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Joseph Aoun, University of Southern California

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Preface

Generative grammar has always set its aims high. From its inception in the 1950s, the ambition has been to go beyond observational and descriptive adequacy to reach explanatory bliss. Important work would be about 'conditions on transformations' rather than on 'some properties of *wh*-movement in English', about the 'transformational cycle' rather than on verb clusters.[1] This is what science should be like. And while earlier attempts at achieving a semblance of an explanatory theory were often clumsy and inadequate, these past forty or so years have shown that truly fundamental questions can now be asked and addressed.[2] This emphasis on theory has not, of course, altered the fact that linguistics is a thoroughly empirical science, but data and analyses are seen as what they are: tools to help us understand the structure and properties of the human language faculty. It is the fate of tools that when the product is finished they are put away. When some (as it turns out controversial) data from Italian had suggested that the notion of bounding node should be parameterized, we then forgot about the Italian data and happily proceeded with the idea of parameters.[3] Numerous other examples could be added.

More generally, the data and analyses that at some point in the history of generative grammar played an important, sometimes even a crucial, role have a tendency to fade into the background rather quickly.[4] This effect is particularly strong when the piece of theorizing they helped to establish becomes obsolete, but it is even true when the theoretical insight persists over time. As time went on, and as generative grammar (using the term in the broad sense, including all its theoretical diversity), in its explosive success, expanded to dozens of countries, hundreds of universities and colleges, and many hundreds of researchers, the muckheap of once useful but then discarded empirical material continued to grow. Old hands in the field may still be served by a good memory, helping them to dig out some of these rejects if they seem useful at some later stage, but successive new generations of young linguists simply don't have access to the wealth of data, generalizations, and analyses that might be terribly important to their research if only they knew about them.

But it is not only a problem for younger generations. Researchers who like to keep track of developments, particularly (but not only) in those subfields that are not directly related to their own research, or who work in closely related disciplines such as, for instance, psycholinguistics or sociolinguistics, find it increasingly difficult to keep track. Current handbooks are often concerned with current theorizing, but only marginally with the history of the various versions of the theory and even less with the empirical generalizations underlying those theories. As a consequence, an ever smaller percentage of the potentially useful empirical material is treated in standard textbooks, and hence the rest is not part of the knowledge that researchers and students in the field may be expected to possess.

It might be objected that the articles in which all this wisdom is stored are, after all, still around in the journals, in the books, in the libraries. But given their theoretical focus, the titles are often unrevealing as far as the empirical domain is concerned, keywords are notoriously absent or unreliable, relevant data are scattered over several articles, and, most importantly, the presentation of the data in these articles is subservient to the theoretical claims that are made and hence not presented in succinct, didactically useful ways.[5] So searching for the relevant materials, even if you know what to look for, is often hard. For young researchers, such a search task is doubly difficult because very often the descriptive generalizations are presented in a jargon and formalism that were characteristic of the theoretical framework at the time, sometimes decades ago. Who thinks to look up the term 'backward equi' when looking for data relevant to what we now call exceptional case marking (ECM)?[6]

Having a good, theoretically oriented mind is not enough. You cannot gain an understanding of the abstract properties of Universal Grammar without having any ideas about interesting empirical areas that might provide the crucial evidence (or counter-evidence) for your claims. But these flashes of empirical insight can only come if you have enough knowledge in your head to start the neurons firing away. And you can only have that knowledge if you have been taught about a certain range of phenomena in a variety of languages, or if you have had access to a repository of such materials to work through by yourself. The problem is that such courses are rarely taught, the reason being more often than not that the relevant data are not available in a form that is didactically usable.

This is the lacuna that we are hoping to fill with *The Blackwell Companion to Syntax*. In these five volumes, we offer you 77 case studies of syntactic phenomena that should, at least partly, fill the gap and constitute an important research tool for the working linguist and for teachers and students of syntax (and its interfaces). In bringing these chapters together, we were guided by a working definition of what a syntactic case study was supposed to be. The following properties were thought to be central: *a well-delimited empirical area (both as to the construction(s) involved and as to the languages in which the phenomena are found) whose analysis has, at one time or another in the history of generative grammar, played an important role in the theoretical debates at that time*. More often than not, we will find that such results are relatively robust in the sense that they will stand and

be interpretable regardless of various innovations or adaptations of the version of the theory in which they first saw the light.

The so-called 'verb-raising' construction in Continental-West Germanic languages (chapter 75) will serve as an example. Much has been published on this subject, a reasonable degree of consensus exists about the most important properties of the construction, its analyses have been frequently used to support theoretical proposals, etc. Nevertheless, the existence of this complex of facts is hardly known outside the small group of specialists in this field, the main properties cannot be presupposed as common knowledge, and no one in the field can be properly held responsible for ignoring the verb-raising construction. In a situation like that, the chapter's presentation will be oriented toward combining views and formulating them in such a way that they will be accessible to researchers from various approaches to the theory of grammar.

In addition, of course, the delimitation had to be such that the empirical subdomain in question could be treated in manageable chapters. It would have been unthinkable to include a case about relative clauses: even a thick monograph would not do such a topic justice. But the subtopic of free (headless) relative clauses (chapter 27), a topic that in the late 1970s and the 1980s generated a considerable literature, is a typical example of what we had in mind.

What about the theory? We wanted to make the empirical generalizations, the insights into the properties of constructions, the main focus of each chapter. But wherever useful and possible, of course, reference can be and is made to the theoretical issues that the phenomena in question were or even are relevant to. This introduces a certain bandwidth, and indeed some of our authors stress the empirical side more strongly while others swerve more easily into theoretical discussions. With a project this size it has been impractical to impose more uniformity than we have achieved here. It was, frankly, not always easy to convince our authors to take time away from their primary theoretical research to write the chapters we asked them to. And it was also on occasion hard to curb the attention that they tended to give to theoretical issues and their own role in those theoretical developments. More generally, wherever possible we suggested that theoretical issues be addressed in robust, sustainable ways, not in terms that would reflect the fads and the terminological peculiarities typical of a specific brief period in the short history of generative grammar.

It does not take a great deal of knowledge of the field to realize that an enterprise such as the present one is a highly open-ended affair. Even if we had achieved complete coverage at the time of appearance, new cases would soon present themselves. But complete coverage is unattainable in the first place. It is always possible to come up with other potential cases, not represented in the present work. Even now we already have a number of ideas about cases that might be added and which may at some point be added to the present collection. Nevertheless, we believe that the coverage that the present collection achieves is very considerable. So much ground is covered that already it seems doubtful that future graduate students of linguistics could be expected to work through all of this material. If a student manages part of it and has the rest at his or her disposal

as an encyclopedia of linguistic phenomena, we feel certain that his or her research will greatly benefit. As teachers we are frequently confronted by a big question mark in the faces of students or even fellow faculty members when we use terms like 'contraction', 'subdeletion', or 'freezing effect'. And when asked "Where can I read up on this?" we are often faced with our own bad memory and the virtual impossibility of pointing toward one representative text that will concisely and competently explain what kind of phenomena are hiding behind these terms. This, we feel sure, is now a problem of the past.

If, as we are convinced, this *Companion* will become an important research tool in linguistics, a pressing need will also be felt for additional case studies to be added. While it may well be possible to project further volumes in the future, or an updated or extended version of the present publication, it has been clear to us from the start that the best way to make this an incremental enterprise is to publish these cases electronically. This would allow the possibility of reviewing cases now published, adding new cases relatively easily, and allowing discussion fora, etc. When that happens, the way to expanded coverage of the field will be paved. For the moment we refer you to www.syntaxcompanion.org to keep you informed on developments in this area.

One point to make about the references: every individual chapter has a reference section; the consolidated reference list is in volume V, and in the XML CD version the links are to the consolidated list rather than to the end-of-chapter lists. So in the chapter references you may find entries with a, b, etc. after the date even if there is only entry with that author and date in that chapter, because there is more than one entry in the whole five volumes with the same author and date. For example, even if there's only one Chomsky 1995 cited in any one chapter, it will appear as Chomsky 1995a or 1995b or 1995c, because there are three Chomsky 1995 entries in the consolidated references for the whole five volumes, identified as a, b, and c.

As editors of this encyclopedia of case studies, we have had to make many choices. In doing so we were greatly helped by the project group at NIAS, the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, at Wassenaar, in the dunes lining the Dutch coast, in 1996/1997. The definition of what we would consider a typical case study was intensively discussed and ultimately fixed by that group: Reineke Bok-Bennema, Norbert Corver, Denis Delfitto, Joe Emonds, Martin Haiden, Itziar Laka, Eric Reuland, Tim Stowell, Sten Vikner, and, to some extent, Ian Roberts. We were also fortunate to have good input and feedback from Hagit Borer, Jan Koster, and Edwin Williams, our special outside consultants. The original list of cases was also compiled by that group. First sample chapters were produced during that year. And we brainstormed a lot about who would be the ideal author for which chapter. Nevertheless, we accept full responsibility for all the choices that were made.

We do wish to emphasize, however, that it has never been our intention to suggest that the present collection could be interpreted as a kind of canon, in the literary sense of the word (to the extent that literary scholars are still prepared to advocate such a notion). What we say above about the open-ended character of

an enterprise such as this should underline the fact that nobody could pretend that it is at all possible to establish such a canon, even if one tried to.

The first plans for this project were made in 1993. That is when we decided to apply to NIAS to see if we could get together a team of colleagues with whom to discuss the scope, the objectives, and the realization of the present work. The application was approved. We gratefully acknowledge the generous support, financial, logistic, and otherwise, of NIAS and, in particular, Dick van de Kaa and Wouter Hugenholtz, respectively the rector and the director of the institute. The group convened in the splendid isolation of NIAS in the academic year 1996/1997. There, we were happy to be able to work together with the colleagues mentioned above. Ilke van den Ende joined us as a student trainee. We were also happy to be able to organize two workshops at NIAS during that year. A third was held in Los Angeles at USC with the help and support of Hagit Borer and Tim Stowell in 2001. We wish to thank the participants at these workshops for their contributions, and LOT (the Dutch National Graduate School of Linguistics) as well as NWO and KNAW (the Netherlands Organization for Scientific Research and the Dutch Royal Academy of Sciences respectively) for financial support for these workshops. We also wish to thank the BSGM Foundation for an additional grant to the NIAS group. Last but not least we wish to thank those who have assisted us with the administration and correspondence, with the copy-editing and the HTML-conversion and the maintenance of the website: Jenny Doetjes, Bart Hollebrandse, Rob Goedemans, and Hannah de Mulder. Without them we literally and figuratively could not have managed. Thanks are due to NWO and the Utrecht Institute of Linguistics OTS (Language in Use project) for grants that made this assistance possible.

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Utrecht and Tilburg
Martin Everaert and Henk van Riemsdijk

NOTES

1 Cf. Chomsky (1973); Evers (1975b).
2 See, for example, Chomsky (2004).
3 Cf. Rizzi (1982b).
4 The reverse also holds true. Certain empirical domains have never figured prominently in theoretical debates, and remain, thus, uncharted territory from a descriptive point of view.
5 We should add that publications like *Linguistics Abstracts Online* will, in future, solve part of the problem we note.
6 Cf. Postal (1974).

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1 The Accusative Plus Infinitive Construction in English

JEFFREY T. RUNNER

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1 Introduction

This chapter focuses on the English construction illustrated in (1). It has traditionally been called the accusative plus infinitive construction, and that term will be used pre-theoretically here; in the generative literature it has been called the raising to object construction and the exceptional case-marking construction.

(1) Cindy believes Marcia to be a genius.

The accusative plus infinitive (A+I) construction displays a number of properties. It involves a verb (here, *believe*) followed by a noun phrase (*Marcia*) and then an infinitival predicate (*to be a genius*). It can usually be paraphrased by a similar sentence containing a fully inflected complement clause:

(2) Cindy believes (that) Marcia is a genius.

In (2) *Marcia* would uncontroversially be analyzed as the subject of the embedded predicate *is a genius*. Given the rough synonymy of (1) and (2) analyses of (1) have tried to account for the fact that at some level of analysis *Marcia* is the subject of *to be a genius*.

Indeed a range of expressions typically thought to be associated with subjects can appear in the postverbal position in the A+I construction. Some examples include existential *there*, weather *it* and idiom chunk subjects:

(3) a. Greg believes there to be no solution to this problem.
b. Peter believes it to be raining cats and dogs.
c. Alice believes the shit to have finally hit the fan.

Besides these subject properties, however, the postverbal NP in the A+I construction in (1) displays several properties often associated with direct objects. First, if the full NP *Marcia* is replaced with a pronoun, it takes the objective or accusative form instead of the nominative form the subject of (2) would take:

(4) a. Cindy believes her/*she to be a genius.
b. Cindy believes (that) she/*her is a genius.

Second, if *Marcia* in (1) is replaced with an anaphoric element coreferential with the subject of *believe* then it takes the reflexive form, not the pronominal form the subject of (2) would take:

(5) a. Cindy_i believe herself_i/*her_i to be a genius.
b. Cindy_i believes (that) she_i/*herself_i is a genius.

Third, if (1) is passivized *Marcia* can become the subject of the passive verb *believe*; this is not possible if (2) is passivized:

(6) a. Marcia is believed (by Cindy) to be a genius.
b. *Marcia is believed by Cindy (that) is a genius.

The postverbal NP in the A+I construction, then, has mixed properties, some subject-like and some object-like. This state of affairs has led to controversy in the generative literature: is the postverbal NP a subject or an object or both? To answer this question we will need a better understanding of the construction itself and of the factors that make an NP subject-like and/or object-like.

Before turning to these issues, there is one other classic property of the A+I construction that should be mentioned. One of the first properties noticed about this construction was how it is different from a superficially similar-looking construction, that of the object control or object equi construction, illustrated in (7), which can be compared to the A+I construction in (8):

(7) Carol persuaded the doctor to examine Bobby.

(8) Carol expected the doctor to examine Bobby.

Rosenbaum (1967) observed that if the material following the main verb is passivized, the results for (7) and (8) are notably different:

(9) Carol persuaded Bobby to be examined by the doctor.

(10) Carol expected Bobby to be examined by the doctor.

While (8) and (10) are paraphrases of each other, (7) and (9) are not. In (7) Carol is persuading the doctor to do something while in (9) Carol is persuading Bobby to do something. In other words, the 'persuadee' differs in the two sentences. In (8) and (10), on the other hand, Carol has an expectation and in both it is about an examination that the doctor will perform on Bobby.

Thus, semantically, the main verb in (7) *persuade* takes three arguments: the persuader (*Carol*), the persuadee (*the doctor*), and the event (the doctor's examination of Bobby); however, the main verb in (8) *expect* takes only two arguments: the expecter (*Carol*) and the expectation (the doctor's examination of Bobby). Indeed, this underlies the main distinction between the two constructions; while the A+I construction's postverbal NP as in (8) superficially seems parallel to the postverbal NP in (9), there is one crucial difference: the NP in (8) is not semantically related to the main predicate, while the postverbal NP in (9) is.

The rest of the chapter is laid out as follows. Section 2 outlines the two major 'brands' of analysis that have been pursued to explain the properties of the A+I construction; this section also presents a roughly chronological discussion of the particular accounts that have been suggested. Section 3 presents the main types of evidence that supporters of each brand have offered. Section 4 briefly discusses the categorial status of the complement clause in the A+I construction. And section 5 mentions some general conclusions and suggestions for additional reading.

2 Two brands of analysis

2.1 Overview

2.1.1 Raising to object

One type of analysis given to the A+I construction is often called the raising to object analysis. On this analysis the reason *Marcia* in (1) has object-like properties is that it is an object of *believes* at the relevant level of representation. Its subject properties follow from the claim that it is also a subject at some other level of representation.

This analysis is the first one given to the A+I construction in the generative literature, being endorsed by Rosenbaum (1967), McCawley (1970), Kiparsky and Kiparsky (1970) and most notably Postal (1974) in the early transformational literature. Its basic claim can be found in non-transformational approaches such as Relational Grammar (Perlmutter and Postal 1983a), Lexical Functional Grammar (Bresnan 1982c) and Head-driven Phrase Structure Grammar (Pollard and Sag 1994). More recently an updated version of this proposal has been reintroduced into the transformational literature and can be found in Johnson (1991), Lasnik and Saito (1991), Koizumi (1993) and Runner (1995), among others. All of these analyses share the intuition that at the relevant level of representation *Marcia* in (1) is a direct object of *believes* and at some other level of representation it is a subject of *to be a genius*. What differs among these analyses is what the relevant levels of representation are and how they are related. Before discussing any of the details of the raising to object approach, the next section will outline the other main approach to the construction in (1), the exceptional case marking approach.

2.1.2 *Exceptional case-marking*

A second type of analysis given to the A+I construction is called the exceptional case-marking or ECM account. On this approach, the reason Marcia has subject properties is that it is in subject position at all levels of representation. The object-like properties follow from the claim that these properties do not target direct objects per se but rather target NPs that have a particular structural relationship to a nearby verb; it happens that this relationship holds of both a direct object (the verb's immediate sister) and of the embedded ECM subject, which is claimed to be 'closer' to the verb in the relevant sense than a normal embedded subject like we find in, e.g., (2). One special characteristic of this construction, according to the ECM approach, is that the verb 'exceptionally' assigns case to this NP which is not its thematic direct object.

The seeds to this approach are first planted by Chomsky (1973) and a version of it is developed by Bresnan (1972). Much of the transformational work of the 1980s assumes the ECM approach, following Chomsky (1981). Though the details vary somewhat, these analyses all agree on one crucial point that distinguishes them from the raising to object approach: the NP *Marcia* in (1) is not in direct object position at any level of representation.

The sections that follow discuss in more detail further properties of the A+I construction that analyses have attempted to explain; then they provide a roughly chronological presentation of versions of the two brands of analysis outlined above. The A+I construction has received so much attention in the literature that it will be impossible to discuss its each and every property or do justice to all of the different analyses proposed. This chapter will outline the main issues and evaluate the success of the different accounts available in the literature.

2.2 Particular analyses

2.2.1 Raising to object

The earliest transformational approach to the A+I construction was the raising to object analysis. In its essentials it has the following characteristics. At an initial stage of the derivation of the sentence the postverbal NP is in the subject position of the embedded clause, as in (11a). As part of the syntactic derivation a transformation moves that embedded subject up to the direct object position of the main clause as in (11b), hence the name 'raising to object'.

(11) a. Mike proved [[Sam the butcher] to be innocent]
b. Mike proved [Sam the butcher] [___ to be innocent]

At deep structure – the initial stage of the derivation – *Sam the butcher* is the subject of the predicate *to be innocent*. At surface structure it is in the main clause as a direct object of the verb *proved*.

How does this analysis handle the basic properties of the A+I construction outlined above? Since *Sam the butcher* is in subject position at deep structure, and deep structure was considered the level of representation where semantic role assignment takes place, the fact that *Sam the butcher* is semantically the subject of *to be innocent* is accounted for. Since *Sam the butcher* raises to the main clause to become the direct object of *proved*, any rules sensitive to direct objects will be able to apply to this NP. One of these rules is passivization. Passivization was thought to be a grammatical function-changing operation that rearranged the subject and direct object arguments of a transitive verb, making the direct object the subject and making the subject a kind of oblique. Since raising to object creates a transitive predicate by providing the main clause verb with a direct object, passivization can then successfully apply. Consider the derivation sketched in (12):

(12) a. Cindy believes [Marcia to be a genius]
b. Cindy believes Marcia [___ to be a genius]
c. Marcia is believed (by Cindy) [___ to be genius]

Marcia is the embedded subject initially, as in (a). Then it raises to the object position of the main clause, as in (b). Finally, passivization applies and *Marcia* winds up as the subject of the passivized verb.

The raising to object analysis also has a straightforward account of the case-marking facts. Since at surface structure, where case-marking is determined, the initially embedded subject is a direct object, it appears with accusative, not nominative, case:

(13) Cindy believes her/*she [___ to be a genius]

Further, the reflexive facts also follow from the raising to object account. Though the actual analysis provided at the time differed in detail, the generalization is still correct: a reflexive NP is licensed if it has a more prominent (c-commanding) clause-mate antecedent. Since raising to object takes an embedded argument and makes it a clause-mate to the subject of the main verb, the conditions for licensing a reflexive are met:

(14) Cindy$_i$ believes herself$_i$/her$_{*i}$ [___ to be a genius]

The Relational Grammar (RG; Perlmutter and Postal 1983a) approach to raising to object was in its essentials very similar to that just outlined. RG does not invoke transformations that rearrange pieces of phrase structure, but it does have rules that change the grammatical relations of the arguments of a clause. RG's view of raising to object is that the embedded subject at an earlier level (or stratum) ends up taking on the role of direct object in the main clause at a subsequent level. Once it is the direct object in the main clause it is available for rules targeting direct objects, as outlined above.

2.2.2 Exceptional case-marking

The seeds of the exceptional case-marking (ECM) approach are found in Chomsky (1973). This approach agrees with the raising to object account that the postverbal NP is an embedded subject initially. However, its claim is that at surface structure the postverbal NP is still in the embedded subject position. A sentence like (15) would have the bracketing indicated throughout the derivation.

(15) Cindy believes [Marcia to be a genius]

This approach, then, straightforwardly explains the subject properties of *Marcia* since it is a subject throughout the derivation. How does it account for the 'object-like' properties?

In the earliest versions of this approach Chomsky argued that the passivization transformation affected whatever NP was directly following the verb. Since both direct objects and the embedded subject in (15) are NPs directly following the verb, both are available for passivization. A similar approach was assumed for reflexivization. What blocked passivization and reflexivization in structures like (16)?

(16) Cindy believes [Marcia is a genius]

Chomsky notes that a crucial difference between (15) and (16) is the finiteness of the embedded clause. He proposes the Tensed-S condition, which blocks rules (like passivization and reflexivization) from relating elements within a tensed clause to elements outside of that clause.

Chomsky (1981) introduced the ECM approach to the A+I construction. It had in common with his earlier analysis that the embedded subject is a subject

throughout the derivation. Its account of the object-like properties of that postverbal NP differs. The intuition behind the ECM account is that a verb bears a particular structural relationship to certain sufficiently 'close' NPs. This relationship is called government. A verb governs its sister direct object; and it also governs the subject of its infinitival sister clause. It does not govern the embedded subject of its finite sister clause. The claim is that a finite clause node is a barrier to government. Additionally, the main verb in the A+I construction can assign accusative case to the embedded infinitival subject, which is exceptional, in that a verb usually only assigns accusative case to its own thematic object.

Then passivization, and the conditions on reflexives and case-assignment are also sensitive to the notion of government by the main verb. Since regular direct objects and the postverbal NP in the ECM construction are both governed by the main verb, they form a natural class and are treated as such by the syntax, reflected in their parallel behavior with respect to passive, reflexives, and case-marking. The fact that the main verb does not govern the subject of an embedded finite clause is part of the explanation for why that NP is not available for passivization, cannot be a reflexive bound in the main clause, or appear in the accusative case.

It is probably worth noting here that the above description of the ECM account is slightly simplified. Indeed, it was assumed that both finite and non-finite complement clauses were dominated by the same syntactic nodes, namely S and S' (what are now called IP or TP and CP). S' was considered a barrier to government, thus the main verb could not govern into either the embedded finite or non-finite clause without some special or exceptional device:

(17) a. Cindy believes [$_{S'}$ [$_{S}$ Marcia to be a genius]]
b. Cindy believes [$_{S'}$ [$_{S}$ Marcia is a genius]]

The special device was the rule of S'-deletion, which would delete the S' node in the A+I construction (17a), but not in (b), with finite complementation. Thus, at surface structure there is a difference between the two constructions:

(18) a. Cindy believes [$_{S}$ Marcia to be a genius]
b. Cindy believes [$_{S'}$ [$_{S}$ Marcia is a genius]]

S'-deletion was considered an exceptional rule limited in its application to a handful of verbs.

Section 4 will take up the question of the categorial nature of the sentential complement of verbs like *believe* in the A+I construction. This in itself is one of the important variables in analyses of the A+I construction.

2.2.3 Raising revisited

In 1991 Kyle Johnson published an article arguing that all direct object NPs in English move from their base-generated position, as sister of V, to a VP-peripheral position, Spec,VP. One of his concerns was that while argument PPs seem able

to intermingle with adverbial and other non-nominal VP-internal material, argument NPs always appear directly to the right of the main verb in English:

(19) a. Bobby talked (quietly) to Bill (quietly).
b. Bobby watched (*quietly) Bill (quietly).

He argued that the NP needed to move leftward to Spec,VP to have its case assigned. Since the main verb still precedes the direct object NP, Johnson provided several arguments that it too moved leftward; he claimed it landed in a VP-external functional head position:

(20) Bobby watched [$_{VP}$ Bill t_V t_{NP} quietly]

Johnson went on to argue that the same range of facts is relevant in the A+I construction. That is, the main verb and the postverbal NP are always adjacent. That and other facts led him to reintroduce a raising analysis for the A+I construction.

Johnson's analysis side-stepped one of the main road blocks that the raising to object analysis faced in the Government and Binding (GB) theory of the 1980s. Partly to constrain GB's main transformational rule, Move Alpha, and partly to rule out transformational analyses like raising to object, GB constraints were stated in such a way as to rule out a construction in which the sister of a lexical item is not that item's semantic/thematic argument. Since raising to object takes an NP thematically related to an embedded predicate and places it in the position of sister of V, this application of Move Alpha would violate these constraints. Since the raising in Johnson's analysis is to a specifier position and not to the sister of V position, this difficulty does not arise. Indeed, there is nothing in the theory to rule out Johnson's approach to the A+I construction.

Additionally, in the late 1980s (published as chapter 2 of Chomsky 1995c) Chomsky suggested that accusative Case was assigned to a direct object NP, not in its surface position, which is sister to V, but rather in a VP-external functional specifier position, Spec,AGRoP. Since it was assumed that the direct object was a sister to V in the surface representation, the claim was that the NP would raise at the abstract level of Logical Form (LF) to the Spec,AGRoP. The main motivation for this was conceptual. Subject NPs were thought to be generated in Spec,VP and raise to Spec,IP overtly to have their nominative case assigned. Chomsky wanted to unify nominative and accusative case-assignment.

Lasnik and Saito (1991) extended Chomsky's approach to the A+I construction. They tentatively suggest that the embedded subject NP moves overtly to the main clause Spec,AGRoP position in the A+I construction. The verb would also move to a higher VP-external functional head position. This much of the analysis paralleled Johnson's proposal. Oddly, they proposed this overt account only for the A+I construction, maintaining Chomsky's covert movement account for regular direct objects. Others have extended the overt movement analysis to direct objects, as well, making them fully parallel with the postverbal NP in the A+I construction (e.g., Koizumi 1993; Runner 1995, and others).

Both the ECM and the revised raising approaches potentially have the ingredients for an explanation of another property of the A+I construction: it is associated with verbal complementation alone. No adjectives or nouns allow for the A+I construction, as noted by Ross (1974a) and Kayne (1983). As only verbs, but not nouns and adjectives, are independently thought to be structural case-assigners, this favors an analysis that tries to relate the A+I construction to structural case-assignment.

2.2.4 The lexicalist approach

Another approach, which has its roots in the raising to object analysis, is found in the lexicalist frameworks, Lexical-Functional Grammar (LFG; see, e.g., Bresnan 1982c) and Head-driven Phrase Structure Grammar (HPSG; see, e.g., Pollard and Sag 1994). Like the raising approach, the lexicalist approach claims that in the surface syntactic structure the postverbal NP in the A+I construction is a direct object of the main verb. This allows a straightforward account of the object-like properties of that NP. What about the subject properties? Both LFG and HPSG recognize that the postverbal NP must have the semantic properties associated with the subject of the embedded predicate. Thus, both frameworks provide a means for associating the syntactic direct object with the semantic features of the embedded subject. At the level of syntactic analysis, the NP is a direct object; at the level of semantic analysis, it is a subject.

3 Evidence for the two brands

3.1 Evidence for raising to object

Many arguments have been offered in favor of the raising to object account of the A+I construction. Indeed, Postal (1974) alone, outlines 14 or so such arguments. Many of these arguments have roughly the following form: NPs certain to be direct objects behave in manner X; the postverbal NP in the A+I construction behaves in manner X; therefore, it is a direct object. Some of these arguments could be turned around and used to support in a similar way the ECM approach: NPs certain to be governed by the main verb behave in manner X; the postverbal NP in the A+I construction behaves in manner X; therefore, it is governed by the main verb. See Bach (1977b) and Bresnan (1976b) for critical reviews of Postal (1974).

The crucial difference between the two approaches hinges on the treatment of the postverbal NP with respect to the surface syntax. Thus, arguments that show the NP to indeed be part of the main clause in the surface syntax are arguments in favor of the raising to object account.

One simple argument of this type comes from adverb placement. If the postverbal NP were in the embedded clause one might expect a main clause adverb to be able to intervene between the main verb and the postverbal subject. This is not possible, as is well known:

(21) Alice believes (*strongly) Sam to be the best butcher in town.

But see section 3.2 for an argument against the raising to object approach based on a very similar example. Another more complicated argument is put forth in Postal (1974). It involves the interpretation of adverbs. Consider these examples:

(22) a. Mike expected Greg incorrectly to take out the trash.
b. #Mike expected Greg incorrectly would take out the trash.

In the A+I example in (22a) the adverb *incorrectly* can have a reading in which it modifies the main verb *expect*. Indeed, that is probably the favored reading. In the full finite clause in (22b) the adverb sounds awkward. If it is inverted with the modal *would* it can be interpreted as modifying the embedded predicate. If the interpretation of an adverb is determined by its surface position then this contrast can be taken as an argument for raising to object. For the adverb *incorrectly* to be interpreted as modifying *expected* it must be in the same clause as *expected*. If it is in the same clause as the verb, then the NP between the verb and the adverb must also be in that clause. Therefore, the postverbal NP is in the main clause.

Another, perhaps slightly more straightforward, piece of evidence in favor of the claim that the postverbal NP in the A+I construction is indeed part of the main verb comes from the 'particle construction'. Kayne (1985) points out examples like the following and Johnson (1991) argues that they show that the postverbal NP is within the surface string of the main clause:

(23) She made Jerry out to be famous.

On the assumption that *made* and *out* are both uncontroversially in the main clause, then since *Jerry* appears between them, it too must be part of the main clause.

A third kind of argument for the raising to object approach comes from testing how 'high' the postverbal NP in the A+I construction is compared to the subject of an embedded finite clause. Versions of these arguments are found in Postal (1974) and are re-introduced in Lasnik and Saito (1991). These may not actually tell us anything about where the postverbal NP is in the overt syntax since currently many frameworks do not assume these phenomena are sensitive to surface syntax, but rather to some more abstract representation (like Logical Form). Nonetheless, these arguments do seem to point toward a difference between the postverbal NP in the A+I construction and a subject NP in an embedded finite clause.

In each of the following the postverbal NP in the A+I construction behaves like it is higher in the structure than a clearly embedded subject at some level of representation. It can take wider scope than an embedded subject; it triggers a Binding Theory Condition C effect in the main clause; it can bind a reciprocal in the main clause; and it can license a Negative Polarity Item (NPI) in the main clause.

Scope:

(24) a. The FBI proved few students to be spies.
b. The FBI proved that few students were spies.

Condition C:

(25) a. ?*John believes him$_i$ to be a genius even more than Bob$_i$'s mother does.
b. John believes that he$_i$ is a genius even more than Bob$_i$'s mother does.

Reciprocals:

(26) a. ?The DA proved the defendants$_i$ to be guilty during each other$_i$'s trials.
b. ?*The DA proved [that the defendants$_i$ were guilty] during each other$_i$'s trials.

NPI:

(27) a. ?The DA proved none of the defendants to be guilty during any of the trials.
b. ?*The DA proved [that none of the defendants were guilty] during any of the trials.

3.2 Evidence for the ECM approach

Several arguments against the raising to object account have been proposed over the years. Chomsky (1973) argues that if the post-verbal NP is indeed syntactically a direct object, then what explains the following type of contrast?

(28) a. Which famous singer does Marcia always believe [gossip about ___]?
b. *Which famous singer does Marcia believe [gossip about ___] to have ruined his career?
c. *Which famous singer does Marcia believe that [gossip about ___] has ruined his career?

He suggests that examples like (27b, c) are simply examples of illicit extraction from subject position, while (27a), being extraction from object, is fine. Postal responded to this criticism by claiming that the condition which blocks extraction from subject is actually a condition on extraction from a phrase that has been a subject at some point in the derivation; even the raising to object analysis assumes that the postverbal NP is a subject underlyingly.

Another argument against the raising to object approach also comes from adverb placement. This time the ECM approach seems to make the right prediction:

(29) a. Alice believes Sam (*strongly) to be the best butcher in town.
b. Alice believes strongly that Sam is the best butcher in town.

If the postverbal NP is indeed part of the main clause, why is it not possible to place this main clause adverb after the supposed main clause direct object? Runner (1995) attempts to explain this by comparing (29a) to (30b):

(30) a. Alice strongly believes Sam's story.
b. *Alice believes Sam's story strongly.

The example in (30a) shows that *strongly* can modify *believe*, but (b) shows that it cannot appear postnominally. The adverbs that are often used to illustrate the contrast in (29) do not do well postnominally even when the postverbal NP is uncontroversially a direct object. And given that there are adverbs that do well in such a position, as illustrated in (22) above, the force of this argument is weakened.

Another type of argument that Chomsky (1973) makes against the raising to object approach involves *tough* movement. *Tough* movement is usually assumed to target various kinds of objects, but not subjects:

(31) a. Bobby is easy to please ___
b. *Bobby is easy to believe [___ saw Big Foot]
(cf. It is easy to believe Bobby saw Big Foot.)

However, the postverbal NP in the A+I construction cannot undergo *tough* movement. This is unexpected if it is a direct object, but is expected if it is a subject:

(32) *Bobby is easy to believe ___ to have seen Big Foot.
(cf. It is easy to believe Bobby to have seen Big Foot.)

Here the raising to object analysis has to explain why the derived object does not undergo certain phenomena usual direct objects undergo. The ECM analysis simply points out that these NPs are subjects, not objects, and hence the contrasts follow straightforwardly.

4 The categorial status of the complement clause

Somewhat independent of the choice of analysis, raising to object or ECM, is the question of the categorial status of the embedded clause. The original analyses usually claimed that it was a full sentence embedded within an S′ (or CP). However, other accounts are possible and have been proposed. One is that the full finite complement of a verb like *believe* is an S′ or CP, the infinitival complement found in the A+I construction is simply an S or IP (or TP). This approach would capture the intuition that there is less syntactic material between the main verb and the embedded subject NP in the A+I construction, without positing a rule of S′ deletion (see, e.g., Massam 1985 for an ECM-type analysis along these lines).

Kayne's (1981b) study of English and French complementation argued that the categorial status of the sentential complement mattered for a range of properties. There he showed that whereas French does not in general have the basic A+I construction outlined above (see (33a, b)), it does have a similar construction, what is now called a small clause (33c). This construction, which does not appear to involve a full infinitival complement clause, looks superficially like the English A+I construction. Interestingly, it is possible to extract the embedded subject of (33b) resulting in (33d).

(33) a. I believe Jean to have arrived.
b. *Je croyais Jean être arrivé.
I believe Jean to-be arrived
c. Je crois Jean intelligent.
I believe Jean intelligent
d. le garcon que je croyais être arrivé
the boy that I believe to-be arrived

Kayne (and see also Rizzi 1981) argues that (33b, d), involve S' (CP) complementation, whereas (33c) does not.

A paradigm pointed out in Postal (1974: 304–305) suggests that even within a single language the possibility of both the English-type and the French-type A+I construction must co-exist. English, too, has predicates that pattern similarly to the French examples in (33b, d):

(34) a. *He alleged Melvin to be a pimp.
b. Melvin, he alleged to be a pimp.
c. Who did they allege to be a pimp?
d. They alleged to be pimps – all of the Parisians who the CIA had hired in Nice.
e. Melvin was alleged to be a pimp.

On the other hand, such an account requires that a predicate be able to select particular categorial features of its complement (here, to be able to choose between S' and S); categorial- or c-selection itself has been controversial with a number of researchers aiming to reduce it to semantic- or s-selection (Grimshaw 1979; Pesetsky 1982). Given the fact that the A+I construction and its finite counterpart are roughly synonymous, it becomes difficult to see how to have the difference in the category of the complement clause follow from semantic characteristics alone (but see Pesetsky 1989 for such an attempt).

5 Conclusion

The A+I construction has had a long and illustrious history in generative syntax. Brand-loyalty ran very strong and it seems that complete subparts of theoretical

frameworks were developed simply to account for this construction. However, over the past five years or so it seems that most analysts have converged on some version of the raising to object approach. With the decoupling of underlying semantic/thematic positions and surface (or LF) functional case positions being explored in recent minimalist versions of transformational grammar, the need for the ECM approach has declined and indeed the full raising to object analysis is the only one consistent with new architecture of the theory. The static representational notion of 'government' no longer plays a role in the theory and its work has been taken over by a derivational feature-movement approach to local relations. Thus, modern transformational grammar joins current lexicalist approaches to grammar in endorsing the basic concepts embraced by the raising to object approach.

This chapter has provided an outline of some of the relevant issues to the analysis of the A+I construction in English. Those interested in reading more about it may want to consult some of the following additional sources and the sources cited therein: Kayne (1985), Massam (1985), Bošković (1997c) and Runner (1998). This list is a tiny fragment of what is available as is clear by doing a Google search on "'raising to object' OR 'exceptional case marking'," which receives over 600 hits.

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2 Adjectival Passives: The Construction in the Iron Mask

JOSEPH EMONDS

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1 Introduction: what counts as a passive?

Perhaps the first task in any work on passives is to set down what this elusive term is meant to cover. Keenan's (1985a) broad but quite detailed overview insists that passives are operations on verb phrases rather than on sentences (p. 247) for which a characteristic morphological marking is central (p. 251). Åfarli (1992: 8) summarizes this research in the following concise statement:

> . . . every sentence one might reasonably want to call a passive may be minimally characterized as follows:
>
> (22) a. Relative to its active counterpart, the passive sentence is marked with special verb morphology.
> b. The subject of the active sentence never remains subject in the passive counterpart.

This characterization of passives lays stress on the role of the subject phrase and its relation to passive morphology. The general approach to characterizing passive in terms of 'dethematized' subjects (those whose expected theta-role is suppressed) stems from Roberts (1987).

1.1 Two types of passives

Åfarli goes on to cite Keenan (1985a: 251) who "distinguishes between two broad types of passive according to the verbal morphology involved: Periphrastic passives, which necessarily make use of a passive auxiliary verb, and strict morphological passives, which do not." Periphrastic passives are also sometimes called 'analytic' and strict morphological passives 'synthetic'.

In these traditional terms, an 'analytic passive' is constructed with an auxiliary verb and a non-finite form of the main verb. In the bracketed passive clauses below, the usual place of the subject (underlined) contains either a noun phrase with the semantic role of what would otherwise be the main verb's object (1a) or some dummy pronoun (a null or overt 'expletive'), as in (1b). The passive auxiliaries are italicized and the non-finite main verbs are in bold.

(1) a. The fact that [<u>the door</u> *was* {**repainted/taken** off} by the tenant] upset her.
It seems that [<u>John's requests</u> are *getting* {**satisfied/written** down}].
b. [<u>It</u> might *be* quickly **concluded** that Mary is ill].
[<u>Det</u> *vart* **sunge**]. 'It was sung.' (Norwegian, from Åfarli 1992: 85)

The non-finite passive form in English, the 'passive participle', combines a verbal stem with a past participle suffix, thus yielding complex analytic or periphrastic passives such as *be repaint-ed*, *be tak-en*, *get satisfi-ed*, *get writt-en*; this pattern is very common throughout Indo-European languages. This suffix is (often) referred to as past, not because of the passive, but because many languages also

combine this participle with different auxiliaries to form composed past tenses (the English perfect tenses *have taken*, the French *passé composé*, the Italian *passato prossimo*).[1] Because of the suffix's distinctive form in many irregular English verbs (*broken*, *done*, *eaten*, *flown*, *gone*, *taken*, *written*), it has usually been notated as *-en*, even when spelled *-ed*, since the earliest transformational work.

At least in the realm of what Baker (1988a: ch. 1) terms "grammatical function changing" rules, this analytic passive certainly reigns as 'king' of transformations. It is one of three singled out in Chomsky (1957) for extensive treatment and has maintained a center stage position in research ever since. This constant attention is in large part due to the fact that the correct analysis for any kind of passive remains uncertain; indeed much debate has turned on to what extent across languages and within one language the many variations on the 'passive' can even be considered a unitary phenomenon (Keenan 1985a; Postal 1986).

1.2 Two variants of 'analytic passives'

Contributing to the uncertainty about the limits on the passive is an interesting dichotomy, widely exemplified in Indo-European systems, between what are termed verbal and adjectival passives. The construction most familiar from transformational literature is in fact a 'verbal passive'. But a second type of passive, often homonymous with the first, is called 'adjectival'. Wasow (1977) draws several grammatical distinctions in English, which we will review as we proceed, between verbal passives as in (2a) and adjectival passives as in (2b):

(2) a. During my visit, that door was quickly *taken off* by the tenant.
John's requests are getting *satisfied*.
b. At my arrival, that door was already completely *taken off*.
John now seems very *(un)satisfied.*

A rough semantic characterization is that a verbal passive (2a) refers to an activity and an adjectival passive (2b) to an already attained state.

This study is devoted to sketching the history of treatments of adjectival passives in generative grammar and to selecting the elements among these treatments that seem to provide a satisfactory analysis for the construction. As the adjectival passive has much in common with periphrastic verbal passives and is often of the same form, we will necessarily be treating aspects of the latter construction.[2] However, we can exclude strict morphological (synthetic) passives from this study, relying on Åfarli's conclusions: "Among Germanic languages, the [strict morphological]-passive is unique to the Scandinavian languages" (1992: 13). "It is important to note that s-passives never have an adjectival reading" (1992: 12).

Between the periphrastic passives, the adjectival variant certainly arrived later on the generative scene (for reasons we will review), and has never become the focus of attention in the same way as the verbal passive. It has been instead confined to a relatively unexamined lexicon where its properties are supposedly

relevant only to the development of 'lexical semantics'.[3] Yet a review of literature and argumentation about the adjectival passive suggests rather that it is the more basic, minimal and diachronically constant representative of the two types.[4]

In the terms of syntactic theory, this review will finally conclude not only that verbal and adjectival periphrastic passives are formed from a single lexical item, the participial suffix, but also that *both involve transformational movement from object to subject for exactly the same reason*. That is, I will argue that both uses of the passive suffix relate similarly to 'NP movement' and that neither is connected to any lexical device which relates arguments of verbs to semantic or 'theta'-roles.

2 Verbal vs. adjectival passives: their differences

I first review the properties that differentiate the two types of passives, summarizing material that also appears in Emonds (2000: ch. 5). The differences in sections 2.2, 2.3, and 2.5 were brought under generative scrutiny in Wasow (1977). In this study of the generative history of adjectival passives, it is important to keep in mind that the specifically adjectival properties reviewed below were never taken as crucial considerations in formulating early versions of the passive transformation.

2.1 The interpretive difference: ongoing vs. completed activity

We began by examining a property that is taken in both traditional and generative grammar to distinguish passive participles with an activity sense (2a, 3a) from those indicating a resultant state (2b, 3b). The verbal passives in (2a, 3a) lack the sense of completed activity conveyed by the adjectival passives in (2b, 3b):

(3)	a.	The door {got/was} *closed* during the noon hour.	(door can be open at noon)
		The door is being *(*un)painted*.	(painting incomplete)
	b.	The door {remained/was} *closed* during the noon hour.	(door closed by noon)
		The door looked *(un)painted*.	(painting complete)

Certain verbs are incompatible with this 'completed sense' and hence do not appear in adjectival passives. Consequently, such V can be passivized only as *verbal* passives; they cannot appear as complements of most verbs subcategorized as +___AP:[5]

(4) *New York seems (very) {*approached/left*} in the tourist season.
*That good dinner felt {*accompanied/followed*} by too much drink.
Many polluted cities remain {(un)avoided/escaped*} during the summer.

*The clay looked (too) {*handed* around to students/*pressed* into a bowl}.
*The message appeared {*slipped* to the spy/*put* in the drawer}.
*Some basketballs sounded {*dribbled* across the floor/*thrown* against the wall}.

The sense of completed activity in (2b, 3b), i.e., of a property, seems nothing more than the characteristic Logical Form (LF) interpretation of the syntactic category A. Moreover, interpretation as a property seems to be exactly what verbal passives lack.[6] I thus propose the following at least descriptive relation between the morphology of the passive and its interpretation. Following the right hand head analysis for bound suffixes in Lieber (1980), the suffix *-en* is the head of the passive participle. Then, while *-en* is obviously present in Phonological Form (PF) in all passives:

(5) a. In adjectival passives, the head [$_A$ *-en*] is present in both LF and PF.
b. In verbal passives, [$_A$ *-en*] is absent in LF and present only in PF.[7]

Many empirical differences between adjectival and verbal passives correlate with and can be largely explained by (5). Of course, we also wish to develop a better theoretical perspective on (5).

We will see as we proceed that there is no need to invoke any further category distinction or change between the two types of passives as long as we maintain a contrast during some part of a derivation, whereby verbal but not adjectival passives lack the filled lexical head [$_A$-*en*] at LF.

2.2 *Selection by different classes of V*

In most of the paradigms from Wasow (1977), the distributions of adjectival passives and underived lexical adjectives are essentially identical. This general fact follows from the presence of adjectival *-en* at all levels of a derivation (5a). In contrast, he considers the lack of the category A in verbal passives to be a crucial indicator of their transformational genesis. That is, while adjectival passives instantiate a category change of the stem for Wasow (morphological 'derivation' from V to A), verbal passives do not and could not effect a category change, because transformations lack this capability. Thus, verbal passives must be of category V. Chomsky (1981: 50) takes a somewhat different tack, proposing a special 'neutralized category' status for verbal passives, presumably to keep them separate from the (undiscussed) adjectival passives (see section 5.1).

Empirically, both types of Germanic and Romance passive phrases are selected by verbs whose subcategorization frames include AP, but there is a difference between adjectival and verbal passives. Adjectival passives are selected by essentially *all* V that select AP complements (Wasow mentions English *act*, *appear*, *be*, *become*, *look*, *remain*, *seem*, *smell*, and *sound*), while only one or two such 'auxiliary' V in each language select verbal passives. Under either Wasow's or Chomsky's categorial proposals, (5a) certainly explains at least the first part of

this statement. Nonetheless, neither proposal clarifies why Indo-European verbal passives are compatible with only one or two 'passive auxiliaries' otherwise specified as +___AP (e.g., *be* and *get*).

2.3 *Degree words freely modify only (certain) adjectival passives*

There are not fully understood differences among adjectival passives as to which permit a full range of characteristic adjectival modifiers, so-called 'degree words', as in (6a).[8] In any case, verbal passives do not tolerate them. By using either a progressive or the verbs in (4) (*approached/avoided/handed*, etc.) to ensure that a passive is verbal rather than adjectival, we create ungrammatical combinations with adjectival modifiers (6b).

(6) a. The garden seemed too overplanted.
New York remains more affected by strikes than other cities.
That region doesn't seem very inhabited.
How spotted with food did those clothes look?
b. The garden is being (*too) overplanted.
*New York is more avoided by tourists than other cities.
*That prison doesn't seem very escaped these days.
*How handed around to students did the clay feel?

Though a full theory of grammatical modification remains to be worked out, the following seems to be a minimal requirement: Many, perhaps all, items that modify only lexical category X^0 (here A) require that this X^0 be lexicalized throughout a derivation. The structural contrast (5) then lays the basis for correlating free adjectival modification with the presence of a lexical entry under A. Since the *-en* suffix on a verbal passive is absent in LF (5b), these forms don't tolerate degree words.

The distinction between lexicalized passive adjectives and those resulting from productive syntactic derivation is studied in more detail in Emonds (2000: ch. 5), in relation to determining possible modifiers of adjectival passives. In that approach, fully lexicalized members of this class (*affected*, *inhabited*, *restricted*, *worried*) are suffixed in the lexicon and hence throughout a derivation, and so can be modified by degree words. Other adjectival passives (*destroyed*, *lost*, *painted*, *planted*) are formed in the syntax, i.e., they are not adjectives throughout a derivation, and hence do not tolerate degree words.[9]

2.4 *Passives with the adjectival prefix* **un-**

This test distinguishing verbal from adjectival passives dates from Siegel (1973). Passives prefixed with *un-* can appear as complements of verbs that take APs as in (7a), while verbal passives cannot. So prefixing *un-* to the verb stems in (4),

which are compatible with only verbal passives, creates the impossible italicized combinations (7b), no matter what the wider context:

(7) a. That work seemed {unknown/unpainted/unrewarded}.
Those books should remain {untouched/unfinished/unsold}.
b. *That work {was/seemed} {*unleft* in good hands/*unfollowed* by others}.
*Those books should {get/remain} {*unthrown/unhanded*} to any customers.

As in the previous subsection, it appears that if a prefix modifies only members of lexical category X^0, then X^0 should be lexicalized throughout a derivation.

Bresnan (1978: 6–9) claims that this pattern precludes using transformational movement in adjectival passives in, e.g., (7a). However, the assumptions of her argument seem to be that passive movement is restricted to V-headed clauses (begging the question) and that all operations contributing to a transformed passive surface structure occur simultaneously (which is currently not assumed).

2.5 *Only verbal passives have the full internal structure of surface VPs*

As observed by Wasow (1977: 341), verbal passives essentially recreate the full range of structures found in active VPs, except that the passive VP contains one gap *e* for the DP which is 'passivized': *Mary was (being) elected e President; Sue was sent e the letter.* They are thus unlike adjectival passives, which fail to appear in such contexts: *Mary felt {happy/*elected President}*; **Sue was unsent the letter.*

Åfarli (1992: chs. 3–4) shows that Norwegian passives with expletive subjects in fact exhibit a full range of active VP structures. Similarly, the 'gapless' Japanese passive VPs analyzed in Kubo (1992) contain one or two object DPs exactly like their active counterparts; and Japanese 'gapped' passive VPs also contain direct objects and other complements, except for the single 'passivized' DP.

In contrast, adjectival passives exhibit a significantly smaller range of syntactic patterns. In particular, they tolerate no overt bare complement DPs not in surface PPs: **Bill sounded offered a dinner.* Nor can their subjects correspond to derived rather than deep direct objects: **John sounds considered to be a scoundrel*; **There seems believed to be corruption in high places* (Wasow 1977: 344). We return in section 5.2 to an account of these limitations. I will suggest that the best currently available analysis depends in part on the morphological distinction in (5a, b) and in part on other independently justified aspects of grammatical theory.

2.6 *Only verbal passives have external arguments*

Many studies (to name some: Chomsky 1965: ch. 2; Wasow 1977, section 4.3; Jaeggli 1986a, section 6; Åfarli 1989, section 1.2.2.1; Schoorlemmer 1995, section III.1.1) have contributed to establishing a widely accepted claim that a verbal passive is always related to a syntactically present noun phrase that acts as its

logical subject, either a *by* phrase or a covert DP. Verbal passives (8) thus contrast with adjectival passives (9), which lack such arguments.

(8) a. The meeting was started on time (by Susan) (in order) to please the host.
b. The chairs were moved around on purpose (by the guests).
c. This corn has been grown voluntarily ({by peasants/to stave off famine}).
d. Our workers are better paid intentionally (by the new boss).
e. Art classes are being restored (by the Board) in order to qualify for funding.

(9) a. That series of meetings sounds completed (*by the committee).
b. Most of our furniture is still unmoved (*by the company).
c. We judge the corn fully grown ({*voluntarily/*to stave off famine}).
d. Our workers remain better paid (*intentionally).
e. Some art classes seem restored (*in order to qualify for funding).

The works just cited propose that an overt *by* phrase or corresponding covertly represented logical subject accounts for two widely recognized properties of verbal passives:

(10) This logical subject may (not necessarily must) control the optional PRO subject of a 'higher' infinitive of purpose, optionally introduced by *in order*, as in (8a, c, e).

(11) A syntactically present animate subject seems to be a necessary condition for adverbs of intentionality, as in (8b, c, d), and for that matter, for adjunct purpose clauses as well.

Given this 'special location' of the external argument in passives, we want to know why verbal passives *must*, but adjectival passives *must not*, have such a structurally represented overt or covert DP subject. (We are not yet accounting for the 'dethematicization' property, i.e., why these external arguments are located in a *by* phrase rather than in the surface position that potentially agrees with the verb; this will be discussed in section 8.2.)

We know that verbs generally require subjects in LF – this follows from the Extended Projection Principle ('EPP') of Chomsky (1981). (12) seems like a workable formulation of this idea:

(12) **Extended Projection Principle at LF (EPP).** A verb must have a structural subject phrase if and only if the verb is a *lexical head* of a constituent in LF.

This formulation exempts 'empty auxiliaries' such as passive and perfect auxiliaries from the EPP; on their own such verbs plausibly lack inherent content, and concomitantly they seem to impose no requirement of having their own

subject. Perhaps more to the point here, verbs in compounds and derivational morphology such as those in bold in ***meet**ing place*, *dish **wash**ing*, ***think** tank*, ***go** cart*, ***infest**ation*, ***bereave**ment*, etc. also lack syntactically specified subject phrases, overt or covert.

To see how (12) applies to passive structures, let us look again at the preliminary characterization (5) of the difference between adjectival and verbal passives.

(5) a. In adjectival passives, the head [$_A$ *-en*] is present in both LF and PF.
b. In verbal passives, [$_A$ *-en*] is absent in LF and present only in PF.

(5a) straightforwardly exempts adjectival passives from (12), because the V stem of an adjectival passive is *not the lexical head* of the construction at LF. The V stems in adjectival passives resemble rather the subjectless initial V in compounds and derivational morphology. In fact, this construction is traditionally treated as an example of the latter. That is, a V inside a passive adjective is simply not subject to the EPP, which accounts for the pattern (9).

On the other hand, according to (5b), the stem V is the only candidate for being the lexical head of a verbal passive phrase in LF, precisely because [$_A$ *-en*] is absent. This V then is subject to the EPP (12), which forces the presence of a subject. As mentioned above, we return in section 8.2 to why this subject is not realized in the usual 'nominative' position but must rather be covert or in a *by* phrase.[10]

2.7 *Idiomatic object nouns passivize freely only in verbal passives*

There remains a final contrast between adjectival and verbal passives concerning idiomatic V-NP combinations. That is, adjectival passives disallow any semantic relation other than 'pure argumenthood' between a subject DP and the participle's V stem, as seen in the contrasts in (13).

(13) Some advantage may finally {be/*feel} taken of our new wealth.
A great deal {was/*sounded} made of your visit.
No attention {is being paid/*seems paid} to minor officials.

Actually, this kind of contrast can be related to a difference between so-called 'inflectional' and 'derivational' morphology, although the confusion over the nature of this distinction limits the usefulness of this reduction. Thus, a verb formed with another fully productive inflection, the *-ing* of the gerund or present participle, allows idiomatic combinations like *maintain silence*, *pay attention*, *please DP no end* and *bore DP to tears* in (14).

(14) During the trial, all were impressed by John's maintaining silence.
His paying {bribes/attention} to minor officials was foolish.
This show is pleasing local kids no end.
They heard Mary boring us to tears.

But in derivational formations such as the nominals and adjectives in (15), idioms don't survive.

(15) *During the trial, all were impressed by John's maintenance of silence.
His payment of {bribes/*attention} to minor officials was foolish.
This show seems pleasing to local kids (*no end).
Mary sounded so boring (*to tears).

Consequently, the contrasts in passive paradigms with idioms as in (13) suggest that verbal passives are inflectional like gerunds, while adjectival passives are not.

The explanation seems to be that idiomatic combinations of heads and arguments tolerate no intervening heads in LF.[11] Once again in accord with the structure (5a), the intervening lexical item [$_A$ -*en*] at LF blocks idiomatic combinations of Vs and phrasal complements in adjectival passives, whereas the absence of [$_A$ -*en*] in the verbal passive LFs (5b) has no effect and hence allows them.[12]

We have now reviewed seven differences between adjectival and verbal passives, which have been discussed in various works on passives in English and other languages. We have been able to attribute six of these differences, at least in part, to the distinction between a structure for adjectival passives (5a), in which a lexicalized A is present in LF, and one for verbal passives (5b), whose adjectival head is *not* lexicalized at LF, but only at PF.

Nonetheless, the genesis of the distinctive properties of the two kinds of passives in the terms just developed remains somewhat mysterious. We have not elucidated what is perhaps syntactically the most important of these differences, that of section 2.5: only verbal passives have the full internal structure of surface VPs. Moreover, we would like to understand better the structural difference (5) that underlies several of the others. Finally, there remains the question of formally accounting for Åfarli's 'essential property of the passive': how does the special morphology of a passive guarantee that the subject of an active sentence never remains an (agreeing) subject in either kind of passive? In my view a satisfactory answer can be given (only) by treating verbal and adjectival passives together.

The next four sections follow the history of the treatments of adjectival passives, and will provide an account of why verbal passives have the internal structure of surface VPs rather than of APs. Then, the last two sections of the study will situate (5) in a theory of lexical insertion and propose an account of the passive's essential 'dethematicization' of an active verb's subject.

3 Adjectival properties of all passives

For two decades prior to Wasow (1977), transformational grammar was largely content to treat verbal passives as the only passives worthy of the name. In particular, Chomsky's early analyses of the passive (1957: ch. 5; 1965: ch. 2) laid

particular stress on properties just reviewed in sections 2.1 and 2.5: verbal passive clauses are transformationally derived because they are largely synonymous with corresponding actives, and the characteristic constituent sequences one finds in verbal passive clauses are systematically related to base configurations. Passive sequences are exactly those we expect if VPs have precisely one NP transformationally 'removed' from them.

However, certain theoretical developments in the early 1970s led to questioning this claim that the passive involves movement. Although the revisionist view seems in retrospect to have been a 'mistake' – moreover one quickly rectified via Wasow (1977) – correcting this mistake led to a second misconception concerning adjectival passives that persists today.[13]

An alternative analysis of the English verbal passive in Hasegawa (1968) had faulted Chomsky's earlier formulations as implausible amalgams of "too many elementary transformations," including movement leftward, movement rightward, auxiliary insertion, and optional deletion of an agent phrase. Under the influence of this critique, Chomsky (1970) reanalyzed the passive as two independent subrules, preposing of a deep object into a subject position (NP-preposing), and demotion of a deep subject into a postposed PP headed by the P *by* (agent-postposing). At the same time, these two operations were used in Emonds (1970, 1976) to illustrate the notion of 'structure-preservation', namely, categories generated in the base component were moved into positions where the phrase structure rules of the base could actually also generate these same categories.[14]

Now the motivations for postulating transformationally derived status, widely circulated at this time and later published in Lakoff and Ross (1976), were (i) possible simplifications in the base component, (ii) allowing simpler definitions of grammatical relations in terms of base structures, and (iii) permitting simplified statements of co-occurrence restrictions on lexical insertion. If transformational outputs of NP-preposing and agent postposing could be generated by independently needed base rules, there remained only two possible (nonetheless non-trivial) motivations for them, (ii) and (iii).

This led some analysts to hypothesize that the passive constructions derived by structure-preserving operations, and thus lacking the motivation (i) for transformations, might simply be base-generated constructions full stop. Freidin (1975: section 2) argued that certain aspects of Chomsky's two NP movement rules, especially the agent postposing rule, were problematic. He further claimed that certain passive properties were similar to, and should be subsumed under, those of base-generated adjective phrases. I now treat each of these four adjectival properties of verbal passives in separate subsections.

3.1 An AP pattern inside passive phrases?

The phrase structure of adjective phrases is generally taken to preclude the possibility of multiple NP sisters to the adjectival head. Freidin's (1975: 401) rule (47) expresses this:

(16) AP → A (NP) (PP) . . .

If a passive participle is analyzed as an A, many varied examples of passive constructions indeed conform to his rule. The brackets represent AP boundaries:

(17) The letter was [given to Ann].
The station was (being) [approached from two sides].
How much unfair advantage was [taken of Bill]?

(18) Ann was [given the letter].
Who got [taken such unfair advantage of]?
A lot of vacation was (being) [allowed the workers].
The workers were (being) [allowed a lot of vacation].
That letter was [sent all the candidates].
Peter was (being) [forgiven his sins].
Peter's sins were (being) [forgiven him].
He was (being) [charged a lot of money].

Wasow (1977: 341) however sharply criticizes (16), claiming: "There is no other construction in English that requires rule (47)," and supports his criticism with extensive argument (his long note 10). Note that most of the overt surface NPs in Freidin's putative APs in (18) are typically and crucially 'bare', i.e., they lack an overt P. Such a complement type is quite unusual with head As in English and many languages, and thus the lack of a structural PP for these complements seems unexplained.[15]

A descriptive generalization (19) that better covers the range of complements observed in (17–18) is unrelated to the range of structures lexically chosen by head As:

(19) English passive verbs take exactly the same range of complement combinations as active verbs, except that one noun phrase is missing in a passive structure.

Thus, the variation in passive verb complement types in (17–18) matches that of identical active verbs in (20), except for the presence in each example of (20) of an additional italicized noun phrase.

(20) give *the letter* to Ann, approach *the station* from two sides, take *such unfair advantage* of Bill, give *Ann* the letter, allow the workers *a lot of vacation*, send all the candidates *that letter*, forgive Peter *his sins*, charge *him* a lot of money.

It is of course the correlation in (19) that originally led Chomsky to propose a transformational treatment of the passive, although it is unclear how many construction types he had in mind. This same correlation led most syntacticians in

Chomsky's surround back to a movement analysis of verbal passives, despite the challenges in Freidin (1975) and Bresnan (1978, 1982d).

In the meantime, however, this challenge and Wasow's (1977) response succeeded in making the field aware of the adjectival properties of analytic passives, three more of which will now be discussed. As will be seen later in this study, only after quite a long period of ambivalence about the categorial status of participles have analyses of the passive emerged which use a synthesis of both transformational movement and a central role for the category A.

3.2 The choice of the passive auxiliary

Freidin (1975: 402) observes that the English 'passive auxiliary' *be* – the same can be said for its second passive auxiliary *get* – is in any case subcategorized for taking AP complements (cf. section 2.2 above). This lexical property follows from analyzing passives as base-generated adjectives. In contrast, if the passive auxiliary is generated separately in a base rule for an AUX constituent, it is subject to several ad hoc restrictions. Moreover, if it is transformationally inserted, its resemblance to other base-generated auxiliary structures seems strangely fortuitous.

More generally, *both* types of passives are selected by verbs that have the lexical frame +___AP. In fact, Wasow (1977) notes that adjectival passives appear as complements of almost all Vs whose subcategorization frames include +___AP or +___DP^(AP). For example, English intransitives such as *act*, *appear*, *be*, *become*, *feel*, *look*, *remain*, *seem*, *smell*, *sound*, *stay*, and *taste* all accept APs, including adjectival passives:

(21) She {felt/seemed/sounded/found him/considered Bill} {ill/betrayed/cared for}.

Although verbal passives are selected by only two linking verbs, Freidin correctly observes that these also have the frame +___AP.[16] Thus, analyzing all analytic passives as adjectives at least explains why both variants inevitably appear as complements of Vs that are +___AP or +___DP^(AP). But still, one wonders why so few verbs select verbal passive complements.

An account of this puzzle is presented in Emonds (2000: ch. 5). Passive auxiliaries, i.e., those V that select *verbal* passives, are invariably among the 'grammatical V' of a given language, that is, those V which lack purely semantic features and hence, in that framework, can be inserted late in a derivation. Now clearly, it is the passive participle morpheme [$_{A}$ *-en*] itself that creates an insertion context ___AP for passive auxiliaries, and the insertion of this purely grammatical element is itself part of PF. Consequently, a V can select a verbal passive only if it is (i) uninterpreted at LF (i.e., inserted in PF), and also (ii) has the frame +___AP. *Be* and *get* are the only such V. I know of no other principled account of why so few verbs can select verbal passive complements.[17]

3.3 The adjectival character of participial morphology

By taking the passive participle as simply an adjective, Freiden (1975) also explains certain aspects of the morphology of a range of Germanic, Romance, and Slavic analytic passives. First, as Lieber (1980) and Bresnan (1982d: 21–24) discuss in some detail, the irregular forms in verbal passives almost exactly mimic items of the same form that are clearly adjectival.[18]

(22) being written, seems written; being done, seems done; being stung, seems stung; etc.
Exceptional: being {burned/*burnt}; looks {?burned/burnt}

The full similarity leads them to endorse a rule of 'conversion', which adds the category A by brute force to verbal participles for the formation of passive adjectives, a procedure also endorsed in Levin and Rappaport (1986). That is, these authors argue that separate lexical formation rules would miss a generalization that the same morphological structure is involved.

Second, in whichever contexts an adjective agrees with a modified nominal in Romance and Germanic languages, both adjectival and verbal uses of the passive participle agree as well. For example, Romance adjectives typically agree in number and gender with modified nominals in both attributive and predicative positions. Therefore, both adjectival (23a) and verbal passives (23b) in French exhibit feminine (plural) agreements via the bold ***-e(s)*** in exactly the same positions.[19]

(23) a. A mon arrivée, ces *joli**es*** portes semblaient déjà {*repeint**es**/gris**es***}.
at my arrival, those pretty doors seemed already {repainted/gray}
'At my arrival, those pretty doors seemed already {repainted/gray}.'
b. Cette *joli**e*** porte était vite *repeint**e*** par le locataire pendant ma visite.
that pretty door was quickly repainted by the renter during my visit.
'That pretty door was quickly repainted by the renter during my visit.'

When only attributive adjectives agree, as in German, then both uses of the passive participle agree in and only in the same attributive contexts. Further, both German adjectives and passive participles agree in number, gender, *and case.* Within some Slavic systems, similar inflectional parallels between verbal and adjectival passive participles are also common. For Russian, they are outlined in Schoorlemmer (1995: section IV.1.1).

Uniformly analyzing all passive participles as adjectives thus explains the fact that adjectival and passive agreements share both their morphology and their syntax in several language systems. Note further that adjectival agreement is unlike verb agreement in the languages in question (verbs agree with subjects in person but *not* in gender), and so the argument goes beyond an appeal to undifferentiated 'agreement'.

In view of Lieber's (1980) right hand head analysis of bound morphology, the morpho-syntactic properties of participles reviewed in this section suggests a partial lexical entry (24) for all passive participles, both verbal and adjectival.

(24) Passive participles (partial lexical entry): *en*, A, + V___, . . .

The realizations of this entry at the PF and LF interfaces are those given above in (5):

(5) a. In adjectival passives, the head [$_A$ *-en*] is present in both LF and PF.
b. In verbal passives, [$_A$ *-en*] is absent in LF and present only in PF.

One means of expressing (24) and (5b) together is to postulate that a structure [$_A$ V – [$_A$ Ø]] can be generated syntactically and be lexically filled in either syntax (5a) or only at PF (5b).[20]

3.4 The AP distribution of passive participles

Phrases with heads of passive form and lexical adjective phrases appear to modify nouns and verbs as 'adjuncts' under basically the same conditions. Passive participles can be adjuncts of sentences (25a), of verb phrases (25b) and attributive modifiers of nouns (25c), all of which are characteristic positions of predicate adjectives:

(25) a. {*Desolate/Unwanted/Rejected*}, the child turned to crime.
b. The child spent its school years {*hungry/uncared for/bullied*}.
c. Church bells {*silent/rung*} at noon reflect the status of the clergy.
It's patients {*unable* to pay/*left* to wait/*examined* hastily} that leads to problems.

An additional distributional argument for the adjectival status of passive participles can be constructed around the usage of the particle *as* as a 'prepositional copula'. Like the copula *be*, non-comparative *as* takes a predicate attribute NP or AP; cf. Emonds (1985: ch. 6). The fact that passive participles can be complements to this prepositional copula then becomes another argument for their adjectival status.

(26) He {struck us/treated them} as {*intelligent/ill/experienced/undernourished*}.

We can thus conclude with Freidin that all passive clauses share in the morphology and the syntax of adjective phrases AP, especially as regards their interaction with material *external* to AP: agreement with a subject, selection by external heads, and distribution as adjuncts. The differences between verbal and adjectival passives reviewed in section 2 turn rather around the syntax *internal* to passive phrases: how they are interpreted, whether they can contain idioms, how their

heads can be modified, how they internally arrange phrases, and whether they contain interpreted subjects.

4 Lexical redundancy rules vs. Anderson's 'Theme Rule'

Given the several adjectival properties of *all* analytic passives, it is not surprising that Freidin proposed to assimilate both types passives to the category of base-generated adjective phrases. In fact, the arguments above in sections 3.2 through 3.4 retain some force. But then, as observed in Freidin (1975: 291), if ". . . the synonymy of active–passive pairs is not explicitly accounted for by a rule in the syntactic or semantic component, a grammar that captures the active–passive relation must include a rule that does so." As a consequence, he looked elsewhere to explain the second motivation for a transformational movement: why do main lexical verbs assign a semantic function (theta-role) to the surface subject of passives in the same way as they assign a role to an object NP in active sentences? Once this explanation was found, it supposedly would simultaneously explain any selectional and subcategorization co-occurrence restrictions on lexical insertion of passive forms, thus removing the third possible motivation (cf. p. 26) for movement in passives.

The device first favoured by this line of research was the 'lexical redundancy' condition or rule, based on extending certain ideas for complex lexical entries in Chomsky (1970). Freidin (1975: section 3) develops such a system, including a general condition for assigning synonymy to projections from similar lexical entries, a general specification of the form of multi-category entries, and a specific redundancy condition that stipulates positional relations between the semantic functions of an active verb and those of a passive verb.[21] Similarly, for adjectival passives only, Wasow (1977: section 4.2) endorses a type of lexical redundancy rule developed in Jackendoff (1976).

The field did not take long to react against a second type of formal device for assigning the same predicate–argument relations to differently situated arguments, however. On the one hand, Anderson's (1977) commentary on Wasow's essay (peer responses follow the papers in this ground-breaking volume) endorses a lexical treatment at least of adjectival passives, in line with grammatical thinking of the time: "The criteria Wasow proposes for distinguishing rules of the two types [lexical and transformational] are entirely natural and well-motivated ones within the general conception of grammar developed as the Extended Standard Theory . . . There is an obvious advantage to making the subclass of lexical redundancy rules as large as possible" (p. 364). On the other hand, however, his main aim is to "arrive at a narrower and more interesting conception of the lexical redundancy rules, [so] that some of the problems arising in Wasow's paper receive a satisfying account" (p. 366).

Anderson then proceeds to implement the following critique of lexical redundancy rules. "The association between grammatical and thematic relations, then,

ought not to be stated in each lexical entry, but ought rather to be stated once and for all as a general rule: part of the semantic component of a grammar of English, or (conceivably) part of a semantic meta theory" (p. 367). His main proposal then follows: the semantic roles of NPs in adjectival passive clauses are determined by what he terms the Theme Rule (and states only informally): "the Theme is quite generally to be found in Subject position if the verb is intransitive, and in Direct Object position if the verb is transitive" (p. 367). The task of the lexicon then reduces to separately listing intransitive forms such as, e.g., *break*, *broken*, *close* and *closed*, and (let me add) *taken*, *eaten*, *painted*, *(over)planted*, *(un)inhabited*, but not verbs such as *take*, *eat*, *paint*, *(over)plant*, or *inhabit*:

(27) a. The door may {break/seem broken/close/seem closed}.
b. This apartment may seem {taken/painted} during your visit.
The park will soon look {(over)planted/(un)inhabited}.
c. *This apartment may {take/paint} during your visit.
*The park will soon {(over)plant/inhabit}.

But Anderson's lexical entries would not have to say anything, via item-particular stipulations and/or lexical redundancy rules, about how subjects and objects receive thematic roles; that would be the province of the Theme Rule. And in fact, Williams (1981a) soon postulates a more formal version of the Theme Rule, positing a direct relation between bound morphemes such as *-en* and the syntactic position of thematic roles, i.e., with *-en*, the Theme must be the external argument.

Lest terminology confuse the issue, we should emphasize that for Anderson the italicized phrases in (28) are Themes, unlike many lexical semantic treatments that would assign them Locational type theta-roles.

(28) A vandal smeared *my house* with the paint. (p. 369)
The result annoyed *John*. (p. 372)
The garden swarmed with bees. (p. 369)
George Washington slept in *this bed*. (p. 373, with the passivizable sense of 'affecting' the bed)

Anderson's proposal and Williams's Theme Externalization are thus close to expressing a generalization (29) that will be important below:

(29) The subject of (always intransitive) adjectival passives relates semantically to the verb root like the direct object of corresponding transitive verbs.

We should keep in mind that various formulations of the Theme Rule don't explain, without having recourse to redundant stipulations, why passive adjectives are more easily formed than intransitive verbs. We return to this in section 6. Nonetheless, Anderson's proposal, to the extent it was appreciated, obviated the need for syntactic theory to countenance a type of lexical redundancy device which 'doubles' the grammatical function changing work of transformations.

Another response to the momentary focus on adjectival passives was more direct. In his seminal article on trace theory, Fiengo (1977) proposed deriving them by using Chomsky's object-preposing inside AP. While his brief formal treatment for interpreting these passives seems inadequate, he nonetheless finds a weak spot in the lexicalist opposition: contemporary argument against deriving adjectival passives via movement seemed to beg the question; it *assumed without argument* that NP movement doesn't apply in an AP domain.

In any case, works like Anderson (1977) led to transformationalists losing interest in lexical redundancy rules, though of course a framework that lost interest in transformations, namely Lexical Functional Grammar, continued to develop the notion of 'lexical relatedness' in terms of lexical 'functional structures' (Bresnan 1978) and 'predicate argument structures' (Bresnan 1982d).

5 The relation of passive participles to case assignment

Before continuing to review analyses specific to adjectival passives, let us investigate the relation of passives to abstract case, a factor which could have – but did not – figure in distinguishing the two types of passive. Traditional grammars of European inspiration have frequently related passive structures to the failure of accusative case assignment. In turn, this failure seems somehow related to the adjectival nature of all passive participles and the fact that adjectives do not in general assign accusative case. A role for case along these lines became a central aspect in government and binding analyses of the verbal passive in the eighties, and in my view, could have led to quicker progress had it been formulated with the properties of adjectival passives in mind.

5.1 Chomsky's Case-driven analysis

In his initial authoritative treatise on government and binding, Chomsky (1981: 48–50) observes that the fundamental property of (verbal) passives may be either one of two options:

(30) Something forces a passivized object NP to move away from its base position.

(31) Something deprives a passive subject position of its usual theta-role and thereby renders it a landing site for movement.

In terms of the then recent incorporation of abstract case into generative syntax, a plausible motivation for forcing movement could be lack of case on a passive verb's object NP, in turn due to the verb's adjectival morphology. Chomsky (1981) thus opts to develop (30) on the basis of a 'Case Filter', by virtue of which

overt noun phrases lacking case at the end of a derivation render a structure ill-formed.[22] The contemporary debates about the relation of passive participles to the category A most likely played a role in attributing forced movement in passives to the adjectival form of the V.

However, if one straightforwardly claimed that verbal passive participles *are* As, then essentially nothing would structurally differentiate verbal from the adjectival passives, which had been consigned to the distant lexicon; Wasow's defense of a transformational passive seemingly depended on *maintaining a difference* between verbal passive participles and the category A. Thus, verbal passive participles should 'act like' As and yet be not quite entirely As. The solution suggested by Chomsky (1981: 50) is to assign them to a special, "unspecified for ±N" neutralized category. In Case Theory, whose Case Assigning categories are V and P (in terms of features –N), the +N categories N and A fail to assign case (Stowell 1981). Chomsky's implied revision of Case Theory is that the categorial features of verbal passive participles, namely [+V, unspecified for N], do not assign case either, which then accounts for (30).

This proposal turns into an equivocation, however, because on the next page Chomsky (1981: 51) suggests that *of* in the context N___NP has the features [–V, unspecified for N] and *does* assign case. Hence, an ad hoc 'neutralized category' (unspecified for N) of highly defective distribution (with only two members, *-en* and *of*) leads not to a definition of a natural class of case assigners somehow related to [–N]), but rather to item-particular stipulations.

In spite of this shaky foundation, the voluminous literature of government and binding in the eighties maintains (and proclaims) this analysis with almost one voice: the mantra was 'lack of case forces movement in the passive'. This literature also uniformly presupposes Wasow's conclusion that only verbal passives involve movement; cf. again note 3. More than a decade later, Åfarli (1992: section 1.2.3.1) reviews the unchanged 'Orthodox Analysis', including the factor that the participle is a "neutralized [+V] category . . . and like adjectives, it is a bad Case assigner."

5.2 Rethinking the full internal VP structures

Government and binding analyses of the passive were slow to challenge Chomsky's choice of (30) over (31). Roberts (1987: ch. 2) reformulated the relation to case assignment in terms of a passive verb assigning 'all but one' of its cases, and began to focus more on properties of a passive's 'dethematized' subject. Cross-linguistic studies of passives, including Åfarli's, finally undermined the choice of (30) over (31).[23] They reason on the basis that verbal passive constructions in several languages can exhibit overt direct objects, even with morphological accusative case.

Some examples include Sobin (1985) on the impersonal passives of Ukrainian, Åfarli (1989, 1992) on the wider range of such constructions in Norwegian, and Kubo (1992) on the 'adversative' and dative passives of Japanese. Åfarli (1989: 23) rejects (30), arguing "on the basis of Norwegian data that passive verbs assign

Case just like their active counterparts do . . . [and] that this is also essentially correct for English . . ." He concludes (1989: 102) rather in favor of (31): "the essential property of the passive phenomenon is that the subject position of a passive clause is theta-free and thus becomes a possible landing site for NP movement."[24] In what follows, I will refer to this as 'the essential property of the passive'.

More prosaically, even very familiar facts of English cast doubt on whether a verbal passive in any way interferes with case assignment. The examples of (18), repeated here, contain a range of italicized objects to which prima facie, *a passive V assigns case*.[25]

(18) Ann was [given *the letter*].
Who got [taken *such unfair advantage of*]?
A lot of vacation was (being) [allowed *the workers*].
The workers were (being) [allowed *a lot of vacation*].
That letter was [sent *all the candidates*].
Peter was (being) [forgiven *his sins*].
Peter's sins were (being) [forgiven *him*].
He was (being) [charged *a lot of money*].

Put differently, since verbal passives have the full internal structure of VPs (the property noted in section 2.5), all these VPs with a single gap are well-formed.[26]

In interesting contrast to these verbal passives, the corresponding adjectival passives based on the 'double object constructions' in (32), as observed in Wasow (1977), are always ill-formed. Levin and Rappaport (1986: section 4) also note these effects for adjectival passives, but do not pursue the implications of the contrast with verbal passives.

(32) *Ann seemed given the letter.
*That letter sounded sent all the candidates.
*Who acted taken such unfair advantage of?
*Peter felt (un)forgiven his sins.
*Peter's sins stayed forgiven him.
*Those workers appeared allowed a lot of vacation.
*He felt (un)charged too much money.

Had syntacticians retained an interest in adjectival passives, they could have concluded that the Case Filter accounts naturally for this regular ungrammatical pattern, because an A can assign case neither to an NP that moves nor to one that stays in its base position. The fact the Case Filter successfully excludes these examples suggests that a proper movement analysis, counter to the government and binding consensus, might be capable of explaining the other systematic syntactic restrictions on adjectival passives: that they are incompatible with derived, non-deep direct objects (section 2.5) and idiomatic objects (section 2.7).

Summarizing, like other adjectives, the participles in (32) with right hand word-internal A heads simply fail to assign case to any VP-internal DPs not targeted by NP movement. Consequently, adjectival passive phrases can't contain such DPs. In contrast, nothing stops a verbal passive from assigning case to these 'second DPs'. This contrast in case-assigning capability is actually another property that follows from the earlier partial structural characterizations of the two passive types:

(5) a. In adjectival passives, the head [$_A$ *-en*] is present in both LF and PF.
b. In verbal passives, [$_A$ *-en*] is absent in LF and present only in PF.

That is, in (5a) the A head prevents case assignment, but in (5b) the V head assigns case normally. What causes movement in passives is thus not lack of case.

As in note 7, there are different ways to realize this LF distinction in passives (5): (i) Derivation – a participial suffix could be entirely absent in verbal passives in the syntax, with [$_A$ *-en*] added to a V in PF. (ii) LF Feature Checking – the suffix [$_A$ *-en*] is present in both passives in the syntax, but is checked off (i.e., deleted) in LF only in verbal passives. (iii) Late Insertion – the suffixal A node is present in both passives; it is already lexicalized in syntax as *-en* in adjectival passives, but in verbal passives it is empty in the syntax and lexicalized only in PF.

For understanding the history of passive analyses, the choice among (i–iii) need not concern us. The Derivation alternative (i) reflects an early generative impulse, but seems unlikely because it does not explain why verbal passives are selected by auxiliaries with a feature +___AP and generally appear in syntactic AP positions (sections 3.2 and 3.4).[27] Alternatives (ii) and (iii) are currently more plausible accounts of (5). The next section briefly examines empirical grounds for favoring Late Insertion (iii), but this is not crucial for our overall review of adjectival passives.

5.3 Passive participle contrasts in Dutch verb raising

The difference between a feature checking approach to *-en* (ii) and its late insertion (iii), i.e., inserting the verbal passive *-en* under a suffixal A in PF, can be tested empirically in the syntax. Under late insertion, verbal passive participles are expected to show some transformational behaviour of V not shared by As, whereas under LF feature checking of *-en*, a verbal passive participle should have the same syntax as an A, because verbal and adjectival passives then come to differ only in LF.

In Dutch sequences of final verbs (where all but the underlyingly highest must be non-finite), verbal and adjectival passive participles behave differently. Verbal participles can move from their base position, italicized in (33a), over higher final verbs as in (33b), but adjectival participles must remain in their italicized base position in (34a). H. Van Riemsdijk has provided these examples:

(33) a. . . . dat de brief *verzonden* moest worden.
. . . that the letter sent must get
'. . . that the letter must be sent.'
b. . . . dat de brief moest worden *verzonden.*

(34) a. . . . dat de brief *onverzonden* moest blijven.
. . . that the letter unsent must remain
'. . . that the letter must remain unsent.'
b. *. . . dat de brief moest blijven *onverzonden.*

Under the verb-raising analysis advocated in Haegeman and Van Riemsdijk (1986), one may say that verbal passive participles undergo reanalysis and subsequent verb raising, while adjectival ones cannot. Furthermore, verb raising, which most likely applies at PF, is optional for a verbal passive participle (33). In contrast, Dutch verb raising to final position is obligatory for an infinitive, as italicized in (35).

(35) a. *. . . dat Henk de brief *zenden* zal moeten.
*. . . dat Henk de brief zal *zenden* moeten.
b. . . . dat Henk de brief zal moeten *zenden.*
. . . that Henk the letter will must send
'. . . that Henk will have to send the letter.'

These observations suggest that verb raising and/or movement is obligatory (in some contexts and dialects) for an item analyzed as a V, but impossible for an item analyzed as an A. That is, at the point in the derivation at which this operation applies, (a) an infinitive is unambiguously a V, (b) a verbal passive participle is analyzable as either a V or an A, and (c) an adjectival passive participle is unambiguously an A. Now according to the late insertion alternative of *-en* (iii), the verbal passive in a syntactic derivation (and early in PF) is precisely a V stem with an empty suffixal head A. Hence an operation such as verb raising/movement can see ('analyze') the verbal passive as either a V or as an A, correctly yielding both variants in (33). By contrast, an adjectival passive is unambiguously an A, with a syntactically invisible V stem inside it throughout a derivation; it must then remain in situ as in (34). Finally, an infinitive is a V and nothing else, so it must undergo verb raising/movement as in (35).

Under the feature-checking approach, the two types of passive are the same in the syntax and shouldn't differ in behavior at all. We thus see that the explanatory contrasting LF structures in (5) are more likely due to the possibility of inserting grammatical morphemes at different derivational levels than to any differences in LF feature checking of a V that moves in syntax or PF.[28]

6 Evidence for Move in adjectival passives

6.1 Levin and Rappaport: relating deep direct objects to adjectival passives

Despite their many surface differences, we can nonetheless descriptively characterize adjectival and verbal passive phrases in very similar terms. To appreciate the empirical import of this, let's first briefly examine a class of 'active' adjectives derived from verbs where we *cannot* descriptively characterize the two classes in similar terms. Consider a large class of lexical adjectives in *-ive* that attach to V stems, i.e., *attractive*, *attentive*, *corrosive*, *decisive*, *defensive*, *derisive*, *dismissive*, *evasive*, *exhaustive*, *invasive*, *obtrusive*, *offensive*, *perceptive*, *(re)active*, *receptive*, *repulsive*, *seductive*, *selective*, etc. In just about every case, the types of permitted arguments with the verb and the corresponding adjective differ.

First, *decide*, *defend*, *dismiss*, *evade*, and *perceive* are transitive, but their adjectival counterparts are preferably intransitive, with *of*-phrase complements being marginal at best, e.g. **John is {decisive/defensive} of his own actions.* Second, selection restrictions on corresponding arguments differ unpredictably: *Magnets {attract/ *are attractive {to/of}} metals*; *America {often invades/*is often invasive of} the Caribbean*; *Those weapons were offensive ≠ Those weapons offended; Mary {repels/is repulsive to} John* vs. *Mary {repels/*is repulsive to} John's advances*; *We are selective about cheeses* vs. *We select (*about) cheeses*, etc., etc.

The variation between adjectival passives and corresponding active verbs is nothing on this scale. In fact, the possible subjects of adjectival passives seem to be precisely those deep direct objects of verbs *whose obligatory subcategorizations are otherwise respected in the passive phrases*. Levin and Rappaport (1986: sections 2–3) explicitly demonstrate that any individual theta-roles, whether or not Theme is understood as in Anderson (1977), are irrelevant for determining well-formed passive adjectives. They use the following type of data to establish this generalization.

(36)
	verb:	They stuffed the feathers *(into the pillow).
	adjective:	The feathers remained stuffed *(in the pillow).
	verb:	They crammed the freezer (with food).
		We crammed food *(into the freezer).
	adjective:	The freezer remained crammed (with food).
		The food remained crammed *(into the freezer).
	verb:	We are placing our company records *(where they belong).
	adjective:	Our company records are placed *(where they belong) by now.
	verb:	The trees are being stripped {of/*with} bark.
		The bark is being stripped {from/*on} those trees.
	adjective:	The trees look stripped {of/*with} bark.
		The bark remains unstripped {from/*on} those trees.

In essence, Levin and Rappaport's results establish a syntactic passive relation between a direct object and a subject. The import of their findings is straightforward: *the theta-role of the subject of an adjectival passive is always that of the corresponding verb's deep direct object.* However, they avoid reference to syntactic structure in describing these findings, as they are convinced that theta-role specifications should replace subcategorization in lexical representations.[29] They therefore paraphrase references to the fact that passive adjectives preserve verbal subcategorization, speaking for example of a "basic insight: the properties of an AP headed by an adjectival passive participle are determined by the complement structure of the base verb" (p. 637). And they summarize "the theta-role assigned to the direct argument internal to the VP headed by the verb is assigned external to the AP headed by the related adjectival passive participle . . ." (p. 643).

A little reflection shows that the syntactic generalization for adjectival passives, above in italics, is exactly what holds for verbal passives, except that 'direct argument' (= deep direct object) for adjectival passives is replaced for verbal passives with 'direct object at Spell Out'. In my view, this relation is best captured, as it has been throughout the history of generative grammar, by using object to subject NP movement in adjectival passives, as suggested in Fiengo (1977). The subsequent inability to even conceive of this option is the unfortunate legacy of Wasow (1977) mentioned in introducing section 3.

Deriving adjectival passives from transformational movement immediately explains the problem faced by Anderson (1977) exemplified in (27): why adjectival passives are easier to form than middle verbs. The latter apparently require lexical specification, which comes with a cost-per-item not assessed for transformational passivization.

Let us see in more detail how Move can derive adjectival passives and account for their differences with verbal passives.

6.2 *Reformulating Levin and Rappaport's 'Sole Complement Generalization'*

We have seen that in the perspective of Anderson (1977), the generalization (29) of section 4 should be expressed by principles of grammar, not in individual lexical items.

(29) The subject of (always intransitive) adjectival passives relates semantically to the verb root like the direct object of corresponding transitive verbs.

Small changes in (29) can lead to a central descriptive generalization about adjectival passives that encompasses the other systematic syntactic restrictions on adjectival passives: their compatibility with only deep direct objects (section 2.5) and their incompatibility with idiomatic objects (section 2.7).

First, it is the presence *in the syntax* of the participial stem [$_{A}$ *-en*] that somehow forces an adjectival passive's subject to relate to a *deep* object rather than a derived object. Second, as argued in Levin and Rappaport (1986: section 4.5),

theta-roles are plausibly interpretations provided only to argument phrases, so that parts of idioms generally lack theta-roles.[30] These two considerations lead us to restate (29) as (37):

(37) **Passive Adjective Condition (PAC).** The subject of adjectival passives receives the theta-role that its verb root assigns to a deep direct object in an active VP. In other respects adjectival passives respect the subcategorization of the verb root.[31]

The conclusion (37) is almost the same as Levin and Rappaport's (1986: 631) summary of their empirical findings for adjectival passives:

(38) **Sole Complement Generalization (SCG).** An argument that may stand as sole NP complement to a verb can be externalized [become the subject] by Adjectival Passive Formation (APF).

The SCG as formulated is inaccurate, however. As discussed in note 5, certain sole NP complements cannot become subjects of adjectival passives. Moreover, NP subjects of adjectival passives can only relate to direct objects; they cannot correspond to predicate nominals or measure phrases (e.g., *We seemed to remain almost three weeks/*Almost three weeks seemed remained*). Therefore, having a sole NP complement is not a sufficient condition for APF.

Nor is the SCG a necessary condition for APF. For example, (38) fails to predict the existence of the adjectival passives in (39a), because their subjects are not potential sole complements to verbs. These APF verbs require *two* complements, as the active counterparts (39b) show.

(39) a. Roses looked strewn everywhere.
Their balconies stayed bedecked with flags for a week.
That application seems worded with exceptional care.
b. The children have strewn roses *(everywhere).
Fans were bedecking their balconies *(with flags).
Mary worded that application *(with exceptional care).

The SCG (38) is not a necessary condition for APF because adjectival passive phrases, like verbal passive phrases, must respect the subcategorization of the head verb. The descriptively adequate reformulation of the SCG is therefore the PAC (37). And if the term 'theta-role' is replaced by the more general term 'interpretation', then the PAC is nothing other than a description of deriving adjectival passives by movement of a deep direct object.

6.3 A non-problem for Move with adjectival passives

Even though Levin and Rappaport show that individual theta-roles are irrelevant for characterizing adjectival passives, there remains another legacy of lexicalist treatments that could prevent acceptance of using Move for this construction.

A number of researchers feel that the idiomatic lexicalized meanings of many passive adjectives, as evidenced in (40), somehow undermine any account of them in terms of transfomational movement of the object DP.

(40) deeply {moved/*shoved} so lost in {thought/*fear}
how {overplanted/*planted} unheard *(of) outrage

But this conclusion is a non sequitur. Chomsky's (1970) long accepted analysis of derived nominals, which also exhibit a notorious range of idiomatic and lexicalized meanings, uses – indeed is the source of using – the NP-preposing transformation for objects. The lexicalized meanings of many passive adjectives are thus no barrier to deriving adjectival passives by 'NP movement'.

7 Lexical notation for dual level or polyfunctional morphology

Throughout this chapter, I have claimed that the LF difference in (5a, b) between phonologically identical adjectival and verbal passives underlies several of their surface differences. If Move can be used in deriving both passive types, the distinction in (5) should somehow correlate with how Move interacts differently with object NPs in the two constructions.

In both passives, the participial head *-en* can be said to agree with a moved passive subject, as this agreement is morphologically overt in many languages (section 3.3). This agreeing surface subject has its source in different pre-movement positions, however:

(41) In adjectival passives, the head [$_A$ *-en*] agrees with the *deep* direct object of the verb, by virtue of the PAC (37). This morpheme is present at LF (5a).

(42) In verbal passives, the head [$_A$ *-en*] agrees with a noun phrase that is a *derived* object of the verb, i. e., the object in the predicate phrase subsequent to transformational computation. This morpheme is absent at LF (5b).

Aside from this difference both uses of the English and other passive participle morphemes can be expressed in a single lexical entry (43). As is standard, phi-features refer to NUMBER, GENDER, and PERSON features on nominal projections:

(43) **Passive participle:** *-en*, A, +V___, phi-features of an (empty) nominal projection sister[32]

The second sentences in (41) and (42) are just (5a, b) rephrased. I assume that these LF differences are simply inherited from the corresponding syntactic representations, so that 'present/absent at LF' is equivalent to 'present/absent in

syntax' and 'absent in syntax/LF' means 'present only in PF'. I thus rephrase (41) and (42) as follows:

(44) Adjectival Passives. An item [$_A$ *-en*] in the context V___ in the syntax agrees with V's *deep* direct object.

(45) Verbal Passives. An item [$_A$ *-en*] in the context V___ only in PF agrees with V's *surface* object.

The links between 'deep' and 'present in syntax' in (44), and 'surface' and 'present only in PF' in (45) now seem suggestive. We want to correlate these two properties of participial *-en*, and thus reduce all the differences between adjectival and verbal passives to one.[33] The sort of dual behavior of grammatical morphemes expressed in (44) and (45) has in recent years been the focus of increasing theoretical interest, for example in Borer (1991, 1993), Emonds (1991a, 2000), Grimshaw (1990), and Schoorlemmer (1995).

For example, Schoorlemmer's thorough study of the Russian participles examines what she terms the 'polyfunctionality' of several grammatical morphemes in Slavic systems. Among them one prominent example is the Russian adjectival passive ending and the homonymous 'PPP' (past passive participle in verbal passives), which is basically the counterpart of the polyfunctionality in (44) and (45). Most of the differences she discusses between Russian adjectival and verbal passives are similar to or even identical with the differences for English: (i) Certain Russian adjectival passives undergo degree word modification and show 'semantic drift', i.e., they are part of the permanent lexicon. These aspects of English adjectival passives are discussed in slightly different terms in section 2.3 above. (ii) Adjectival passives have no external argument (implicit or explicit); cf. section 2.6. (iii) A Russian counterpart to *un-* prefixation, namely *ne-* prefixation, occurs with adjectival but not verbal passives; cf. section 2.4. (iv) The verbal passive reports an event (with a possible durative adverb), while the adjectival passive reports a state; cf. section 2.1. (v) Adjectival passives can be complements of *stat'* 'become, get' whereas verbal passives cannot be; cf. section 2.2.[34]

She summarizes these results as follows: "The PPP is adjectival only with respect to its inflection, everything else is verbal, as shown by its behaviour in the diagnostics for adjectival passives" (1995: 217–222). In an earlier passage, Schoorlemmer characterizes this type of grammatical behavior as follows:

> there seem to be two kinds of morphological processes: those that can be argued to be presyntactic [e.g., in passive adjectives] and those that can be argued to be non-presyntactic [e.g., in verbal passives] . . . the morphological output of both rules is almost entirely uniform. (Schoorlemmer 1995: 163–164)

The formulations (44) and (45) reflect the same dichotomy between 'presyntactic' and 'non-presyntactic'.

In order to provide a theoretically satisfactory basis for expressing the polyfunctionality of the Russian PPP (i.e. *-en*), Schoorlemmer uses an approach developed by H. Borer:

> for a unitary morphological module that runs parallel to syntax and also precedes and follows it, an approach to morphology named Parallel Morphology in Borer (1993) . . . Morphology . . . is a set of rules that can apply anywhere. It derives Lieber type head-adjoined structures (Lieber 1980, 1992) . . . The product of these morphological rules may be inserted at both D- and S-structure. Borer argues that the difference between two kinds of nominals (like Hebrew and English process and result nominals) is one of the levels at which the product of the morphological rules enters syntax. (1995: 171–173)[35]

This relatively new approach to morphology, though doubtlessly still in need of refinement, seems capable of capturing the dual functionality of the passive participle morpheme [$_A$ *-en*] expressed above as (44) and (45). We want to derive it from the single lexical entry (43).

Adjectival passives require the Lieber type head-adjoined structure [$_A$ V – [$_A$ *-en*]] that results from (43) to enter a derivation *presyntactically*, at the beginning of a computational 'phase'. Presyntactic insertion naturally implies that the item *-en* satisfies its lexical specification *at that level*, i.e., it must agree with a nominal projection that is its *pretransformational* sister. This can only be a deep direct object, so (44) follows. Moreover, since the head of the predicate phrase is a lexicalized adjective *-en*, no case can be assigned to any DP sister of the head. The same *-en* blocks any idiomatic V-Complement readings by virtue of O'Grady's (1998) Continuity Constraint; cf. note 11.

Verbal passives instantiate this same structure and lexical specification, but applied in PF. Consequently, they enter the derivation 'nonpresyntactically'. We can improve on this rather vague term by specifying Spell Out as the appropriate input for the insertion operation. The output of the insertion is then part of PF. Satisfying its lexical requirement at Spell Out implies that *-en* agrees with any nominal phrase that is its sister *after* the (visible) transformational computation. From this follows (45).[36] Moreover, since the A head is not lexicalized *at* Spell Out (but only *after* insertion in PF), V is the visible head of the construction and both case assignment and idiom interpretation can proceed normally. The different types of agreements of *-en* are thus derived from its two levels of insertion (44) and (45) into the computation.

The only thing that remains to stipulate for *-en* is the dual level insertion itself. Apropos, Schoorlemmer (1995: section 3.3.3) rightly observes: "A related question is why there are so few morphological processes with dual properties" (p. 180). This empirical observation suggests that polyfunctionality is a marked lexical option, perhaps partly motivated diachronically; cf. note 4. What the lexical entry for *-en* then needs to indicate is that A can optionally, in the marked case, remain *uninterpreted in LF* – the property (5b) of verbal passives so frequently called on earlier to explain differences in the two passive types.

In a study attempting to develop some appropriate notations for the special lexicon of grammatical formatives, Emonds (2002) argues that while syntactic categories are never optional (every morpheme in a tree has a category), they may *optionally be ignored at the LF interface*. The marked option of not interpreting a category at LF can then be simply notated by parenthesizing it. If further an element so parenthesized has no other interpretable features (and *-en* does not, since agreement features are not interpreted), then the item optionally plays no role at LF. But items without interpretations should be inserted into the derivation only in PF, which is precisely what is needed in order to derive the results of this study. Revising (43) in this way, we derive a final and parsimonious lexical entry for the polyfunctional passive participle morpheme:

(46) **Revised Passive participle:** *-en*, (A), +V___, phi-features of an empty sister

In the reading without parentheses, A is a normal LF-interpreted syntactic category, as needed in the adjectival passive. As expected, A is interpreted as a property of the subject DP that it modifies. In the marked reading with parentheses, the category A (i.e., a 'state' or 'property') is ignored at LF; therefore *-en* is inserted in PF, and the verbal passive results.[37]

Certain languages such as Ukrainian (Sobin 1985) and Norwegian (Åfarli 1989, 1992) have 'transitive impersonal passives' in which the participle has phi-features of an *overt* noun phrase sister. In these languages, 'empty' in (46) is an option rather than a necessity as in English. Various formal analyses of such distinctions are given by these authors and in Baker, Johnson, and Roberts (1989), Lappin and Shlonsky (1993), and Emonds (2000: ch. 5).

Two last details: since phi-features can originate only with nominal projections, (46) does not mention the latter. Moreover, the fact that sisterhood is the favored source for agreement is plausibly also to be derived from Universal Grammar and need not be stipulated in a lexical entry.

We thus seem to have successfully accounted for all differences between adjectival and verbal periphrastic passives with a single polyfunctional lexical entry (46) that specifies an inflection, exactly in accord with the rather bold research program for language particular properties proposed in Borer (1984a: 29).

8 Consequences of adjectival agreement in passives

There still remains the issue of how to best characterize what passive structures have in common: the verbal stem of a passive participle cannot assign an external theta-role to the participle's grammatical subject, even when the verb's objects remain in situ (as in Norwegian and Ukrainian). The key to these 'dethematicized' subjects lies, I believe, in understanding the crucial role of adjectival agreement. While this agreement is not universal, it is typical of the Indo-European family whose periphrastic passives we are trying to understand. Moreover, it has certain systematically recurring characteristics (phi-features of gender and number,

interaction with case marking, absence in adverbial APs) that suggest some common cross-linguistic basis.[38]

8.1 Lexical agreement of **-en** *with objects*

The lexical entry (46) stipulates that a certain verbal suffix, the passive participle, agrees with that verb's object. That is, the phi-features on the inserted item *-en* must be the same as those of any nominal projection sister at the moment of insertion, which can be pre-transformational (44) or exactly at Spell Out (45). Notice that (46) is indifferent between (i) insuring that the phi-features of A's sister are *those independently assigned to A*, due to the general agreement of adjectives with their subjects, and (ii) assigning the phi-features of A's sister to *a featureless empty A* (which then appear on *-en* in PF).

Some puzzling related but non-passive paradigms in several Romance and Slavic systems strongly suggest that the reference to object agreement in (46) is on the right track. As mentioned in section 1.1, many of these languages additionally use their passive participle morpheme to form an active periphrastic past tense (e.g., the French *passé composé* and Italian *passato prossimo*), in which *the participle does not agree with the subject*. With some language-particular restrictions, the participial morpheme *-en* in this active tense nonetheless agrees in phi-features with a deep object, i.e., a DP sister, just as stated in (46).

Exact determination of the variable conditions on this non-passive object agreement is orthogonal to our concerns here. At one extreme, Modern Spanish active perfective participles, also based on the passive form, never agree with an object. In other systems only empty objects trigger agreement, e.g., in Standard French they must be bound by a clitic or a fronted constituent such as a clefted or questioned direct object. Agreement of *-en* in adult Standard Italian generally requires empty DPs in deep object position, under conditions that are similar though not identical to Standard French. We see the relevant contrast in French in (47), where bold indicates feminine plural suffixes; t_i is a trace of the moved direct object.

(47) a. Cette femme a $[_{AP}$ vite repein-$[_A$ t-**{Ø/*es}**$]$ $[_{DP}$ ces bell**es** port**es**$]]$.
that woman has quickly repaint-ed those beautiful doors
'That woman has quickly repaint-ed those beautiful doors.'

b. C'est $[_{DP}$ ces bell**es** port**es**$]_i$ que cette femme a $[_{AP}$ vite
it's $[_{DP}$ those beautiful doors] that that woman has quickly
repein-$[_A$ t-**{*Ø/es}**$]$ $[_{DP}$ $t_i]]$.
repaint-ed $[_{DP}$ $t_i]$.
'It's those beautiful doors that that woman has quickly repaint-ed.'

In yet other systems, *-en* agrees even with overt objects. Perhaps the most striking contrast is within Italian. Antinucci and Miller (1976) and Volterra (1976) report that at a certain stage of child Italian, the agreement of participial *-en* with all direct objects in the *passato prossimo* is uniform.[39] Borer and Wexler (1992: 153)

describe this as follows: "Presumably, the learner initially tries a 'simple' rule, like 'agree with the D-structure object'."[40]

The active participle ending *-en* thus seems exceptional only in being an adjective that does not agree with subjects, as seen in (47a).[41] Otherwise though, its lexical entry must be an extension of (46), since it shares every other characteristic of the passive participle: its category (A), its host (V), and its phonological form. In addition, the object agreement of *-en* in active tenses that has led several authors to conclude that *its central property in all its uses* is potential agreement with a verb's object, precisely as specified in (46), albeit at different levels and under different conditions. Among the passive constructions, this apparent object agreement is obviated just in those cases where the language allows expletive subjects (without phi-features), which in, e.g., Norwegian and Ukrainian include even VPs that contain overt object noun phrases.

We find in the literature at least four mechanisms for effecting the phi-feature agreement mandated in (46) between deep object noun phrases and participial *-en*. In each case the mechanism extends beyond passive constructions; all extend agreement with null objects to other uses of *-en*. While I am a partisan of this general approach, the exact conditions determining these limitations on agreement clearly lead outside the domain where adjectival passives have a special role, so my summary of these four mechanisms is cursory.

A first proposal in McA'Nulty (1990) limits itself to generalizing in French over object traces in passives and A-bar bound traces, as suggested by the paradigms just mentioned. Second, Lefebvre (1988) develops a more general system in terms of 'Move Case', thus making precise government and binding's often vague concept of 'case absorption' by *-en.* She summarizes, "agreement morphology on the past participle spells out the features of the trace of the NP governed by the past participle."

A third proposal is the widely adopted hypothesis that all phi-feature agreements are defined on Specifier–Head configurations. Since the non-passive uses of *-en* agreement involve deep objects (e.g., the French and Italian paradigms cited above), Kayne (1989a) proposes that it takes place after the agreeing object nominals move to relatively low Specifier positions within extended verbal projections. Borer and Wexler also follow this approach (1992).[42]

Finally, Emonds (2000: ch. 4) argues that morphological inflections instantiate a widespread phenomenon called 'Alternative Realization'. Under this view, grammatical features are *interpretable only in certain base positions* (e.g., phi-features are interpreted only on D). However, they can also occur in non-base positions on lexically stipulated closed class elements (usually on an adjacent head) if they thereby contribute to Economy of Derivation. Accordingly, the entry for *-en* stipulates (only) that it 'alternatively realizes' phi-features of objects, with differences among the passive systems of English, German, and Norwegian attributed to slightly different lexical specifications. A general restriction to local contexts in the definition of (unmarked) Alternative Realization renders unnecessary any mention of 'empty sister' in (46).

We need not decide among these four alternatives. However this agreement of *-en* with an object is finally formalized, the analytic passive sub-case of (46),

robustly overt in several grammatical systems, fully unifies adjectival and verbal passives. All their differences are due to the levels of insertion of *-en*, as explicated in section 7. And somewhat surprisingly, we will see in the next section that (46) also leads directly to explaining Åfarli's 'essential property of (all) passives', the suppression of external theta-roles in SPEC(IP).

Needless to say, object agreement in participles still leaves unanswered questions: (i) Why and under what conditions do expletive subjects cancel the need for it? (ii) Why do only certain grammars exhibit it in active composed pasts with overt object noun phrases? (iii) How is this *-en* agreement (46) related to expressing what is familiarly called 'object to subject movement', i.e., is 'subject–object agreement' possibly a *prerequisite* for the latter? (Cf. Emonds 2000: ch. 5.) But since these intriguing questions lead well outside the realm of specifically adjectival passives, this study leaves them for future research.

8.2 External theta-role suppression (dethematicization)

If adjectival passives are derived by movement, they show that the common property of passives has nothing to do with some subject position 'losing' an ability to express a theta-role, since the works cited in section 2.6 show that no such underlying position or theta-role is ever part of a derivation of adjectival passives. Rather, what makes the subject of *any* (verbal or adjectival) passive clause 'theta-free' (and hence, when expletives are unavailable, forces movement of some DP to this position) is the fact that agreement with a subject simply makes the latter *inaccessible* for being interpreted within any phrase headed by a passive participle. That is, nothing outside a phrase whose head V *has adjectival morphology* can serve as an argument of that V. If we can explain why – why the feature specification of the A head of the passive participle should block theta-role assignment to SPEC(IP) – we thereby account for Åfarli's 'essential property of the passive'.

We want to do this with no stipulation about passive structures, using only generally justifiable statements of grammatical theory. The key distinction, overtly morphological in several Romance languages, lies in the adjectival agreements of *-en*. The following French examples from section 3.3 show a typical situation: *all passive participles overtly agree with the surface subject* as shown in bold brackets in (48a, b) while *active participles do not* (48c).

(48) a. A mon arrivée, ces joli**es** portes semblaient [$_{AP}$ déjà
at my arrival, those pretty doors seemed already
repein-[$_{A}$ **t-es**]].
repainted
'At my arrival, those pretty doors seemed already repainted.'

b. Ces joli**es** portes étaient [$_{AP}$ vite repein-[$_{A}$ **t-es**] par le
Those pretty doors were quickly repainted by the
locataire] pendant ma visite.
renter during my visit
'Those pretty doors were quickly repainted by the renter during my visit.'

c. Ces femmes ont [$_{AP}$ tout de même pein-[$_{A}$ **t-{Ø/*es}**] seulement
those women have all the same painted only
par nécessité].
by necessity
'Those women have all the same painted only by necessity.'

Using the representations for adjectival agreement just developed, we can account for this contrast with what is actually a generalization of the Head Movement Constraint (Travis 1984). The HAC (49) is motivated by the same paradigms as the HMC but is also more general than the HMC.

(49) **Head Accessibility Constraint (HAC).** In a structure . . . X^j . . . [$_{YP}$ . . . Z^0 . . .], X^j can be related only with the least embedded Z^0 specified for inherent features within YP.[43]

There are two cases, j = 0 and j = 1. The case that j = 0 is Travis's HMC, with the slight and welcome modification that a completely featureless intervening head doesn't trigger the HMC; a computational step can relate two heads X^0 and Z^0 over an intermediate head Y^0 only if Y^0 completely lacks features. In particular, a lexical stem V of a participial AP can relate to a higher head in LF, e.g., a tense or modal in I, only if both the head [$_{A}$ Ø] of AP *and* any auxiliary V have no features. This occurs in derivations where the lexical entry (46) assigns phi-features to A only in PF, i.e., in active perfects and certain reflexive clauses.[44] In contrast, participles in all analytic passive clauses agree in phi-features with their subject DPs *in the syntax*, so that the role of (46) is to verify that phi-features *already on [$_{A}$ Ø]* are compatible with those of an object.

What accounts for dethematicization in passives is the case where j = 1 in the HAC, e.g., where X^j is a subject DP position.[45] As desired, (49) says that a subject in SPEC(IP) is inaccessible to V^0 (= Z^0) in the syntax whenever the head of the participle (= Y^0) is specified for features, as in fact the A^0 head is in the syntax of both types of periphrastic passives. Consequently, *ces jolies portes* in SPEC(IP) in (48a, b) simply cannot relate to the verb stem *repein-*, as external argument or in any other way. This prediction of the HAC then finally expresses the 'essential property of the passive' that we have been hoping to derive throughout this study.

On the other hand, the DP *ces jolies portes* in (48a, b) does indeed receive an LF iterpretation: it has the property expressed by the adjectival head *-en* that modifies it. The agreeing phi-features of *-en* transmit to the subject the property of playing the role of the phrase Y it agrees with, namely the object noun phrase in the proposition expressed entirely within the AP: 'X repaints Y, where Y = the direct object'.

In contrast to passives, the right hand morphological head [$_{A}$ *-t*] of the French active participle in (47a, b) and (48c) is an exceptional non-agreeing adjective, like those in the idioms *avoir chaud* 'feel hot', *tenir bon* 'hold on', *peser lourd* 'weigh a lot', etc., it is lexically specified to not agree with a subject DP. This participle can

thus acquire phi-features only in PF, due to the object agreement induced by (46). Hence the HAC (53) allows the stem V *(re)pein-* to relate to the DPs in a higher SPEC(IP) outside the AP in these examples, because the PF features on *-t* are not part of the syntax or LF. The only factor which could inhibit such a relation would be an intervening head V *specified for features*. But the intervening auxiliary head *avoir* 'have' with an active participle is precisely a V that is also empty except in PF. Therefore, the DPs *cette femme/ces femmes* in (47a, b) and (48c) relate to the Vs *(re)pein-* as their subject, even though these Vs are contained in both a higher VP headed by *a/ont* 'have' and an AP headed by *-t* '-en'.[46]

In this section, we have been able to account for Åfarli's 'essential property of the passive' (31) by generalizing Travis's Head Movement Constraint to the 'Head Accessibility Constraint' (49). The crucial 'dethematicization' of the external argument position in passive phrases is crucially due to the fact that both types of passives are *inflected adjectives*, i.e., they have feature specifications in syntax that make impossible any relation between their subject and the V stem to which they are attached. The HAC thus prevents any of a verb's theta-roles from being realized outside the passive AP. Nothing in this explanation of dethematicization requires reference to any special passive properties, once we understand both the syntactic nature of adjectival agreement and the far-reaching syntactic effects of the passive morpheme's unified lexical entry (46).[47]

8.3 An additional consequence of the Head Accessibility Constraint

We can examine a different adjectival construction to see how the HAC fares when confronted with possibly disconfirming data. Let us again consider the class of lexical adjectives formed by attaching *-ive* to V stems, i.e., *attractive*, *corrosive*, *decisive*, *defensive*, etc. French cognate counterparts of many of these, like other French adjectives, agree with their subjects: masculine *défensif(s)* and feminine *défensive(s)*. For many adjectives in this class, it seems like the subject of the adjective is also the subject of the verb stem: one who is decisive also decides, something that is offensive also offends, etc.

According to the HAC (49), however, the subjects of these APs cannot directly relate to these V as subjects, because the agreeing suffixes [$_{A}$ *-if/-ive*] block accessibility between V and these subject phrases. And the fact that the restrictions on the subjects of corresponding Vs and As are so different suggests that this is correct. As reviewed in section 6.1, one who receives visitors or gifts is not receptive, one who repels attacks is not repulsive, the goal phrases for *attractive* must be animate, etc.

There is a regularity, however: the adjective seems appropriate for a *subset* of cases where the verb stem can be used as a bare predicate. Thus in most cases, if 'X is V-ive', then typically 'X V-s . . .' in a subset of contexts in which 'X-V-s . . .' is appropriate. Plausibly, the lexical entry of a V in this formation associates the suffixation frame ___ *+ive* with both these limitations and also a subject variable X, possibly sometimes giving the latter a ±ANIMATE value. (Only people seem

perceptive and selective, although animals can perceive and climactic conditions can select.) In this way, *the adjectival ending serves to transmit to its own subject the external theta-role* of the V stem. The subject of the adjective then has the property of one who fulfills that role X in the associated proposition (e.g., 'X repels people' but not 'X repels attacks').[48] But in all this, the V itself does not need to directly relate to the subject DP in, e.g., SPEC(IP). So it seems that the HAC is not undermined by typical adjectival modification, which does not involve passive 'dethematicization'.

9 Conclusion: the unity of syntax and morphology

We have reviewed the history of treatments of the adjectival passives, concluding that Fiengo's (1977) basic idea was correct: this construction should be derived by NP movement, just like verbal passives. The many differences between adjectival and verbal periphrastic passives, which reproduce themselves cross-linguistically, are due not to their genesis in different grammatical components but rather to their morphological structure entering a syntactic derivation at different levels. Adjectival passive *-en* is inserted essentially at the outset of transformational computation (causing it to be mistaken for a base construction). Verbal passive *-en* is inserted only at Spell Out, with the result that it has been mistaken for a VP when it is in fact an AP of a special sort, one whose head A is not interpreted in LF.

We have found that almost every well-known property of either type of periphrastic passive is intimately connected to its participial morphology. Its category A and the insertion level of its morphemic realization *-en* determine (i) the suppression of the external theta-role, (ii) the missing external argument and unavailability of case in (only) adjectival passives, (iii) the type of verb which selects each passive type, (iv) the types of modifiers which each type tolerates, and (v) their general syntactic distribution. To the extent these conclusions are warranted, we must conclude that studying the passive independent of its morphology is as fruitless as studying its morphology in isolation. The unity of morphology and syntax is not only an a priori desideratum based on parsimony but apparently a methodological necessity.

A somewhat more exotic conclusion of this study has been that the verbal passive, considered in early generative grammar to be the 'true passive' and straightforwardly taken as the basis of the adjectival passive in several studies (e.g., Bresnan 1982d; Levin and Rappaport 1986), is rather the lexically marked and diachronically later variant of the construction, as proposed in Schoorlemmer (1995: 180–183). This conclusion is expressed formally by the use of parentheses in (46). That is, parenthesizing a grammatical element's syntactic category opens the way for its use as a semantically empty 'inflection' (if a bound morpheme) or 'function word' (if a free morpheme).

This conclusion brings us back around to the chapter's subtitle, from Dumas's *Man in the Iron Mask*. The verbal passive, king of transformations in the domain of syntax, has for decades shaped the beliefs and practices of the loyal subjects, to say nothing of the cabinet's. Examples: movements give rise to co-indexed chains rather than vice versa; syntax can be fruitfully pursued with at most lip service to 'autonomous' morphology. But the king has a double, and this double carries the same traits as the king: it is adjectival, it is a verbal suffix, and it agrees with object nominals. Moreover, it is adjectival in meaning, not just in exterior form. So the double doesn't look like the king but rather the king looks like the double, and derives its kingship precisely from being a look-alike. Strangely, the double has been locked in an impregnable fortress, the lexicon, where few transformationalists have cared to venture; and the kingdom's beliefs and practices have developed during this imprisonment. When we now bring the double out of this fortress, the king will have two faces and the loyal subjects may lose their bearings. The beliefs and practices established during the kingship, perhaps even those of the cabinet, may have to change.

NOTES

1 Moreover, this participial suffix and the finite past tense are the same in Standard English for all but a closed set of irregular verbs. In many spoken dialects, the past participle and the finite past tense have the same form even *with* these verbs: *they('ve) took it*, *they('ve) done it*, *they('ve) wrote it*, *they('ve) broke it*, *they('ve) sung it*, *they('ve) hid it.*

2 Fassi-Fehri (1993) reserves the term verbal passive for an Arabic construction more akin to the Latin synthetic passive. He refers to the Arabic construction corresponding to an English verbal passive as an adjectival passive because it is "internally verbal but externally adjectival." This study will focus on the adjectival properties of Germanic and Romance periphrastic verbal passives and try to integrate them in the final analysis.

It is only an accident of academic history that we do not use Fassi-Fehri's terms, i.e., what we call here throughout the verbal passive could be called the 'syntactic adjectival passive' and what we call the adjectival passive could be called the 'lexical adjectival passive'.

3 For example, Jaeggli's (1986a) landmark Government and Binding article "Passive" mentions adjectival passives only on the last page, essentially as an afterthought. Baker, Johnson, and Roberts' (1989) treatise on the passive refers to them with scare quotes in the last footnote and does not cite literature on the topic.

4 Ackema (1995) proposes that dual or second usages of suffixes such as English passive *-en* may arise "because they serve to fill in the gaps in the morphological system in diachronic change" (cited in Schoorlemmer 1995: 181). For example, when the suffixes of the Latin synthetic passives were lost (Romance languages typically show no reflexes of them), Latin analytic perfect passives formed from the copula plus an adjectival passive participle were extended to a second use in Romance, that of a verbal passive, thereby filling the morphological gaps. Thus, Romance adjectival passives seem historically the prior type.

5 Levin and Rappaport's (1986) study of adjectival passives might attribute some of the examples in (4), e.g., with verbs like *hand* and *slip*, to their 'Sole Complement Generalization' (SCG):

(i) Sole Complement Generalization. An argument that may stand as sole NP complement to a verb can be externalized by Adjectival Passive Formation.

However, the SCG can't be the *only* restriction on forming adjectival passives, since in view of the examples in (ii), those in (4) *all* counter-exemplify (i).

(ii) They {approached/left} New York. Drinks {accompanied/followed} dinner. During the summer, we try to {avoid/escape} cities. They practiced {dribbling/throwing} the ball.

So some other characteristic of verb classes must be incompatible with adjectival passives.

6 The fact that adjectival passives describe a property is mentioned in Bresnan's (1982d) lexical rule of conversion, which adds this interpretation as well as the category A to verbal participles. It seems obvious that 'property' or 'state' is simply the unmarked interpretation of A.

7 The formulation (5) is neutral as to how syntax derives this LF alternation. It could be that *-en* is present in both types of syntactic derivation, with its uninterpretable A feature checked off prior to LF in verbal passives (in the terminology of Chomsky 1995c), or that the *-en* of verbal passives is inserted under A only in PF (as in Emonds 2000: ch. 5). Sections 3.3, 5.2, and 7 return to these alternatives.

8 In general, adjectival passives can themselves be divided into lexicalized adjectives, which like most other adjectives are compatible with a full range of degree words, and those that seem 'created anew' at each use. The latter often sound unacceptable with adjectival modifiers and in this sense resemble verbal passives.

9 Similarly, Emonds (1991a) claims that a range of quantifiers and determiners which modify only nouns cannot modify English gerunds headed by V + [$_{N}$ *ing*] because this N is empty in LF.

10 Authors who agree that verbal passives contain covert agent phrases (which is all that is necessary for the analysis here) disagree as to its nature. Chomsky (1986b) and Roberts (1987) argue that it cannot be the same as the PRO subject of infinitives. Emonds (2000: ch. 10) claims that Chomsky's examples are inconclusive because they are based on properties of 'obligatory PRO', while a covert agent phrase has discourse-bound properties of so-called 'optional' PRO.

11 This restriction on idiom formation is a slight strengthening of O'Grady's (1998: 284) well researched 'Continuity Constraint' on idioms (i), where he defines 'chain' as in (ii):

(i) The Continuity Constraint. An idiom's component parts must form a chain.
(ii) The string x . . . y . . . z . . . (order irrelevant) forms a chain iff x licenses y and z, or if x licenses y and y licenses z.

12 In other words, the italicized phrasal complements XP of adjectival passives in (i), like those of morphologically derived nominals in (ii), must be non-idiomatic:

(i) The dinner seemed made *from leftovers*.
They sounded fully informed *of your intentions*.

(ii) The maintenance *of these roads* is costly.
His payment *of huge sums* didn't result in any entertainment *of poor children*.

13 Calling a step in the history of generative analyses a 'mistake' refers only to how it has been ultimately evaluated by most Chomskyan practitioners. Adherents of other frameworks may consider such a step as a crucial breakthrough.

14 The structure-preserving constraint (SPC) of Emonds (1976) is more than an observation that operations such as the passive movements reproduce base structures; it also specifies the exact conditions for when landing sites do *not* require base structures. In mimimalist terms, part of structure preservation (in the original stronger sense of category preservation) means that the possible non-vacuous outputs of Merge and Move are structurally identical at given points in a derivation. In one sense, feature checking may predict this: if in any given position *Move and Merge necessarily check the same features*, this part of the SPC may follow.

But the SPC further specifies conditions under which structure preservation does not occur, i.e., the conditions under which Move and Merge do *not* have the same effects. In other words, certain Moves at the root of a tree prevent further Merges. The promissory note on structure preservation in Chomsky (1995c: section 7.2) seems to shed no light on how feature checking addresses this issue.

15 The exceptional English A-NP combination in *very near the station* may be a hybrid of an AP *very near to the station* and a PP *right near the station.*

16 In particular, 'passive auxiliaries' are those V with the frame ___AP that are *least semantically specific*: *be* and *get.* Most of the Germanic and Romance languages with similar analytic passives use translations of one or both of these.

17 While it is obvious that *be* does not contribute to LF, it might seem that *get* does. Emonds (2000: ch. 5) argues that while the *distribution* of *get* seems restricted by a following verb's 'change of state' feature (*?get owned*, *?get hated*, *?get known*), no difference in *interpretation* is observed in pairs such as *{get/be} examined by, {get/be} built by, {get/be} scared by,* etc.

18 Archaic and sometimes semantically irregular options such as *burnt*, *proven*, and *supposéd* are sort of 'exceptions that prove the rule'.

19 In contrast, the composed past of a verb in French does *not* agree with a subject when the auxiliary is *avoir* 'have':

(i) Cette femme a tout de même *peint(*e)* seulement par nécessité.
that woman (FEM) has all the same painted (*FEM) only by necessity
'That woman has all the same painted only by necessity.'

These kinds of patterns are commonplace in traditional grammars of languages such as French, German, and Spanish, and so will not be exemplified in detail here.

20 An alternative to such insertion would be for a separate morphological operation to 'add on' an A-headed structure in PF to a simple syntactic V. But this ad hoc solution for the morphology explains neither the selection of verbal participles by *be* and *get*, nor their more general syntactic distribution reviewed in the next subsection. In addition, derivationally changing a V to $[_A$ V – $[_A$ *en*]] would contravene Chomsky's (1995c) programmatic Inclusiveness Condition (transformational operations can't introduce new material) more violently than late insertion into an independently justified syntactic slot. Consequently, the optimal *syntactic* target for the verbal passive participle seems to be $[_A$ V – $[_A$ Ø]].

21 Freidin claims (1975: 395) that passive rather than active verbs are listed in the lexicon and (p. 396) that his formalism "must be stated in terms of semantic functions rather than syntactic categories." A consequence is that verbs with two passives (*give*, *take advantage of*, *allow*, etc.) each require two lexical passive verbs in the lexicon.

22 Van Riemsdijk (1983a) provides an important bridge linking a generative perspective on abstract case to the traditional understanding that accusative case is unavailable in the absence of V.

He further questions the standard version of the Case Filter, based on the availability of apparent 'default morphological cases' in many constructions in many languages, e.g., German. Rephrasing his concern, why are some noun phrases lacking categories which assign them case ill-formed, while default case allows other such noun phrases to be well-formed? This study retains a Case Filter of the original sort, assuming that any default cases are limited to noun phrases in Specifiers not linked by movement to argument (A-) positions. This formulation partly answers Van Riemsdijk's objections, but detailed justification is not straightforward and would lead us too far afield.

23 Baker, Johnson, and Roberts (1989: section 4) discuss and try to circumvent, almost desperately it seems to me, the mounting evidence against attributing case a central role in accounting for the passive; cf. especially their note 10. In the twilight of government and binding, they "are forced to conclude, following Sobin (1985), that the absorption of accusative Case is a cross-linguistically more variable property of passive than the absorption of a θ-role" (p. 236).

24 Minimalism itself, to the extent it is based on empirical paradigms, can be traced to abandoning a case-based 'forced government' account (30) and embracing an 'attract' account of passives (31), under the at least tacit influence of the cited studies. Passive movement in minimalism is universally motivated by the 'EPP property' of the landing site, satisfied by Movement in a situation where it cannot be satisfied by Merge. But a deeper examination of these issues would lead squarely into the territory of the verbal passive, and away from the particular focus of this study.

25 These paradigms and arguments are from Emonds (2000: chapter 5). Government binding treatments mention this type of example from time to time, often suggesting that some kind of ad hoc inherent case can be assigned to the italicized noun phrases. This line of thought sheds no light on the problem, however. Since noun phrase complements of lexical adjectives typically can have 'inherent case' cross-linguistically, one remains at a loss to explain why the adjectival counterparts (32) of (18) are nonetheless uniformly out (i.e., why inherent case is unavailable just where we most expect it).

26 One can still maintain that noun phrases moved in passives don't receive case, if one holds that structural cases are always assigned *optionally*. Emonds (1985: ch. 1) develops this perspective on case assignment; if a DP doesn't receive case from V (whether or not the V *may* assign case), this DP may move to get case, e.g., into the surface position of SPEC(IP).

27 A variant on (i) relates adjectival and verbal passive participles via unaffixed 'conversion', as in Bresnan (1982d) and Levin and Rappaport (1986: section 4.3). That is, the two constructions would share a common stem but be syntactically distinct like a noun-verb pair *smoke*/*smoke*; one would derive from the other by zero affixation. There are reasons to reject this approach, however. First, conversion only rarely affects morphologically derived forms: while the noun *commission* doubles as a verb, the more typical *transmission*, *contraction*, *communion* and *contrition* do not. Second,

conversion typically relates two phonologically identical and semantically close forms that do *not* share syntax. But as seen in section 3, adjectival and verbal passives share a *lot* of syntax. Third, Schoorlemmer (section III.2.3.2) provides extensive arguments against using conversion to express the morphological relatedness of Russian adjectival passives and passive perfective (verbal) participles, drawing on special properties of its tense and aspect systems. The participial syntax of Germanic and Slavic languages is similar enough to expect that conversion cannot be completely wrong for the Slavic systems and yet right for Germanic.

28 In any case, feature checking in LF of a V that itself doesn't move in LF seems essentially incoherent.

One can of course both reject late insertion and insist that the feature-checking in both kinds of passives is the same, but then one has no account of any differences between them, i.e., such a theory ends up with nothing to say about any of the contrasting passive paradigms. Recent studies often insist on theoretical simplicity of this and that sort, at the cost of accounting for few if any paradigms.

29 Thus, Levin and Rappaport begin their section 4.1: "In accordance with the program initiated in Chomsky (1981), we eschew the explicit use of subcategorization frames in lexical entries as a representation of the complement structure of verbs." Consequently, after establishing their empirical conclusion, the second half of their essay reformulates their result in terms of theta-grids (taking issue with various competing semantic formulations). In my view, their choice of a semantics-based lexical framework makes it impossible to express their main result in a natural way, namely, that adjectival passive phrases lack exactly that overt DP that is licensed by the lexical frame +___DP.

30 Levin and Rappaport's vague term 'argument' should perhaps be replaced by a more testable concept such as 'potentially referring phrase'. NPs in some idioms may exceptionally potentially refer, consequently receiving a theta-role and appearing in adjectival passives. Thus ?*Sam will spill the beans before anyone else spills them* sounds at least marginally acceptable, so *the beans* may be a theme. This would license the idiom in adjectival passives: *?The beans now seem spilled.*

31 'Object' in (37) can also refer to objects of stranded P. I have not made an analysis here of stranded prepositions in passives found in English in both verbal (i) and adjectival (ii) variants:

(i)	This problem is being attended to.	That couch got sat on soon afterwards.
(ii)	It is a long unattended to problem.	That couch looks more sat on than I thought.

The stranded P in the first example in (ii) is puzzling because English pre-nominal adjective phrases typically terminate in a head A, i.e., such an A must be adjacent to the N-projection it modifies. Perhaps the required adjacency forbids only intervening phrases. (Along similar lines, postverbal particles do not interfere with the adjacency usually required between English verbs and their object.)

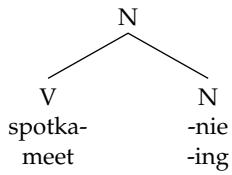
In any case, the approach here removes a problem posed by 'P-stranding' for a case account of passive movement, since stranded Ps generally assign case. Since movement here is not caused by lack of case, the fact of movement with stranded Ps becomes unremarkable.

32 Pseudo-passives fall under this formulation if they are derived by 'detaching' a governing P from its object (or otherwise rendering it invisible) in the context V___.

33 Recall that a lexicalized A blocks all case-assignment in adjectival passives (44), while the V in verbal passives (45) can assign case to objects, including double objects. Moreover, non-referential object phrases in idioms are compatible with (45) but not (44). These independent factors reviewed earlier should be consequences of imposing the agreements in (44) and (45) at different levels.

34 I omit three further distinctions analyzed by Schoorlemmer, which represent specifically Russian reflexes of polyfunctionality and are interesting in their own right. They would require preliminary discussion of Russian morphology (the genitive of negation), stylistics (the long form of adjectives), and aspect (her 'perfectivity restriction', to which she devotes most of her chapter 4), and thus take us too far afield.

35 Borer (1991) is an earlier, more accessible reference on Parallel Morphology. In her (43), Schoorlemmer exemplifies a Lieber type head adjoined structure with a Polish result nominal:



A similar theory of morphological analysis, but one that denies the need to distinguish a separate morphological component, is presented in Emonds (2000: chs. 3–5). Under this view, 'morphology' is simply the name of what results phonologically when lexical items composed entirely of grammatical features are additionally specified as 'bound', i.e., requiring a sister within an X^0 domain.

36 My version of dual level lexical insertion (cf. Emonds 2000: ch. 4) tries to respect the spirit of Chomsky's (1995c) Inclusiveness Condition: new structure should not be added during a derivation. Therefore, even though the morpheme *-en* is itself absent from verbal passive participles during the first part of a derivation, its category A should be present and empty; cf. sections 2 and especially 3.3 above.

37 Borer and Wexler (1987) propose a government and binding analysis of passives whereby verbal passives contain traces (A-chains) and adjectival passives do not. They attribute the later acquisition of verbal passives to a difficulty with acquiring A-chains. In the analysis of passives based directly on the lexical formulation (46), the later acquisition of verbal passives is due to the marked nature of 'cancelling' syntactic categories at the LF interface by means of the parenthesis notation.

38 Emonds (2000: ch. 5) argues that much of the grammar of APs derives from their being subject to the Case Filter, as in Stowell (1981). Non-agreeing adjectives, including perfective *-en*, are in general those endowed with an inherent case feature that obviates subject agreement. Other realizations of case are adverbial *-ly* and agreement itself. This particular mode of explanation is not at issue here.

39 Borer and Wexler (1992) cite the following summary of Antinucci and Miller (1976): "Up to a certain age, variable from child to child and ranging roughly from 2;0 to 2;5, the rule of agreement between transitive past participles and their grammatical object is never violated."

40 Borer and Wexler's simple rule is precisely (46), which I claim is at the centre of passive phenomena as well. They reject verbal agreement with objects, however, since

they wish to subsume this agreement under SPEC–HEAD agreement, along the lines of Kayne (1989a); see below in the text.

As they observe, a partisan of (46) has to explain why the adult rule is restricted to only empty objects. In the framework in Emonds (2000: ch. 4), agreement patterns 'alternatively realize' features away from their canonical LF positions; sometimes these features are also spelled out in the canonical positions and sometimes they are not. Unmarked Alternative Realization in fully developed adult grammars is used mainly to achieve economy; that is, for avoiding 'doubling.' Thus the child Italian rule, whereby *-en* doubles overt objects, would be a marked option for adults and so is superseded by a more restricted variant.

41 Several instances of exceptional non-agreeing adjectives in French are discussed in Emonds (2000: ch. 5): *avoir chaud* 'be hot', *peser lourd* 'weigh heavy', *tenir bon* 'hold on', etc.

42 The material in this study seems orthogonal to the question of whether traditional VPs should all be analyzed as functional category projections (so-called 'small vPs' of some sort) with object noun phrases located in some Specifier, as Kayne's proposal requires.

43 Contextual features on Z^0, for example whatever differentiates *be* and *have*, are irrelevant.

44 French and Italian have active participles whose auxiliary, like the passive auxiliary *être/essere*, 'be' agrees with their surface subject in, for example, reflexive sentences. Such agreements might seem to counterexemplify the HAC, since in these sentences the verb's agent theta-role is assigned to this subject, as in French *Cette femme s'est peinte* 'That woman has painted herself.'

But in this construction, *-en* acquires agreement features only *after être* is inserted in PF as a result of the reflexive clitic. (Spanish reflexives which don't trigger a change in auxiliary exhibit no agreement.) Since these reflexive-induced agreement features on *-en* don't appear in the derivation of LF, they are irrelevant (invisible) for a principle blocking a theta-role relation between a subject and a V (respectively X^j and Z^0 in the HAC).

45 If VP and NP have more than one functional projection in their maximal 'extended projections' (IP and DP respectively), then (53) should perhaps include all but the topmost extended projections of YP, since I and SPEC(IP) need access to V, and D and SPEC(DP) to N.

We might also decide to include *all* extended projections of VP and NP under the term YP in (53). This would permit directly relating C to V (as in analyses countenancing 'long head movement' of V to C) and also V to the N heads of direct objects, as in Baker's (1988a) noun incorporation. Moreover, it would allow selection restrictions to pair V with object Ns, skipping D. All these seem like acceptable, even welcome consequences.

46 I will not try here to recast everything in terms of some kind of 'XP-internal subject hypothesis', where XP includes any type of phrase. The VP-internal subject hypothesis of Zagona (1982) has indeed played an important role in improved analyses of causative and restructuring complements. However, the analyses of these constructions in Emonds (2000: ch. 6) indicates the inadequacy of a commitment to uniform phrase internal subjects.

47 The reason this explanation has been a long time coming is the agreed 'division of labor' between 'syntactic theorists' and 'morphological specialists', as advocated for example in Aronoff (1994: 134): "But within a lexeme-based framework in which

morphology and syntax are autonomous, what Passive consists of syntactically is not directly relevant to its morphological realization . . . For my purposes, the question is just not interesting. Conversely, its morphology has no bearing on its syntax and should not be used as evidence for one syntactic analysis or another."

This study has shown that satisfactory descriptions of all the main grammatical components of Indo-European periphrastic passives require a tight integration of morphology and syntax. Along similar lines, Kubo (1992) shows that the much wider range of passivizable NP positions in Japanese is directly linked to the V category of its passive morphology, which contrasts with the adjectival nature of the Indo-European periphrastic passives.

48 On similar lines, the lexical entry for the adjectival suffix *-able*, which is often said to also form passive adjectives, transmits to its subject not an external theta-role but that of a direct object.

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3 Adjectives: Order within DP and Attributive APs

DANIEL VALOIS

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2 Predication and attribution
3 Ordering
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1 Introduction

Not unlike adverbs (see chapter 4), the study of adjectives and adjective ordering is a difficult and complex one. Aside from interpretation considerations of the various adjective types, two different problems have been the object of much research in the field: the ordering of adjectival strings per se, and the relative ordering of adjectives and the noun they modify in various languages (see also chapter 2).

These two main areas of research have been developed substantially over the last few years in large part due to our improved understanding of the structure of Determiner Phrases (DP) and their various components. This has enabled researchers to tackle the adjective ordering problem in a systematic and principled way.

Here, we first look at some of the earlier work with respect to adjective ordering, then move on to discuss some of the more influential proposals concerning the aforementioned problems.

2 Predication and attribution

Variation in terminology and classification notwithstanding, adjectives are usually divided into two categories: predicative and non-predicative (for detailed discussions of adjective types, see Bolinger 1967; Kamp 1975; Siegel 1980; Higginbotham 1985; Keenan and Faltz 1985; Giorgi and Longobardi 1991). Generally, predicative adjectives describe a property that is predicated of the set of individuals denoted by the noun, while non-predicative adjectives do not. This distinction usually correlates with the adjective's capacity to appear with a copula (null or not) or with a verb in a reduced relative construction; predicative adjectives do, while non-predicative adjectives establish a relation with a noun without an intermediate copula (see Bolinger 1967; Cinque 1994).[1]

This differentiates, for instance, *round* from *alleged* in (1):

(1) a. The round table. (round = property of the set of tables)
b. The table is round.
c. The alleged communist. (alleged ≠ property of the set of communists)
d. *The communist is alleged.

Predicative adjectives can be further divided into intersective and non-intersective adjectives. The adjective *round* in (1) is intersective because it denotes the sets of objects that are both round and tables. This is not the case for *careful* in (2).

(2) A careful cook.

Here the adjective may either restrict the reference denoted by the set of cooks to only those who are careful (internal scale) or determines the set of cooks being characterized (denoting cooks that are careful as individuals, not just as cooks – external scale – see Bouchard 1998, from whom the above discussion is taken, for a more detailed discussion, and how these distinctions sometimes correlate with the pre- or postnominal position of adjectives in French).

3 Ordering

One major concern in the study of adjectives is ordering. Hetzron (1978) observes that, for a good number of natural languages, adjectives seem to be ordered according to semantic criteria.[2] The major rule calls for the more objective and undisputable qualifications to be closer to the noun, and the more subjective, opinion-like ones to be farther away. At one extremity of the continuum we find subjective and individual denoting adjectives, at the other objective and collective denoting adjectives. In between, there is a whole spectrum of semantic features.[3]

According to Hetzron, the general cross-linguistic tendency is that adjectives that usually appear closest to the noun are those denoting *purpose* or *destination*.

In prenominal position, for instance, these are preceded by adjectives denoting *composition*, *origin*, *color*, *physical defect*, *shape*, and finally, *age*.

This ordering of adjectives seems to apply independently of the position of adjectives with respect to the noun they modify, i.e., it is somewhat general. Indeed, in languages with A(djective)-N(oun) word order the ordering is exactly the mirror image of what is found in consistent NA word order. There are also 'mixed' languages, e.g., French, in which adjectives may appear either in pre- or postnominal position (this particular case is examined in detail in the sections below). The paradigm in (3) illustrates the distribution of a subclass of adjectives in each language type.

(3)

AN languages	*Evaluating*	*Size*	*Color*	*N*
English	beautiful	big	red	ball
German	schöner	großer	roter	Ball
Hungarian	szép	nagy	piros	labda
NA languages	*N*	*Color*	*Size*	*Evaluating*
Indonesian	bola	merah	besar	tjantik
Persian	tupe	qermeze	bozorge	qasangi
	ball	red	big	beautiful
ANA languages	*Evaluating*	*Size*	*N*	*Color*
French	joli	gros	ballon	rouge
Italian	bella	grossa	palla	rossa
	beautiful	big	ball	red

When two adjectives of the same class co-occur, it seems that the order is interchangeable across languages. Thus, both (4a, b) (which involve two adjectives of the *human propensity* class in Dixon's classification) are acceptable in English:

(4) a. a clever brave man
b. a brave clever man

There are exceptions to the general pattern. For one, it seems that in some of the languages Hetzron examined certain adjectival categories are either interchangeable or take ordering precedence over others. For instance, some languages allow *color* and *evaluation* adjectives to interchange. One example is Polish. According to Hetzron's informants both (5a) and (5b) are acceptable "with relative ease:"

(5) a. pięknа duża piłka
beautiful big ball
b. duża piękna piłka

In other languages, certain types of adjectives must occur first in the line of adjectives. This is the case for *size* adjectives (arguably because size qualifications

are obligatorily treated as emphatic in these languages) in Japanese (also Amharic) and Romanian (as well as Spanish). As a comparison between these two language types shows, this ordering precedence is at play whether adjectives precede or follow the noun:

(6) a. Japanese: ōki kirei na akay bōru
big pretty red ball
b. Romanian: o minge mare roșă (și) frumoasă
a ball big red (and) pretty

Finally, some languages are rather free with respect to adjective ordering, which in this case depends on external factors such as context, relative emphasis, euphony, etc. Two examples are Somali (which has relatively few basic adjectives) and Kurdish, which allow all six permutations of the strings in (7a, b):

(7) a. Somali: gabadh fiican dheer madow
girl good tall dark-skinned
gabadh fiican oo madow oo dheer
gabadh dheer oo madow oo fiican
etc.
b. Kurdish: top-a jwan-a gawr-a sur-a-ka
ball beautiful big red
top-a sur-a gawr-a jwan-a-ka
etc.

Having said this, Hetzron points out that the languages that exhibit the more general ordering (i.e. (3)) have the most elaborate systems, and he goes on to suggest that "it is the properties of adjective ordering in these languages, such as English and Hungarian, that need thorough investigation in view of establishing a general theory, while the other language types will be described as a simplification of the more complicated system, or . . . a statement has to be made to the effect that they are EXEMPT from the generalizations established for the first group" (1978: 175).

Sproat and Shi (1988) also look at adjective ordering in some detail. Their analysis aims at providing some justification for a cognitive-based account of adjective ordering. Looking at English and Mandarin Chinese, they distinguish between *apparent* and *non-apparent* adjectives. More apparent adjectives are those that denote an intrinsic property of a noun, while less apparent adjectives denote a property in relation to other objects. For instance, the adjective *red* describes an intrinsic property of an object since being red does not require comparing the object with other non-red objects in order to determine its color. On the other hand, *large* is less apparent in the sense that for an object to be considered large it needs to be compared with non-large objects: a butterfly may be large compared to other butterflies but is still smaller in real size than a large (or even a small) car. Hence, adjectives that require less comparison are more apparent, while those that require more comparison are less apparent.

With prenominal adjectives, Sproat and Shi's proposal is that the less apparent the adjective is, the further to the left in the adjective string it appears. This is exemplified by the following pairings of adjectives in English:

(8) The large red car. *Size* (less apparent) to the left of *color* (more apparent)

(9) A nice small dog. *Quality* to the left of *size*

(10) A nice green table. *Quality* to the left of *color*

Aside from the ordering problem, which they also touch upon, recent studies on adjectives have sought to give a principled analysis of the relative position of adjectives with respect to the noun in various languages. As we saw above, in some languages adjectives appear before the noun, in others they appear after the noun, yet in others they may appear in either position. The problem can be looked at either from a derivational or a representational point of view. We begin in the next section with an approach that has spawned much research in recent years: the derivational analysis.

4 Adjective placement as an argument for N-movement (Cinque 1990a, 1992; Valois 1991a, 1991b, 1996)

In early work in generative grammar, adjectives were generally considered to be adjoined to the intermediate N′ projection of the noun, with no real attempt at accounting in a principled way for cross-linguistic variation with respect to the relative order of adjectives and the noun they modify. Recent work has looked at this very problem. Much progress made in this area is in large part due to other important developments in syntactic theory, such as recent research on the structure of Determiner Phrases, and head-movement within the DP. These studies on adjectives are thus inseparable from these developments, and will be presented in that context here, as we provide a general overview of some of the more detailed and influential research on adjective placement.

Research in generative grammar on the structure of DP and its similarities with the structure of clauses (an idea originally put forth by Szabolcsi 1987, 1994; see also Abney 1987) has provided in the late 1980s and the 1990s a new way of looking at the distribution of adjective phrases (AP) within the DP. One important development is the proposal by Cinque (1990a) that the distribution of APs provide an argument in favor of N-movement within the DP.

It has been argued that the relative position of adverbs in English and French is a consequence of the different ways that inflectional morphology attaches to the verb in the two languages: via verb movement to an inflectional node located higher than the adverb in French, but through affix-hopping of the morphological features onto the verb in English (Emonds 1976; Pollock 1989; Chomsky 1995c) (see chapter 75). Typical examples are given below:

(11) a. Marc often eats apples.
b. Marc mange$_i$ souvent t$_i$ des pommes.

Looking at thematic (external argument) adjectives in event (deverbal or derived) nominals (see chapter 19), Cinque (1990a, 1992) points out that their relative position with respect to the noun differs in Romance and Germanic languages in a way that is reminiscent of what can be observed with verbs and adverbs. The proposed analysis is thus similar to that for adverbs: The noun moves over the thematic adjective in Italian (or French), but not in English. This is illustrated in (12), where the thematic adjective occupies the basic position of the external argument (SpecNP) in both languages:

(12) a. *L'[$_{NP}$ italiana invasione dell'Albania]
the Italian invasion of Albania
b. L'invasione [$_{NP}$ italiana __] dell'Albania
c. L'invasion italienne de l'Albanie
the invasion Italian of Albania
d. *The invasion [$_{NP}$ Italian __ of Albania]

Crucially, (13) below shows that APs (with normal intonation; see the discussion concerning (35) below) cannot be rightward-moved, as they cannot appear on the right of the noun and its complement, meaning that the string in (13) cannot be the result of adjunction of the adjective to the right of the head noun (from prenominal position):

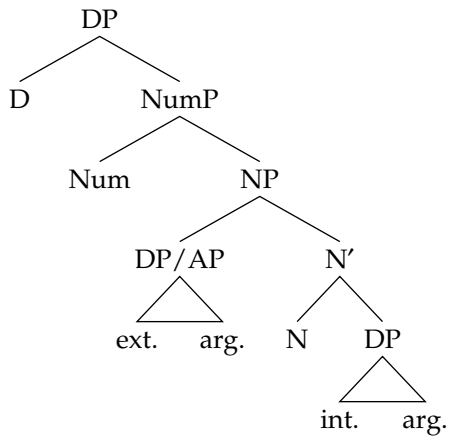
(13) *L'invasione dell'Albania italiana

Motivation for N-movement, just like V-movement, is morphological: it takes place in Romance (to a functional Num(ber) category – more details below) in order for the noun to attach to its number features. It is worth noting that, aside from accounting for the contrasts in (12), the proposal that the noun may undergo head-movement has been the source of substantial research in recent years, and has been shown to have a wide range of consequences concerning the syntax of DP. For instance, with respect to Romance and Germanic languages, Valois (1991a, 1991b, 1996) outlined certain differences between the two language types that can be ascribed to a parameterization of N-movement. Among these are (i) the relative distribution of DP-internal arguments; and (ii) the relative distribution of adjectives in event nominals. Concerning the former, French and English differ with respect to the relative position of the noun and its external argument. In English, the external argument precedes the noun (14a), whereas it follows it in French (14b).

(14) a. Rembrandt's (agent) portrait of Aristotle (theme)
b. Le portrait de Rembrandt (agent) d'Aristote (theme)

Both English and French having basic S-N-O (and S-V-O) word order, N-movement past the external argument in French derives (14b) while the absence of movement in English derives (14a). In Valois (1991a, 1991b, 1996), movement is to an intermediate Num(ber) Phrase (see Ritter 1991 for arguments in favor of NumP). The (partial) structure of DP is thus as in (15):[4]

(15)



The second difference between the two language types has to do more directly with the topic at hand, i.e., adjectives, more precisely adjectives in event nominals. This is the topic of the next section.

5 DP and clausal structures: adjectives in event nominals

The study of the distribution of adjectives in French and English event nominals Valois 1991a, 1991b, 1996) was conducted in the spirit of drawing parallels between the syntax of clauses and the syntax of DP. Indeed, event (deverbal) nominals form a class of nouns that is very closely connected to verbs. One obvious parallel between clauses and event nominals is the semantic connection between some of their modifiers, e.g., adverbs and adjectives.

For his purpose Valois adopted Travis's (1988) and Rochette's (1990b) position that the first four classes of adverbs discussed by Jackendoff (1972) are reducible to three classes indicating the level of adjunction of the adverb within IP. This is shown in the classification below (labeling is Valois'):

Adverb classification (by level of adjunction)

Adverbs of the *probably* class: Jackendoff's Class III	Highest
Adverbs of the *frequently* class: Jackendoff's Classes I and II	Higher
Adverbs of the *completely* class: Jackendoff's Classes I and II	Lower

The underlying assumption here is that the positional distribution of adverbs in English is predictable on the basis of their meaning. For instance, manner adverbs (those belonging to the *completely* class), which modify the VP, are adjoined lower than sentential adverbs (those belonging to the *frequently* class and those belonging to the *probably* class). Setting other independent factors (such as transportability) aside, and provided that only one adverb may adjoin to a given projection (Jackendoff 1972), co-occurrences of adverbs generally follow the structural hierarchy imposed by their meaning; that is, adverbs of the *probably* class, which modify propositions (mapped onto CP according to Rochette 1990b), precede those of the *frequently* class, which modify events (mapped onto IP or VP), which in turn precede those of the *completely* class, which modify actions (mapped onto VP). This can be seen in the pairings in (16–18):

(16) a. They [$_{IP}$ probably [$_{VP}$ completely invaded China]].
b. *They completely probably invaded China.

(17) a. They [$_{IP}$ frequently [$_{VP}$ completely invaded China]].
b. *They completely frequently invaded China.

(18) a. They [$_{IP}$ probably [$_{VP}$ frequently invaded China]].
b. *They frequently probably invaded China.

Turning now to adjectives, the assumption is that the classification assumed for adverbs also applies to the corresponding adjectives, as given in the classification below:

Classification of adjectives in event nominals (by level of adjunction)

probable class: probable, unfortunate, etc.	Highest
frequent class: clever, clumsy, careful, careless, frequent, etc.	Higher
complete class: complete, easy, total, bad, mortal, brutal, etc.	Lower

According to the stand concerning the parallel syntax of DP and CP, the expectation is for the distribution of the adjectives in the above list to parallel that of the corresponding adverbs; that is, pairings of adjectives belonging to different classes should yield word orders in which adjectives belonging to, say, the *complete* class follow adjectives of the *frequent* class, or in which adjectives of the *frequent* class follow members of the *probable* class. Looking at English first, we see that this prediction is borne out:

(19) a. The probable complete invasion of China
b. *The complete probable invasion of China

(20) a. The frequent complete invasion of China
b. *The complete frequent invasion of China

(21) a. The probable frequent invasion of China
b. *The frequent probable invasion of China

This follows if, like adverbs, adjectives are adjoined hierarchically according to the class to which they belong, as shown in (22) (see Crisma 1989 on Italian).

(22) [$_{DP}$ *probable* class [*frequent* class [*complete* class [$_{NP}$ invasion of China]]]]

In French, when preceding the head noun, the same distributional constraints operating for adverb ordering can be observed for adjectives, as shown in (23–25).

(23) a. La probable complète invasion de la Chine
the probable complete invasion of China
b. *La complète probable invasion de la Chine
the complete probable invasion of China

(24) a. La fréquente complète invasion de la Chine
the frequent complete invasion of China
b. *La complète fréquente invasion de la Chine
the complete frequent invasion of China

(25) a. Les probables fréquentes invasions de la Chine
the probable frequent invasions of China
b. *Les fréquentes probables invasions de la Chine
the frequent probable invasions of China

However, as in Italian, French adjectives may also appear in postnominal position (thematic adjectives being one case, cf. (12c)), as can be seen in the event nominal constructions in (26):[5]

(26) a. L'invasion probable de la Chine
the invasion probable of China
b. L'invasion fréquènte de la Chine
the invasion frequent of China
c. L'invasion complète de la Chine
the invasion complete of China

This is the unmarked case if, as concluded with respect to (12c), the noun moves past the adjective in French. This in turn begs the question as to the formal mechanisms responsible for the presence of adjectives in prenominal position.

Valois' answer (which differs from Cinque's 1994 approach, as we discuss in section 6) is that prenominal adjectives are derived via the application of an additional rule that adjoins the adjective to the left (by head-movement), as (27) illustrates:[6]

(27) a. L'invasion probable de la Chine
b. La [probable$_i$ [invasion]] t$_i$ de la Chine

In (23–25), the presence of two prenominal adjectives indicate that two instances of left-adjunction have taken place.[7]

This process is reminiscent of cases of syntactic incorporation (Baker 1988a). One indication that this view might be on the right track is that liaison is (slightly) more acceptable when the adjective is in prenominal position than when it is in postnominal position, presumably because incorporation involves the formation of a 'tighter' morphophonological complex (see also Bernstein 1993, who claims that liaison is obligatory with prenominal adjectives but optional in postnominal position, an observation disputed by Bouchard 1998):

(28) a. Les improbables [z] invasions de la Chine
the improbable invasions of China
b. Les invasions (?[z]) improbables de la Chine

The alternate pre- and postnominal position, as well as co-occurrence restrictions of adjectives, is given a substantially different analysis by Cinque (1994). The next section presents Cinque's approach on this and other aspects of the syntax of adjectives.

6 Serialization and partial N-movement (Cinque 1994)

6.1 Attributive APs

Cinque (1994) proposes an analysis that differs from Valois' proposal in two important ways. He proposes that (i) Adjective Phrases (APs) are generated in specifier positions of functional categories; (ii) nouns can undergo *partial* N-movement, a mechanism responsible for the possibility for an attributive adjective to appear in pre- or postverbal position.

Before moving on to the analysis proper, it should be noted that Cinque revises his initial stand that thematic adjectives are generated in SpecNP. This is motivated by the observed prohibition on the co-occurrence of both manner and thematic adjectives in prenominal position, as in (29a), combined with the fact that the noun moves past a manner adjective, as in (29b):

(29) a. *?L'aggressione brutale (manner) italiana (thematic) ___ all'Albania
the agression brutal Italian against Albania
b. L'aggressione brutale (manner) all'Albania

If thematic adjectives were generated in SpecNP and the noun could move past a manner adjective, as (29b) shows, (29a) ought to be possible. Cinque's conclusion concerning the ungrammaticality of (29a) is that both manner and thematic adjectives compete for the same position outside NP.

We saw in the previous section that in French some adjectives may appear either pre- or postnominally. This is the case in Italian as well. Compare (29b) with (30):

(30) La brutale aggressione all'Albania
The brutal aggression of Albania

Cinque's account of the pair of examples differs markedly from Valois'. Rather that assuming incorporation to account for the prenominal position of the adjective in (30), he proposes to base-generate *brutale* in two different positions in the DP. The motivation behind this is based on Cinque's observation that, although the difference is subtle, (29b) and (30) yield slightly different interpretations: While the adjective in (29b) has a 'pure' manner interpretation, it has a subject-oriented interpretation in (30), a result that can clearly not be attributed to the sole application of N-movement. In other words, *brutale* in (29b) and (30) are two different homophonous adjectives, one (the subject-oriented adjective) being base-generated higher than the position to which the noun moves.

The relationship between the position and interpretation of *brutale* can be seen by the fact that, in constructions that force the manner interpretation of the AP, the subject-oriented interpretation is unavailable, as shown in (31):

(31) a. Le aggressioni brutali (*manner*) vanno severamente condannate.
the aggressions brutal are strongly condemned
b. *Le brutali (*subject-oriented*) aggressioni vanno severamente condannate.

Subject-oriented APs followed by manner or thematic APs are impossible between N and its complements, suggesting that N does not move past a subject-oriented AP:

(32) *?L'aggressione stupida (*subject-oriented*) brutale (*manner/thematic*) all'Albania
the aggression stupid brutal/Italian of Albania

Since subject-oriented adjectives may be preceded by speaker-oriented APs, as in (33), Cinque arrives at the partial structure in (34) (the ___ symbol indicating possible landing sites for N):

(33) ?La probabile (*speaker-oriented*) stupida (*subject-oriented*) aggressione dell'Albania
the probable stupid aggression against Albania

(34) [$_{XP}$ speaker-oriented ___ [$_{YP}$ subject-oriented ___ [$_{ZP}$ manner/thematic [$_{NP}$ N . . .]]]]

6.2 Predicative APs

While the word order N-complement-AP is generally not possible (see (13) above), it becomes possible under certain specific conditions. In (35), the sentence is grammatical if there is a sharp intonational break between the complement and the AP:

(35) La loro aggressione all'Albania BRUTALE
the their aggression of Albania brutal

According to Cinque, the adjective in (35) is a predicative AP, i.e., an AP that is predicated of a maximal projection (here NP; see also Bernstein 1993b; Sleeman 1996). Such APs generally appear after the noun and its complements.

A good test to support the assumption that predication is at play when adjectives follow a noun complement would be to try to insert to the right periphery of the DP an adjective that is not suitable for predication. This is the case for thematic adjectives, which cannot be predicative, as the ungrammaticality of (36a) shows. Indeed the result is not felicitous when the AP appears after the noun complement (36b):

(36) a. *L'invasion de Jupiter fut martienne.
the invasion of Jupiter was Martian
b. *L'invasion brutale de Jupiter MARTIENNE
the invasion brutal of Jupiter Martian

That post-complement APs are predicative is further supported by the fact that APs that cannot be used predicatively, as evidenced by (37a), cannot appear after N and its complements (37b), although they can appear pre- or postnominally (37c, d):

(37) a. *Questo motivo è principale.
this reason is main
b. *Questo è il motivo della sua partenza, PRINCIPALE.
this is the reason of his departure, main
c. Questo è il principale motivo della sua partenza, PRINCIPALE.
this is the main reason of his departure, main
d. Questo è il motivo principale della sua partenza.

Note in passing that the fact that when two adjectives appear in postnominal position the second one is predicative might explain the restriction in Romance on the number of (intonation-free) postnominal adjectives, which seem to be limited to two (this is not discussed in Cinque's article):

(38) a. Une émission chargée intéressante
a program contentful interesting

b. Une émission tardive intéressante
a program late interesting

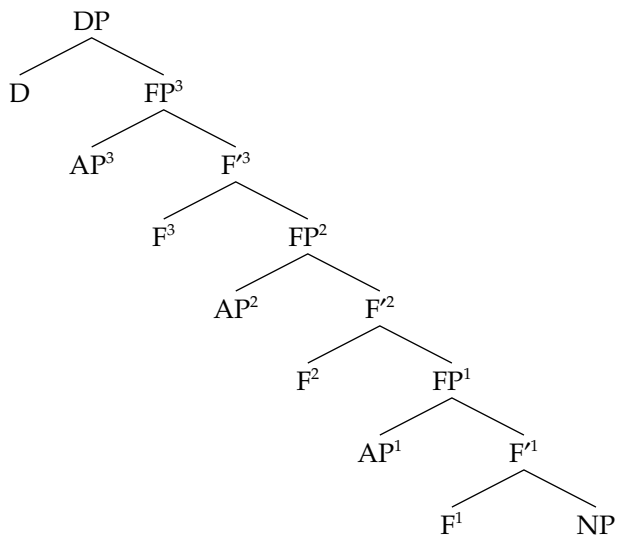
c. Une émission tardive chargée
d. *Une émission tardive chargée intéressante

The ungrammaticality of (38d) would follow if adjectival predication, as is the case for the subject-verbal predicate relation, were a 'one-time' process.

6.3 Adjunction vs. specifiers and serialization of adjectives

While Valois (1991a, 1991b, 1996) proposes that APs are adjoined to X^{max} projections within DP, Cinque argues that they should rather appear in specifiers of some DP-internal functional projection, as illustrated in (39) (omitting other potential functional categories, such as NumP):

(39)



According to Cinque, there are both conceptual and empirical reasons to prefer this approach to the adjunction analysis. On the conceptual side:

(i) There is an unmarked *serialization* of the different classes of APs:

poss > cardinal > ordinal > speaker-oriented > subject-oriented > manner/thematic

Example (partial):
Le *sue due altre probabili goffe* reazioni *immediate* alla tua lettera
his two other probable awkward reactions immediate to your letter

poss > cardinal > ordinal > quality > size > shape > color > nationality

Example (partial):
(I) *suoi due altri bei grandi quadri tondi grigi*
his two other beautiful big pictures round gray

Adjunction being generally free, Cinque contends that the strict ordering is better rendered if encoded into the tree structure.[8]

(ii) There is a clear limit on the number of uncoordinated attributive APs, a fact that is better rendered by imposing a limit on the number of functional projections available in DP rather than limiting the number of adjunctions (although Cinque does not present an analysis of this).

(iii) The specifier analysis does not need to stipulate that APs are base-generated to the left of N, since this follows from the fact that specifiers are always on the left in Romance and Germanic.

Two empirical arguments for this approach are presented: First, APs with complements cannot appear on the left of N (a fact that was attributed to Heavy-AP Shift by Valois (1991a)), as is generally the case for XPs on a left branch:

(40) a. Il suoi fedeli (*alla causa) sostenitori.
the their faithful (to the cause) supporters
b. Il suoi sostenitori fedeli alla causa.

Second, as we saw in section 2, there is a cross-linguistic regularity in adjective ordering, whether adjectives precede or follow the noun. Again, this would follow from encoding serialization into the tree structure.

7 Challenges for the derivational analysis and semantics-based approach

There are outstanding issues that the derivational approaches must address. Bouchard (1998) points out a few in relation to the distribution and the scope of right-adjoined adjectives, as well as to interpretation differences between prenominal and postnominal adjectives in French. The main points are discussed below.

Possibly the most important issue that the derivational approaches raise is the mirror image distribution of adjectives one finds when comparing two languages like French and English. Indeed, when looking at classes of adjectives other than those found in event nominals, English adjectives are on the surface ordered in a way that mirrors the ordering found in French: whereas French postnominal adjectives exhibit the order N-ADJ1-ADJ2, English has ADJ2-ADJ1-N. If N-movement were the only factor responsible for the relative distribution of N and ADJ in these two languages, this is unexpected (French, for instance, should be $N\text{-}ADJ_2\text{-}ADJ_1$). In this connection, Lamarche (1991; see also Bouchard 1998) provides the following contrasts:

(41) a. A huge orange fruit
b. Un fruit orange énorme

(42) a. A delicious cold chicken
b. Un poulet froid délicieux

Lamarche's objection is that, if adjectives were generated prenominally in the same fashion in both French and English, with N-movement in French accounting for word order differences between the two languages, we should obtain: **Un fruit énorme orange* instead of (41b). On the basis of such examples, his conclusion is that free adjunction to the right of N in French is a more appropriate analysis than the derivational account (but recall Cinque's objections to free adjunction). If correct, this constitutes a serious problem for the derivational analysis. However, Cinque objects that (41b) is nonetheless compatible with the derivational analysis if the second AP (*énorme*) is interpreted predicatively, and as such is adjoined to the right periphery of NP. In fact, in their attributive interpretation, the same two French adjectives are ordered exactly as in English (partial N-movement being responsible for the ADJ_2-N-ADJ_1 order):

(43) Un énorme fruit orange

Bouchard (1998) objects to Cinque's analysis on the basis of two types of examples. Consider first (44):

(44) a. Le ministre de la défense *français*
the Minister of defense French
'The French Minister of Defense'
b. Le ministre de la défense est *français*.

In this example Bouchard claims that the postnominal (post-complement) adjective appears to receive an interpretation that seems to differ from the one it receives in the predicative construction (44b) (44b refers to the person's nationality more specifically).

The second type of example concerns the relative scope of adjectives. Bouchard's analysis (see below) predicts that, in French, when two adjectives appear postnominally, the rightmost adjective has scope over the other one. This is the case in (41b, 42b) for instance.

In the derivational approach, this is attained by allowing adjectives to be adjoined to the right periphery of the DP and be interpreted predicatively (Cinque 1994; Bernstein 1993b; Sleeman 1996).

Bouchard's objection to this option is based on the following examples:

(45) a. La distribution de pétrole américaine
b. *La distribution fut américaine.

While in (45a) the adjective can appear on the right periphery of the DP, (45b) shows that it cannot receive a predicative reading.

Although this issue may require further investigation, there seems to be a way to look at the two sets of examples that is till compatible with the derivational approach. The idea is that in both (44a) and (45a), the noun and its complement can be interpreted as a compound.[9] If this is correct, both examples simply represent cases of N-movement past an attributive adjective.

That the noun and its complement form a compound is probably more evident given the absence of a determiner before the noun *pétrole* in (45a). In fact, addition of a determiner results in ungrammaticality:

(46) *La distribution du (= de le) pétrole américaine

Returning to the mirror image issue, one last remark is in order. There have been additional claims that the mirror image in (41–42) is only apparent. For instance, in Laenzlinger's (2000) analysis of adjective ordering in French, (41b) could be derived from (43) through XP-movement of the string *fruit orange* to the left of the adjective *énorme* (much like Cinque's 1999 account of adverb ordering VP-fronting).[10]

Turning to Bouchard's (1998) account in more detail, which will lead us to discuss one last apparent challenge to the derivational analysis, his goal is to propose an analysis of the differences between French and English illustrated in the previous sections without recourse to N-movement. His approach is representational and relies on semantic rather than syntactic factors. The analysis is couched in Chomsky's (1995c) Minimalist Program. Here we briefly outline Bouchard's proposal and look at and discuss some of the empirical arguments behind it.

The main aspects of Bouchard's analysis are the following (it should be noted these premises play a role in other syntactic differences between French and English):

- in French, number is in D and has scope over all ADJ;
- in English, number is a morphological morpheme on N and has scope over elements on its left;
- *Number Scope Condition*: the element that codes Number in a nominal expression must have scope over the elements that determine the extensity of the expression (complementless adjectives are such elements).

Since number in D governs everything to the right within DP in French, adjectives may be adjoined higher than N, allowing them to be right adjoined to NP in postnominal position. In English however, adjectives are forced to appear in prenominal position attached to N since Number is on N and governs to the left.

Adjectives in French may also appear in prenominal position, some may even appear in either pre- or postnominal position. According to Bouchard, the relative position of the noun and the adjective is semantically based: prenominal

adjectives have a non-intersective reading while postnominal adjectives are intersective. The following example illustrates this:

(47) a. Une ancienne église
an old church
b. Une église ancienne
a church old

In (47a), the denotation is that of a former church while in (47b) it is that of an old church. In other words, the adjective may only be non-restrictive in (47a), while it may only be restrictive in (47b). Bouchard (1998) accounts for this difference in meaning by positing two different base-generated adjunction sites for adjectives (a consequence of his Internal Merging condition): prenominal adjectives are adjoined to N, while postnominal adjectives are adjoined to NP. As such, prenominal adjectives modify components internal to N, while postnominal adjectives modify all components. In other words, in (47b) a property is assigned to the set of individuals determined by the noun, while in (47a) it is not.

According to Bouchard, the contrast in (47) constitutes another challenge to the derivational analysis given the impossibility for N-movement by itself to account for the difference in meaning between the (a) and (b) examples. In fact, there clearly is no plausible reason why N-movement should have an impact on the meaning of the adjective in (47). Bernstein's (1993b) response to cases such as (47) is to posit two homophonous adjectives that are base-generated in different positions within the DP. In (47a) *ancienne* is an attributive adjective past which the head-noun has moved, while in (47b) the homophonous adjective is base-generated in a position that is higher than the target of N-movement.

It is worth observing that adjectives in event nominals, the analysis of which constitutes one of the main arguments for N-movement, do not exhibit the same meaning differences based on their surface position. Consider (48):

(48) a. L'invasion brutale de l'Albanie
b. La brutale invasion de l'Albanie

Although Cinque (1994) observed that the interpretation of the adjective in (48a) is that of a manner adjective while (48b) is that of a subject-oriented adjective, to us the difference in interpretation is minimal and certainly not nearly as sharp or along the lines of (47a, b), i.e., that of a non-restrictive vs. a restrictive interpretation.

Bouchard's analysis is presented in reaction to other objections of a conceptual nature to Cinque's (and the general derivational) analysis. Among others, Bouchard questions the nature of the functional categories whose specifiers contain the AP, as well as the mechanisms regulating partial N-movement, i.e., how far can the noun move, and how does it 'know' when to stop so that the correct word order is derived? We refer the reader to Bouchard's article for a more detailed discussion of the relative merits of the derivational and the representational analyses.

8 Conclusion

After discussing briefly the two main adjective types, i.e., predicative and attributive adjectives, the former further splitting into the intersective and non-intersective type, we looked at some early accounts of the ordering of adjectives problem. We then examined in detail two areas of research that have been developed recently concerning the syntax of adjectives: the ordering of adjectival strings per se, and the relative order of the adjective and the noun it modifies. Attempts at providing a principled account of adjective ordering have taken two different approaches: a derivational account, and a representational account. The derivational analysis derives the various positions of the noun and the adjective via N-movement (partial in the case of Cinque 1994), while the representational analysis is based on semantic features. There is a longer discussion than that presented here of the relative merits of the two analyses in Bouchard's (1998) paper. For instance, Bouchard's objections concerning the nature of the functional categories in Cinque's analysis, as well as the nature and constraints of partial movement, are valid points that must be addressed in further research. But we think that it is important to point this out: It seems that the debate might involve two independent considerations, i.e., (i) the assumptions behind the analyses of adjective distribution per se, and (ii) the arguments for N-movement. To reframe the problem, we might formulate the following questions: (i) Is the derivational account sufficient to account for *all* aspects of the syntactic distribution of adjectives? (ii) Are the arguments for N-movement (especially those based on the distribution of adjectives in event nominals, which extends to the distribution on DP-internal arguments) still valid?

NOTES

Thanks to two anonymous reviewers for useful suggestions.

1 According to Kamp (1975), predicativeness is described (informally) by the following syllogism:

(i) All Xs are Ys.
Z is a member of X.
Therefore Z is a member of Y.

Regarding adjectives, those for which the conclusion of (i) is true are predicative, others are not (they are attributive). According to this assumption, *white* in (ii) is predicative, but *large* is not:

(ii) All mice are mammals.
Freddy is a white mouse.
Therefore Freddy is a white mammal (true).
All mice are mammals.

Freddy is a large mouse.
Therefore Freddy is a large mammal (false).

2 This, of course, refers to stringed adjectives, that is, it exludes adjectives linked together by coordinate (e.g., and) or logical (e.g., but) conjunctions, adjectives enumerated with comma intonation, or adjectives that appear in sequences where one of them carries contrastive stress. It also only refers to 'morphological adjectives', as some languages, e.g., French, in some cases use different devices to qualify an object (e.g., *a wooden chair, une chaise [$_{PP}$ en bois]*).

3 Previous surveys had already established some semantics-based ordering of adjectives. Crystal (1971) reports that the order *size-age-color-nationality-material* is the norm in English, as exemplified in (i):

(i) Those large new red English wooden chairs.

However, he observes some cases where adjectives are interchangeable, as in (ii):

(ii) a. the cheap comfortable chairs
b. the comfortable cheap chairs

Seiler (1976) has a slightly different view: He claims that anaphoric adjectives precede all others and are followed by *affective-evaluating-color-material* adjectives. This is illustrated in (iii):

(iii) The aforementioned marvelous beautiful red wooden statue.

Other studies mentioned by Hetzron include Quirk and Greenbaum (1973), Sussex (1974), and Dixon (1977). However, Hetzron points out that these are either not systematic or limited to English.

4 The structure is actually more elaborate than (15). For instance, on top of the theme and agent arguments French DPs also allow the presence of a possessor argument (see Valois 1991a, 1991b, 1996 for details). In addition, Valois (1991a, b) advocates a 'layered' structure similar to that proposed by Sportiche (1990) which was shown to have some consequences with respect to the syntax of French sentence negation, *wh*-pied-piping (Moritz and Valois 1994) (see chapter 50), and extraction out of DP.

5 There seems to be a limitation on the number of postnominal adjectives. We return to this in section 6.2.

6 Bernstein (1993b) argues on the other hand that the pre- and postnominal position of an adjective results from the capacity of some adjectives to adjoin to different DP-internal position.

7 The right order of prenominal adjectives (e.g., *la probable complète invasion de Jupiter* versus **la complète probable invasion de Jupiter*) is achieved in Valois (1996) through a more elaborate structure of DP (as proposed in Sportiche 1990). For instance, *invasion* here is an event nominal which may select both an internal (here Jupiter) and an external (not realized) argument. Each requires its own maximal projection layer, as in (i):

(i) $[_{DP}\ [_{NumP}\ [_{NP^*}\ [_{NP}$ invasion de Jupiter]]]]

The adjectives *complète* and *probable* are adjoined to NP and NP* respectively.

(ii) $[_{DP}\ [_{NumP}\ [_{NP^*}$ probable $[_{NP^*}\ [_{NP}$ complète $[_{NP}$ invasion de Jupiter]]]]]]

On its way to Num, the noun first moves to the head on NP*, N*. *Complète* adjoins to the left of the noun at this point, forming the complex *[complète-invasion]*. This newly formed complex then moves to Num, followed by adjunction of *probable* to its left, yielding the right order of prenominal adjectives: *[probable [complète-invasion]]*.

One residual problem with the analysis is mentioned by Valois but no solution is offered at that point: The N-movement analysis he presents predicts that two or more postnominal adjectives should be possible, whereas they are not:

(iii) *L'invasion probable complète de Jupiter

Cinque's (1994) analysis (presented in section 6) offers a solution to this problem.

8 Although one might object that adjunction could be regulated by some (semantic) principles which would generate the right ordering, for example in a Montague-style grammar.

9 Thanks to an anonymous reviewer for the suggestion.

10 See also Duffield (1999), Cinque (2000), Shlonsky (2000a).

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4 Adverb Classes and Adverb Placement

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1 Introduction

Adverbs are one of the familiar categories of traditional grammar. Traditional terminology suggests that adverbs are modifiers of the verb (Lat. *adverbium*, Gr. *epírrhema*). The traditional view has to be improved in at least two respects. First, adverbs modify not only verbs, but also predicates belonging to other syntactic categories (adjectives, as in *very smart*, other adverbs, as in *very soon*, etc.). Second, and even more importantly, not all adverbs can be interpreted as predicate operators (see section 3 for a discussion of this point). Sentence adverbs (for instance, 'modal' adverbs such as *probably*) are better conceived of as sentence operators, whereas subject-oriented adverbs such as *rudely* roughly correspond to two-place relations between individuals and events.[1] Temporal adverbs of frequency (such as *often*, *always*) have been interpreted as unselective operators (starting from Lewis 1975's seminal work) or even as generalized quantifiers (cf. De Swart 1993). The inescapable conclusion is therefore that different adverbs are projected into different semantic objects: the interpretive notion of 'predicate modifier' does not provide us with a criterion of classification sufficient to understand what all adverbs have in common.

Morphologically, matters are certainly not less intricate. Descriptively, adverbs can be classified into lexical and derived adverbs. Lexical adverbs can be morphologically related to adjectives (as witnessed by English *hard*, *fast*, etc.), to nouns (*yesterday, tomorrow,* etc.), to prepositions (*downstairs*, *before*, etc.) and arguably even to determiners (*now, there*, etc.).[2] Derived adverbs (*-ly* adverbs in English, adverbs formed by means of the Latin suffix *-mente* in Romance) are all adjectivally related adverbs, but they belong semantically to distinct classes (*probably* is a sentence operator, whereas *rudely,* at least in one of its possible readings, is a predicate operator). Therefore, it is difficult to see how morphological criteria could be helpful in our attempt to find a unitary characterization for adverbs.

Adverbial syntax, on the other hand, is notoriously a fairly complex domain. Traditionally, the parallelism with adjectival modification in the nominal domain and the possibility for adverbs to occur 'stacked' (*John repeatedly viciously attacked Mary*), as adjectives do (see chapter 3), has been held to imply that adverbs give rise to adjunction stuctures.[3] The view that (adjectival and adverbial) modification essentially involves adjunction is still widely shared, as we will see in the following sections. However, at least two problems should be immediately mentioned in this connection. First, many adverbs are clearly selected/subcategorized by the verb (as in *The job pays us handsomely, John worded the letter carefully*), and this fact has often been assigned a central theoretical relevance.[4] Second, it is far from obvious that the complex facts characterizing adverbial syntax can be derived by means of principled constraints on adjunction.[5] A careful examination of the literature shows in fact that the issue of adverbial modification fairly exceeds the domain of base-generated adjunction and significantly overlaps with issues concerning the status of implicit and optional arguments and the parallelism with optional oblique arguments such as benefactives, instrumentals, locatives, and so on.

These first considerations about the syntax of adverbs acquire a particular importance if viewed in the light of their ambiguous categorial status (which will be discussed in detail in section 2). It has been observed in the literature (cf. especially Larson 1985a) that the distribution of adverbs can be hardly made dependent on some common set of syntactic features, corresponding to a well-defined syntactic category, as is arguably the case with the other lexical categories (N, V, A, and presumably P). Adverbs may be characterized as a collection of phrasal categories exhibiting similar distribution (and being hopefully assigned some common semantic function, such as that of 'modifier'). However, it is far from obvious that CPs (as in *because I am sleepy*), PPs (as in *at 4 o'clock*), APs (as in *hard*) and NPs (as in *that way*) constitute a natural class under any generally accepted set of syntactic features. This makes it hard to understand why they tend to be distributionally equivalent when occurring as adverbials, under common assumptions concerning the relation between semantic and categorial selection.

These considerations might lead to interesting general conclusions along the following lines. Adverbs (and more generally 'adverbials', that is, phrasal categories

of different sorts roughly performing the same function as lexical adverbs) constitute a still largely unsolved puzzle concerning the form of mapping between syntactic and semantic categories. The problems are more serious than those that arise with other lexical categories (the fact, for instance, that the very same syntactic category may be mapped into two or more distinct semantic categories, or the related fact that different syntactic categories may be mapped into the very same semantic object). The additional problem concerns here the difficulty to understand which set of syntactic features is involved in the mapping (as we have seen, the distributional evidence does not provide us with the desired answer), and the lack of agreement among scholars as to the precise definition of the co-domain of the mapping function (are adverbials to be uniformly regarded as predicate modifiers, or are they to be assigned to a large variety of semantic objects, ranging from individuals to sets to sets of sets, just abstracting away from 'intensional' complications?). Given this state of affairs, it is really not surprising that the syntax of adverbs (and, more generally, the syntax of modification) still represents one of the most controversial domains of research, posing essential challenges to core modules of syntax such as the theory of categorial constituency, so that ". . . we still have no good phrase structure theory for such simple matters as attributive adjectives . . . and adjuncts of many different types" (cf. Chomsky 1995c: 382, n. 22).

Nevertheless, we hope that the following sections will show to the reader that research in formal linguistics has greatly contributed, over the past 30 years, to our understanding of important properties of adverbs and adverbial phrases.[6] Our discussion will be fairly interdisciplinary, partly reflecting the different perspectives from which the issue of adverbial modification has been approached along the years. In section 2, the categorial status of adverbials will be discussed, in the attempt to clarify whether the presence of adverbs in the lexicon of a given language requires the enrichment of the commonly assumed set of syntactic categories and/or the commonly accepted set of categorial features. Section 3 deals with the main attempts to classify adverbials into several distinct classes, mainly based on interpretive criteria and revolving around the mapping from syntactic representations to 'logical' forms which provide a suitable 'compositional' input for interpretation. In section 4 it will be shown that the issue of syntactic placement of adverbials is largely underdetermined by their partition (on semantic grounds) into different classes. Section 5 will face the issue of movement (how it relates to adverbial syntax): we will discuss the peculiar properties of *wh*-movement when applied to adverbs/adjuncts of several types and the status of the argument/adjunct asymmetry (see chapter 64), the possibility that adverbs undergo other sorts of movement and the use of adverb placement as a diagnostic for the application of different sorts of syntactic processes, with special reference to head-movement processes. In section 6 the issue of adjunction and some related theoretical issues will be handled. Finally, in section 7, an attempt will be made to illustrate the range of semantic ambiguity of adverbials by means of a detailed examination of the behavior of different sorts of temporal adverbs.

2 The categorial status of adverbs

As emphasized in the introduction, this is one of the long-debated issues in adverbial syntax. It is easy to observe that handbook-level classifications of syntactic categories generally tend to overlook the presence/role of adverbs, under the (often) implicit assumption that lexical adverbs are relatively easily amenable to the most common syntactic categories (A, N, and P). A necessarily condensed survey of the relevant literature reveals that this attempt has been pursued in two main directions.

On the one hand, adverbs occurring in sentence-final position (as in *John ran downstairs*) are easy to interpret as 'intransitive' (that is, objectless) prepositions, as confirmed by the fact that many of them can behave as normal prepositions (*down the stairs*) and/or are morphologically related to prepositions (Klima 1965; Jackendoff 1972). This strategy is at first sight corroborated by the parallel treatment of postverbal particles (as in *John carried up the trunk*) as transitive prepositions also admitting an intransitive use, in terms of 'directional' adverbs with virtually the same meaning as when they have an object (Emonds 1985: 252ff.; see also chapter 76). However, it is hard to see how adjectival adverbs such as *long* or *fast* might be inserted in this category (Jackendoff 1972: 63). Similarly, the issue arises of *-ly* adverbs occurring sentence-finally as selected by the verb (as in *John dresses elegantly*): are they to be added to the inventory of (intransitive) prepositions or are they transformationally related to the sentence-internal position (see section 3) where they are normally generated if not selected by the verb (as in *John elegantly solved the problem*)? Either solution does not appear particularly natural, even though the transformational analysis is more readily discarded on strictly theoretical grounds (it would unnecessarily increase the complexity of subcategorization rules, Jackendoff 1972). The variety of interpretations and the complex distribution of *-ly* adverbs has constituted in fact the main source of evidence against the attempts to reduce adverbs to more primitive syntactic categories, as we will see in a moment.

The case of adjectivally related adverbs such as *fast* and *hard* has led some scholars to the hypothesis that even non-selected adverbs are uniformly categorized as A(djectives), say with a defective distribution (Emonds 1985). In other words, *-ly* is considered a suffix inflectional on A (tentatively accounting, under the assumption that English admits only one inflection per word, for the fact that comparative/superlative affixes cannot be added to *-ly* adverbs: **elegantlier*), the crucial evidence being provided by the cases where the adverb is morphologically indistinguishable from the related adjective. As for the case of underived adverbs (such as *seldom*, *often*, etc.) which do not occur in noun-modifying position, it has been argued that they may be As as well, on the grounds of the observation that they exhibit the same specifier system as adjectives, as can be seen in *very seldom*, *how often*, etc. The position that unselected adverbs are uniformly As from a categorial perspective is somehow reminiscent of the hypothesis (dating back to at least Katz 1964) that alternations such as *good/well*

constitute suppletive pairs of the abstract underlying form (A, EVALUATIVE), the different surface realization being the result of case-assignment to the adjectival member of the pair (the comparative/superlative forms *better* and *best* are actually indistinguishable). A natural development of this basic insight would be to assume that APs and adverbial APs differ in that the former, but not the latter, are case-marked. It has been observed that there are cases where adjectival and adverbial realization appear to be in free alternation (Emonds 1985: 58, n. 30).[7] Pursuing this line of research would obviously require versions of theta *and* case theory which are able to correctly derive the fact that caseless APs are interpretable only in some well-defined positions (the adverbial use being strictly confined to these positions). Alternatively, one might simply consider some extension of the case filter to true APs, with adverbs belonging to a syntactic category other than A. This possibility leads us to examine the radical alternative to the 'reductionist' approaches considered so far, based on the assumption that adverbs constitute a primitive syntactic category.

This alternative is explicitly developed in Jackendoff (1972), where adverbs are assumed to be lexical categories performing, within the verbal domain, the same function performed by adjectives within the nominal domain. The parallelism between adverbs and adjectives is particularly striking on distributional grounds: adverbs surface between subject and main verb (in the so-called 'auxiliary position', identified with the underlying position for *-ly* adverbs, as in *John easily won the race*), exactly as adjectives surface between the determiner and the noun (*the easy solution*). Derived nominals and gerunds provide the most suitable context for the parallelism to be detected (*John's rapid reading of the letter* vs. *John's rapidly reading the letter*) (see chapter 30). The leading hypothesis is that there are two distinct base rule schemas for adjectives and adverbs, roughly assigned the following form (Jackendoff 1972: 60):[8]

(1) N′ (Adj) – N – Complement

(2) V′ (Adv) – V – Complement

The rule admits a more abstract formulation, in which the categorial labels N/V are replaced by the common symbol X (referring to the sets of syntactic features shared by N and V), and Adj/Adv are replaced by the common symbol Y (referring to the set of features shared by adverbs and adjectives): in this way it is possible to capture the distributional similarity emphasized above by simply expressing the generalization that whenever the feature +V is assigned to X the feature +Adv will be assigned to Y (yielding the base rule schema in (2)). It is worth noticing that these distributional facts (whose theoretical relevance is confirmed by the observation that adjectives that only occur prenominally are paralleled by adverbs exclusively occurring in auxiliary position, as in *the mere truth* vs. *John merely said the truth*) could not be easily given formal expression in a grammar where adverbs are derivative categories transformationally related to adjectival sources (as was the case, in the 1960s, for the approaches inspired by

the Katz-Postal hypothesis, according to which all semantic information is encoded in underlying structure). The fact that a sentence such as *John easily won the race* can be assigned an underlying structure roughly equivalent to *It was easy for John to win the race* does not offer any clue as to why adjectives and adverbs should exhibit the distributional symmetry tentatively captured in (1–2). Criticism of the idea that adverbs and adjectives are transformationally related is also based on the observation that adverbs of certain classes (such as *merely, readily, actually*, etc.) cannot be derived from adjectival sources (*Albert is merely being a fool / *it is mere that Albert is a fool*) and on the hopeless variety of the adjectival sources arguably involved (to be reviewed in section 3 while discussing the variety of interpretations assigned to different classes of adverbs). It seems reasonable to conclude that adverbial syntax constitutes one of the domains of research in which the complex and idiosyncratic rules resorted to in generative semantics (typically involving deletion of the superordinate clause and insertion of lexical material in the lower clause) proved not only difficult to handle but also severely inadequate empirically. A case in point (beyond the general difficulty of attaining a real simplification of the lexicon due to the unavailability of adequate adjectival sources for many adverbs) is provided by the analysis of adverbials such as instrumental PPs. The attempt to link sentences such as *John sliced the salami with a knife* to sources involving *use* in the deleted higher clause (*John used a knife to slice the salami*) has been argued at least as early as in Bresnan (1969) to be problematic in view of cases such as *John used a knife to slice the salami with*.

It might be argued that *derived* adverbs and a subset of *lexical* adverbs are adjectival, with other adverbs distributing over various syntactic categories, as is the case for prepositional adverbs occurring in sentence-final position (see above) and for bare NP adverbs, like the *now/then* and *here/there* pairs discussed in Emonds (1985) and the temporal, locative, directional, and manner bare NP adverbs discussed in Larson (1985a) (*sometime*, *someplace*, *that direction*, *that way*). However, this analysis would still be in need of explaining the central fact of adverbial syntax, that is, the distributional symmetry observed among 'adverbial' constituents belonging to several syntactic categories. Bare NP adverbs, for instance, certainly exhibit distributional peculiarities, in that they can occur in specifier positions which are restricted to NPs (as in *yesterday's refusal*, Larson 1985a: 598). They also exhibit, however, a distributional behavior quite similar to that of other 'adverbial categories': they occur in subcategorized position (as in *Peter worded the letter that way/tactlessly/in a thoughtful manner*), co-occur with the intensifier *right*, as adverbial PPs and adverbial clauses do (*I saw John right then/near the door/after you did*), and can be easily coordinated with adverbial categories of a different syntactic category (*They will be arriving Thursday and/or subsequently*). The obvious expectation is that constituents sharing, to a significant extent, the same distributional behavior, will also be endowed with the same categorial feature(s). On the other hand, as already emphasized, CPs, APs (or AdvPs), PPs, and NPs hardly constitute a natural class under any generally accepted set of syntactic features. As observed by Larson, the temptation might

be strong to postulate 'hidden' categorial structure for which it is difficult to find independent evidence, as in Bresnan and Grimshaw's (1978) account of English free relatives (see chapter 27), where bare NP adverbs are analyzed as PPs headed by an empty head. A better solution consists in the assumption that distribution is not an exclusive function of category membership, as was the case in structural linguistics and in earlier phases of generative linguistics. Distribution is rather the product of the interaction of different modules of syntax (essentially, theta theory and case theory). This approach is particularly natural if it is assumed that predicates may assign 'adverbial theta-roles' to arbitrary categories and that distributional constraints affecting certain adverbial categories (like bare NP adverbs) essentially depend on case considerations.[9] Potential problems for this approach concern the feasibility of the notion of 'adverbial theta-role' (based on the analogy with the theta-roles assigned to other optionally selected constituents such as benefactives), especially in view of the fact that adverbial categories are arguably mapped into a relatively large variety of semantic objects (section 7), and that the nature of the mapping is largely independent of their categorial specification.

Summarizing, there seems to be agreement that the notion 'adverb' is largely dependent on thematic and case-theoretic considerations and cannot be simply reduced to a categorial primitive. Phrases belonging to different syntactic categories (NPs, PPs, CPs) are easily assigned the same semantic function and the same syntactic distribution as 'lexical' adverbs. As for the latter, there seems to be some consensus that the 'reductionist' approach (all adverbs are Ps, As, or Ns) cannot be pursued up to its extreme consequences, and that mention of the category 'Adverb' might well be unavoidable. Interestingly, reductionist approaches tend to discharge the burden of explanation on specific versions of theta and case theory.

3 Adverb classes

Descriptively, adverbs of different sorts are distinguished on intuitive meaning grounds. In the literature, reference to adverbs often makes use of such primitive labels as manner adverbials, locative adverbials, temporal adverbials (further distinguished into punctual, durative, frequency adverbs, etc.), means and degree adverbs, reason adverbials and so on. At a more abstract level, the classification task is intended to provide generalizations which might be relevant for a satisfactory formal characterization of adverbs, on syntactic and/or semantic grounds. Adopting a semantic or a syntactic perspective may lead indeed to quite different results. Here, we will consider the two perspectives separately, comparing them only at a later phase.

Semantically, adverbs have been traditionally partitioned into predicate operators and sentence operators (roughly corresponding to the familiar distinction into VP-adverbs and S-adverbs). S-adverbs are assumed to take scope over the whole sentence, as is clearly the case with modal adverbs such as *probably*,

certainly, presumably, etc., whose semantic structure roughly coincides with a copula clause containing *Adj* (that is, the adjectival counterpart of the modal adverb) and taking as its unique argument the sentence resulting from removing the adverb (*Frank is certainly avoiding us / It is certain that Frank is avoiding us*) (Jackendoff 1972: 69). However, the interpretation of S-adverbs as uniformly belonging to the syntactic category t/t (categories combining with sentences to yield sentences) is clearly deemed to fail, since many other sorts of S-adverbs, such as evaluative adverbs (*fortunately, happily*, etc.), domain adverbs (*politically, botanically*, etc.), and pragmatic adverbs (*frankly, honestly*, etc.) seem to resist this straightforward semantic treatment.[10] Jackendoff's Type I adverbs ('speaker-oriented adverbs') are actually interpreted as involving (at least in some cases) a two-place adjectival predicate, whose first argument is the sentence resulting from removing the adverb and whose second argument is an NP referring to the speaker: ADJ (SPEAKER, f(NP^1, . . . , NP^n)), where ADJ is the adjectival counterpart of the adverb and f(NP^1, . . . , NP^n)) expresses the relation between the verb and its strictly subcategorized arguments. As a consequence, the appropriate paraphrase for a sentence such as *Happily, Frank is avoiding us* (containing an evaluative adverb) will involve a two-place adjective, as in *I am happy that Frank is avoiding us*. Matters are even more complex in the case of speech-act modifying or pragmatic adverbials, which seem to modify an implicit speech-act predicate: the appropriate paraphrase for *Botanically, a tomato is a fruit* will presumably be something equivalent to *In making the following assertion, I speak botanically: A tomato is a fruit*. What seems to be at stake here is that "we do not use the proposition expressed by the modified sentence as input to our adverb: rather, the adverb helps determine what proposition that sentence expresses. And this then makes it impossible to treat sentence adverbs of this kind as semantic functions whose arguments are propositions expressed by the modified sentences" (McConnell-Ginet 1982: 176). In other words, it seems reasonable to conclude that Jackendoff's class of 'speaker-oriented adverbs' is sufficient to show that the interpretation of S-adverbs in terms of sentence operators is severely inadequate. As for the nature of the mapping between sentences containing adverbs and the adjectival structures purported to express their interpretation, it is important to emphasize that Jackendoff interprets it in terms of 'projection rules' belonging to the interpretive component (against the view of generative semanticians, contending that adverbial sentences and their adjectival counterparts are transformationally related).[11] The role of syntax consists in constraining the application of these rules, since each of them applies to a well-defined set of structural descriptions: for instance, the projection rule mapping speaker-oriented adverbs into two-place adjectives will not apply to syntactic configurations where the adverb is generated too low in the structure, as in **George will be happily finishing his carrots*. Of course, interesting issues arise concerning the compositional nature of the interpretation procedure, issues to which we will return below.

Let us consider now the case of VP-adverbs (that is, adverbs allegedly interpreted as predicate operators). The traditional view in formal semantics (established in Montague's classical contribution and defended in largely influential

successive work, cf. especially Thomason and Stalnaker 1973) is that VP-adverbs, typically instantiated by manner adverbials such as *slowly*, correspond to predicate functors, that is, categories of type <<e,t>, <e,t>>, which apply to predicates to yield predicates (see Heny 1973 for a discussion of this approach). A well-known shortcoming of this approach is that it fails to derive arguably valid logical entailments such as *John walks slowly / John walks* as a matter of logical form, requiring the introduction of specific meaning postulates (that is, the validity of this kind of logical entailment has to be independently established, in principle, for each single predicate). It is worth noticing that the set-theoretic treatment of VP-adverbs as predicate functors appears to constitute a suitable formalization of Jackendoff's semantic structure for manner, degree, and time adverbs (Type III adverbs, Jackendoff 1972: 70–71). The semantic structure associated to manner adverbs by projection rules is roughly represented as [f + ADV] (NP^1, . . . , NP^n), expressing the fact that the adverb can be interpreted as adding a lexically determined set of 'semantic markers' interacting with the set of semantic markers corresponding to the lexical meaning of the verb, without altering its 'functional structure', that is, its selection properties.[12] Both approaches (Montague's and Jackendoff's) fail to characterize adverbial modification as essentially involving that the extension of the modified predicate is (properly) included in the extension of the original one – "that the set of those who talk quickly is a (probably proper) subset of the talkers" (McConnell-Ginet 1982: 162). That 'davidsonian' inferences of this sort actually hold has been repeatedly challenged in the literature: *He filled the tank halfway / He filled the tank* can hardly be viewed as a logically valid entailment, even though *halfway* qualifies as a VP-adverb according to the diagnostics proposed in Thomason and Stalnaker (1973), contrary to adverbials such as *allegedly* and *in a dream*, which have also been used in order to reject the davidsonian inference pattern (Parsons 1970; Montague 1974). However, it is widely aknowledged that inference patterns such as *John walks slowly, therefore he walks* fit quite well our pre-theoretical intuitions about adverbial modification. That the analysis of VP-adverbs as predicate functors can hardly be assumed to adequately formalize our pretheoretical intuitions about 'modification' is more clearly confirmed by the fact that this analysis cannot be satisfactorily developed in purely extensional terms. In a model where 'those who talk' accidentally coincide with 'those who walk', we do not want to conclude that those who talk quickly necessarily coincide with those who walk quickly (McConnell-Ginet 1982: 162). The solution traditionally consists in assuming that the adverb takes the intension rather than the extension of the predicate as its argument (this way, alternative situations are considered (possible worlds) where the extension of the properties of walking and talking are differently defined, making it possible to differentiate the result of the application of the function 'quickly' to these properties). However, the intensional machinery does not really reflect the way we think about *why* quick talkers and quick walkers may well correspond to two distinct sets in situations where talkers and walkers coincide. Intuitively, what we would like to have is a semantics according to which ". . . a single situation can distinguish those walking quickly

from those talking quickly, even if walkers are all talkers and vice versa" (McConnell-Ginet 1982: 163). There is a clear sense in which 'intensions' are beyond the point here, but intensions are all we have to achieve the correct empirical result if VP-adverbs are to be treated as predicate functors.

As is well known, the davidsonian approach (Davidson 1967) is often understood as a research program intended to circumvent these counterintuitive intensional complications, by means of a non-standard formalization of first-order logic. Events are entities and predicates contain an additional argument position for events. Sentences such as *Sebastian strolled through the streets of Bologna at 2 am* and *Sebastian strolled through the streets of Bologna* are assigned the logical forms in (3) and (4), respectively, easily reducing logical entailment between the first and the second sentence to a matter of form (Davidson 1980: 166):

(3) ∃e(Strolled(Sebastian, e) and Through(e, the streets of Bologna) and at(e, 2am))

(4) ∃e(Strolled(Sebastian, e) and Through(e, the streets of Bologna))

The real issue, however, is that interpreting VP-adverbs as predicate functors (as in Montague grammar) or as predicates of events (as in Davidson's proposal) does not provide any viable approach for the analysis of slightly more sophisticated uses of VP-adverbs, as with the 'subject-oriented' reading of manner adverbs like *rudely, carefully*, etc. According to this reading, the adverb does not express the manner in which the action occurred, but rather expresses some judgment about the import of its occurrence (the latter reading is also qualified as 'stative', cf. Higginbotham 1989). Jackendoff (1972) assigns this reading the following semantic structure: ADJ(NP^i, $f(NP^1, \ldots NP^n)$), corresponding to a two-place adjective which takes as its first argument the sentence obtained by removing the adverb and as its second argument one of the elements selected by the verbal predicate. The canonical example *Louisa rudely departed* will therefore be assigned, in its subject-oriented reading, a paraphrase roughly corresponding to *It was rude of Louisa to depart* (McConnell-Ginet 1982; Higginbotham 1989).[13] Notice that a delicate compositionality issue arises here, since Jackendoff's paraphrase contains two instances of the subject NP (as a semantic constituent in its own right and as a sub-constituent of the sentential argument), whereas sentences such as *Louisa rudely departed* cannot be assumed to contain multiple occurrences of the subject NP (abstracting away, of course, from analyses which identify the deep structure of the sentences under scrutiny with their logical form, as in Lakoff 1965). McConnell-Ginet proposes a solution according to which Jackendoff's paraphrase should be modified by replacing the sub-constituent of the sentential argument which also occurs as first argument of ADJ with a variable. This can be made semantically straightforward by assuming that in the subject-oriented reading of *Louisa rudely departed*, the adverb is a daughter of the sentential node and applies to VP (interpreted as a predicate, that is, λxPx). Since predicates and open sentences of the form Px are both interpretable as propositional functions,

the semantics of *Louisa rudely departed* can be partially made parallel to that of its adjectival paraphrase *It was rude of Louisa to depart* (where the semantic variable is presumably provided by the subject PRO of the infinitival clause), without any need of unorthodox stipulations concerning the syntactic structure of *Louisa rudely departed*.[14] However, application of the predicate functor *rudely* to either V (yielding (6)) or to the whole VP (yielding (5)) will still be insufficient to differentiate the manner reading from the subject-oriented one, since the predicates to which the adverb applies in the two cases differ only structurally, but not semantically, and will therefore yield undistinguishable interpretations (McConnell-Ginet 1982: 161):

(5) (Louisa) (rudely (λx (x departed)))

(6) (Louisa) (rudely (departed))

Again, the predicate-operator approach needs to resort to meaning postulates in order to arrive at the correct empirical result: in this case, it seems necessary to assume two distinct predicate operators 'rudely$_1$' and 'rudely$_2$', one designating manner and the other attitude.

This is the reason why a number of scholars have rejected the predicate-operator approach, essentially by adopting non-standard assumptions about the argument structure of (verbal) predicates. According to one of these hypotheses, manner adverbs (presumably on a par with other 'circumstantial' adverbs such as locatives, instrumentals, etc.) are to be interpreted as 'optional' arguments of the verb. The main piece of evidence is provided by the fact, discussed in section 2, that adverbs, on a par with other 'optional' arguments such as 'benefactives', are sometimes obligatorily selected by the verb, as in *Joan behaved *(badly)* and *Most of the people treated Jill *(rudely)*.[15] Jackendoff's failure to satisfactorily connect the homonymous 'manner' and 'sentence-complement' (i.e., subject-oriented) adverbs is allegedly repaired by assuming that adverbs that are semantically equivalent to predicates with a sentential complement are actually connected (by means of some lexical rule) with genuine 'higher' predicates, modified by the adverb and regularly taking sentential complements. In this way, the subject-oriented interpretation of *Louisa rudely departed* will be traced back to structures of the form *Louisa acted rudely to depart* (McConnell-Ginet 1982: 173). Notice that this kind of approach is essentially based on assuming fairly complex lexical representations, with a high degree of lexical ambiguity: the manner reading depends on the possibility of adding an extra argument position in the theta-grid of *depart*, whilst the subject-oriented reading is based on the possibility that the adverb can be interpreted as the modifier of an implicit higher predicate. Conceptually, they seem to be motivated by the desire to replace the mechanical meaning postulates which would anyway be necessary within the predicate-operator approach with explicit assumptions about the nature of the lexical operations involved, in the hope that these assumptions will eventually lose their stipulative flavor. In the same vein, but more in the spirit of Davidson's

approach, Higginbotham (1989) proposes that the issue of adverbial modification reduces to how open positions in the lexical structure of lexical items are 'saturated' by means of the mechanism of thematic discharge (involving the operations of theta-binding, theta-identification, and autonymous theta-marking) developed in Higginbotham (1985), and originally applied to adjectival modification. The basic insight is that there are cases of adverbial modification, as in *Mary fatally slipped*, which exactly parallel the canonical adjectival modification in *a white ball*. Under the assumption that adverbs express relations about an event *e* and an individual *x*, and that the open positions in the lexical structure of the adverb can be 'discharged' by identifying them with those in the lexical structure of the verb, it is possible to arrive at the correct semantic paraphrase (*Mary slipped and it (the slip) was fatal to her*). Needless to say, the manner and subject-oriented readings of adverbs such as *rudely* require that the adverb under scrutiny be assigned more complex (and distinct!) lexical structures: as for the manner reading, rudely is interpreted as expressing a relation between situations and 'attributes' (the latter corresponding to the 'intensional' equivalents of predicates), in order to arrive at paraphrases like '*e* is a departure by Louisa and it is rude (for a departure by Louisa)'; as for the subject-oriented reading, the adverb is assigned the lexical structure of a three-place predicate (expressing a relation among situations, individuals, and attributes), in order to yield paraphrases such as 'the departure of Louisa was rude of Louisa, as classified by the very attribute of being a departure by Louisa'.[16] It is worth noticing that Higginbotham's analysis of adverbial modification can be interpreted as an attempt to provide the semantics for adjunction structures: adverbs, within the large variety of their interpretations, are consistently analyzed in terms of n-place relations crucially involving the event variable assigned to action predicates by Davidson.[17] This position has to be carefully kept apart from the view taken in McConnell-Ginet (1982) or Larson (1985a), where 'circumstantial' adverbs are interpreted, as emphasized above, as (optional) arguments of the verb. In section 7, we will see that the latter view is apparently supported by important facts concerning (a subset of) temporal adverbs. For the time being, we will limit ourselves to pointing out some intriguing facts concerning adverb-incorporation in Modern Greek, which also seem to militate in favor of the relevance of the argument status of adverbials (Rivero 1992). Rivero discusses the fact that manner and directional adverbs apparently incorporate into the verb in Modern Greek.[18] Incorporation is not limited to strictly selected adverbials (as in *Mary behaves badly toward her sister*) but significantly extends to normal cases of adverbial modification like *Mary turned it upside down*. The class of incorporators arguably includes 'aktionsart' adverbials such as *again* (intuitively referring to the internal properties of the event, much in the spirit of Verkuyl 1993's 'theory of aspectuality' and as such qualifying as VP-internal), but crucially excludes 'aspect' adverbials like *still* (apparently sensitive to the perfective/imperfective distinction) and 'tense' adverbials like *yesterday* and *often* (which are assumed to be adjoined to different functional layers such as AspP and TP). Under the assumption that these phenomena fall under the range of Baker's (1988a) analysis of incorporation in terms

of head-movement into a higher selecting head, Rivero uses them as a diagnostic for a distinction between adverbials which qualify as arguments of the verbal predicate (manner, directional, and aktionsart adverbs) and those that are adjuncts related to different functional projections (primarily aspect and tense adverbs). The results produced by the application of this diagnostic are sometimes highly intriguing. The classification cuts across the class of circumstantial adverbs: manner and locative adverbials are kept apart from temporal adverbials, suggesting that the latter are never interpreted as arguments, a result difficult to justify both on empirical and theoretical grounds (see section 7).

As emphasized at the outset, identifying different adverb classes is strictly dependent on the nature of the criteria which are applied. On essentially distributional grounds, the number of relevant classes can be easily shown to exceed the semantically motivated partition into VP- and S-adverbs, and the related quadripartition proposed in Jackendoff (1972).[19] There is a large amount of literature, concerning a relatively large typological domain, about the rigid relative ordering of different sorts of adverbs.[20] Cinque (forthcoming) proposes a universal hierarchy of adverbs (hopefully correlating with a fixed universal hierarchy of functional projections, see section 6) which distinguishes among (at least) an ordered sequence of 'higher' sentence adverbs, an ordered sequence of 'lower' VP-adverbs and an unordered sequence of VP-internal 'circumstantial' adverbs:

(7) higher sentence AdvPs > lower AdvPs > (DP^{subj}) (V) complements > > place, time, manner, etc. adverbials[21]

The theoretical relevance of the partition obtained by applying distributional criteria is assumed to depend on the feasibility of the correlation between (classes of) adverbs and independently motivated functional projections, and on the existence of a one-to-one correlation between syntactic positions and semantic structures. At the same time, it is worth emphasizing that these results are unlikely to improve our understanding of the compositionality issue. The relation between the syntactic position occupied by an adverb and the semantic role fulfilled by the latter remains essentially non-compositional (as was the case in Jackendoff's analysis).[22] We might say, by adopting Jackendoff's terminology, that the arbitrariness of the projection rules involved is hopefully compensated for by the presence of a distinct structural description for each projection rule. The role of syntax seems to consist in producing an unambiguous input for the application of non-compositional interpretive strategies. This would entail that the relation between the manner and the subject-oriented readings of adverbs such as *carefully* or *rudely* does not go far beyond accidental homonymy.

Summarizing, we have seen that the familiar distinction between VP-adverbs and S-adverbs is hardly supported by a semantic partition between adverbs that are predicate operators and adverbs that are sentence operators. Rather, a large variety of interpretations has emerged (for instance, Jackendoff's speaker-oriented and subject-oriented readings of S-adverbs and VP-adverbs, respectively).

Two major streams of research have been discussed. The one tries to cope with the challenge that adverbial syntax poses to compositionality. The other accepts the arbitrariness of the projection rules and tries to provide the most adequate characterization of the set of structural descriptions involved (representing the input for the interpretive component). We turn now to the consequences of the proposed analyses for the issue of adverb placement.

4 Issues of adverb placement

As remarked at the end of the previous section, investigations on the syntactic position occupied by adverbs are likely to play an essential role if syntax is assumed to provide an unambiguous input for the application of the interpretive procedure ('projection rules') which associates adequate semantic structures to sentences containing adverbs. In the ideal situation, configurations where an adverb is assigned more than one interpretation should be ambiguous between two distinct configurations in which the adverb fills a different position, and, conversely, there should be no case of an adverb receiving the same interpretation in more than one syntactic position (abstracting away, for the time being, from the 'reconstruction' properties of certain kinds of adverb movement, which will be discussed in sections 5.1 and 5.2). Jackendoff (1972) tried to reduce the notion 'ambiguity of syntactic position' to the notion 'ambiguity of syntactic attachment'. The canonical cases of ambiguity taken into consideration concern relative ordering of adverbs and auxiliaries, as in the following examples:

(8) a. John cleverly has read the book.
b. John has cleverly read the book.
c. John has read the book cleverly.

As is well known, (8a) is only possible with the subject-oriented reading of the adverb, and (8c) with the manner reading of the adverb. As for (8b), it is assumed to be ambiguous between the subject-oriented and the manner reading. These facts easily follow if the adverb is attached to S in (8a) and to VP in (8c), whereas it is ambiguous between VP-attachment and S-attachment in (8b), under the assumption that the projection rule providing the subject-oriented and the manner reading only applies to adverbs attached to S and to VP, respectively. The ambiguity of attachment holding for (8b) is derived from the hypothesis that the auxiliary system is split into two parts, with Modal and Tense realized as a daughter of S and (*have -en*)/(*be -ing*) realized under VP (Klima 1966; Emonds 1970). Since obligatory raising of *have*/*be* to Tense is assumed to take place, this system entails that an adverb which follows a single auxiliary, as in (8b), can be attached either to S or to VP, reducing interpretive ambiguity to structural ambiguity, as desirable on theoretical grounds. One of the predictions is that adverbs following more than one auxiliary are only compatible with the manner reading (crucially excluding S-attachment), since the second auxiliary, that does not

undergo movement to Tense, is obligatorily VP-internal, forcing VP-attachment of the adverb. The prediction is borne out, as shown in (9) (Jackendoff 1972: 76):

(9) George will have (*probably/completely) read the book.

A more complex class of facts involves the marginality of the manner reading in configurations where the adverb surfaces between two auxiliaries, as in *John will (probably/?*completely) have read the book*. Within the system outlined above, the question is how to exclude VP-attachment of the adverb. The solution consists in assuming that the position of VP-adverbs within VP is rigidly determined to follow *have/be* and is therefore incompatible with the relative ordering observed in the sentence under scrutiny (entailing VP-fronting of the adverb). The position of the adverb is however somewhat less rigid in the cases involving S-attachment: the system has to account for (at least) the possibilities exemplified below, with the adverb preceding the subject, filling an intermediate position between the subject and the auxiliary, following the auxiliary, and occurring in dislocated sentence-final position (Jackendoff 1972: 72ff.):

(10) a. Evidently John has eaten the beans.
b. John evidently has eaten the beans.
c. John has evidently eaten the beans.
d. John has eaten the beans, evidently.

As emphasized above, the very same structural position should be involved here, since the interpretation is essentially the same in all cases. The proposed solution consists in assuming that all the adverb positions detected in (10) crucially involve S-attachment: the relative ordering with respect to other constituents may vary, provided the sisterhood relation to these constituents is maintained. This proposal is technically implemented by resorting to the 'Transportability Convention' introduced in Keyser (1968), according to which constituents marked as [+transportable] can be freely moved, giving rise to a (possibly) large variety of linear orders, under the condition that the fundamental *structural* relations that they entertain with the other constituents be preserved. The stipulative flavor of this solution is essentially maintained under more recent approaches to the problem raised by (10). Belletti (1990), where a more constrained version of X-bar theory is adopted (essentially, that defined in Chomsky 1986a), ruling out uniform base-generation of subject, auxiliary, and adverb as daughters of IP (= S), proposes for (10c) an analysis which involves recursion of the Agr(eement)-node.[23] The proposal is that S-adverbs such as *evidently* are uniformly generated as adjoined to the sentential AgrP node. Whenever an auxiliary is present, Agr-recursion is assumed to take place, with obligatory movement of Aux to the higher Agr-node (cf. Belletti 1990: 53ff.). Under these assumptions, the word orders in (10a) and (10c) depend on whether the adverb has been adjoined to the lower or to the higher AgrP-node. In other words, the adverb is granted a certain amount of freedom with respect to syntactic placement, provided certain

fundamental *structural* relations are preserved (here, adjunction to a sentential node), much in the spirit of the 'Transportability Convention'. There are cases, however, where global improvement in the theoretical format of the theory might correspond to a real advancement in our understanding of some of the issues involved by the paradigm in (10). As far as the pair in (10a) and (10b) are concerned, for instance, Belletti proposes that the latter is transformationally related to the former by means of left-dislocation of the subject. Evidence for this hypothesis is provided by the observation that the word order in (10b) is unavailable in Italian in cases where left-dislocation of the subject NP is independently excluded, as with indefinite quantifiers.[24] As for 'lower' VP-adverbs such as *spesso* 'often', Belletti argues that the configurations where they occur sentence-initially (as in *Spesso Gianni incontra Maria in vacanza* 'Often Gianni meets Mary on vacation') are derived by the application of '*wh*-movement' (topicalization) to the adverb, as shown by the ungrammaticality of structures in which a second constituent has undergone topicalization (**MARIA spesso Gianni incontra in vacanza*), under the independently well-motivated assumption that topicalization cannot affect more than one constituent per sentence (Belletti 1990: 62; see chapter 26). The examples just discussed conveniently illustrate the general remark made at the beginning of this section: one of the main streams of research on the syntax of adverbs has implicitely adopted Jackendoff's assumption that principles of adverb interpretation are tied to a well-defined set of structural descriptions, further constraining it in the sense of an ideal one-to-one correlation between syntactic positions and adverb readings. Cases where two or more positions are apparently associated with a single interpretation are tentatively analyzed as involving movement of syntactic constituents other than the adverb, or as involving *wh*-movement of the adverb itself (under the well-established assumption that the meaning associated with the position of the trace is retained, for example via 'reconstruction'; see chapter 54).[25] In this perspective, the only viable alternative consists in the possibility that the interpretations involved turn out to be different under a deeper examination. This has been argued to be the case with the manner reading associated with adverbs realized preverbally or postverbally (in a non-dislocated position). A case in point is the following minimal pair (Cinque 1999):

(11) a. John has cleverly answered the question.
b. John has answered the question cleverly.

That the two positions of the adverb in (11) cannot be tied to the same interpretation is shown by the fact that the position in (11a) does not satisfy the selection properties of the verb (**John has carefully worded the letter*), differently from what happens when movement is involved (cf. the grammatical *How carefully did John word the letter?*). The hypothesis that the readings involved are actually different is corroborated by Thomason and Stalnaker's (1973) observation that the two adverb positions in (11) are associated to unambiguous scope construals, yielding in some cases different truth-conditions, as shown by the example in (12):

(12) a. He slowly tested some bulbs.
b. He tested some bulbs slowly.

As Thomason and Stalnaker put it "sentence (12a) would be true if he took a long coffee break between each testing, even though he tested each single bulb quickly." Other cases where the interpretation of an adverb occurring in (at least) two distinct positions is only apparently the same involve frequency adverbs such as *often*, as exemplified by the minimal pair in (13) below (to be further discussed in section 7):

(13) a. John knocked on the door often.
b. John often knocked on the door.

It has been observed that (13b) corresponds to a 'relational' statement comparing two classes of events (roughly paraphrasable as 'many of the events in which John knocked on something are events in which John knocked on the door'), whereas (13a) corresponds to the 'absolute' statement that the knocking events (by John) were many.[26] The relation between the postverbal and preverbal position in which some adverbs may occur can give rise to intriguing (and still poorly understood) scope patterns, such as that exemplified in (14) and (15):

(14) a. John knocked on the door intentionally twice.
b. John knocked on the door twice intentionally.

(15) a. ?John twice intentionally knocked on the door.
b. ??John intentionally twice knocked on the door.

It has been noticed that the scope construal associated to (14) corresponds to some sort of 'inverse-linking' effect (see chapter 36): the reading according to which John intended to knock twice is expressed by either (15b), the adverb on the left takes wide scope, as expected, or (14b), here it is the adverb on the right that takes wide scope (see Andrews 1983; Cinque 1999 for a detailed discussion of this issue).

As a result of these observations, we can conclude that the possibility for the same adverbial to occur, with distinct interpretations, in different syntactic positions (as we have shown to be the case for manner adverbials and frequency adverbs) raises a number of delicate questions revolving around the relation between these interpretations and largely bearing on still poorly understood issues concerning the syntax of 'modification' and the syntactic encoding of quantification over events and/or times. A better understanding of these matters will hopefully lead to a satisfactory answer to the questions whether and how these adverb positions are related by movement and to a better assessment of the relevance of adverbial syntax for the compositionality issue in natural language (much in the spirit of McConnell-Ginet's stimulating observations).

5 Adverbs and movement

5.1 Wh-*movement*

The observation that adverbs can naturally undergo *wh*-movement is quite uncontroversial. As is well known, it has motivated the argument-adjunct asymmetry in extraction facts (Huang 1982a and much subsequent literature). Roughly, adverbs turn out to be sensitive to both strong and weak islands (see chapter 64), whereas arguments are only sensitive to strong islands. The asymmetry does not reduce to the fact that elements which are not selected (that is theta-marked) by the verb are less easily extractable. Selected adverbials, as the French manner adverbial in the following example, are worse than optional comitative arguments when extracted from *wh*-islands, falsifying the hypothesis that semantic selection is the relevant factor for the admissibility of long movement (Rizzi 1990b: 77ff.):

(16) a. ?Avec qui ne sais-tu pas [comment [PRO te comporter t t]]
with whom don't you know how to behave
b. *Comment ne sais-tu pas [avec qui [PRO te comporter t t]]
how don't you know with whom to behave

It seems that the possibility for an element to enter binding relations (hence to give rise to long-movement dependencies) is connected with the fact that it bears a 'referential' theta-role (expressing a 'participant' in the event referred to by the predicate) and is therefore endowed with a 'referential' index:[27] the manner adverb in (16) does not refer to any 'participant' in the relevant event, in spite of the fact that it is obligatorily selected by the verb. An alternative approach ascribes the sensitivity of adverbs for weak islands to the fact that adverbs refer to 'partially-ordered' objects (that is, objects that cannot be collected into unordered sets, but only into sets whose members exhibit inclusion and/or overlap relations), under the assumption that weak islands provide semantic environments which do not preserve partial ordering (Szabolcsi 1992: 410ff.; cf. also Szabolcsi and Zwarts 1993). One of the merits of the latter approach is that adverbs cease to represent a uniform semantic class, as was the case with the 'referential-role' approach: there might well be adverbs referring to 'individuals' (elements which can be collected into unordered sets), as is arguably the case with punctual temporal adverbials such as *at 5 o'clock*, which significantly perform quite better than manner adverbs when extracted from weak islands (Giorgi and Pianesi 1997; cf. section 6) (see chapter 72).

Independently of the correct characterization of the constraints governing *wh*-movement of adverbials, notice that the question how adverbs move should be naturally preceded by the question why adverbs can be moved. Under a conjunctive formulation of the E(mpty)C(ategory)P(rinciple), the obvious assumption is

that adverb traces (on a par with the other empty categories) have to be formally licensed by a higher head of the appropriate type. In Rizzi (1990b), manner adverbials are assumed to be VP-adjoined and to be formally licensed by the higher functional head T(ense) (Rizzi 1990b: 46). An interesting issue arises with sentence adverbs such as 'reason' adverbials (the domain of interrogative *why*): as S-adverbs, they are expected to be attached to a higher position than manner adverbials, arguably TP or AgrP: in both cases, proper government by T is obviously excluded, raising the issue of why *wh*-movement is perfectly admissible in these cases. Rizzi's solution consists of the assumption that adverbs of the reason type are base-generated in spec-CP. Evidence is provided by the fact that reason adverbials cannot occur *in situ* in French, contrary to what happens with other VP-adverbials (*Il a parlé comment* vs. ?**Il a parlé pourquoi*) and by the observation that French stylistic inversion cannot be triggered by sentential adverbials such as pourquoi (*Comment a parlé Jean* vs. ?**Pourquoi a parlé Jean*) (Rizzi 1990b: 47–48).[28]

A semantically-based approach to the issue of adverb movement is proposed in Chierchia (1985), where a trace is assumed to be properly governed if and only if it constitutes the argument of some propositional function (Chierchia 1985: 433). The basic insight is that variable-binding of adverbs is generally excluded, since adverbs are 'functors' (that is, predicate operators, cf. section 3) and the type-hierarchy in natural language is arguably limited to three semantic 'layers' (individuals, propositional functions, and functors). This hypothesis nicely accounts for the fact that a large variety of adverbs cannot be *wh*-moved (including *too*, *again*, *also*, *even*, *almost*, etc.). As for the adverbs that undergo *wh*-movement (typically, manner adverbs in *-ly*), the solution consists of the assumption that these adverbs are semantically related to predicative counterparts (that is, to 'propositional functions') by means of a mapping function *-ly*, with morphemes such as *-ly* playing the role of 'exceptional' proper governors. This approach raises a number of intriguing issues concerning the cases where *-ly* adverbs cannot be *wh*-moved, as when they are assigned a subject-oriented interpretation (How elegantly do you think he was dressed? vs. *How luckily has he won?; Cinque 1999), and the cases where other sorts of adverbs (with no lexically distinct predicative counterpart) are *wh*-moved, as with punctual temporal adverbs (At which time do you think he went out?).

Before closing this section, let us note that *wh*-movement easily allows the "regular" relative order between two adverbs to be subverted, as has been emphasized in Cinque (1999), who provides the following paradigm for Italian:

(17) a. Tratta già male il suo assistente.
he is treating already badly his assistant
b. *Tratta male già il suo assistente.
c. Quanto male tratta già il suo assistente?
how badly is he already treating his assistant

5.2 Other kinds of movement

As noted in section 4, the issue of whether the different syntactic positions filled by a given adverb are related by movement is arguably one of most poorly understood topics in adverbial syntax. However, Cinque (1999) discusses a number of cases in which varieties of displacement other than *wh*-movement appear to be involved. As observed in Kayne (1975), French exhibits structures where an adverb surfacing in the main clause is thematically related to the predicate of the embedded clause, as in *Il ne faut plus que tu parles* 'it is necessary that you do not speak.' Interestingly, the fixed relative order cannot be subverted in these cases, as shown by the ill-formedness of examples such as **Il a mal dû toujours raccrocher* 'he must have badly always hung up', contrary to what happens with *wh*-movement (section 5.1). The same seems to hold for the cases where an adverb is topicalized, in Germanic SOV langages, to comply with the verb-second requirements. As observed in Koster (1978c), adverb topicalization is not admitted to alter the fixed relative order between two adverbials, as shown by the Dutch paradigm in (18–19), suggesting that these verb-second phenomena have to be kept apart from standard *wh*-movement:

(18) a. Het is zo dat hij *helaas waarschijnlijk* ziek is.
it is the case that he unfortunately probably sick is
b. *Het is zo dat hij *waarschijnlijk helaas* ziek is.

(19) a. Helaas is hij *waarschijnlijk* ziek.
b. **Waarschijnlijk* is hij *helaas* ziek.

A different class of phenomena, attested in Italian, is discussed in Cinque (1990c), where it is noted that certain instances of 'adverb-preposing' exclusively apply to sentence-initial adverbials. The evidence for this hypothesis originates from the observation that the preposed adverb does not preserve the scope properties which are linked to the VP-adjoined (or sentence-final) position, a phenomenon that is naturally accounted for under the assumption that adverbs undergoing this sort of movement are necessarily IP-initial (see chapters 53 and 54). A relevant example is provided in (20a), where the preposed adverb cannot be interpreted in the scope of the universal quantifier in subject position, contrasting with the ordinary case of *wh*-movement in (20b), where narrow scope of the adverb is readily admitted (Cinque 1990c: 91–92):

(20) a. In una città del sud, ognuno di loro è nato.
In a southern city everyone of them was born
b. In quale città del sud ognuno di loro è nato?
In which southern city was everyone of them born

Additional evidence is provided by the absence of crossover violations in contexts involving adverbial clause preposing (originally discussed in Longobardi

1983), exemplified in (21a), and clearly contrasting with the strong crossover violation detected in (21b), suggesting the presence of an IP-internal trace in (21b), but not in the case of adjunct-preposing (21a):

(21) a. Dopo aver presentato Maria a che ragazzo, lui vi si è dimostrato riconoscente?
after presenting Maria to which boy, he was grateful to you
b. *[Di parlare a [che ragazzo]$_i$]$_k$ [pro$_i$ vi ha chiesto t$_k$]
to speak to which boy did he ask you

These observations have motivated highly intriguing hypotheses, according to which 'adverb-preposing' corresponds to an instance of non-standard *wh*-movement and 'circumstantial' adverbs (as the locative in (20)) can be directly generated in IP-initial position, contrary to the familiar assumption that they are VP-internal (Cinque 1990c: 94; on the issue of adverbial PP preposing, see also Rizzi 1990b, appendix 1). Again, adverbial syntax seems to lead to quite puzzling questions concerning the interplay between issues of placement (cf. section 4) and issues of movement.

5.3 Adverb placement as a diagnostic for movement

Issues of adverb placement have traditionally been related to the syntactic analysis of processes of inflectional morphology (Emonds 1978, 1985; Pollock 1989). In Emonds' analysis, the process of finite verb formation corresponds to a language-particular transformation (as such not belonging to the operation Move) which allows a grammatical formative realized in the third-level projection of V to be realized as an inflection bound to V (Emonds 1985: 200ff.). As a matter of fact, inflectional processes are crucially assumed to require adjacency configurations: the fact that finite verb formation is not blocked by the presence of adverbs (such as *scarcely* or *never*) is accounted for by assuming that adverbs are generated within the first level of V, with adjacency defined in such a way that the head X of a phrase is considered adjacent to the boundary of the phrase X'. Elements which block head-attachment (such as the negation *not* in English) are assumed to be generated outside V", destroying the required adjacency configuration (Emonds 1985: 207ff.). In Pollock's analysis, head-movement operations belong to the core of the syntactic system (much in the line of Baker's 1988a analysis of a large variety of incorporation processes in terms of head-movement). The parametric difference between English and French in configurations where the verb selects a direct object, illustrated by the minimal pair in (22), is assumed to depend on the fact that V moves to the functional projection(s) realizing the inflectional features in French, but not in English (see Pollock 1989 and much subsequent literature for a more detailed assessment of the empirical issues involved):

(22) a. Mon ami prépare *toujours/souvent* du poisson.
b. *My friend prepares *always/often* fish.

However, the conclusion that verbs do not move in English has been challenged in view of the observation that the position of the adverb seems to depend on the application of the adjacency requirement between verb and nominal objects proposed in Stowell (1981): adverbs easily occur to the right of the verb (as in French) whenever prepositional or clausal complements are involved, as shown by the minimal pair in (23) (Chomsky 1995c: 329ff.):

(23) a. *John reads often books.
b. John reads often to his children.

This state of affairs is in principle compatible both with the hypothesis that verb movement is not generally barred in English, possibly depending on case considerations (see Pesetsky 1989; Johnson 1991), and with the hypothesis that structures such as (23b) do not involve verb movement, but rather the adverb occurring sentence-finally with extraposition of the prepositional complement (Pollock 1997).[29] Chomsky (1995c) formulates the more radical hypothesis that the relevant paradigm of adverb distribution might be entirely independent from the issue of verb raising: adverbials such as *every day* or *last night* exhibit the behavior shown in (23) for *often* (**John reads every day books* vs. *John reads every day to the children*), but they are not allowed in the preverbal position available to *often* (*John often reads to his children* vs. **John every day reads to his children*). Chomsky's proposal for English, according to which covert movement of the nominal object in (23a) to the functional position relevant for case-checking is blocked by the occurrence of two closer intervening elements (the subject and the adverb itself) filling specifiers of a Larsonian VP-shell (as a violation of 'shortest movement'), raises the issue of how to account for the grammaticality of the French counterpart of (23a).

As a result of this brief survey, let us emphasize that the use of facts of adverb placement as a diagnostic for syntactic operations affecting constituents other than adverbs (which is a typical characteristic of a significant part of the literature on Germanic scrambling and Scandinavian object-shift) is arguably more problematic than it is generally assumed. However, some skepticism seems at least partly justified in these empirical domains as well (see especially Neeleman 1994a for the view that a given adverb can fill a variety of syntactic positions in Germanic SOV languages, giving rise to 'base-generated' scrambling).

6 Adverbs and adjunction

In recent times, the hypothesis that XP-adjunction does not belong to the core of the 'computational system' (or syntax proper) has gained considerable credit. Adjunction sites strictly resemble traditional specifier positions in Kayne's (1994) version of X' theory, where a principled constraint on multiple adjunction is introduced. Chomsky (1995c) develops a model in which syntactic operations are triggered by Last Resort and feature-checking, under the restrictive assumption

that the checking domain of a category is limited to positions included (rather than contained) in Max(α) and that XP-adjunction is severely constrained to semantically vacuous targets (Chomsky 1995c: 324–326; cf. also pp. 329ff.).

This research program is apparently supported, empirically, by a large number of facts arguing against the idea that adverbials are freely generated in adjunction positions, to be briefly reviewed below.

A first class of data concerns the constraints on right-adjunction (cf. Cinque 1999; Costa 1997; and others). Under the familiar approach to adjunction according to which both right- and left-adjunction are possible, a sentence like *John has spoken to his mother cleverly* should be interpretable as involving right-adjunction of the adverb *cleverly* to the same (functional) category to which *cleverly* is left-adjoined in cases such as *John cleverly has spoken to his mother*, as shown by the structures in (24):

(24) a. John [$_{XP}$cleverly [$_{XP}$has spoken to his mother]]
b. John [[has spoken to his mother$_{XP}$] cleverly$_{XP}$]

However, it is well known that *cleverly* is exclusively assigned the subject-oriented reading in (24a), and can only receive the manner reading in (24b) (see section 4). This difference in meaning is clearly unexpected under the assumption that all hierarchical relations relevant for meaning are essentially preserved in the shift from (24a) to (24b). Similarly, the ungrammaticality arising from 'stacking' adverbs in sentence-final position, as in **John has answered their questions stupidly cleverly* is actually unpredicted if this sentence can be assigned a structural analysis (as is quite naturally the case under the adjunction hypothesis) which has the adverb right-adjoined to the same projection to which the adverb is left-adjoined in its grammatical counterpart *John cleverly has answered their questions stupidly.*

A second kind of argument against adjunction is provided by the observation that adverbs tend to pose severe 'selectional' constraints on the 'adjoinee', giving rise to a relatively fixed linear order among their different classes. There is a large literature to be considered here, including at least Zubizarreta (1982a), Sportiche (1988), Travis (1988), Rochette (1990c), Bowers (1993), Lonzi (1991), and Cinque (1999). On the grounds of a fine-grained assessment of the empirical evidence from Italian, Cinque proposes for instance the following relative order for S-level adverbs (see section 3 for the variety of readings actually assigned to this class of adverbs):

(25)	francamente	< purtroppo	< evidentemente	< probabilmente
	frankly	< unfortunately	< evidently	< probably
	< ora	< forse	< stupidamente	
	< now	< perhaps	< stupidly	

Deriving patterns of relative order as that in (24) under the free adjunction hypothesis is arguably quite problematic, unless it can be shown that the order constraints follow from the application of independent semantic conditions at the

interface with the interpretive system. However, we have already emphasized (see sections 3 and 4) that the interpretation of 'higher' adverbs as those in (25) is largely non-compositional, as it involves a fairly arbitrary set of mapping operations between the syntactic structures exhibiting the order constraints under discussion and the logical forms which correspond to a compositional codification of their meaning. Cinque's implicit assumption is that adverb ordering is in fact *not* semantically motivated, but rather encoded in syntax in the form of a one-to-one correlation between (distributionally motivated) adverb classes and functional positions (whose hierarchy is in principle independent of interpretive considerations, for instance the logically motivated exclusion of certain scope construals). This correlation arguably permits an elegant treatment of the complex interplay between adverbs and various sorts of verbal heads, whose analysis is highly problematic under the free adjunction hypothesis, which must resort to arbitrary 'filters' to reduce overgeneration.[30]

A third class of facts that apparently militate against adjunction concerns the behavior of 'circumstantial' adverbs of time, place, and manner. These adverbs easily enter coordination and binding relations which are problematic under the free adjunction hypothesis. As discussed in Larson (1988b), temporal adverbials can be coordinated with a complement of the verb, and anaphors contained in them can be bound by antecedents corresponding to a complement of the verb, as shown in (26a) and (26b), respectively:

(26) a. Sue gave books [to these people on Friday] and [to those people on Saturday]
b. Sue gave books *to these people on each other's birthday.*

Under relatively well-motivated assumptions concerning coordination and binding (essentially establishing that coordination exclusively involves constituents and that binding requires c-command), these facts have been taken to show that circumstantial adverbials of various sorts must be sisters to a projection of V, motivating the adoption of VP-shell structures, with 'alleged' adjuncts filling a position lower than verbal arguments in compliance with a thematic-relational hierarchy of some sort (Larson 1988b; Pesetsky 1995: 163ff., and the references cited there). Pesetsky interprets the availability of coordination configurations such as *Sue gave books to [these people on Friday] and [those people on Saturday]* as evidence that shell-structures (characterized by the abandonment of the requirement that the verb's lexical properties be satisfied at D-structure) might not suffice to achieve empirical adequacy and as an argument for the adoption of *cascade*-structures in syntax.[31] All these facts conspire to the conclusion that circumstantial adverbs are syntactically represented VP-internally, by filling a fixed (lower) position with respect to the arguments of the verb. There is in fact some evidence that these adverbs correspond to the presence of a spatio-temporal argument (Kratzer 1995) in the theta-grid of verbs: temporal adverbs such as *on Friday* or *at 4 o'clock* exhibit for example an argument-like behavior in extraction contexts, in not being sensitive to weak islands (Giorgi and Pianesi 1997) and

giving rise to rigid-denotation effects in certain contexts (see section 7).[32] The well-known fact that other 'circumstantials' such as manner adverbials *are* indeed sensitive to weak islands need not represent a problem for the hypothesis that *all* VP-internal adverbials are arguments: the contrast between punctual temporal adverbs and manner adverbials easily follows, for instance, from the approach to weak islands developed in Szabolcsi and Zwarts (1993), under the quite reasonable assumption that (certain) temporal arguments refer to 'individuals' (times), whilst manner adverbials necessarily refer to 'partially-ordered' objects (see section 5.1).

Before closing this section, it is worth noticing that the negative conclusions about the relevance of base-generated adjunction for issues of adverb placement is corroborated, at a more general level, by the conceptual and empirical success of proposals aimed at severely constraining the role of adjunction in movement processes. Cases in point are Rizzi's (1997) attempt to reduce alleged instances of adjunction such as topicalization and focus movement to instances of substitution movement and Beghelli's (1995) decomposition of quantifier raising into a class of 'checking' operations involving a well-defined set of functional projections. Finally, issues concerning the role of intermediate adjunction sites have been addressed, within the same negative program, in Sportiche (1993a; see also Chomsky 1995c).

7 Adverbs and the syntax/semantics mapping

In the preceding sections, we have repeatedly emphasized that one of the major problems arising with adverbials is constituted by their ambiguous role in the mapping from syntax to semantics. This ambiguity is conveniently illustrated by the interaction between adverbial phrases and specific modules of syntax, such as theta-theory. In the literature, claims are found both that adverbials are arguments of the verb receiving a specific theta-role (McConnell-Ginet 1982; Larson 1985a) and that adverbials are elements assigning some theta-role to predicates, heads, or other adjuncts (Chomsky 1995c: 45). In this final section, we want to provide further exemplification of the kind of complexities arising at the syntax–semantics interface. Given our space limitations, we will only present some interpretative ambiguities involving different classes of temporal adverbs. The choice of temporal adverbs is not accidental. As we have seen, one of the most promising lines of research for the treatment of adverb semantics involves assuming more complex lexical structures for verbal predicates, with a consequent increase in the degree of complexity of the related syntactic representations.[33] The adoption of syntactic representations permitting quantification over events and/or times seems to provide adequate heuristic tools for a satisfactory assessment of the factors involved in the contribution of temporal adverbials to meaning.

A first class of facts concerns temporal adverbials of the *punctual* or *durative* sort (such as *at 5 o'clock*, *for three hours*, etc.). These adverbials have been shown to be ambiguous between a "p(osition)-definite" interpretation, according to which

they unambiguously fix the position of a time span on the time axis, and a non-p-definite interpretation, according to which they express a time span whose position on the time axis is vague (Klein 1992). Significantly, this interpretive ambiguity seems to correlate with the syntactic position (sentence-final or sentence-initial) occupied by the temporal adverbial, as exemplified by the minimal pair in (27). (Hitzeman 1995):

(27) a. Mary lived in Amsterdam for three years (once).
b. For three years, Mary lived in Amsterdam (#once).

Sentence (27a) is ambiguous between a reading in which "there is some three-year interval in the past during which Mary lived in Amsterdam, and a reading in which Mary lives in Amsterdam at the speech time and has done so for the three years preceding speech time" (Hitzeman 1995: 2), whereas only the latter reading is preserved in (27b), as shown by the awkwardness of *once* (which presumably forces the event time to be non-p-definite) when occurring in this structure. Interestingly, this sort of ambiguity can be expressed by saying that *for three years* can be interpreted as a 'predicate' in (27a) (it corresponds to the restriction of a time variable which is existentially quantified), but necessarily counts as an argument in (27b) (it behaves as a rigidly-denoting referential expression, unambiguously fixing a certain position on the time axis). The name-like behavior of temporal adverbials corroborates the hypothesis that they may count as arguments of the verbal predicate, in accordance with the argument-like behavior they exhibit in extraction contexts, as already observed in sections 3 and 6. This conclusion easily extends to *punctual* adverbials, as shown by the fact that the sentences in (28) exhibit the same kind of ambiguity detected in (27):

(28) a. Mary will be in her office at 8 o'clock.
b. At 8 o'clock, Mary will be in her office.

At this point, we may wonder which factors (beyond the syntactic position of the adverbial) are involved in these kinds of meaning ambiguities. Delfitto and Bertinetto (1995) observe that Aspect arguably plays a crucial role, since the ambiguity detected in (27) and (28) does not arise with 'habitual' sentences. However, the position of the temporal adverbial affects truth-conditions even in habitual sentences. This is shown, for Italian, by means of the 'imperfective' sentences in (29), where the realization of the punctual adverbial either in VP-internal or in dislocated position clearly affects meaning, as expressed by the logical paraphrases in (30):

(29) a. Gianni beveva un caffè alle 8.
Gianni drank-IMP a coffee at 8 o'clock
b. Alle 8 Gianni beveva un caffè.
At 8 o'clock Gianni drank-IMP a coffee

(30) a. Gn t (∃e: D(e) and at(e,t)) (at 8(t))
b. Gn t (at 8 (t)) (∃e: D(e) and at(e,t))

The ambiguity detected in (28) can be explained by saying that *at 8 o'clock* is uniformly interpreted as a 'predicate' expressing a property of time, with the syntactic position of the adverb determining whether this property applies to the temporal variable in the scope (30a) or to the temporal variable in the restrictive clause (30b). Accordingly, (29a) will be roughly assigned the paraphrase 'every time Gianni used to drink a coffee it was 8 o'clock' and (29b) the paraphrase 'every time it was 8 o'clock Gianni used to drink a coffee', intuitively expressing different truth-conditions.

A second class of facts concerns the ambiguity of 'frequency' adverbs such as *often* and *always*, which can be interpreted, on a par with determiners, as generalized quantifiers (De Swart 1993). For instance, the interpretation of *always* in (31a) as a generalized quantifier expressing a relation between two sets of events/times is represented in (31b) ('the set of events in which John writes with something are included in the set of events in which John writes with a red pencil'):[34]

(31) a. John always writes with a red pencil.
b. λe [∃y (John writes with y) (e)] ⊆ λe [(John writes with a red pencil) (e)]

However, Q-adverbs may also be assigned, when occurring in (non-dislocated) sentence-final position, an 'adjectival' reading according to which they express a cardinal predicate of the plurality of events referred to by the verbal predicate: (32) seems to correspond to the 'absolute' statement that 'the situations in which John writes with a red pencil are many', paralleling the 'adjectival' usage of weak determiners in cases such as *These students are many* (Higginbotham 1987):

(32) John writes with a red pencil (quite) often

Again, the syntactic position of the adverb appears to be crucial in order to discriminate between the 'relational' and the 'cardinal' interpretation of Q-adverbs.

Summarizing, we have seen that temporal adverbials exhibit a broad range of semantic ambiguity, in that they can be mapped into individual-referring expressions, predicative expressions and quantificational expressions (referring to different types of logical objects). The factors involved in these kinds of ambiguity include at least syntactic placement, the presence of an event/time argument in the lexical structure of verbal predicates, and morphologically encoded aspectual distinctions. Needless to say, any theoretical advancement in these domains is likely to improve our understanding of the role of adverbs in the mapping from syntax to semantics.[35]

NOTES

1 See in particular Jackendoff (1972) and McConnell-Ginet (1982).

2 See Emonds (1985), where the *now/then* and *here/there* pairs are analyzed as 'suppletive' NPs, in view of the fact that they exhibit the same distant/proximate dichotomy as *this/that* and that they can be the object of prepositions (Emonds 1985: 161).

3 According to the by now standard version of X-bar theory originally proposed in May (1985) and adopted in Chomsky (1986a), adjunction structures involve categories composed of two or more *segments*. These theories are thus based on the distinction between segments and categories, and on the related distinction between inclusion and containment. See also section 6.

4 The issue concerning the syntactic relation between the sentence-final position in which selected adverbials occur and and other adverb positions will be addressed in section 4. As emphasized in the text, the presence of 'selected' adverbials has been important for syntactic theorizing, mainly in order to decide whether the argument/adjunct asymmetry can be reduced to the role of theta-marking or must receive a more sophisticated conceptual foundation (on this issue, see the literature on the proper definition of the Empty Category principle (ECP) and especially Rizzi 1990b).

5 See sections 3 and 4 for a critical discussion of some basic facts in the syntax of adverbs, and section 6 for a critical assessment of the explanatory role played by adjunction.

6 Besides the contributions explicitly referred to or discussed in the text and in the notes, see also the following works for a presentation of other important aspects of the syntax and semantics of adverbs: Åfarli (1995), Andrews (1982), Baker (1981, 1989), Bartsch (1976), Cresswell (1985), Dik et al. (1990), Dowty (1982b), Emonds (1976), Ernst (1984), Geis (1986), Huang (1975), Kuroda (1968b), Ladusaw (1978), Laenzingler (1993), Lakoff (1968, 1974a), Larson (1984), Moltmann (1991), Pecoraro and Pisacane (1984), Ramat and Ricca (1994), Rizzi (1997), Rooth (1995), Schreiber (1971), Stroik (1992b), and Vinet (1995).

7 According to Emonds, one possibility is that case-marking of APs is syntactically optional, providing adjectival APs when it applies and adverbial APs when it does not apply. There seem to be syntactic positions in which both case-marked (adjectival) and case-less (adverbial) APs can be realized and interpreted:

(i) Bill [walked into the room] [fearful]
(ii) Bill [walked into the room] [fearfully]

8 The base rule schemas in (1) and (2) in the text, intended to capture the prenominal and preverbal occurrence of adjectives and adverbs, respectively, can be easily restated in a more updated X-bar theoretic framework by assuming that adjectives and adverbs fill the specifier position of intermediate functional projections, on the grounds of the by now standard parallelism between nominal and clausal structures (see especially Szabolcsi 1987; and Abney 1987). See also sections 3 and 6.

9 The claim that the distribution of bare NP adverbs crucially involves case considerations, as in Larson (1985a), is obviously reminiscent, at an abstract theoretical level, of Emonds' treatment of adverbial APs as non-case-marked. For the claim that predicates may assign 'adverbial theta-roles' to arbitrary categories, see McConnell-Ginet (1982), Roeper (1983), Larson (1985a), and others.

10 For a discussion of the peculiar properties of the classes of adverbs mentioned in the text, see Mittwoch (1977), Bellert (1977), McConnell-Ginet (1982), and others.

11 The reader is referred to Lakoff (1965); for an early detailed criticism of Lakoff's positions, see Bowers (1969).

12 This is intended to capture meaning equivalences such as that existing between *break violently* and *smash*, the semantic markers added by *violently* being incorporated in the lexical entry of *smash* (Jackendoff 1972: 71).

13 See Stowell (1991) (and the references cited there) for the syntactic analysis of this particular kind of adjectival construction, involving 'mental predicates' and arguably expressing stage-level relations between individuals and events.

14 McConnell-Ginet's proposal, according to which VPs correspond to predicates (hence to semantic objects interpreted as propositional functions) obtained by lambda-abstracting over the subject position, arguably finds a rather solid 'compositional' foundation under some version of the VP-internal subject hypothesis (cf. Koopman and Sportiche 1991a), and the assumption that the VP-internal subject trace is interpreted as a variable undergoing lambda-abstraction (see especially Chierchia 1995b).

15 See McConnell-Ginet (1982) and Larson (1985a), where some of the arguments against the treatment of oblique terms as arguments are critically evaluated and tentatively rejected.

16 The cases of adverbial modification which exclusively involve theta-identification (as in *Mary fatally slipped*), paralleling adjectival modification in *white ball*, are assigned the structure indicated in (i), where coindexing indicates theta-identification:

(i) $[_{V'}$ [fatally, $<1^i, 2^j>$] $[_{V'}$ slipped, $<1^j, E^i>$]]

The manner interpretation of *Louisa rudely departed* is obviously assigned a more complex representation, involving theta-identification together with autonomous theta-marking of the V'. The subject-oriented (or, according to equivalent terminology, 'stative') reading of the same sentence involves an interpretation of 'rudely' as a three-place predicate with the thematic grid <1, 2, 3>, interpreted as expressing that situation 1 is rude of actor 2 with respect to 'attribute' 3 (that is, with respect to the property of being a departure of Louisa) (see Higginbotham 1989: 476–479).

17 Scholars are divided into those who assume that only some classes of predicates contain an open position for the event variable, crucially excluding statives and/or individual-level predicates (Kratzer 1995; Diesing 1992b) and those who assume that the event argument is selected by virtually every sort of predicate (Parsons 1990; Higginbotham 1985) (see chapter 8). However, it should be noticed that there have also been attempts to distinguish between Davidson's event argument and Kratzer's spatio-temporal argument (see Ramchand 1996).

18 Some of the examples of adverb incorporation provided by Rivero are reproduced below in (i) and (ii) (involving manner and directional adverbials, respectively):

(i) a. I María férete KAKÁ stin adelfí tis.
the Mary behaves badly to+the sister hers
b. I María KAKOférete stin adelfí tis.
the Mary badly+behaves to+the sister hers

(ii) a. I María tha to girísi ANÁPODA.
the Mary FUT it turn upside down

b. I María tha to ANAPODOgirísi.
the Mary FUT it turn upside down

19 We have already introduced three of the four classes of adverbs discussed by Jackendoff: class I includes modal adverbs (sentence operators) and speaker-oriented adverbs; class II includes subject-oriented adverbs; class III is typically instantiated by manner adverbs. As for class IV, it is assumed to include adverbs such as *merely, truly,* etc., for which Jackendoff is unable to provide a suitable semantic structure. Adjectives belonging to this class have been important for the empirical evaluation of the hypothesis that adverbs are transformationally related to adjectival sources, since they do not seem to admit adequate semantic paraphrases with adjectival predicates. However, it should be noticed that these adverbs exhibit a striking distributional symmetry with the corresponding adjectives (*mere*, etc.): the prohibition against the adverb occurring sentence-initially or sentence-finally is paralleled by the prohibition that the corresponding adjectives occur in predicative position (for a more detailed discussion of the distributional constraints holding for this class of adjectives, see especially Bernstein 1993b).

20 See especially Ruwet (1968), Bellert (1977), Travis (1988), Belletti (1990), Lonzi (1991), Bowers (1993), and the references cited in Cinque (1999). The hypothesis put forward by Cinque, essentially based on a principled correlation between adverbs and designated functional projections, presents important analogies with the analysis independently developed in Alexiadou (1994).

21 As for the class of 'higher' adverbs, Cinque proposes, for Italian and French, something along the lines of the following ordered sequence of adverbs (each adverb in the hierarchy is assumed to stand for a set of adverbs belonging to the same (distributional) class):

(i) francamente/fortunatamente/probabilmente/ora/forse/intelligentemente
frankly/fortunately/probably/now/perhaps/intelligently

For the class of 'lower' adverbs, the proposed hierarchy is as follows:

(ii) solitamente/mica/già/più/sempre/completamente/tutto/bene
usually/not/already/any longer/always/completely/everything/well

Cinque shows that violations of the relative ordering constraints give rise to ungrammaticality, as exemplified in the paradigm below, concerning the class of 'lower' adverbs:

(iii) a. Da allora, non accetta mica più sempre i nostri inviti.
since then, he doesn't any longer always accept our invitation
b. *Da allora non accetta mica sempre più i nostri inviti.
c. *Da allora, non accetta sempre mica più i nostri inviti.
d. *Da allora, non accetta più mica sempre i nostri inviti.
e. *Da allora, non accetta più sempre mica i nostri inviti.

22 Cinque's proposal entails that a 'modal' adverb such as *probably* and a 'subject-oriented' adverb such as *cleverly* occupy the specifier position of different functional layers. This is not enough to provide us with syntactic structures which allow the

former adverb to be 'compositionally' interpreted as a sentence operator and the latter to be interpreted as a two-place predicate expressing a relation between individuals and events. Another clear instance of the compositionality issue arises with frequency adverbs such as *always*, which can be interpreted as generalized quantifiers expressing relations between two classes of events (see section 7). It is explicitly assumed that the two 'arguments' of *always* are not syntactically represented and are in fact derived by applying relatively complex interpretive procedures (see Rooth 1985; De Swart 1993; Delfitto and Bertinetto 1995 for a 'compositional' alternative). The issue has important implications for the 'Universality of theta-assignment hypothesis' (UTAH), which proposes a rigid mapping between thematic notions and structural configurations and has revealed itself an important heuristic tool for the investigation of several syntactic domains. There is nowadays large agreement, for instance, on the fact that 'unaccusative' adjectives such as *likely* in *This result is likely* are related to source structures of the form *[e] is likely this result*, in spite of the ungrammaticality of **It/there is likely (of) this result*, and that pairs like *John was clever to leave* and *Leaving was clever of John* admit a common structural source (since they are assigned the same thematic interpretation). In the same vein, we would like to explain the fact that members of pairs like *John will probably call* vs. *It is probable that John will call* or *John rudely departed* vs. *John was rude to depart* are basically assigned the same meaning, by relating them to a common structural source (unless we want to restore compositionality by assuming hidden higher predicates for subject-oriented adverbs, as in McConnell-Ginet 1982). Since there seems to be no obvious way to relate adjectival and adverbial constructions syntactically (that is, by resorting to widely accepted modules of syntax, much in the spirit of Jackendoff's criticism), we are forced to depart from the strongest version of UTAH. It seems fair to conclude, however, that this issue is still poorly understood (see also section 4).

23 The Agr(eement) node corresponds to one of the functional projections in which the Aux(iliary) node has been split under the set of assumptions developed in Pollock (1989), Moro (1988).

24 A suitable example is *Nessuno probabilmente telefonerá alle 5* 'Nobody probably will call at 5', where only the topicalized reading of the negative subject is admitted (Belletti 1990: 43). Under the assumption that the left-dislocated subject can be 'reconstructed' into its original position, we can arguably derive the correct semantic result, according to which the modal adverb takes scope over the whole sentence. However, notice that the same facts obtain for sentences involving subject-oriented adverbs, as in *Nessuno intelligentemente telefonerá alle 5* 'Nobody cleverly will call at 5', where the negative subject is obligatorily topicalized. In this case, it is not clear that reconstruction of the subject in the scope of the adverb would produce the correct semantic result, since the subject is one of the arguments of the 'relational' adverb. Additional (interpretive) assumptions are needed, suggesting that (independently motivated) movement of constituents other than the adverb is not sufficient to assign a 'compositional' meaning to the latter (on the compositionality issue, see also section 3).

25 There are also approaches where a certain adverbial reading is admitted to apply to a set (crucially not a singleton) of structural descriptions, as in Neeleman's (1994a) analysis of the variety of adverbial positions characterizing West-Germanic scrambling.

26 See De Swart (1993), Delfitto and Bertinetto (1995), Cinque (1999).

27 See Cinque (1990c) for an empirically motivated refinement of the notion 'referential index' in terms of the notion 'D-linking' (Pesetsky 1987a). According to Cinque's

proposal elements bearing a referential index must refer to discourse-prominent entities in addition to referring to a participant in the event expressed by the predicate.

28 The hypothesis that adverbs can be generated in spec-CP is also apparently corroborated by the analysis of 'affective adverbials' (that is, adverbs mitigating the '*that*-trace' effect) as base-generated in spec-CP and as triggering, in such a position, CP-recursion, arguably as a consequence of the requirements on clause-type identification (Browning 1996). A convenient example is provided by the following minimal pair:

(i) *Robin met the man Leslie said that was the mayor of the city.
(ii) Robin met the man that Leslie said that for all intents and purposes was the mayor of the city.

Browning claims that the circumvention of the *that*-trace effect is achieved via coindexation of the *wh*-operator with the trace of the displaced C, and presents interesting evidence to the effect that embedded topicalization of arguments is essentially different from embedded topicalization of adverbials.

29 Costa (1996) provides interesting empirical arguments against Pollock's analysis, arguing that extraction is possible in English from the allegedly extraposed prepositional complements.

30 Under the hypothesis that adverbs belonging to a given class fill the specifier position of a designated functional projection, it is expected that one and only one head position is available between two arbitrary adverbs (corresponding to the head of the designated functional projection). Data concerning the distribution of past participle heads in Romance arguably provide support for this hypothesis.

See section 3 for a critical assessment of the conceptual foundations of the proposed correlation between adverbs and functional heads.

It should be emphasized that this idea has been advocated, in various ways, by different authors (Travis 1988; Bowers 1993; and others), claiming that adverbs belonging to a given class are licensed by the features realized on a single designated head, which may be functional or lexical. Travis (1988) assumes, for example, that adverbs licensed by V can be generated either as complements of V (within V'), as in *John learned French perfectly*, or as adjoined to V' (or VP), as in *John learned French quickly*, where the adverb is allowed to occur preverbally, contrary to what happens in the former example (**John perfectly learned French*). The form of head licensing developed in Bowers (1993) is far more restrictive, since adverbs are uniformly analyzed as X'-adjuncts and a one-to-one correlation is assumed to exist between adverb classes and designated heads. Bowers assumes that adverbs which exclusively occur postverbally, such as *perfectly* in the example above, are in fact those which are licensed by V, explaining the prohibition on their preverbal occurrence in terms of obligatory verb movement to the functional category Pred, encoding predication in syntax (see Bowers 1993 for the derivation of verb movement within the 'minimal functional complex' from the particular version of theta-theory assumed there, which presents clear analogies with the Larsonian VP-shell theory). Since direct objects are assumed to be generated in spec-VP, and VP-adverbs are adjoined either to V' or to Pred', the prohibition against adverbs occurring between the verb and the direct object is straightforwardly derived, without any need to resort to the adjacency condition on case assignment originally proposed in Stowell (1981). As a matter of fact, Bowers claims that V-adverbs are prohibited from appearing between the verb and the direct object even in French, as shown by the ungrammaticality of **Jean parle*

parfaitement l'Anglais (predicted by the hypothesis that the postverbal position of V-adverbs is a consequence of obligatory movement of V to Pred). The assumption that adverbs like *perfectly* and *intimately* are V-adjoined, together with obligatory V-raising to Pred and the assumption that direct objects are in spec-VP and PP-complements within V', provide a direct structural explanation for the fact that V-adverbs do not resist placement between verb and PP-complements, as revealed by the following contrast (see Bowers 1993: 609 and section 5 for further discussion of these facts):

(i) John spoke French intimately to Mary.
(ii) *John spoke intimately French to Mary

An important aspect of Bowers' analysis is that head licensing of adverbs is assumed to be essentially nondirectional (with right and left adjunction equally permitted), explaining why Pred-adverbs can optionally occur postverbally (as in *John learned French (very) quickly*). See, however, section 6 for important arguments against right-adjunction and the nondirectionality of adverb licensing.

31 Cascade-structures are characterized by a modification of the usual selection requirements according to which a head H is allowed to select positions corresponding to the specifier of the sister of H.

32 As examples of the insensitivity of temporal adverbials to weak islands, Giorgi and Pianesi (1997) discuss minimal pairs as the following in Italian, instantiating a clear contrast between manner and temporal adverbials:

(i) A che ora ti dispiace che Mario sia partito?
'At which time do you regret that Mario has left?'

(ii) *Come ti dispiace che mario sia partito?
'How do you regret that Mario has left?'

33 Instances of analyses of the argument structure of verbal predicates which depart from usual assumptions are Higginbotham's (1985) event argument, Kratzer's (1995) spatio-temporal argument, and Stowell's (1996) temporal argument.

34 See Rooth (1985) for technical discussion of the way in which the two arguments of the frequency adverb are derived. The view adopted there is that these arguments are not syntactically expressed, and must be derived by applying relatively complex interpretive devices, based on the so-called association with focus procedure. For the view that the two arguments can be derived compositionally by means of a relatively straightforward mapping between syntax and semantics, see Delfitto and Bertinetto (1995).

35 There is an extensive literature on the interplay between temporal morphemes and adverbials (see the references cited in Ogihara 1996). The interplay between temporal/aspectual adverbials and aspectual morphemes is a somewhat less studied phenomenon (see the references mentioned in Delfitto and Bertinetto 1995).

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5 Affectedness

MONA ANDERSON

1 Introduction
2 Other formulations of affectedness
3 Extending affectedness to verbs
4 Affectedness in middles
5 Affectedness in dative constructions
6 Other forms constrained by affectedness
7 Experimental work

1 Introduction

The notion of affectedness was used in Anderson (1977a, 1979) to describe the relation between a preposable object and its head in noun phrases. In (1a) the logical object of the noun can appear as the possessive but in (1b) it cannot. The mechanism by which this generalization is captured is that only nouns which affect their complements can take bare NP complements. The structure of a noun phrase like (1a) would have *the city* as the direct complement of destruction. The surface structure would be derived by NP preposing. The structure of a noun phrase like (1b) would have *history* as the object of a true preposition *of* and (1b) could not be derived by NP preposing because a preposition would be stranded. There is no legitimate source for (1b) because the noun *knowledge* cannot take a bare complement but only a prepositional phrase complement. Only those nouns which affect their complements can take bare complements. A necessary assumption is that a stranded preposition within the NP marks it as ungrammatical. Only nouns which affect their complements can allow those complements as possessives. In essence the notion of affectedness determines the categories of complements that nouns can select. Those which affect their complements can select bare NPs but those which do not affect their complements must select prepositional phrases. The notion of affectedness is extended to nouns of creation such as *the production of the play.*

(1) a. the city's destruction
b. *history's knowledge
c. the destruction of the city by the barbarians

Since that claim, others have used this notion for other constructions or modified it or tried to derive it from other principles. Others used the notion in describing language acquisition or patterns of verb usage in adults. The modifications of how the constraint operates are of several types.

For Fiengo (1980) there is a sort of filter on noun phrases which requires arguments within noun phrases to be either agents or affected objects if they are structurally possessive but semantically not subjects or structurally in a prepositional phrase and semantically subjects. This information is expressed as features on these nouns. Jaeggli's (1986a) version of the constraint applies to both nouns and verbs and he makes an attempt at an explanation. He claims that the relation between a noun or verb and an unaffected complement is not as clear as when the complement is affected and so the external theta-role must be expressed when the complement is unaffected. This indirectly constrains the kinds of objects that can occur with a certain class of nouns and verbs by constraining the external theta-role position rather than the object position. Grimshaw (1990) has another set of mechanisms to deal with the data. She argues that passive nominals like (1a) are fundamentally different from their active counterparts (1c). In (1c) the noun *destruction* takes arguments, has event structure, and assigns a theta-role through the preposition *of*, but in (1a) the noun *destruction* neither takes an argument, has event structure, nor assigns theta-roles. The relation between the noun *destruction* and *city* is expressed not at the syntactic level but at the lexical semantic level. (1b) is ungrammatical because it is stipulated that complements cannot be unaffected at the lexical semantic level.

Rozwadowska (1988) and Amritivalli (1980) present data from English and Polish, a new theta-role, and several language specific constraints to account for affectedness but it appears that their data are better described in terms of lexical gaps rather than by this extra machinery.

Giorgi and Longobardi (1991) extend Anderson's (1977a, 1979) analysis to Italian nouns which allow preposed pronominal objects even though these objects are not affected. They follow Jaeggli in assuming that nouns of this class must have the external theta-role expressed and they assume that Italian nouns have a position which allows the pronominal object to prepose, a position not available in English. Rizzi (1986a) uses affectedness as a constraint on possible theta-grids to predict the availability of null objects in Italian.

Tenny (1992, 1994) revises the semantic description of affectedness to include verbs of creation, concealment, and exposure which seemed not to fit into the original formulation. She claims the correct description is that the object delimits the event of the noun or verb. She uses data from middles in English and the *ba* construction in Mandarin to illustrate her point. Egerland (1998) discusses this version in terms of middles in English and claims that the event is delimited if it must take place over a fixed period of time.

Ackema and Schoorlemmer (1994) try to derive the affectedness constraint from other principles using data from middles in Dutch and English. They claim that some middles are formed in which the object is not affected and that these and other middles are predicted by the presence of an action tier for the verb or noun and a suppressed arbitrary actor and a thematic hierarchy. However, their Dutch examples fall under Tenny's revision of affectedness, a more economical way of accounting for them.

It appears that affectedness may play a part in some dative constructions. Janda (1988) claims that the dative of possession in Czech implies the possessor is affected and that it can be used pragmatically to create a feeling of intimacy. Landau (1999) argues that the possessive dative construction in Hebrew, French, and Spanish is not constrained by affectedness but rather by independent constraints on movement. Collins (1995) argues that interpretation of datives in English is not constrained by affectedness. Sadakani and Koizumi (1995) however, argue that children learn the distinction between the case marker *ni* and the postposition *ni* in Japanese on the basis of affectedness. They relate this to a hierarchy proposed by Koizumi in which more affected arguments are attached closest to the verb. Koizumi uses depictive predicates and secondary resultative predicates in Japanese to provide evidence for this claim. Miyagawa (1988) uses floating numeral quantifiers in Japanese to make a similar point.

This connection between the semantic notion of affectedness and the closeness of the connection between the complement and the head seems to be the most salient feature of the work on affectedness. In Anderson (1977a, 1979) this is expressed as a constraint on the syntactic frames that nouns affecting their objects can appear in. This constraint seems to extend to verbs as well. It seems reasonable to suggest that this semantic notion has an effect on syntactic structure at the level of subcategorization. The use of affectedness in experimental and acquisition studies seems to support the idea that this is some kind of semantic primitive that constrains syntactic frames.

In an experimental study Gropen et al. (1991) found that when asked to use novel verbs children more often made the goal in the illustrated activity the direct object of the verb when the goal was affected. The moving entity was more often made the direct object when the goal was unaffected. Lebeaux (1988a) claims that children use affectedness in acquiring passives with affected objects being more readily passivized. Gordon and Chafetz (1990), however, claim that the difference in comprehension by children is due to the fact that they hear the passives with non-affected objects less often. The data on affectedness in acquisition provides some support for the notion being a semantic primitive.

2 Other formulations of affectedness

Fiengo (1980) uses a feature system involving the notion affected to describe the same data but claims the features allow him to include the generalization that

the objects of *by* must be affectors. He combines the generalization in Anderson (1977a, 1979) with another generalization. In his system the possessives in (1a) and (1b) must be interpreted as affected because there is a rule forcing arguments within nominals to be marked as [+affect] whenever the case and the semantic notion of subject match in value. The example in (1b) is ungrammatical because it cannot be interpreted as affected contrary to the rule (2).

(2) $\theta \longrightarrow$ + affect / _____
α Oblique
α Subject

Nouns are semantically classed as requiring affected objects and/or affector subjects. Fiengo claims that the possessive case is [–oblique] and the case of the object of the preposition is [+oblique]. In the semantics of the NPs in (1) both *the city* and *history* are [–subject] and the NPs in the *by* phrases if they were present would be [+subject]. The feature [+affect] belongs to both the affected NP and the affecting NP. The possessives in (3a) and (3b) are both [–subject] in a semantic sense and [–oblique] in a case sense. They match, being both [–] and therefore must be interpreted as affected. However *expresssion* is in the class of nouns which does not affect its objects and so there is a clash between the syntactic feature and the necessary interpretation.

(3) a. Carthage's destruction by Rome
b. *great relief's expression by John
c. *the definition of a term by a dictionary

(3c) is out because *the dictionary* is [+oblique] being the object of a preposition, and [+subject] being the semantic subject, so it must be [+affect] but it is not capable of being an affector.

It is not entirely clear why a dictionary cannot affect something. Fiengo is relating the notion of affector to the notion agent.

Technically, the notions of affected patient and affecting agent are brought together in this analysis but the system as a whole does not seem to be an improvement over the original formulation in Anderson (1977a, 1979).

Jaeggli (1986a) suggests another way of expressing affectedness in an attempt to unify it with constraints on passive in general. His Affectedness Constraint specifies that if a complement of a category is unaffected, it is impossible to eliminate the external theta-role of that category.

In an example like (3b) *expression* does not affect its complement and therefore the external theta-role cannot be absorbed and expressed in the prepositional phrase because of the Affectedness Constraint. An example like (1b) is out because the external theta-role is not expressed. An example like (4) is allowed because there is a PRO expressing the external theta-role of *expression*.

(4) the expression of great relief

Jaeggli has an explanation of sorts for this generalization. He claims that when the complement is affected the thematic relation between the predicate and the complement is well defined. When the complement is unaffected the relation is not clear and depends on the external theta-role for clarification. The external role cannot be eliminated because then the relation will not be clear. Jaeggli sees this as a possible way to derive the Affectedness Constraint from more general principles. As it stands it seems to be a constraint on the theta-roles occurring in a class of nouns. Nouns which do not affect their complements have an obligatory external theta-role. This is more indirect than the formulation in Anderson (1977a, 1979) in that the lack of preposing is attributed to the unavailability of the specifier position in these nouns but the unavailability is directly linked to the ability of the noun to affect its object. Both rely on the semantic characterization of these nouns constraining the frames they can appear in.

Grimshaw (1990) has another version of the way the constraint operates. Grimshaw argues that nouns do not assign theta-roles unless they have prepositions mediating between the noun and the complement. This means that a system like Anderson (1977a, 1979) will not work because there the noun assigns the theta-role to the bare NP complement before it moves. For Grimshaw the affectedness constraint works at the level of lexical semantic representation. At this level, the objects of nouns are complements but not grammatical arguments. Complex event nominals such as *destruction* have a representation like verbs in that they take arguments and assign theta-roles. They must have prepositions to actually assign the roles. However, for her the example in (1a) has no event structure and does not have arguments or assign roles. Result nominals such as *knowledge* have no arguments and do not assign theta-roles. The relation to their complements as in *knowledge of history* is represented at the lexical semantic level and not at the syntactic level. There is no movement in nominals and the ungrammaticality of nominals like (1b) results from the stipulation that at the lexical semantic representation complements cannot be unaffected. In other words "unaffected [lexical conceptual structure] arguments are not subject to complement interpretation" (Grimshaw 1990: 94). The effects of the affectedness constraint are achieved by restricting arguments to those nouns which are process nouns and by a stipulation at the semantic level that unaffected DPs cannot be complements. In a phrase like *knowledge of history* presumably the phrase *history* is interpreted as a complement so there must be a more specific constraint. Nominal passives are not parallel to verbal passives in syntax but only at the lexical semantic level. The possessive in a passive nominal like *the city's destruction by the enemy* is interpreted as the patient because it is an argument at the lexical semantic level. The *by* phrase should not be interpreted as agent because there is no syntactic argument structure so Grimshaw must deny that *the enemy* is interpreted as an agent. Within her analysis passive nominals cannot be interpreted as processes with event structure though their counterparts such as *the enemy's destruction of the city* have event structure and theta-roles. This discrepancy between the interpretation of nominals which appear to be similar in meaning is a weakness of this analysis.

Rozwadowska (1988) claims that the affectedness constraint should be replaced by a new grammatical relation, Neutral, and the constraint that Neutral can not be in the specifier of an NP. The examples which provide evidence for this are in (5).

(5) a. the public's delight in the book
b. *the book's delight of the public
c. The book delights the public.
d. The public delights in the book.

The assumption seems to be that because (5c) is a good sentence the nominal *delight* should result in the NP in (5b). However there is another sentence (5d) which could have the verb which is related to the nominal in (5a). In Anderson's (1977a, 1979) analysis the affectedness constraint limits the nouns which take bare NP objects. If one assumes that the noun *delight* corresponds to only one of the possible categorical frames of the verb *delight* the prediction is straightforward. The noun *delight* never appears with an *of* preposition so there is no reason to believe that it takes a bare NP and the lexical preposition *in* in both the NP form (5a) and the verb form (5d) indicates that there is no bare NP involved here. Chomsky (1970) in his original proposal of the lexicalist hypothesis cautioned that not all verbs will have related nominals and there seems to be no good evidence that the verb in (5c) has a related nominal. Rozwadowska goes on to use the notion affected to define a new thematic relation, Neutral, in which the entity holding that relation to a predicate is not affected by the predicate and does not have control over the predicate. She formulates a principle that Neutral can never appear in a specifier position of a nominal. This principle and the new relation will rule out the example in (5b) which in Anderson would be accounted for by the lexical gap, no nominal *delight* corresponding to the verb in (5c).

Rozwadowska (1988) goes on to bring in data from Polish to show that only affected arguments can be expressed as genitive complements of Polish nominals. She accounts for these with an additional principle applying to Polish nominals.

(6) a. Jan podziwia Marię. (Polish)
John-nom admires Mary-acc
'John admires Mary.'
b. Podziw Jana dla Marii
admiration-nom John-gen for Mary-gen
'John's admiration for Mary'
c. *Podziw Marii przez Jana
admiration-nom Mary-gen by John-gen
*'Mary's admiration by John'

Amritivalli (1980) presents a class of noun/verb pairs which Rozwadowska claims cause a problem for the affectedness constraint.

(7) a. Gamma rays excited the protons.
b. the excitation of the protons by gamma rays
c. The news excited Mary.
d. *the excitation of Mary by the news
e. *the excitement of Mary by the news
f. Mary was excited at the news.
g. Mary's excitement at the news
h. *Mary's excitation by the news

The question raised is if *excitation* is a nominal that allows preposing as in (8a) why does the animate noun not appear in the genitive in (8b)?

(8) a. the proton's excitation by gamma rays
b. *Mary's excitation by gamma rays

The answer seems clear when you look at the whole range of examples. The noun *excitement* is related to the adjective/past participle in (7f) not to the verb in (7b). This is shown by the fact that (7e) is ungrammatical. (7d) is bad because *the news* cannot cause the kind of physical event that is meant by the noun *excitation*. For the same reason (7h) is out. (7b) is actually grammatical if the physical sense of *excitation* is used. Other nouns which show this same pattern are *depression* and *agitation.* Although they do not have two different forms of the nominal they have the two senses. The crucial factor is the difference in the two senses of the nominals, not in whether the object is animate or not. This set of data can be more easily explained by a lexical gap rather than by a new thematic role and several independent principles.

Giorgi and Longobardi (1991) look at affectedness in Italian and English but suggest that the generalizations probably hold for Germanic and Romance languages in general. They accept Anderson's (1977a, 1979) analysis in which those nouns which do not affect their objects take true prepositions which prevent preposing because of preposition stranding. However they point out some nouns in Italian which allow preposed objects which are not affected.

(9) la sua conoscenza (Italian)
the its knowledge
'its knowledge'

They claim that examples like this are possible in Italian because there is a pronominal empty category which serves as the external theta-role. English and other Germanic languages do not have this empty pronominal as a possibility. They claim that this class of nouns requires an external theta-role. Others in the class are derived from verbs translated as *know*, *see*, *recollect*, *perceive*, *observe*. In English, because there is no empty pronominal to take the external theta-role, preposing the object fills the external theta-role position and this violates the

condition that these nouns must have an external theta-role. Their version of the affectedness condition says that if the complement of a noun is unaffected the external theta position cannot be de-thematized. This would distinguish between the two phrases in (10) because the technical definition of dethematized applies to the *by* phrase in (10b) but not to the *by* phrase in (10a).

(10) a. the knowledge of algebra by the students
b. *algebra's knowledge by the students

In order to make this analysis work they include the condition from Anderson (1977a, 1979) that only nouns that affect their objects can take bare NPs and a condition which says that certain nouns must have an external theta-role and that the theta position cannot be dethematized if the complement is unaffected. This extra condition is needed to account for the Italian examples like (9a) which appear to violate the condition from Anderson (1977a, 1979). They are allowed because Italian allows for an extra position where the pronoun *sua* can be before the noun but not in the thematic subject position.

They provide additional evidence to support the class of nouns which require an external theta-role. They show that these nouns do not allow backward control by a non c-commanding controller. In (11a) *lui* and *Mario* cannot be coreferent.

(11) a. Una migliore conoszensa di lui e della natura del problema
a better knowledge of him and of the nature of the problem
avrebbe giovato alle decisioni di Mario.
would have helped the decisions of Mario
b. Quella fotografia di lui in divisa ha giovato molto alla
that picture of him in uniform has helped much the
carriera di Gianni.
career of Gianni

Nouns like *fotografia* in (11b) do allow control because they are not in that class. In (11b) *lui* and *Gianni* can be coreferent. Nouns like *fotografia* have an agent as the external argument.

3 Extending affectedness to verbs

Rizzi (1986a) also uses nouns like *fotografia* to support a generalization based on the affectedness distinction from Anderson (1979). He suggests that affectedness operates on theta grids. Some verbs take unaffected objects. He claims that theta-roles other than theme, such as experiencer, benefactive, source, goal, are always affected but that there are two kinds of theme: theme 1, which is affected and theme 2, which is unaffected. He argues that an empty pronominal cannot be interpreted as arbitrary if it is unaffected and this predicts that verbs which take

theme 2 will not allow null objects whereas those which take theme 1 will. The contrast is shown in (12):

(12) a. *Gianni incontra/trova/vede/sente/ arrabiati (Italian)
Gianni meets/finds/sees/hears angry
b. Gianni fotografa/ritrae/visita nudi
Gianni photographs/portrays/visits nude

In (12a) the null object is not allowed because these verbs take unaffected objects. In (12b) the null object is allowed because these verbs take affected objects. Rizzi agrees with Anderson (1977a, 1979) in claiming that reproduction of an object as in *fotografia* counts as affected.

Rizzi notes that the same kind of distinction shows up in middles as described by Fiengo (1980) and Keyser and Roeper (1984).

(13) a. John portrays easily.
b. *John sees easily.

Rizzi notes that the affectedness effect becomes less clear-cut if the context indicates the object is affected even when the verb is one that takes an unaffected object.

(14) In questo paese, talvolta la polizia trova ___ nudi
In this country, sometimes the police find ___ nude
sulla spiaggia. (Italian)
at the beach

In (14) the null object should not be allowed because the verb *trova* does not affect its object but the context indicates that those found nude by the police will be affected. Rizzi also notes that "the affected–unaffected distinction appears to be of higher syntactic relevance than most distinctions offered by θ theory" (1986a: 540). These attempts to use affectedness to cover other languages essentially accept the definition of affectedness in Anderson (1977a, 1979) though they modify the mechanism, but Tenny (1992) modifies the description itself.

Tenny (1992, 1994) argues that the affected argument of a verb is better described as "an argument which measures out and delimits the event described by the verb" (1992: 8). This quality of delimiting the event is supported by the fact that these verbs take temporal adverbs:

(15) a. The missionaries converted the natives in a day/*for a day.
b. John avoided Bill *in a day/for a day.

In (15a) *the natives* delimits the act of conversion and does not allow the temporal adverb with *for* which modifies an event taking place over a period of time. In (15b) *Bill* does not delimit the act of avoiding and allows the adverbial with *for* but not the adverbial with *in* which applies to events with an end point. Tenny

claims that this brings together the other nominals allowing preposing, those of creation, concealment, or exposure. Anderson (1977a, 1979) had to extend the notion of affected to include these nominals. Tenny claims that describing this class of predicates in terms of aspect allows a more unified description of the whole class. She claims they have a measure aspectual role which gives a temporal limit associated with the event being measured out. She seems to mean by delimited that the endpoint is indicated.

4 Affectedness in middles

Tenny (1992, 1994) extends this analysis to middles and here again argues that the notion affected is not as accurate as the notion of delimited. In (16) neither *cross* nor *wander* affects the object, *desert*, but *the desert* delimits crossing and not wandering. Thus (16a) is predicted to be grammatical and (16b) is not.

(16) a. This desert crosses easily.
b. *This desert wanders easily.

Tenny agrees with Anderson (1977a, 1979) that the affected object is a direct internal object of the verb or noun when the object is affected or in Tenny's terms, when the object delimits the event of the verb or noun.

In support of the measure aspect Tenny gives examples from the *ba* construction in Mandarin. In this construction the object preceded by a preposition can move to a position before the verb only if it is affected:

(17) a. Ta ba Zhangsan sha-le. (Mandarin)
he BA Zhangsan kill-ASP
'He killed Zhangsan.'
b. *Lisi ba Xiaoming kanjian-le.
Lisi BA Xiaoming help-ASP
'Lisi saw Xiaoming.'

The object can appear with *ba* before the verb if the object is affected as in (17a) but not otherwise as in (17b). Tenny cites Cheng and Ritter (1987) for these examples and claims that verbs with change of state or resultatives also allow this construction. She claims that all of these involve a measure aspectual role.

It is not clear how the aspectual role actually limits the operation of these movement rules. Tenny claims that some syntactic processes such as passivization are sensitive to the measure aspect but others such as *wh*-movement are not. However, it appears that taking the affected object as delimiting the event unifies the kinds of predicates that are involved in affectedness for both nouns and verbs.

Going back to the noun preposing examples, one could claim that those nouns which are delimited by their objects take those objects as bare NPs and when the

event is not delimited the complement is a prepositional phrase. A prohibition against preposition stranding then prevents preposing such objects.

Egerland (1998) follows Tenny in assuming that the affectedeness constraint is better described in terms of the object delimiting the event. For Egerland an event is delimited if it must take place over a fixed period of time. Egerland uses middles to illustrate his point:

(18) a. John read the book.
b. The book reads easily.

In (18a) *the book* delimits the act of reading even though it is not affected by the event. As predicted, *read* is good as a middle and middles are assumed to work only with affected objects.

Ackema and Schoorlemmer (1994) suggest that the affectedness constraint can be derived from other conditions. They claim that there are middles in Dutch and English in which the subject is not affected:

(19) a. De Matterhorn beklimt gemakkelijker dan de Mt. Everest. (Dutch)
the Matterhorn climbs more easily than the Mt. Everest
b. Greek translates easily.

In their analysis these are predicted because they claim that middles are formed in the lexicon whenever there is an action tier and a suppressed arbitrary actor. When this occurs the affected patient can be projected as the external argument. Both the Dutch and English examples have action tiers but no patients and so the only remaining arguments become the external arguments. They claim that these kinds of examples are rare because usually verbs with action tiers have patients. This means that middles tend to have affected objects but not always. Additional evidence comes from Dutch impersonal middles. The subject is not affected so the affectedness constraint fails to predict the grammaticality of (20):

(20) Het loopt lekker op deze schoenen. (Dutch)
it walks comfortably on these shoes

This is grammatical because there is an action tier and a suppressed arbitrary actor so the impersonal pronoun is projected in the external argument position. (21) is predicted to be bad because there is no action tier or actor for a state verb:

(21) *Het lijdt even makkelijk met veel geld. (Dutch)
it suffers as easily with much money

The authors suggest that a similar explanation may underlie the claim that the affectedness constraint controls passive nominals and null objects. They suggest that the logical subject argument is suppressed and the external argument chosen

by the thematic hierarchy and that such a derivation will be possible only with nouns that have an action tier.

For Ackema and Schoorlemmer the work of the affectedness constraint is done by the thematic hierarchy which dictates that the affected patient will be the external argument, if there is one, instead of the arguments lower on the hierarchy. Examples like those in (22) show that this analysis does not cover all of the data because both *avoid* and *avoidance* surely have action tiers and suppressed actors but they do not allow a middle (22) or preposing (22a):

(22) a. *the avoidance of the hole by John
b. *That hole avoids easily.

It appears that Tenny's version of the affectedness constraint covers their examples. In (19) the *climbing* and the *translating* are both delimited by the syntactic subjects. The impersonal middles are not obviously predicted by Tenny's version of affectedness. It is not clear what mechanism prevents middles from forming with verbs which don't affect or delimit their objects but there seems to be agreement that some constraint operates here.

5 Affectedness in dative constructions

Janda (1988) relates affectedness to the dative of possession in Czech. The dative of possession as contrasted to the regular possessive implies that the possessor is affected. So for example in (23b) the possessor is considered to be affected, but not necessarily in (23a):

(23) a. Jeho matha zemřela. (Czech)
his -possessive mother-nom died
'His mother died.'
b. Zemřela mu matha.
died him-DAT mother-NOM
'His mother died.'

Further, the regular genitive (24a) cannot be used for inalienably possessed body parts but the dative of possession (24b) can be:

(24) a. *Litost sevřela hrdlo Petra. (Czech)
regret-NOM tightened throat-ACC Peter-GEN
'Regret tightened Peter's throat.'
b. Litost sevřela Petrovi hrdlo.
regret-NOM tightened Peter-DAT throat-ACC
'Regret tightened Peter's throat.'

Both the dative of possession and the regular possessive can be used together. As in (25):

(25) Když sevrátit viděl že mu shořel
When refl-ACC returned saw that him-DAT burned down
jeho dům. (Czech)
his-POSS house-NOM
'When he returned he saw that his house had burned down (and he was affected).'

Janda claims that this dative can then be used to pragmatically create intimacy, solidarity, and authority because it can create the feeling that the speaker or the listener is affected by the action when it is not obvious that this is so. For example in (26), the mother includes herself as affected by the teething pain of the child and creates a feeling of solidarity:

(26) Rostou nám zoubky
grow us-DAT teeth-Nom

Janda relates this pragmatic use to Lakoff's cognitive grammar (Lakoff 1987).

Landau (1999) argues that in Hebrew, French, and Spanish the possessive dative construction is limited by independently motivated constraints on movement and that affectedness does not make the correct predictions. The contrast in (27a) and (27b), he claims, does not support the importance of affectedness because even though the affected dative in (27a) is good and the unaffected dative in (27b) is out there are other examples in both Hebrew and French in which the dative is unaffected, as in (28a) and (28b):

(27) a. Je lui ai arraché la dent. (French)
I him have pulled the tooth
'I pulled his tooth.'
b. *Je lui ai admiré le bras
I him have admired the arm
'I admired his arm.'

(28) a. Gil xipes le-Rina et ha-taba'at. (Hebrew)
Gil searched to-Rina ACC the-ring
'Gil searched for Rina's ring.'
b. Je lui ai photographié les pieds. (French)
I to- her have photographed the feet
'I photographed her feet.'

Landau claims that the dative of possession in these languages originates in the specifier of the DP which is possessed, *les pieds* in (28b), and raises from there to the specifier of the VP. His analysis predicts that you will not get dative of possession when there is no specifier of the VP and he claims this is true when the verb is a subject experiencer verb. In these verbs the experiencer is an internal argument so there is no position to which the possessive can raise. He argues that verbs with agents require a higher verb shell and the possessive can raise to the

specifier of that shell. In experiencer verbs like those in (27) the experiencer, *je*, occupies the specifier of VP position and the dative cannot raise. His analysis also predicts that the dative of possession will not be possible if the possessed DP is not present as in (29):

(29) Gil axal le-Rina *(et ha sendvich). (Hebrew)
Gil ate to-Rina Acc the sandwich
'Gil ate Rina's sandwich.'

These data from French and Hebrew cast doubt on the claim that dative of possession in general allows only affected objects. However there does seem to be a connection between the closeness of the object to the verb in datives and the notion of affectedness. Shopen (1986) claims that "in any construction the position immediately following the verb draws more attention to affectedness than a position farther removed from the verb" (1986: 153). Thus in *threw John out* there is more interest in the effect on *John* than there is in *threw out John*.

Collins (1995) argues on the basis of alternations extracted from the Australian Corpus Project that affectedness is not the only factor in the interpretation of datives. He claims that whether the NPs are definite, accessible, pronouns, or at the end of the VP are all factors. He claims that in examples like (30) the (30a) version occurs more often when *the flowers* is new information and (30b) more often when the identity of the recipient is new information. These are not distinguished by affectedness.

(30) a. Tom gave his aunt the flowers.
b. Tom gave the flowers to his aunt.

Another claim about the relevance of affectedness to datives is made in Sadakani and Koizumi (1995). They claim that children distinguish between the dative case marker *ni* and the postposition *ni* on the basis of the affectedness of the NP. The case marker *ni* is attached to more affected objects and the postposition is attached to less affected objects.

(31) a. Emi-wa Mika-ni bara-no hanataba-O ageta.
Emi-Top Mika-ni rose-Gen bouquet-Acc gave
'Emi gave Mika a bouquet of roses.'
b. Kanta-wa yuuenti-de uma-ni notta.
Kanta-Top amusement park-at horse-NI rode
'Kanta rode a horse at the amusement park.'
c. Mika-wa Tanaka sensee-ni inu-o.
Mika-Top Tanaka prof.-NI dog-Acc
'Mika was affected by Professor Tanaka's complimenting her dog.'
d. Kanta-no ronbun-wa GB riron-ni.
Kanta-Gen paper-Top GB theory-NI
'Kanta's paper is based on GB theory.'

In (31a) and (31b), where *Mika* and *the horse* are more affected, the case marker is used and in (31c) and (31d), where *Professor Tanaka* and *GB theory* are not affected, the postposition is used. This difference in affectedness is implicated in the process by which children learn the distinction between the postposition and the case marker. Children give a case marker structure to NPs which are more affected and a postposition to those which are less affected. The dative case marker is acquired first by children. This corresponds to a hierarchy suggested by Koizumi (1994) in which more affected arguments are attached closest to the verb.

6 Other forms constrained by affectedness

Koizumi (1994) argues that depictive predicates in Japanese are not grammatical when the antecedent of the depictive is a non-affected theme. The contrast is shown in (32).

(32) a. Taroo-ga aizin-o hadaka-de korosita. (Japanese)
Taroo-Nom lover-Acc naked killed
'Taro killed his lover naked.'
b. Sinko-ga manekin-o hadaka-de korosita.
Shinko-Nom mannekin-Acc naked displayed
'Shinko displayed the mannequins naked.'
c. *Taroo-ga Ziroo-o hadaka-de hometa.
Taroo-Nom Ziroo-Acc naked praised
'Taro praised Jiro naked.'
d. *Taroo-ga Ziroo-o hadaka-de oikaketa.
Taroo-Nom Ziroo-Acc naked chased
'Taro chased Jiro naked.'

In (32a) and (32b) the antecedents of the depictive *naked*, *his lover*, and *the mannekin*, are affected by the verbs, *killed* and *displayed*. In (32c) and (32d) the antecedent, *Jiro*, is not affected by the verbs *praised* and *chased*. Koizumi claims that the affected theme illustrated in (32a) and (32b) is a sister to the lowest verb and thus available to the depictive predicate whereas the unaffected theme illustrated in (32c) and (32d) is a sister to the higher verb phrase and thus not available to the predicate. Koizumi's principle of predication requires that the predicate be c-governed by the antecedent and c-governed by an x zero category. C-government is defined in terms of c-command with the requirement that there be no barrier between the two elements.

(33) a. $[_{VP}$ NP-o ODP $[_{V'}$ v]]
b. $[_{VP}$ NP-o $[_{V'}$ ODP v]]

In (33a) the object depictive phrase (ODP) is not c-governed by the verb, the only available zero level category, and in (33b) the V' is a barrier to c-government by

the unaffected object theme. In (32c) and (32d) the non-affected theme *Jiro* will not c-command a depictive predicate that is c-commanded by the zero level verb. Only the affected theme which is sister of the zero level verb will do so. These non-affected themes can however be antecedents of depictives if they undergo passive:

(34) a. *Taroo-ga Ziroo-o hadaka-de nagutta. (Japanese)
Taro-Nom Jiro-Acc naked hit
'Taro hit Jiro naked.'
b. ?Ziroo-ga hadaka-de Taroo-ni nagurareta.
Jiro-Nom naked Taro-by was hit
'Jiro was hit by Taro naked.'

Koizumi says this is because the subject position allows the depictive because the depictive can be a sister of Infl and be c-governed then by both an x zero category and the antecedent in subject position.

Koizumi points out that the thematic roles assigned in (34) are the same and thus it is not directly the thematic role which restricts the interpretation. Rather it is the base structure associated with the semantic role. The affected theme is a sister of the lowest verb and the non-affected theme is not.

Koizumi claims that secondary resultative predicates are also sensitive to the affected/non-affected distinction as illustrated in (35):

(35) a. Taroo-ga garasu-o 3-tu-ni kitta. (Japanese)
Taro-Nom glass-Acc 3-CL-into cut
'Taro cut the glass into three pieces.'
b. *Taroo-ga garasu-o 3-tu-ni tataita.
Taro-Nom glass-Acc 3-CL-into hit
'Taro hit the glass into three pieces.'

He concludes that secondary resultative predicates like *into three pieces* are generated as sisters of the lowest verb, v, and thus can be predicated of affected themes which are also sisters of v as in (35a) but they cannot be predicated of non-affected themes like *the glass* in (35b) because such themes are sisters of the higher verb complex. In other words, these themes are attached higher in the structure. Locative phrases are claimed to behave in the same way:

(36) a. Taroo-ga Ziroo-o betto-no ue-de korosita.
Taro-Nom Jiro-Acc bed-Gen on killed
'Taro killed Jiro on the bed.'
b. Taroo-ga Ziroo-o betto-no ue-de hometa.
Taro-Nom Jiro-Acc bed-Gen on praised
*'Taro praised Jiro on the bed.'

Koizumi claims that (36b) is ungrammatical if just *Jiro* is on the bed but that (36a) is grammatical if just *Jiro* is on the bed. In the reading where both people are on the bed it is assumed that the locative is higher in the structure. If locatives are considered to be secondary predicates they fit the pattern of Koizumi's principle of predication.

The notion of affected versus non-affected theme is different for Koizumi than for Anderson. In example (35b) the verb *hit* seems to carry the connotation of affecting the object yet these examples are classified by Koizumi as non-affected themes. Koizumi claims that affected themes are selected by verbs which "cannot repeatedly act upon the same object while a non-affected theme transitive can" (1994: 74). Thus one can kill someone only once but one can hit or praise them a number of times. This seems compatible with Tenny's revision of affectedness, that the affected theme delimits the action of the verb.

Koizumi claims that a similar analysis of secondary predicates works in English and that in English secondary predicates cannot be predicated of non-affected themes as shown in (37):

(37) a. ?*John hit Tom naked.
b. ?*Mary praised the professor drunk.

He claims that the objects of the verbs as non-affected themes are generated in the spec of VP and the adjectives *drink* and *naked* are generated as sisters of v. The judgments here are not very clear. *John killed Tom naked* seems no better than (37a) or *chased Tom naked*. Further, (38) seems perfect though *see* does not affect its object:

(38) Mary saw the professor drunk

Miyagawa (1988) makes a similar point about floating numeral quantifiers in Japanese. He claims that only affected themes allow numeral quantifiers to float. In (39) the floated quantifier is grammatical with *okutta*, 'sent', but ungrammatical with *matte*, 'wait for'.

(39) a. futa-tsu John-ga kozutsumi-o t okutta (koto) (Japanese)
2-CL John-Nom package-Acc t sent fact
'(the fact that) John sent two packages'
b. *futa-ri Mary-ga gakusei-o t matte iru (koto)
2-CL Mary-Nom students-Acc t wait fact
'(the fact that) Mary is waiting for two students'

This he claims is because the type of verb he calls a theme transitive directly governs the numeral quantifier, a predicate in his terms. He further stipulates that a predicate leaves a trace only if it is in a virtual A position. He claims that affected themes can involve exchange, creation, conversion, destruction, or consumption. As a test he uses the intransitivizing resultative, *-te aru*:

(40) a. ringo-ga katte aru. (Japanese)
apples-Nom buy-Gerund exist
'Apples are bought = Apples have been bought.'
b. *Hanako-ga aishite aru.
Hanako-Nom love-Gerund exist
'Hanako is loved.'

(40a) is grammatical but (40b) is not. Using this test verbs translated as *open*, *write*, *collect*, *break* are theme transitives and *wait*, *praise*, *like*, *shout at*, and *hit* are non-theme transitives. He claims that *hit* does not affect its object or take an affected theme role and that the same is true in English as shown by the impossibility of the predicate *flat* in (41b):

(41) a. John smashed the can flat.
b. *John hit the can flat.

Numeral quantifiers cannot move out of the positions in which they modify non-themes as in (27b) because they cannot leave traces. The assumption here is that if they cannot leave traces they cannot move.

Miyagawa claims that the distinction between affected and unaffected themes is similar to the distinction between resultative and depictive predicates in English.

(42) a. How clean did the dog pick the bone?
b. *How raw did you eat the meat?

In (42a) *clean* is the state that results from the event. In (42b) *raw* depicts the state of *the meat* not the result of the event. Miyagawa argues that a result can only occur when an entity is affected. This connects the resultative predicates to affected themes. He claims that the resultative predicate, like the numeral quantifier, is governed directly by the verb because of the relation to the affected theme. The distinction he makes seems similar to Tenny's distinction between accomplishment vs. ongoing action.

7 Experimental work

Gropen et al. (1991) show that affectedness may be a semantic primitive that enters into the assignment of argument structure to verbs. The authors' experimental data provide evidence that children use a rich semantic structure with linking rules rather than a fixed list of thematic roles.

The linking rule they discuss is one that links the direct object of a verb to the entity affected by the verb. Children aged 3 to 9 and adults were introduced to novel verbs by showing them the action described by the verb. Entities, such as a piece of cotton, were moved to a goal which was either affected by that movement or not affected. For example, a piece of wet cotton soaked the goal which

changed color, or a piece of dry cotton had no effect on the goal. When the goal was not affected the motion was in a particular manner, such as zig-zagging. Sentences using the novel verbs were elicited and it was found that when the goal was affected the children more often made the goal the direct object rather than making the moving entity the direct object. They would more often use a structure like 'keated the paper with the cotton' than 'keated the cotton on the paper'. This was taken to show that the children were using a rich semantic structure including the notion of affected and that they linked affected entities to the direct object position. If children had a set list of thematic roles and assigned the moving object to one of these roles and the goal to another, one would not expect there to be a difference in syntactic structure when the goal was affected.

The authors also found that the ground or goal was made the direct object only when it was completely filled or covered. In 'keated the board with the ball' the board would be covered by the ball. However the figure, the moving entity, could usually be the object whether the ground was completely covered or filled or not. In 'keated the ball on the board' the board could be completely covered or not. In terms of affectedness this may mean that a ground will not be considered affected unless it is substantially covered or filled. Having a few apples does not affect a cart. However, a figure is affected just by changing position.

The authors assert that those verbs which alternate between figure and ground are those in which both the figure and the ground could be construed as affected. Verbs like *brush* and *dab* have force applied simultaneously to figure and ground and alternate between 'brush the board with paint' and 'brush paint on the board'.

Lebeaux (1988a) claims that children use the semantics of affectedness when acquiring passives. Children learn non-action passives like 'was liked' later than action passives like 'was hit' and Lebeaux claims this is because they have a constraint that affected entities are objects. When the child hears passives like 'John was hit' the child assumes that *John* is affected and so must have been the object and posits a trace after *hit*. The child does not make the same assumption for sentences like 'John was liked' and so can't process them. Later the child notices that there is a productive passive morphology and so extends passive to verbs like *like* on the basis of the morphology not the semantics. For noun phrases like 'the city's destruction' the child assumes that there is a trace and that *the city* is the object, but because there is no passive morphology for passives in noun phrases the child does not extend this structure to other nouns. Passive is assumed only for those which fit the thematic generalization that affected nouns must be internal arguments. In the adult grammar the NPs with nouns like *destruction* will have a trace but they will not be real passives because it is not a productive process and the nominal passive ends up being thematically restricted.

Gordon and Chafetz (1990) claim that at least in the acquisition of passives children are not influenced by whether or not the object is affected by the action of the verb. Children do not seem to comprehend non-action passives as early as action passives but Gordon and Chafetz claim this is because they hear fewer

non-action passives. In their studies the verbs with affected objects were no more likely to be understood in passive than those which had non-affected objects.

Affectedness seems to be a factor in a number of different constructions, NP preposing, middles, datives, depictive predicates. The effects are found in English, French, Dutch, Hebrew, Polish, Japanese. The most straightforward mechanism for describing the effect is that it is a semantic primitive which constrains the subcategorization frames of verbs and nouns. The actual way in which this mechanism operates is not worked out for most of the constructions described here. Experimental work adds weight to the idea that affectedness is a semantic primitive.

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6 Analytic Causatives

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1 Introduction

The sentence in (1a) describes an event that occurred in the past of John repairing the car. In (1b), this sentence is embedded under a causative verb, *make*. The new sentence expresses the fact that the event of John repairing the car was brought about or caused by Mary.

(1) a. John repaired the car.
b. Mary made John repair the car.

Sentences such as those in (1b) are called causative sentences. The term *causative* derives from the semantics of these constructions. It is meant to express the fact that the event reported in (1a) is caused by someone. *Mary* in (1b) is called the *causer*, the person that brought about the event described by its verbal complement (*repair the car*), and *John* is called the *causee*. Other constructions that are like (1b) are given in (2):

(2) a. Mary let John repair the car.
b. Mary had John repair the car.

We call causatives of the types found in English analytical causatives, since the causative verb *make* (or *let*, *have*) and the verb in the complement are two independent words. Analytical causatives are also found in Romance languages, as the Catalan, French, Italian, Portuguese, and Spanish examples in (3) show:

(3) a. Marie fit reparer la voiture à Jean. (French)
b. Maria fece riparare la macchina a Gianni. (Italian)
c. Maria hizo arreglar el coche a Juan. (Spanish)
d. A Maria fez arranjar a máquina à João. (European Portuguese)
e. La Maria va fer arreglar el cotxe al Joan. (Catalan)
Mary made repair the car to John
'Mary made John repair the car.'

Although morphologically English and Romance causatives are similar (in both cases we have two verbs), syntactically the causative and the infinitive verbs (e.g., *fit reparer* in (3a)) in French and more generally in Romance languages behave as a single complex verb. This behavior is apparent in the distribution of

the infinitive arguments and in the properties of these arguments with respect to certain syntactic processes, as we will see in the following sections. Here we will mainly concentrate on Romance causatives.

Since Kayne's (1975) seminal work on French causatives, many studies have looked at the causatives in various Romance languages (see Rouveret and Vergnaud 1980; Manzini 1983b; Burzio 1986; Zubizarreta 1986; Bordelois 1988; Gonçalves 1999; Treviño 1990; Guasti 1993). For expository purposes, this review of analytical causatives will take Italian as a representative language of the Romance family and will explicitly point out the divergences among Romance languages.

2 The syntax of Romance causatives

Various properties single out Romance causatives. The most prominent ones are the distribution of the thematic subject of the infinitive verb embedded under the causative, and the behavior of its arguments with respect to certain syntactic processes like cliticization and passivization.

2.1 Distributional properties of the infinitive's subject

We have seen that in English the infinitive's subject surfaces between the causative verb and the infinitive, as in (1b). In Romance languages, the same order is generally prohibited, as seen in (4):

(4) a. *Maria ha fatto Gianni riparare la macchina.
Maria has made Gianni repair the car
'Maria made Gianni repair the car.'
b. *Paolo ha fatto la classe ridere.
Paolo has made the class laugh
'Paolo made the class laugh.'

The subject must occur in a position at the very end of the sentence, as in (3) above. In causatives based on transitive verbs, the subject of the infinitive, *Gianni*, appears after the direct object *la macchina* (the car) and is preceded by the preposition *a* (to), as in (3b) and (5a). Alternatively, it is introduced by the preposition *da* (by), as in (5b). These are not just two ways of expressing the causee. In fact, (5a) and (5b) are two different constructions that have some properties in common, but differ with respect to a number of other properties, as we will extensively discuss in section 2.3. Since Kayne's 1975 work, these two constructions have been named *faire-infinitif* (FI), (5a), and *faire-par* (FP), (5b):

(5) a. Maria ha fatto riparare la macchina a Gianni. *(faire-infinitif)*
Maria has made repair the car to Gianni
'Maria made Gianni repair the car.'

b. Maria ha fatto riparare la macchina da Gianni. *(faire-par)*
Maria has made repair the car by Gianni
'Maria had the car repaired by Gianni.'

In causatives of intransitive unergative verbs, as in (6), the subject of the infinitive surfaces after the infinitive verb, but is not and cannot be preceded by any preposition. This causative construction is also considered an instance of the *faire-infinitif* construction.

(6) Paolo ha fatto ridere la classe. *(faire-infinitif)*
Paolo has made laugh the class
'Paolo made the class laugh.'

The English order SV(O) displayed in (1b) is unacceptable in Romance causatives. Exceptions are some dialects of Spanish, according to Moore (1991) and European Portuguese (EP). For example, in EP, beyond the order in (3) found in the other Romance languages, one finds a causative construction displaying the English order, as shown in (7):

(7) Os pais mandaram os meniños comprar(em) os livros.
the parents made the children buy(-3PL) the books
'The parents made the children buy the books.'

Interestingly, in this EP construction, the infinitive verb can be inflected, that is, it can display overt subject agreement. In contrast, in the other causative construction, in (3d), typically found in the other Romance languages, inflected infinitives are prohibited. Notice also that the order SV(O) is perfectly acceptable in all Romance languages when the causative verb is replaced by a verb of perception as illustrated in (8). Compare (8) with the minimal pairs in (4):

(8) a. Maria ha visto Gianni riparare la macchina.
Maria has seen Gianni repair the car
'Maria saw Gianni repair the car.'
b. Paolo ha visto tutta la classe ridere.
Paolo has seen whole the class laugh
'Paolo saw the whole class laugh.'

The contrast between the ungrammatical sentences in (4) and the grammatical ones in (8) suggests that the Romance causative construction has properties that single it out from other infinitival constructions. With the exception of the EP construction in (7), all the sentences examined show that adjacency between the causative and the infinitive verbs cannot be interrupted by the subject of the infinitive. This fact may suggest that the causative and the infinitive verbs count as a single unit, an interpretation that is supported by other pieces of data.

2.2 Syntactic processes in causative constructions

In this section, we are going to examine the syntactic behavior of arguments of the infinitive verb with respect to two processes, cliticization and NP-movement, as it occurs in passive constructions. With respect to these two processes the two causative constructions, *faire-infinitif* and *faire-par* are essentially alike. Therefore, only examples of *faire-infinitif* will be offered.

2.2.1 Causatives based on transitive verbs

2.2.1.1 Clitic placement

Consider the sentence in (5a), repeated below for convenience:

(5) a. Maria ha fatto riparare la macchina a Gianni.
Maria has made repair the car to Gianni
'Maria made Gianni repair the car.'

The direct object of *riparare* can be expressed as an accusative clitic that appears in a position preceding the causative verb, as in (9a). Placement of this clitic after the infinitive is generally unacceptable, although some speakers (see Burzio 1986) accept it marginally (see (9b)):

(9) a. Maria la fa riparare a Gianni.
Maria it-FEM-SG-ACC makes repair to Gianni
'Maria made Gianni repair it.'
b. ??/*Maria fa ripararla a Gianni.
Maria makes repair+it-FEM-SG-ACC to Gianni
'Maria made Gianni repair it.'

Now compare the placement of the clitic in (9) with the placement of the clitic in other non-causative constructions, e.g., the control structures in (10). The direct object in (10a), *il libro* (the book), can be cliticized and placed after the infinitive verb, as in (10b). Placement of it in a position preceding the main verb, *promettere* (promise), yields a severe ungrammatical result, as illustrated in (10c):

(10) a. Gianni promise di leggere il libro.
Gianni promised to read the book
b. Gianni promise di leggerlo
Gianni promised to read+it-MASC-SG-ACC
'Gianni promised to read it.'
c. *Gianni lo promise di leggere.
Gianni it-MASC-SG-ACC promised to read
'Gianni promised to read it.'

Facts similar to those just discussed can be observed with *ne*-cliticization, that is, when we cliticize the head of an internal argument. Consider the causative sentence in (11a). The head of the NP, *libri* (books) in (11a), can be expressed by the clitic *ne* (of + them). In causatives, this clitic must surface on the causative verb, not on the infinitive verb, that is, (11b) is the only grammatical possibility of placing the clitic *ne*.

(11) a. La maestra fa leggere molti libri a Paolo.
the teacher makes read many books to Paolo
'The teacher makes Paolo read many books.'
b. La maestra ne fa leggere molti a Paolo.
the teacher of+them makes read many to Paolo
'The teacher makes Paolo read many of them.'

On the contrary, in non causative constructions, e.g., a control structure in (12a), the clitic *ne* standing in for the head of the internal argument of the infinitive surfaces after the infinitive, as in (12b). Placement of this clitic before the main verb *promise* leads to an ungrammatical result, (12c):

(12) a. Gianni promise di leggere molti libri.
Gianni promised to read many books
b. Gianni promise di leggerne molti
Gianni promised to read+of+them many
c. *Gianni ne promise di leggere.
Gianni of+them promised to read
'Gianni promised to read many of them.'

The set of data in (10) and (12) displays the normal distribution of clitics in infinitival constructions. What is exceptional is the placement of clitics in causative constructions. Not only is the placement of clitics on the causative verb possible, but it is the standard solution, appearance of the clitic on the infinitive leading to ungrammatical or rather marginally acceptable results.

In causatives, clitics standing in for the internal argument of the infinitive must cliticize on the main verb. The process by which this occurs is referred to as clitic climbing in the literature (see Kayne 1989b, 1991).

The subject of the infinitive introduced by the preposition *a* (to) can also be expressed by a dative clitic placed before the causative verb, as in (13b). No clitic exists for the subject of the infinitive when it is introduced by the preposition *da* (by).

(13) Maria gli fa riparare la macchina.
Maria to+him makes repair the car
'Maria makes him repair the car.'

Appearance of the dative clitic after the infinitive is unanimously considered unacceptable, as (14) illustrates:

(14) *Maria fa riparargli la macchina.
Maria makes repair+to+him the car
'Maria makes him repair the car.'

Generally, a clitic is placed close to the verb that determines its thematic role, its case, and its grammatical function. This is illustrated in (10) and (12). For example, in (10) the argument of the verb *leggere* (read) can be expressed by a clitic following the infinitive verb, which is the verb that determines its thematic role, its case, and its grammatical function. In causatives, instead, clitics expressing arguments of the infinitive surface on the causative verb. In a way, these arguments seem to act as arguments of the causative verbs as well, a fact that is in need of explanation.

2.2.1.2 Passivization and NP movement

When the causative verb is in the passive, the internal argument of the infinitive behaves as a direct object of the causative verb as well: it undergoes NP-movement to the subject position of the causative verb:

(15) a. La macchina è stata fatta riparare a Gianni da Maria.
the car is been made-FEM-SG repair to Gianni by Maria
'The car was made to be repaired to Gianni by Maria.'
b. La macchina è stata fatta riparare da Gianni (*da Maria).
the car is been made-FEM-SG repair by Gianni (*by Maria).
'The car was made to be repaired by Gianni by Maria.'

In passive sentences, the passive morpheme on the verb absorbs structural accusative case. As a consequence, the D-structure object is forced to move to a position where it receives nominative case. Since in (15) it is the D-structure object of the infinitive that undergoes movement, we must conclude first that the infinitive by itself has no case to assign; second that movement to the structural subject position of the causative verb ensures that the internal argument of the infinitive, *la macchina* (the car), gets a case, precisely nominative case. Since case is not assigned by the infinitive, one can conjecture that it is assigned by the causative and the infinitive taken as a complex verb. When the causative verb is passivized, the complex verb as a whole looses its ability to assign accusative case and forces movement of the D-structure object to the subject position. As in all passive sentences the subject, or in this case, the causer, Maria in (5), can be optionally expressed with the *by* phrase. Passivization is possible with the causative construction FP as well as seen in (15b), obtained by (5b). In this case, however, the presence of a *by* phrase standing in for the causer yields a very marginal result.

Passivization of the causative verb and NP-movement are perfectly natural in Italian and in EP, as seen in (16a) (see Gonçalves 1999). In other Romance languages, there is variation and restrictions apply. Variation exists among the speakers of Spanish concerning the status of passivization in causatives (see

Moore 1991). Zubizarretta (1986) reports that the equivalent of (15) is ungrammatical in Spanish. Guasti (1993) and Treviño (1990) give examples perfectly acceptable for Spanish speakers (see (16b)).

(16) a. O carro foi mandado arranjar à João.
the car was made repair to João
'The car was made to be repaired by João.'
b. La catedral fue hecha costruir por el Papa.
the cathedral was made-FEM-SG build by the Pope
'The cathedral was made to be built by the Pope.'

Passivization in French is generally reported to yield ungrammatical results, as shown in (17) (see Kayne 1975; Zubizarreta 1986):

(17) *La voiture a été fait reparer par Jean.
the car has been made repair by Jean
'The car was made to be repaired by Jean.'

In summary, we have seen that the arguments of an infinitive after a causative verb display a peculiar behavior: while being arguments of the infinitive, they behave as if they were arguments of the causative verb, as well. The direct object of the infinitive can be expressed by an accusative clitic surfacing before the causative verb and undergoes NP-movement when this verb is in the passive. The subject of the infinitive can be expressed by a dative clitic.

2.2.2 Causatives based on intransitive unergative verbs

2.2.2.1 Cliticization

In causatives based on intransitive unergative verbs, the subject of the infinitive must appear at the end of the sentence, as we saw in (6). It can be expressed by an accusative clitic, as direct objects can (see (18a)):

(18) Paolo l' ha fatta ridere.
Paolo her has made-FEM laugh
'Paolo made her laugh.'

Appearance of the clitic on the infinitive leads to severe ungrammaticality, as in (19):

(19) *Paolo fa riderla.
Paolo makes laugh+her
'Paolo makes her laugh.'

Since an unergative verb does not assign accusative case, this case must be supplied by the causative verb.

Let us now consider the process of *ne*-cliticization. Take the sentence in (20a). The head of the NP subject *molti bambini* (many children) can be cliticized by the clitic *ne* (of + them) and this must appear on the causative verb, as in (20b):

(20) a. Ciò ha fatto piangere molti bambini.
this has made cry many children
'This has made many children cry.'
b. Ciò ne ha fatti piangere molti.
this of+them has made-MASC-PL cry many
'This has made many of them cry.'

2.2.2.2 Passivization and NP movement

The subject of the intransitive verb embedded under a causative verb may undergo NP-movement, like a direct object, and becomes the subject of the causative sentence when *fare* is passivized. An optional *by* phrase, *dal dottore* (by the doctor), can express the underlying subject of the causative verb:

(21) Molti bambini sono stati fatti piangere per nulla
many children are been made-MASC-PL cry for nothing
dal dottore.
by+the doctor
'Many children have been made to cry for nothing by the doctor.'

Molti bambini (many children) is the subject of *piangere* (cry) and thus receives a thematic role from it. As we saw earlier in section 2.2.1, the arguments of the infinitives behave somehow as arguments of the causative verbs. Here we have seen that the subject of the infinitive behaves as an object: it can be expressed by an accusative clitic and undergoes NP-movement to the subject position of the causative verb when this is passivized.

2.2.3 Causatives based on unaccusative verbs

In declarative sentences the internal argument of an unaccusative verb can surface both before or after the verb (at least in Catalan, Italian, and Spanish), as shown in (22):

(22) a. Molti studenti arrivarono in ritardo.
'Many students arrived late.'
b. Arrivarono in ritardo molti studenti.
arrived late many students
'Many students arrived late.'

In causatives based on unaccusative verbs, the internal argument of the infinitive must stay in the postverbal position, as illustrated in (23):

(23) Lo sciopero ha fatto arrivare molti studenti in ritardo.
the strike has made arrive many students late
'The strike made many students arrive late.'

2.2.3.1 Cliticization, passivization, and NP movement

The NP-internal argument of the infinitive can be expressed by an accusative clitic surfacing on the causative verb, as in (24a), and its head can be expressed by the clitic *ne*, as in (24b):

(24) a. Lo sciopero li ha fatti arrivare in ritardo.
the strike them has made-MASC-PL arrive late
'The strike made them arrive late.'
b. Lo sciopero ne ha fatti arrivare molti in ritardo.
the strike of+them has made-MASC-PL arrive many late
'The strike made many of them arrive late.'

Finally, it may undergo NP-movement to the subject position of the causative verb when this is passivized. In this case, as in all passive sentences, an optional *by* phrase expressing the causer can be used (see 25b):

(25) a. Molti studenti sono stati fatti arrivare in ritardo.
many students were been made arrive late
'Many students have been made to arrive late.'
b. Molti bambini sono stati fatti nascere da giovani ostetriche.
many children were been made born by young midwives
'Many babies were made to be born by young midwives.'

Since unaccusative verbs do not assign accusative case, this case in (24a) must come from elsewhere. We must then conclude that the causative verb is playing a role in the process of case assignment. Again, these data show that the internal argument of the infinitive acts as an argument of the causative verb, as well. Notice that causatives based on unaccusatives behave as causatives based on unergatives as far as cliticization and NP-movement are concerned.

2.2.4 Summary

In Romance causatives based on transitive verbs, the direct object of the infinitive behaves as a direct object of the causative verb, and the subject of the infinitive as an indirect object. In causatives based on intransitive unergative verbs, the subject of the infinitive behaves as a direct object of the causative verb and, finally, in causatives based on unaccusative verbs, the internal argument of the infinitive acts as a direct object of the causative verb. One way to interpret these facts is by assuming that although Romance causative sentences include two morphologically distinct verbs, for syntactic purposes these two verbs behave as a single complex verb, an idea that we will develop in section 2.4. So far, we have examined some properties that are common to the *faire-infinitif* and to the *faire-par* construction. It is now time to see how these two constructions differ.

2.3 *The* faire-infinitif *and the* faire-par *constructions*

Since Kayne's 1975 work on French causatives, two types of constructions are distinguished in Romance languages: *faire-infinitif* (FI) illustrated in (5a) earlier and repeated in (26a) and *faire-par* (FP) illustrated in (5b) and repeated in (26b). In both constructions, the infinitive subject appears at the end of the sentence. However, while in the former case the causee is introduced by the preposition *à* (to), in the latter it is introduced by the preposition *par* (by) (Italian *a* and *da* respectively in (26a, b)). Causative sentences lacking the causee as in (26c) are also instances of the FP construction, as we will prove in 2.3.3.

(26) a. Maria ha fatto riparare la machina a Gianni.
Maria has made repair the car to Gianni
'Maria made Gianni repair the car.'
b. Maria ha fatto riparare la macchina da Gianni.
Maria has made repair the car by Gianni
'Maria had the car repaired by Gianni.'
c. Maria ha fatto riparare la macchina.
Maria has made repair the car
'Maria had the car repaired.'

2.3.1 *Status of the causee in the two causative constructions*

A major difference between the two causative structures is that the causee in the FI construction is an argument, whereas it is an adjunct in the FP construction, as shown by Burzio (1986). Binding of an anaphor is a standard test for argumenthood. In (27a) and (27b), instances of the FI construction, the causee binds the anaphor *proprio* ('own') and *se stesso* ('himself'), while it does not in the FP construction in (27c) and (27d), since it is an adjunct.

(27) a. Faremo curare i propri$_i$ interessi ai nostri clienti$_i$.
(we) will make take care of the own interests to our customers
'We will make our customers take care of their own interests.'
b. La polizia fece accusare se stesso$_i$ a Gianni$_i$.
the police made accuse himself to Gianni
'The police made Gianni accuse himself.'
c. *Faremo curare i propri$_i$ interessi dai nostri clienti$_i$.
(we) will make take care of the own interests to our customers
'We will make their own interests taken care of by our customers.'
d. *La polizia fece accusare se stesso$_i$ da Gianni$_i$.
the police made accuse himself by Gianni
'The police had himself accused by Gianni.'

In causatives based on intransitive verbs, the causee is an argument and not an adjunct. It cannot be omitted, as in (28a) and it can bind an anaphor, as in (28b). Thus, causatives based on intransitive verbs are also instances of the FI construction.

(28) a. *Paolo ha fatto dormire.
Paolo has made sleep
'Paolo had (someone) sleep.'
b. Faremo parlare ogni autore$_i$ del suo$_i$ libro.
(we) will make speak every author of his (own) book
'We will make every author talk about his book.'

In summary, causatives may take two forms referred to as *faire-infinitif* and *faire-par*. In the former, the causee is an argument, while in the latter it is an (optional) adjunct.

2.3.2 *Similarities between the passive and the FP construction*

Kayne (1975) and Burzio (1986) pointed out that the FP construction resembles the passive construction. The most evident similarity is that the causee is expressed in the same way the D-structure subject is expressed in passive sentences, that is, by a PP headed by the preposition *da* (by), a *by* phrase. (29) is an example of passive sentence with the *by* phrase:

(29) L' Italia fu battuta dal Belgio.
the Italy was beaten by the Belgium
'The Italian team was beaten by the Belgian team.'

Other less evident properties include the following. Idiomatic expressions, like *fare il furbo* ('be the smart one') that cannot be passivized cannot appear in the FP construction. This is illustrated in (30):

(30) a. *Il furbo è fatto da Gianni.
the smart one is done by Gianni
'The smart one is made by Gianni.'
b. *Ciò ha fatto fare il furbo da Gianni.
this has made make the smart one by Gianni
'This had (it) tried to be smart by Gianni.'

Expressions of inalienable possession cannot be used in passive sentences, neither can they appear in the FP construction. The sentences in (31) are ungrammatical under an inalienable possession reading of *la mano* ('the hand').

(31) a. *La mano è stata alzata da Gianni.
the hand is been raised-FEM-SG by Gianni
'The hand was raised by Gianni.'
b. *Ciò ha fatto alzare la mano da Gianni.
this has made raise the hand by Gianni
'This had Gianni raise his hand.'

Thus, the FP construction shares a number of properties with the passive construction. First, the subject of the infinitive verb is optional and when it is

expressed it is an adjunct as in the passive construction. Second, a number of verbs and idioms that cannot be passivized cannot appear in the FP construction as well. Third, expressions of inalienable possession can neither be passivized nor appear in the FP construction. Now that we know the properties of the FP construction, we can prove that the causative construction in which the causee is not expressed is also an instance of the FP construction.

2.3.3 Causative lacking the causee as instances of the FP construction

The *by* phrase is an adjunct and as such it can be omitted (see (26c) above). Thus, this kind of causative sentence is also an instance of the FP construction. As a matter of fact, the *by* phrase is optional in the FP construction, as it is in passive sentences. This claim is supported by the operativity of the same restrictions holding in causatives when the causee is expressed as *da* NP and also by some interpretative facts.

In section 2.3.2 above, we discussed evidence showing that a number of restrictions hold in the FP construction (and in the passive construction), but not in the FI construction. Interestingly, the same restrictions are still operative in causative sentences lacking the causee (see (30–31) above):

(32) a. *Ciò ha fatto fare il furbo.
this has made make the smart one
'This had (someone) be the smart one.'
b. *Ciò ha fatto alzare la mano.
this has made raise the hand
'This had (someone) raise his hand.'

Interpretative facts discussed in Pearce (1990) also suggest that causatives lacking an overt expression of the causee are instances of the FP construction. The ambiguous expression *prendere la medicina* ('take the medicine') can either mean ingest the medicine or take hold of the medicine. When this phrase is embedded under causatives the ambiguity disappears: in FI only the first meaning is conserved, as in (33a), whereas in the FP construction only the second meaning is preserved, as in (33b):

(33) a. La maestra ha fatto prendere la medicina al bambino.
the teacher has made take the medicine to+the child
'The teacher made the child take the medicine.'
b. La maestra ha fatto prendere la medicina dal bambino.
the teacher has made take the medicine by+the child
'The teacher had the child take hold of the medicine.'

Causatives lacking the causee, as in (34), retain only the second meaning, the one expressed in the FP construction in (33b). This fact can be explained only if we

say that causative sentences without an overt causee are also instances of the FP construction.

(34) La maestra ha fatto prendere la medicina.
the teacher has made take the medicine
'The teacher had (someone) take hold of the medicine.'

In summary, in the FP construction, the causee can either be expressed by an adjunct introduced by the preposition *da* ('by') or it can be omitted. By saying that it is omitted, we want to suggest that it is not simply lexically nonovert, but that there is no empty category standing in for the causee. We have seen above that the phrase *da* NP cannot bind an anaphoric expression, like *propri* or *se stesso* (see (27c, d)). The same holds true in causative sentences lacking the causee. The sentences in (35) are ungrammatical since the anaphors are not bound:

(35) a. *Faremo curare i propri interessi.
(we) will make take care of the own interests
'We will have (someone) take care of their own interests.'
b. *La polizia fece accusare se stesso.
the police made accuse himself
'The police had (someone) accuse himself.'

Failure to bind the anaphoric expressions in (35) suggests that the causee is syntactically absent. In fact, empty categories may serve as binders. This is illustrated in (36) where PRO binds the anaphoric expression *propri* in its governing category:

(36) I ragazzi hanno promesso di PRO portare i propri libri.
the boys have promised to PRO bring the own books
'The boys promised to take their own books.'

If the causee in (35) were structurally represented by an empty category it should be able to bind anaphoric expressions, as does PRO in (36). Since it does not, we conclude that the causee is syntactically absent in the causative construction lacking an overt expression for it. It thus seems reasonable to conclude that causative constructions lacking the causee are also instances of the FP construction.

2.3.4 Differences between the FP and the passive construction

Although the FP construction and the passive constructions share a number of properties, they differ in a number of respects, as pointed out in Guasti (1993). First, we observe implicit argument effects in a passive sentence. The logical subject (or external argument) of a passive sentence, the so-called implicit argument, is syntactically active: it can control PRO, as shown in (37a), and be the antecedent of anaphors, as in (37b). Notice that in (37) the *by* phrase cannot

control PRO or bind the anaphor, since it is an adjunct. Moreover, the sentences in (37) remain well-formed even if the *by* phrase is absent, proving that there is indeed an implicit argument in the structure.

(37) a. Questo edificio fu costruito (da Gaudì) per PRO ottenere un premio.
this building was built (by Gaudì) to PRO obtain a prize
b. Certi privilegi furono riservati ai propri amici (da Gianni).
some privileges were kept for own friends (by Gianni)
'Some privileges were kept for their own friends.'

Jaeggli (1986a) and Baker (1988a) suggest that the external argument role is assigned to the passive morpheme. Being syntactically present, this argument can act as a binder in (37b) and controls PRO in (37a).

In the FP construction, binding of an anaphor and control of PRO do not obtain. As for binding, this was already discussed in 2.3.1 above. For control, this is illustrated in (38) below. The controller of PRO here can neither be the *by* phrase (because it is an adjunct) nor a potential implicit argument (which is not present). To the extent that the sentence is grammatical, only the matrix subject, *il comandante* ('the officer') can control PRO.

(38) Il comandante ha fatto attaccare i nemici dal generale
the officer has made attack the enemies by+the general
senza PRO avvisare il governo.
without PRO informing the government
'The officer made the enemies be attacked by the general without informing the government.'

Notice that lack of control by the logical subject of the infinitive cannot be attributed to the prominence of the matrix subject, as proven by the ungrammaticality of (39), where control by the matrix subject is inhibited and no controller for PRO is available:

(39) *E' la ragion di stato che ha fatto sequestrare i beni
(it) is the reason of state that has made confiscated the properties
dall' avvocato senza PRO avvisare nessuno.
by+the lawyer without PRO informing nobody
'It is reason of state that had the property be confiscated by the lawyer without informing anybody.'

The contrast between the passive sentences in (37) and the FP construction in (27) and (38) is best understood if we assume that in passive sentences the external argument which is assigned to the passive morpheme can bind and control, while the external argument is not assigned to any morpheme in the FP construction and thus cannot act as a binder or a controller. In the FP construction, the external argument can only optionally be expressed by an adjunct, the *by* phrase.

A second difference between the passive and the FP construction is that there are verbs that can be passivized, but cannot appear in the FP construction (see Marcantonio 1981). These are *psych* verbs (*temere*, 'fear'), epistemic verbs (*pensare*, 'think'), some verbs of perception (*vedere*, 'see'; *sentire*, 'hear'), verbs like *perdere* ('lose'), *vincere* ('win'). In (40) we have examples of passive sentences with this set of verbs. In (41) we see that these verbs cannot be embedded in the FP construction:

(40) a. La grandine è temuta dai contadini.
the hail is feared by+the farmers
'The hail is feared by the farmers.'
b. Un canguro è stato visto da Gianni.
a kangoroo is been seen by Gianni
'A kangoroo was seen by Gianni.'
c. La causa è stata persa da Gianni.
the suit is been lost by Gianni
'The suit was lost by Gianni.'

(41) a. *La grandine ha fatto temere un disastro dai contadini.
the hail has made fear a disaster by+the farmers
'The hail had the farmers fear a disaster.'
b. *Maria ha fatto vedere un libro da Gianni.
Maria has made see a book by Gianni
'Maria had Gianni see a book.'
c. *L' avvocato ha fatto perdere la causa da Gianni.
the lawyer has made loose the suit by Gianni
'The lawyer had Gianni loose the suit.'

Thus, there are two properties that distinguish the FP construction from passives: First, there is no implicit argument in the FP construction or equivalently the logical subject is syntactically suppressed and thus is not syntactically active, as binding and control data above indicates. Second, verbs that can be passivized cannot enter the FP construction, which entails that suppression of the logical subject of the infinitive is not possible with all verbs.

2.3.5 Differences between FI and FP

We observed in the section above that there are a number of restrictions holding in the FP construction. It is interesting to observe that all the restrictions holding in the FP construction do not hold in the FI construction. First, some verbal expressions that cannot be passivized cannot be found in the FP construction (section 2.3.2). However, these verbal expressions yield perfectly grammatical results in the FI construction, as observed in Burzio (1986). In fact, if the causee is expressed by a PP headed by the preposition *a*, rather than by the *by* phrase, the sentences in (30b) and (31b) become grammatical. Compare (30b) and (31b) with (42a) and (42b), respectively:

(42) a. Ciò ha fatto fare il furbo a Gianni.
this has made make the smart one to Gianni
'This made Gianni be the smart one.'
b. Ciò ha fatto alzare la mano a Gianni.
this has made raise the hand to Gianni
'This made Gianni raise his hand.'

(42) shows that there is no intrinsic incompatibility between idiomatic expressions, expressions of inalienable possession, and causatives.

Second, we observed that some verbs cannot be found in the FP construction (section 2.3.4). Interestingly, all those verbs can be embedded in the FI construction. In contrast to the ungrammatical sentences in (41) we have the grammatical sentences in (43):

(43) a. La grandine ha fatto temere un disastro ai contadini.
the hail has made fear a disaster to+the farmers
'The hail made the farmers fear a disaster.'
b. Maria ha fatto vedere un libro a Gianni.
Maria has made see a book to Gianni
'Maria made Gianni see a book.'
c. L' avvocato ha fatto perdere la causa a Gianni.
the lawyer has made lose the suit to Gianni
'The lawyer made Gianni lose the suit.'

Third, Hyman and Zimmer (1976) observe that the FP and the FI constructions have different interpretations. Consider the two sentences in (44):

(44) a. I soldati fecero pulire le toilette al generale.
the soldiers made clean the toilets to+the general
'The soldiers made the general clean the toilets.'
b. I soldati fecero pulire le toilette dal generale.
the soldiers made clean the toilets by+the general
'The soldiers made the general clean the toilets.'

When the causee is expressed by an *a* NP, as in (44a), the interpretation is that the soldiers want the toilets to be cleaned and they want the general to do it and not someone else. The soldiers cause an event to take place and this causation is directed toward the general or the general is affected by the event caused. By contrast, when the causee is expressed by an adjunct *da* NP, the interpretation is that the soldiers caused an event, that of the toilets being cleaned. The general happened to do it, but this is incidental (see also Lepschy 1978).

2.3.6 Summary

The major differences between the two causative constructions, FI and FP, found in Romance are the following. First, the logical subject of the infinitive is syntactically

suppressed in the FP construction and is optionally expressed as an adjunct (the *by* phrase). By contrast, it is projected in an argumental position in the FI construction. Second, suppression of the logical subject of the infinitive in the FP construction is subject to restrictions: some verbs cannot be found in the FP construction, but they can appear in the FI construction. Third, certain verbal expressions (of inalienable possession, verbs of measure) cannot be embedded in the FP construction, but can be found in the FI construction. Fourth, the meaning of the two kinds of sentences is not the same. In the FI construction an event is caused and this causation is directed toward the causee; in the FP construction, just the event is caused.

2.4 *Theoretical accounts of causatives*

We have seen that Romance causatives are special in that the causative verb and the verb embedded under it behave as a single verb as far as syntax is concerned. Moreover, we have also seen that there are two causative constructions: FI and FP that differs in several respects. Having surveyed the major properties of causative constructions, we can now move on and examine how these can be handled.

2.4.1 *Causative complements as bare lexical structures*

Clauses are the projections of a verb augmented with a number of functional projections (Pollock 1989; Cinque 1999, among others). Within such a framework, differences between infinitival complements after causative verbs and other ordinary infinitival complements with respect to various syntactic processes, like cliticization, can be understood by assuming that these complements do not include the full array of functional categories found in other finite and infinitival clauses. The table in (45) below summarizes the functional projections of the clausal domain and the overt evidence for these projections:

(45)

Projection	*CP*	*AgrSP*	*NegP*	*TP*	*AgrOP*
Evidence	*Wh*-movement	Agreement SVO	Negation	Aspectual auxiliary	Accusative case

First, there is no *wh*-movement inside causative complements, suggesting that CP is not present. Second, AgrSP is usually associated with the presence of overt agreement and of overt preverbal subjects. As we have seen, a preverbal subject is disallowed in Romance causative complements, suggesting that a position for it is not available. Further support for this claim comes from European Portuguese. As we saw in sections 1 and 2, there are two (or three) kinds of causative complements in this language, one similar to that found in the other Romance languages (see (3) above) and displaying the order VOS and one similar to that found in English and displaying the order SVO (see (7) above). As we said earlier, when the order is SV(O), there are two possibilities: the infinitive in the causative complement can either be inflected, in which case

subject agreement is attested, or not. When the order is VOS, an inflected infinitive is not possible. One natural way to interpret this contrast is that the causative complements displaying the order VOS, the one that is typically found in all Romance languages, does not include AgrSP, while the other complement displaying the order SV(O) includes AgrSP. Interestingly, when AgrSP is overtly present, the causee receives nominative case, as proven by the fact that it can be expressed by a nominative pronoun: *O professor mandou eles sairem* ('The professor made they leave-Agr') (from Gonçalves 1999). When AgrSP is not overtly present, the causee gets accusative case as in E(xceptional) C(ase) M(arking) structures. Let us continue with the examination of the other projections. Third, negation *non* ('not') cannot be present in causative complements. Since *non* is assumed to be the head of NegP (see Zanuttini 1996), its absence from causative complements suggests that NegP is unavailable in such complements:

(46) *Gianni ha fatto non bere più Paolo.
Gianni has made not drink anymore Paolo
'Gianni made Paolo not drink anymore.'

Similarly, (aspectual) auxiliaries cannot be present in causative complements, as shown in (47).

(47) Marco farà aver letto i libro a Gianni per domani.
Marco will make have read the book to Gianni by tomorrow
'Marco will make Gianni have read the book by tomorrow.'

This restriction can be explained as follows. Because of their interpretive properties, aspectual auxiliaries are either located in tense or need to be licensed by tense. The unavailability of aspectual auxiliaries may be taken as evidence that TP is absent from causative complements. Finally, AgrOP is the position where structural accusative case is checked. As shown by the distribution of clitics, (see, e.g., (9)), structural case cannot be checked inside causative complements, a fact that may be interpreted as evidence that AgrOP is not present in such complements.

The data examined so far are best interpreted by assuming that causative complements do not include any functional projection, in contrast to other infinitival complements (that do not display the restriction examined in the previous sections). Under the assumption that the thematic information associated with a verb is expressed within a *v*P (Larson 1988b; Hale and Keyser 1993b; Chomsky 2000), it is plausible to assume that causative complements are bare lexical structures that at most project up to *v*Ps. The lower VP includes the verbal head and the complement; the higher *v*P includes a *v*-head to which the infinitive verb moves and the position for the external argument. In the following sections, we will refine this conjecture in view of the different properties of the two causative constructions, FI and FP.

2.4.2 The structure of infinitival complements in the FI construction

We have established that the causee is an argument in the FI construction, precisely it is the thematic subject of the infinitive. It has been proposed that the position of the subject is submitted to parametric variation, that is, it can be located either to the left or to the right of the verbal head. For Romance, the subject position seems to be to the right (cf. Bonet 1990; Giorgi and Longobardi 1991; Koopman and Sportiche 1991b; Friedemann 1997). Based on this hypothesis, the proposal is that in causative complements the subject surfaces in the base-generated position to the right of the verbal head. For concreteness, we assume that the subject position is Spec *v*P, and that this Spec position is to the right. Causative complements in the FI construction have the structure in (48):

(48) $[_{VP}$ fare $[_{vP}\ _{v'}\ [_{v}]\ [_{VP}\ [_{V}$ riparare] $[_{DP}$ la macchina]] a Gianni]]
$[_{VP}$ make $[_{vP}\ _{v'}\ [_{v}]\ [_{VP}\ [_{V}$ repair] $[_{DP}$ the car]] to Gianni]]

The subject or the external argument of a transitive or an intransitive verb stays in its base position that in Romance is located to the right of the *v*P head. The internal argument of a transitive verb occupies the V sister position of the lower VP. This hypothesis grants in the same structural status to the external argument of a transitive or an intransitive ergative verb: in both cases they remain the external argument of the selected verb. As for why the case properties of these two arguments vary, the reader can refer to 2.4.5.2.

2.4.3 The structure of infinitival complements in the FP construction

In the FP construction, the logical subject of the infinitive or the external argument is syntactically suppressed, as an argument (see section 2.3.4). When it is expressed, it surfaces in an adjunct phrase, the *by* phrase. These facts can be best accounted for by assuming that the complement of the causative verb in the FP construction is a bare VP lacking the higher *v*P and thus a position for the external argument (an idea that was already in Burzio 1986), as in (49). The internal argument occupies the V sister position and the adjunct causee is adjoined to the VP, when present.

(49) $[_{VP}$ fare $[_{VP}\ [_{V}$ riparare] $[_{DP}$ la macchina]]]
$[_{VP}$ make $[_{VP}\ [_{V}$ repair] $[_{DP}$ the car]]]

Unaccusative verbs also lack the thematic subject and only have internal arguments, as complements of causative in the FP construction. The natural assumption is that in causatives based on unaccusative verb, the complement is a VP lacking the *v*P and thus the position for the external argument; therefore, the structure of causative complements based on transitive verbs in the FP construction and on unaccusative verbs is the same, a VP without the projection of the external

argument (as in Burzio 1986). This captures the fact that in both cases the complement selected by the causative verb does not include an external argument.

In the 1980s it was generally assumed that causative complements were like full clauses, that is, they projected at least up to IP (or AgrSP in the Pollockian framework) (Burzio 1986; Zubizarreta 1986) or even to CP (Baker 1988a). Essentially, this assumption was forced by the fact that subjects were assumed to be generated in SpecIP (or SpecAgrSP). Therefore, IP was necessary to accommodate the subject of causative complements. The hypothesis that subjects are generated in a *v*P (a lexical structure that includes all thematic information associated to the verb) made the abandonment of such an analysis possible in favor of one that more accurately takes account of restrictions and distributional properties of expressions in causative complements.

In summary, the causative verb can either select a *v*P including a position for the external argument or a VP from which the higher *v*P is missing and thus a position for the external argument is lacking. In this case, the logical subject or the external argument is suppressed and is optionally expressed by an adjunct. We return later to the different selectional properties of the causative verbs.

2.4.4 *Romance causatives and the process of complex predicate formation*

The causative complement is a *v*P headed by the infinitive verb. In section 2.2 we have shown that the causative verb and the infinitive behave as a syntactic unit with respect to a number of processes, such as cliticization and NP-movement under passives. Various notions have been advocated in the literature to express this fact: reanalysis (Rouveret and Vergnaud 1980; Manzini 1983b), verb raising (Aissen 1974), merger (Marantz 1984; Rosen 1989), clause union (Gibson 1980). The common idea behind these various notions is that of transforming a biclausal structure or a structure with two distinct clauses (one for the causative and one for the infinitive verb) into one single clause. For example, reanalysis is the process by which two independent verbs are reanalyzed as a single verb. Reanalysis can be expressed through indexation, as in (50):

(50) Maria fa^{i} riparare^{i} la macchina a Gianni.
Maria makes repair the car to Gianni
'Maria makes Gianni repair the car.'

Although these notions capture the relevant data, they remain ad hoc devices with a limited explanatory power. Detailed work on morphological causatives (Baker 1988a) has prompted an analysis of causatives through the notion of incorporation, itself an instantiation of movement of one head to another head. Unlike other notions mentioned above, head movement is not construction specific and its application is quite widespread. One familiar case is movement of the verbal head to inflectional heads. In causatives, it is the infinitive that moves to the higher verbal head, the causative verb, and forms with it a complex verb *fare + riparare*.

2.4.5 Head-movement in Romance causatives

At D-structure, the infinitive and the causative verbs head two verbal projections. By S-structure, the infinitive moves to *v* (if present) and then higher up to incorporate into the causative verb, thus forming a complex verb with it, as in (51):

(51) $[_{VP}$ fare riparare$_i$ $[_{vP}$ $[_{v'}$ $[_{v}$ $t_i]$ $[_{VP}$ $[_{V}$ $t_i]$ $[_{DP}$ la macchina]]] a Gianni]]
$[_{VP}$ make repair$_i$ $[_{vP}$ $[_{v'}$ $[_{v}$ $t_i]$ $[_{VP}$ $[_{V}$ $t_i]$ $[_{DP}$ the car]]] to Gianni]]

The claim that in causative sentences the infinitive does not stay in its base position, but moves higher up, is supported by word-order facts. Consider the example in (52) (see Guasti 1993; Den Dikken 1995c):

(52) I professori$_j$ facevano commentare tutti$_j$ il libro a Ugo.
the professors made comment all the book to Ugo
'The professors all made Ugo comment on the book.'

Sportiche (1988) proposed that Floating Quantifiers (FQs) occur in positions which the subject has moved through on its way from its base position (inside *v*P) to the specifier of the higher projection, AgrSP. In (52), the matrix subject, *i professori* ('the professors'), has stranded the FQ *tutti* ('all') in a position close to the matrix *v*P. From the order in (52), causative-infinitive-FQ, we must conclude that the infinitive has moved from the causative complement to a position inside the matrix sentence, as displayed in (53). Thus, the infinitive must move and form a complex head with the causative verb overtly.

(53) $[_{IP}$ I professori$_j$ [facevano commentare$_i]_k$ $[_{vP}$ tutti$_j$ t_k $[_{VP}$ t_i quel libro a Ugo]]]

Thus, there is no special rule of causative formation: causative sentences are derived by a primitive process operating in various constructions, head-movement.

2.4.5.1 Potential problems and further refinements

One potential problem for this approach is that the causative and the infinitive verb can be separated by adverbial elements as shown in (54).

(54) I professori$_j$ fanno spesso commentare tutti$_j$ il libro a Ugo.
the professors make often comment all the book to Ugo
'The professors all make Ugo often comment on the book.'

Moreover, in French interrogative sentences, it is only the causative verb that precedes the clitic subject, as (55) shows (see Kayne 1975):

(55) Fera-t-il reparer la voiture a Jean?
make-he repair the car to Jean?
'Does he make Jean repair the car?'

If the causative and the infinitive formed a single complex head, they should not be separable, contrary to facts. Thus, on the one hand, there is evidence that head-to-head movement occurs in Romance causatives to form a complex verbal head. On the other, the causative verb and the infinitive may be separated. To accommodate all these facts, one can appeal to the notion of excorporation, another instance of head-movement. Romance causatives allow excorporation of the causative head from the complex verb previously formed by incorporation. The causative verb excorporates and moves alone to T and AgrS. In other words, Romance causatives are the result of two processes: incorporation and excorporation (for the technical execution of this proposal, see Roberts 1991a; Guasti 1993).

2.4.5.2 Consequences of incorporation

Causative constructions are an instance of verb incorporation, or head-to-head movement. This is the primitive property responsible for all the other properties manifested by Romance causatives and illustrated in section 2.2. As shown by Baker (1988a), verb incorporation disrupts the usual government relationships and creates new government relationships. It also alters the usual grammatical functions. The incorporation host (the causative verb) and the incorporee (the infinitive verb) become a single complex verb that inherits properties from its components and governs every argument governed by its constituent parts, as established by the Government Transparency Corollary (GTC), which states that:

GTC: A lexical category, which has an item incorporated into it governs everything which the incorporated item governed in its original structural position. (Baker 1988a: 64)

As a consequence of the formation of a complex verb, a single thematic grid is formed that includes arguments from each single verb. Therefore, the arguments of the infinitive become arguments of the complex verb. Under the assumption that case is assigned under government, the GTC also accounts for the case pattern found in causatives. In a language a complex verb cannot have more case assignment possibilities than a simplex verb. A simple verb in Romance assigns a single structural accusative case as shown in (56):

(56) Ho dato un libro a Maria.
(I) have given a book to Maria

Here the direct object is assigned accusative case, while the indirect object is marked with the dative case expressed by the preposition *a* ('to') in front of the noun. A complex verb behaves in the same way as far as case assignment is concerned. Formation of a complex verb and case assignment abilities of this verb account for the process of grammatical function change that we observe in causatives. The external argument of the infinitive becomes the direct or indirect object of the complex verb depending on the transitivity of the verb and the

direct object of the infinitive becomes the direct object of the complex verb. This change of grammatical functions is overtly shown by the processes of cliticization and NP-movement under passive that we discussed in section 2.2. We will illustrate this by means of the example in (6), repeated here:

(6) Paolo ha fatto ridere la classe.
Paolo has made laugh the class
'Paolo made the class laugh.'

In (6), *la classe* ('the class') is the logical subject of the infinitive. However, due to the incorporation process it is now governed by, and becomes the direct object of, the newly created complex verb *fa-ridere*. The complex verb assigns accusative case to the DP *la classe* ('the class'). When realized as a clitic, it cliticizes in front of the complex verb, as in (18), repeated below:

(18) Paolo l' ha fatta ridere.
Paolo her has made-FEM laugh
'Paolo made her laugh.'

When the causative verb is passivized, the complex verb of which it is part is unable to assign accusative case and *la classe*, originally an argument of the infinitive, becomes the subject of the passivized complex verb *fatto-ridere*.

2.4.5.3 Summary

In summary, the primitive property that is responsible for the behavior of Romance causatives is incorporation, or the process of head-to-head movement that creates a complex verb formed by the causative and the infinitive verb. As a side-effect of incorporation, the grammatical functions, the government relationships, and the properties of case assignment of the causative and of the infinitive verb are altered. This explains the exceptional behavior of the arguments of the infinitives, as far as case, cliticization, and passivization are concerned. Incorporation occurs in the syntax and is accompanied by a process of excorporation, 'another instance of head movement' that takes place to allow the causative verb to check its tense and agreement feature.

2.4.6 Selectional properties of the causative verb

It was proposed above that the causative verb can take a *v*P complement including the external argument of the infinitive or a VP lacking a position for this. Moreover, we saw that the two causative constructions FI and FP have different meanings. We can capture these observations by assuming that the causative verb can be associated to either of the thematic grids in (57):

(57) *Fare*	*thematic grid*	
	<<causer/agent, event> benefactive>	FI
	<causer/agent, event>	FP

The causative verb selects a causer and an event in the FP construction. The event is syntactically realized as a VP lacking the position for an external argument or subject. This hypothesis captures the idea that in this case, the causer wants some event to happen or some action to be carried out. In the FI construction, instead, the causation of the event is direct or is to the benefit of someone, hence the additional selection of a benefactive role (if positively affected, or a 'victim' if negatively affected). This role is assigned under government to the causee in the FI construction, which in this way receives two thematic roles, one from the causative verb and one from the infinitive. This proposal is compatible with versions of the Theta Criterion in (58) (Chomsky 1986b) according to which a single DP is allowed to receive more than one theta-role provided these are assigned to the same position:

(58) Theta Criterion: Each argument α appears in a chain containing a unique visible theta position P, and each theta position P is visible in a chain containing a unique argument α.

(Chomsky 1986b: 97)

Alternatively, one may also say that the two roles are fused together after the formation of a complex predicate and the ensuing creation of a single thematic grid (see also Alsina 1992).

2.4.7 An account of some differences between the FI and the FP constructions

Verb incorporation accounts for the major similarities between the FI and the FP constructions with respect to cliticization and NP-movement. However, the two constructions display a number of different properties. One is that the causee is an argument in the former case, while it is an adjunct in the latter (see section 2.3.1). The assumptions adopted in the 2.4.2 and 2.4.3 account for the different status of the causee in the two constructions as follows. Since the causee is projected into an argument position in the former case, it can act as a binder and can control PRO. By contrast, control and binding by the causee or by an implicit argument do not obtain in the FP construction because there is no implicit argument (sections 2.3.3, 2.3.4) and because when expressed the causee is an adjunct. Under the plausible assumption that expressions of inalienable possession are anaphoric to the possessor (see Kayne 1975), the ill-formedness of (32b) can be explained by appealing to the lack of an appropriate binder. As for idiomatic expressions like *fare il furbo* ('be the smart one') that cannot occur in the FP construction (as shown in (30b)), Burzio (1986) proposes that some sort of anaphoric relation exists between the subject and the idiomatic object, an idea that is suggested by the fact that the subject and the object agree, as exemplified by *Maria fa la furba* (lit. Maria-FEM makes the smart-FEM) where *Maria* and *la furba* are both in the feminine gender. If this view is correct, the ungrammaticality of (34b) is again a case of binding failure.[1]

We observed in section 2.3.2 that the FP construction resembles the passive construction. This similarity can be understood as follows. As observed by Burzio (1986), under the Principles and Parameters model there is no construction specific rule, that is, there is no rule of passivization. Instead, there are various operations and phenomena that can cluster or can occur in isolation. Passive sentences are characterized by (i) the introduction of the passive morphology; (ii) the movement of the object into subject position; (iii) the presence of an implicit argument or, optionally, of a *by* phrase. These three phenomena cluster in passive sentences because the introduction of the passive morphology absorbs accusative case. Thus, the object is forced to move to the subject position to receive case. The passive morpheme receives the role of the external argument and transmits this role to a doubling *by* phrase (Baker 1988a). In the FP construction, there is no passive morphology, no absorption of accusative case, and no movement of the object. The logical subject of the infinitive is suppressed in the lexicon. Optionally, it can be expressed with a *by* phrase that is licensed by the argument structure associated with the infinitive, precisely by the position that is lexically suppressed, as in Grimshaw (1990). One question that still needs an answer is what regulates the suppression of the external argument of the infinitive in the FP construction, an issue that we examine in the next section.

2.4.8 The FP construction and the affectedness constraint

In section 2.3.5 we saw that certain verbs cannot enter in the FP construction. These are *psych* verbs (*temere*, 'fear'), epistemic verbs (*pensare*, 'think'), some verbs of perception (*vedere*, 'see'; *sentire*, 'hear'), verbs like *perdere* ('lose'), *vincere* ('win'). According to Guasti (1993, 1996a), this restriction can be expressed by the Affectedness Constraint. She notes that the restrictions operating in FP also operate in passive nominals (see Anderson 1977a; Jaeggli 1986a; Roberts 1987). The object of a noun, such as *city* in (59a) undergoes NP-movement in passive nominals, as in (59b):

(59) a. Attila's destruction of the city
b. The city's destruction (by Attila)

Passivization is forbidden with certain types of nouns, as the following contrasts witness:

(60) a. John's loss of the job
b. *The job's loss (by John)
c. Mary's fear of storms
d. *Storms' fear (by Mary)

Jaeggli (1986a) proposes that in passive nominals the external argument is not syntactically projected because it is suppressed in the lexicon. Therefore, the prenominal position remains empty and is available for the object to move there, as in (59b). However, suppression of the external argument is possible only when

the object of the noun is affected by the process described by the noun. In (59a), the object of the noun *destruction* is affected and thus the external argument of this noun can be suppressed. Then, NP-movement of the object to the pronominal position is possible. By contrast, the external argument of *loss* or *fear* cannot be suppressed. The prenominal position must be filled with it and thus movement of the object of these nouns to the preverbal position cannot occur. Extending this line of thinking, Guasti (1993, 1996a) claims that suppression of the external argument of the infinitive embedded under a causative verb can only occur when the object of the infinitive is affected by the process described by the infinitive, as happens with verbs like *riparare* ('repair'). By contrast, with psych verbs, epistemic verbs, some verbs of perception, *lose* and *win*, the object is unaffected and the external argument cannot be suppressed but must be syntactically projected. Thus, the FP construction cannot be formed with such verbs. One might wonder why the Affectedness Constraint applies in Romance causatives as it does in passive nominals. In (verbal) passives, we observe a change of grammatical functions (GF) and the presence of overt morphology, the passive morpheme signaling this change. Usually a GF changing process is sanctioned by morphology. However, there are cases where this does not happen. Passive nominals are a case in point. The noun does not have different morphology in (60a), an active nominal and in (60b), a passive nominal. A second case is causative constructions. In the FI and in the FP constructions we observe a GF changing process not sanctioned by a morphological marker. It is possible that when GF changing processes are not morphologically marked, their power should be somewhat restricted or equivalently it can be limited to a set of verbs with special characteristics (see Pesetsky 1990 on this issue). Under this view the Affectedness Constraint that operates in the FP construction may be viewed as a condition limiting the power of grammatical changing processes and thus ensuring recoverability of the lexically suppressed argument.

2.4.9 Summary

Romance has two causative structures, both derived by syntactic incorporation. These structures are semantically different and this is expressed by assuming that the causative verb is associated to two thematic grids, one including a causer/agent and an event, the other also including a benefactive role. The event is structurally realized as a VP in the FP construction or a *v*P in the FI construction. While the external argument is present in the latter case, it is not in the former (since there is no position for it). Lack of the external argument and thus formation of the FP construction is possible only if the internal argument of the infinitive is affected by the process described by the infinitive itself.

3 Conclusion

Romance causatives include two verbs that syntactically behave as a single verb that takes as arguments the arguments of the two single verbs. This behavior has

been explained by appealing to the notion of verb incorporation of head-to-head movement. The syntactic properties manifested by the arguments of the infinitive after a causative verb follow from this process. Romance has two causative constructions that convey different meanings and display different lexico-semantic restrictions. These differences have been captured first by assuming that the causative verb is associated to two thematic grids and second by appealing to the Affectedness Constraint.

There is variation among causative constructions that are not accounted for by the proposals discussed in the previous section. One is the failure to form passive causative sentences in French and for some speakers in Spanish too; another is that in French/Spanish reflexive verbs, like *se laver/lavarse* ('to wash -self') can be embedded under the causative verb, while their Italian counterpart, *lavarsi*, cannot, as the contrast in (61) shows:

(61) a. Juan hizo lavarse las manos a Maria.
b. Jean faisait se laver les mains à Marie.
c. *Gianni faceva lavarsi le mani a Maria.
John made wash-self the hands to Maria
'John made Mary wash her hands.'

In Italian, the reflexive clitic must be omitted as displayed in (62), although the sentence maintains the same meaning as the Spanish and French sentences in (61a) and (61b):

(62) Gianni ha fatto lavare le mani a Maria.
John has made wash-self the hands to Maria
'John made Mary wash her hands.'

Interestingly, in EP the reflexive clitic cannot be present in a construction comparable to the one in (62) with the causee at the end of the clause, as the contrast between (63a) and (63b) shows.[2]

(63) a. *O João mandou barbear-se o Pedro.
the João made shave-self the Pedro
'João made shave himself Pedro.'
b. O João mandou barbear o Pedro.
the João made shave the Pedro
'João made shave Pedro.'

The reflexive clitic can be present in EP causatives when the order of the arguments of the complement is SV(O), as in (64):

(64) O João mandou o Pedro barbear-se.
the João made the Pedro shave-self
'João made shave himself Pedro.'

These facts support the idea advanced in section 2.4.1 that causative complements displaying the order SV(O) are not bare *v*P, but include functional projection (e.g., AgrSP). Under the assumption that reflexive clitics are located in AgrSP or in some other functional projection, the contrast between (63a) and (64) can be explained by saying that AgrSP is present in the latter case, but not in the former, that is, causative complements displaying the order VOS are bare lexical structures, while causative complements displaying the order SV(O) include functional projections (see Guasti 1993, 1996a for a development of these ideas; see Zubizarreta 1986 for an alternative proposal about the distribution of reflexive clitics in causatives).

NOTES

1 Although in passives there is an implicit argument, as shown in (37) in the text, this argument has special properties and is not compatible with all kind of anaphoric expressions.
2 Gonçalves notes that the EP sentences in (63b) does not have a reflexive interpretation, but an arbitrary interpretation. By contrast, the Italian sentence in (62) has a reflexive interpretation (Guasti 1993). This fact may depend on the availability in EP, but not in Italian, of the ECM construction in (64) to express the reflexive interpretation.

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7 A-not-A Questions

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1 Introduction

An A-not-A question is a type of question with a function similar to that of a yes/no question, the surface form of which involves two copies of a predicate with one copy negated. A-not-A questions have been investigated most thoroughly in Mandarin Chinese, with (1) and (2) below being characteristic examples. One noteworthy aspect of (1) is that it has reduplicated only the first syllable of the verb; *xi* here is not a word on its own, it is simply the first syllable of *xihuan*.

(1) ta xi-bu-xihuan zheben shu? (A-not-A)
he li-not-like this book
'Does he like or not like this book?'

(2) ta xihuan-bu-xihuan zheben shu? (A-not-A)
he like-not-like this book
'Does he like or not like this book?'

The A-not-A questions above represent one of several ways that one can inquire about the truth of a proposition in Mandarin, and much of the recent literature on the topic has been concerned with distinguishing such questions from one another.

A-not-A questions like (1) and (2) are not really yes/no questions of the familiar sort; yes/no questions are usually formed using the sentence-final question particle *ma* in Mandarin, as in (3). Apart from the distributional differences to be discussed at length below, perhaps the clearest difference between A-not-A questions and yes/no questions is that only yes/no questions can be naturally answered with *shi* 'yes', *dui* 'correct', or *bu* 'no'; the questions in (1) and (2) are answered by repeating either the questioned predicate *xihuan* 'like' or its negation *bu xihuan* 'not like':

(3) ta xihuan zheben shu ma? (Y/NQ)
he like this book Q?
'Does he like this book?'

With respect to how they are answered, A-not-A questions are similar to alternative questions, such as (4) below. Although it is tempting to assume that (4) is simply a more explicit version of (2), the distribution of questions containing the word *haishi* 'or' differs from that of questions lacking *haishi*.

(4) ta xihuan zheben shu haishi ta bu xihuan zheben shu? (AltQ)
he like this book or he not like this book
'Does he like this book or doesn't he like this book?'

In addition to the three classes of questions described so far, there are several other ways in which this question can be asked, each of which has been claimed at some time or another in the literature to have a distinct structure.

In the following set of examples, (5–7), the negative morpheme comes after the VP; what differentiates the forms is how much of the second copy is repeated. In the VP-not-VP type in (5) the whole VP is repeated, in the VP-not-V type in (6) only the verb is repeated, and in the negative particle question (NPQ) in (7), the negation appears alone at the end of the question.

(5) ta xihuan zheben shu bu xihuan zheben shu? (VP-not-VP)
he like this book not like this book
'Does he like this book or doesn't [he] like this book?'

(6) ta xihuan zheben shu bu xihuan? (VP-not-V)
he like this book not like
'Does he like this book or doesn't [he] like [it]?'

(7) ta xihuan zheben shu bu? (NPQ)
he like this book not
'Does he like this book or not?'

The next set of examples illustrates A-not-A-type questions formed with an auxiliary, a modal, and the focus morpheme *shi*. Example (8) is an M-not-M question in which a modal is reduplicated, and (9) is a B-not-B question in which the focus morpheme/copula *shi* is reduplicated:

(8) ta hui-bu-hui tiaowu? (M-not-M)
He can-not-can dance
'Can he dance?'

(9) ta shi-bu-shi xihuan zheben shu? (B-not-B)
he be-not-be like this book
'Is it the case or not that he like this book?'

Given that Mandarin allows omission fairly freely, the null hypothesis should be, and traditionally was, that (1–2) and (5–7) are simply versions of (4) that have undergone varying degrees of ellipsis, and that (8) and (9) are simply extensions of the A-not-A pattern of (1–2).

By far the most influential work on A-not-A questions was that of Huang (1982b, 1991), who challenged the traditional assumption by showing, among other things, that A-not-A questions, yes/no questions, and alternative questions have different distributions. Probably the most well-known observation that Huang made about A-not-A questions like (1–2) is that they, unlike alternative questions like (4), resist appearing in movement islands. On the basis of this, Huang hypothesized that the A-not-A surface sequence reflects an abstract question morpheme that must undergo movement to a scope position in CP, and drew a parallel between this A-not-A morpheme and adjunct *wh*-words like *weishenme* 'why'.

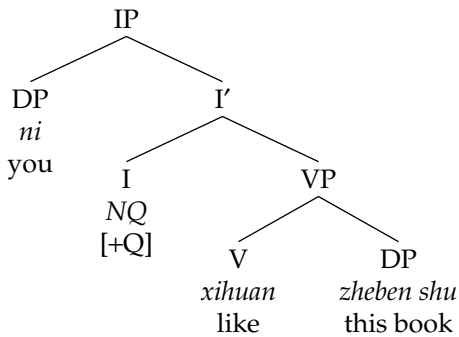
In the remainder of this chapter, we will review the distributional characteristics of A-not-A questions and the rest of the family of questions introduced in this section. The main goal here is not so much to exhaustively present and compare the different theoretical analyses as it is to try to present the types of data that have been crucial in formulating the analyses. The first few sections will concentrate on the A-not-A question 'proper', like (1–2), after which we will move on to consider similarities and differences between A-not-A questions and the other forms, such as VP-not-V questions, NPQs, and VP-not-VP questions. A relatively brief review of some related cross-linguistic data will close the discussion.

2 A-not-A as a reduplicative inflectional morpheme

2.1 The NQ morpheme

Huang (1991) proposed that the A-not-A sequence in A-not-A questions is the morphological exponent of a reduplicative interrogative morpheme located in the inflectional system, an 'interrogative INFL'.

(10)



In light of subsequent developments in syntactic theory, particularly the widely assumed need to separate IP into several separate projections (following Pollock 1989), the structure in (10) requires elaboration – but it illustrates the basic idea: the A-not-A sequence is essentially a word formed morphologically by an abstract question morpheme and a following predicate. For expediency, we will refer to this morpheme as NQ (intended to reflect both its negative and interrogative character).

A simple argument in favor of a structure like (10) can be made from the fact that NQ must appear on the modal or auxiliary when one is present in the sentence. Thus, while (11) is an acceptable question, (12), with NQ on the main verb, is impossible (Li and Thompson 1979):

(11) ta hui-bu-hui tiaowu?
He can-not-can dance
'Can he dance?'

(12) *ta hui tiaowu-bu-tiaowu?
He can dance-not-dance
('Can he dance?')

It is also worth noting that NQ is not limited to attaching to verbs. An A-not-A question can also be formed, for example, with an adjective (13), a preposition (14), an adverb (15), or a modal/auxiliary as above (11):

(13) zheben shu hao-bu-hao?
this book good-not-good
'Is this book good?'

(14) ta cong-mei-cong Beijing lai?
he from-not-from Beijing come
'Did he come from Beijing?'

(15) ta chang-bu-chang lai?
he often-not-often come
'Does he come often?'

If NQ is indeed something like a VP-proclitic, these facts follow; it simply reduplicates the word (or syllable) that it attaches to, with a negative morpheme between the copies.

Huang (1991) also provides a cross-linguistic argument for this analysis, pointing out that Taiwanese has a question particle *kam* that appears in the same contexts in which NQ is hypothesized to be in Mandarin. Huang cites an extensive cross-dialectal survey by Zhu (1985) that concludes that *kam*-type questions and A-not-A type questions are essentially in complementary distribution across dialects: a language either has *kam*-type questions or A-not-A questions but not both. Huang interprets this as evidence that NQ and *kam* are different morphological exponents of the same underlying morpheme. Other *kam*-type questions are found in Shanghai and Early Mandarin. Huang's examples are given in (16–18).

(16) li kam beh lai? (Taiwanese)
you Q want come
'Do you want to come?'

(17) nong a le va? (Shanghai)
you Q come prt
'Will you come?'

(18) ni ke you kong? (Early Mandarin)
you Q have time
'Do you have time?'

2.2 The role of negation

The fact that the A-not-A question in (1) involves a syllable that does not carry any meaning of its own (it is simply the first syllable of the questioned predicate) suggests that the surface form arises from a morphological process, and not from ellipsis or any purely syntactic process, since neither syntax nor ellipsis can generally target just part of a word.

As discussed above, Huang (1991) proposed that NQ is realized as a copy of (some part) of the following predicate, and an inserted negative morpheme *bu*. It is far from clear what role negation plays in A-not-A questions, because it is a definitional characteristic of an A-not-A question; a question without negation is not an A-not-A question and has no NQ, and all questions with NQ show negation. There is clearly an 'or not' meaning associated with these questions, but it is impossible to say whether this is inherent in the interpretation of NQ or whether this is contributed by the negative morpheme. Note, for example, that the *kam-* and *ke*-type morphemes in other dialects (16–18) do not appear with a negative morpheme, although they are interpreted in the same way as A-not-A questions in Mandarin. Still, there are some respects in which the negative morpheme in A-not-A question behaves like meaningful negative morphemes elsewhere in Mandarin. McCawley (1994) provides several arguments to show that *bu* is not simply an unanalyzed expletive element, but is rather an actual negative morpheme. His arguments are reviewed below.

In Mandarin, the form in which the negative morpheme appears depends on the aspectual structure of the sentence. A fair approximation is that *bu* is used in clauses denoting states (19) and *mei(you)* is used in clauses denoting bounded and episodic events (20); see Ernst (1995), Lin (2003) for a more precise characterization. The choice of *bu* or *mei* in an A-not-A question is governed by the same conditions; an A-not-A question about a state interposes *bu* between the copies of the predicate (21), and an A-not-A question about a bounded event appears with *mei* (22). This pattern by itself rules out the possibility that *bu* is an unanalyzed connective morpheme; as far as the morphology is concerned, NQ is a negative morpheme.

(19) wo bu chi mugua.
I not eat papaya
'I do not eat papaya.'

(20) wo mei-you chi mugua.
I not-have eat papaya
'I did not eat papaya.'

(21) ta xi(huan)-bu-xihuan neiben shu?
he like-not-like that book
'Does he like that book?'

(22) ta kan(jian)-mei-kanjian neiben shu?
he see-not-see that book
'Did he see that book?'

McCawley further observes that lexical restrictions on the appearance of negation are observed in A-not-A questions. Where a predicate cannot be negated, as is the case for some lexically negative predicates like *weijue* 'unsolved', neither can the predicate be questioned using NQ. Not only are absolute co-occurrence restrictions observed, but intermediate judgments are also parallel; in each of the examples (23–26), the acceptability of the (a) sentences matches the acceptability of the (b) sentences. While judgments seem to vary on the sentences in (23–26), McCawley's point is secure so long as the (a) examples have the same status as the (b) examples:

(23) a. *neige wenti bu/mei weijue.
that problem not unsolved
('That problem isn't unsolved.')
b. *neige wenti weijue be/mei weijue?
that problem unsolved not unsolved
('Is that problem unsolved?')

(24) a. ??zheiyang zuo bu wuli.
thus do not without-reason
'It isn't unreasonable to do this.'
b. ??zheiyang zuo wu bu wuli?
thus do without not without-reason
'Is it unreasonable to do this?'

(25) a. ?zheiyang zuo bu feifa.
thus do not illegal
'It isn't illegal to do this.'
b. ?zheiyang zuo fei-bu-feifa?
thus do it-not-illegal
'Is it illegal to do this?'

(26) a. ta bu wuchi.
he not without.shame
'He isn't shameless.'
b. ni shuo ta wu(chi)-bu-wuchi?
you say he without.shame-not-without.shame
'Do you say he's shameless?'

McCawley's argument shows that, as far as the morphology is concerned, the negation in an A-not-A question is a real negation, but does not decisively show

that the negative morpheme is part of the syntax and interpretation. The negation in NQ could as easily be similar to the supportive verb *do* in English, which inflects like a real verb, but is arguably not part of the syntax (Chomsky 1957; Halle and Marantz 1993). It could be that NQ carries a negative feature, one that is realized in the Mandarin morphology, but has no exponent in the hypothetically parallel *kam*-type questions in Taiwanese.

3 Movement of NQ and parallels to *weishenme* 'why'

Unlike yes/no questions formed with *ma*, A-not-A questions can be embedded, and can take scope beyond their own clause. However, a long-distance interpretation is blocked if the NQ and its would-be scope position are separated by an island boundary. On the basis of these facts, Huang (1982b, 1991) argues that A-not-A questions involve covert movement of NQ to its scope position for interpretation. Below, we will first review the evidence that A-not-A questions can be embedded when no island interferes, and then the evidence that islands can interfere. The distributional characteristics of NQ are parallel to those of non-nominal adjunct question words like *weishenme* 'why', for which a movement-based analysis is relatively uncontroversial.

3.1 A-not-A questions can be embedded

The statement in (27) has an embedded A-not-A question and it is grammatical, indicating that A-not-A questions are not exclusively a matrix clause phenomenon.

(27) [ta qu bu qu Meiguo] bu qingchu
he go not go America not clear
'Whether he will go to America is not clear.'

The question in (28), due to Huang (1982b), can also make this point, in a slightly more sophisticated way. The main verb in (28) is the question-embedding verb *xiang-zhidao* 'wonder', and the interpretation of this question has the *wh*-word in the embedded clause taking wide scope. While the English translation of this question would be somewhat marginal (due to extraction of the *wh*-word from the embedded interrogative), Huang rates the Mandarin question as fine, and the embedded clause is clearly an A-not-A question. Care is required in judging this sentence; the intended interpretation is one in which a person's identity is sought, and some speakers find it helpful to emphasize the embedded *wh*-word:

(28) ni xiang-zhidao [shei xi-bu-xihuan ni] (ne)?
You want-know who li-not-like you
'Who is the person *x* such that you wonder whether *x* likes you or not?'

The ability to embed A-not-A questions is fairly restricted – enough so to lead Li and Thompson (1979) to view the situation in the opposite way: they claim that A-not-A questions are only possible in matrix clauses except under special circumstances. According to Li and Thompson, a certain class of "semantically bleached" verbs (including *xiang/kan* 'think', *shuo* 'say', and *juede* 'feel') is semantically transparent enough to allow the embedded verb to "count as" a matrix verb, and thereby permit the attachment of NQ morphology. McCawley (1994) makes essentially the same observation, putting forth the idea that those verbs that allow 'embedded A-not-A questions' are susceptible to a parenthetical interpretation, and in that case are not truly embedding the A-not-A question. However, the examples above are sufficient to show that it is at least in principle possible to embed an A-not-A question.

3.2 A-not-A questions cannot appear in islands

The dominant view in the literature on A-not-A questions, arising from the influential arguments presented by Huang (1982b, 1991), is that NQ is something akin to a *wh*-word, related by movement to a CP-level scope position.

In addition to giving us a window into the syntactic structure of A-not-A questions, these facts also provide evidence that alternative questions, with *haishi* 'or', are different from A-not-A questions. To see the sensitivity of A-not-A questions to islands, we can compare them to alternative (*haishi*) questions, which are very similar in meaning but are syntactically relatively unconstrained. In particular, alternative questions can occur inside islands without difficulty. In (29) we have *haishi*-questions inside sentential subjects, and in (30) we have *haishi*-questions inside relative clauses. The questions in (29–30) differ in how much material is elided, but all have the disjunctive *haishi*.

(29) a. [wo qu Meiguo haishi bu qu Meiguo] bijiao hao? (AltQ)
I go America or not go America more good
'Is it better that I go to America or that I do not go to America?'

b. [wo qu Meiguo haishi bu qu] bijiao hao?
I go America or not go more good
'Is it better that I go or not go to America?'

c. [wo qu haishi bu qu Meiguo] bijiao hao?
I go or not go America more good
'Is it better that I go or not go to America?'

(30) a. ni xihuan [renshi ni haishi bu renshi ni] de ren? (AltQ)
you like know you or not know you DE person
'Do you like people who know you or people who don't know you?'

b. ni xihuan [renshi haishi bu renshi ni] de ren?
you like know or not know you DE person
'Do you like people who know or don't know you?'

c. ni xihuan [renshi ni haishi bu renshi] de ren?
you like know you or not know DE person
'Do you like people who know you or don't?'

The questions in (31–33) are A-not-A questions, the counterparts to (29–30) but without the word *haishi*, and all are ungrammatical as a result of being embedded in an island. The questions in (31–33) are intended as matrix questions, with NQ inside a sentential subject, a relative clause, and a *because* clause, respectively.

(31) *[wo qu bu qu Meiguo] bijiao hao?
I go not go America more good
('Is it better that I go to America or not?')

(32) *ni xihuan [ren(shi) bu renshi ni de ren]?
you like kn(ow) not know you DE person
('Do you like people who know you or don't know you?')

(33) *ni [yinwei Lisi lai-bu-lai] shengqi ne?
you because Lisi come-not come angry Q
('Are you angry or not because Lisi came?')

Example (27) in the previous section showed a grammatical A-not-A question inside a sentential subject, but there the scope of the question is itself within the island, hence the hypothesized movement need not cross the island boundary.

In addition to the islands noted by Huang (1982b), verbs that take nominal complements, including *yihan* 'regret', *jide* 'remember', and *tongyi* 'agree', also prevent A-not-A questions from appearing in their complements (Tsai 1994b). Note that to judge (35) requires some care, since *jide* 'remember' can also be read parenthetically.

(34) *ni hen yihan [Lisi xi-bu-xihuan Meiguo]?
you very regret Lisi li-not-like America
('Do you regret that Lisi likes or doesn't like America?')

(35) *ni jide [Lisi xi-bu-xihuan Meiguo]?
you remember Lisi li-not-like America
('Do you remember that Lisi likes or doesn't like America?')

3.3 A-not-A questions are like weishenme *'why' questions*

The observed sensitivity to movement islands suggests that NQ undergoes covert movement, presumably to a position in the CP system. In fact, the distribution of NQ is quite parallel to that of adverbial *wh*-words like *weishenme* 'why', also generally assumed to undergo covert movement to CP: the class of constituents from which A-not-A questions are excluded appears to be the same as the class

of constituents from which non-nominal adjunct *wh*-phrases like *weishenme* 'why' are excluded. To capture this, parallel, Huang (1982b, 1991) proposed that NQ is, in essence, a non-nominal adjunct *wh*-phrase. Examples showing the parallel ill-formedness of *weishenme* in islands are given below. Of course, *weishenme* questions are grammatical when *weishenme* is not embedded in an island.

(36) *[women weishenme chuli zhejian shi] bijiao hao?
we why handle this matter more appropriate
('What is the reason *x* such that it is more appropriate [for us to handle this matter for *x*]?')

(37) *ni bijiao xihuan [[ta weishenme zhu] de cai]?
you more like he why cook DE dish
('What is the reason *x* such that you like better [the dishes which he cooks for *x*]?')

(38) *Lisi hen yihan [ta weishenme cizhi]?
Lisi very regret he why resign
('What is the reason *x* such that Lisi regrets [that he resigned for *x*]?')

(39) *ni jide [Lisi weishenme cizhi]?
you remember Lisi why resign
('What is the reason *x* such that you remember [that Lisi resigned for *x*]?')

A-not-A questions and *weishenme* questions pattern together in several other ways as well, as will be noted in later sections. For example, both must have scope over focus-sensitive adverbs like *ye* 'also' and *zhi* 'only' (section 4.3), and over quantifiers like *meiyouren* 'nobody' (section 5.3).

3.4 A-not-A questions can be embedded: a further note

To complete the argument that movement is implicated in the ill-formedness of A-not-A questions within islands, it is important to establish that A-not-A questions can be embedded within non-islands. This was shown in section 3.1, but there has been some debate on this point. Most prominently, McCawley (1994) objected that Huang's examples used matrix verbs that lend themselves to a parenthetical interpretation. Countering Huang's examples, McCawley provided the example (40), in an attempt to choose a matrix verb that would not be likely to receive a parenthetical interpretation. Indeed, using the verb *xihuan* 'like' as a matrix verb results in ungrammaticality when an A-not-A question is embedded as or in its complement.

(40) *Lisi xihuan [women he bu he pijiu]?
Lisi like we drink not drink beer
('Does Lisi like for us to drink beer?')

However, given that verbs that take nominal complements (as *xihuan* clearly does, cf., e.g., (1)) induce islands for both *weishenme* (39) and A-not-A questions (35), the ungrammaticality of (40) is unsurprising, and does not undermine the generalization that A-not-A questions can be embedded, just not in islands.

4 Focus marking and A-not-A questions

Focus constructions in Mandarin interact with A-not-A questions in an interesting way. In this section we will first review some restrictions on these focusing constructions in general, and then turn to their interactions with and implications for A-not-A questions.

4.1 Restrictions on focus marking

The copula *shi* is used in Mandarin as a focus marker, resulting in a cleft-like interpretation, as illustrated by the examples in (41–43).

(41) shi wo mingtian yao mai neiben shu
be I tomorrow want buy that book
'It is I that want to buy that book tomorrow.'

(42) wo shi mingtian yao mai neiben shu
I be tomorrow want buy that book
'It is tomorrow that I want to buy that book.'

(43) wo mingtian shi yao mai neiben shu
I tomorrow be want buy that book
'I do want to buy that book tomorrow.'

Huang (1982b) observes that only one *shi* is allowed per clause (44–45), and that *shi* is not possible in *wh*-questions (46–48) except when the *wh*-word itself is focused by *shi* (49–50). Huang analyzes this as a consequence of there being a single focus position (high in the clause) to which both foci and *wh*-words must move for interpretation (see also Rizzi 1997 for essentially the same claim). Since both clefted constituents and *wh*-phrases compete for the same position, only one or the other is allowed.

(44) *shi Zhangsan shi mingtian yao lai
be Zhangsan be tomorrow want come
('It's Zhangsan, tomorrow that *t* will come *t*.')

(45) shi Zhangsan shuo Lisi shi mingtian lai
be Zhangsan say Lisi be tomorrow come
'It's Zhangsan who said that it's tomorrow that Lisi will come.'

(46) *shi Zhangsan da-le shei?
be Zhangsan beat-perf who
('Who is it Zhangsan who beat *t*?')

(47) shi Lisi xiang-zhidao [shei da-le ta]
be Lisi wonder who beat him
'It is Lisi that wonders who beat him.'

(48) *shi Lisi xiangxin [shei da-le ta]
be Lisi believe who beat him
('Who is it Lisi that believes that *t* beat him?')

(49) shi shei da-le ta?
be who beat-perf him
'Who is it that beat him?'

(50) ta xiang-zhidao [shi shei da-le ta]
he wonder be who beat him
'He wonders who it is that beat him.'

In further support of the idea that the focused constituent must undergo covert movement, Huang (1982b) observes that the focus marker *shi* cannot occur within movement islands (much like the NQ morpheme introduced in section 2), e.g., the sentential subject in (51):

(51) *[Zhangsan shi mingtian lai] mei guanxi.
Zhangsan be tomorrow come not matter
('It's tomorrow that [that Zhangsan will come *t*] does not matter.')

4.2 Focus markers in A-not-A questions

Focusing elements interfere with the formation of A-not-A questions in revealing ways. Focus-sensitive adverbs such as *zhi* 'only' and *ye* 'also' are incompatible with NQ in cases where the adverb takes scope over the NQ on the surface. A simple example is given in (52):

(52) *ni zhi xi bu xihuan yige ren?
you only li-not-like one person
('Do you only like one person?')

Recall that a modal accepts NQ (53), and notice that *zhi* can precede a modal (54) or follow it (55). However, putting the two together is fine only if NQ precedes *zhi* (56), and not if NQ follows *zhi* (57) (see Soh 2005 for further discussion).

(53) ta hui-bu-hui tiaowu?
he can-not-can dance
'Can he dance?'

(54) ta zhi hui shuo Yingyu.
he only can speak English
'He can only speak English (no other languages)'

(55) ta hui zhi shuo Yingyu.
he can only speak English
'He can only speak English (since none of us speak Chinese)'

(56) ta hui-bu-hui zhi shuo Yingyu?
he can-not-can only speak English
'Can he only speak English?'

(57) *ta zhi hui-bu-hui shuo Yingyu?
he only can-not-can speak English
('Can he only speak English?')

The focus marker *shi* can take NQ (a B-not-B question), enabling NQ to take scope over *zhi* on the surface. Again, when this obtains, *zhi* is acceptable in an A-not-A question (58):

(58) ta shi-bu-shi zhi hui shuo Yingyu?
he be-not-be only can speak English
'Is it the case that he can only speak English?'

It is not, however, possible to have NQ realized on *zhi* itself (59):

(59) *ni zhi bu zhi xihuan yige ren?
you only not only like one person
('Do you only like one person?')

This interaction with focus-sensitive adverbs is peculiar to A-not-A questions; *zhi* does not cause similar problems in *ma*-questions (60), nor do the effects appear in full alternative questions with an explicit *haishi* 'or' (61):

(60) ni zhi xihuan yige ren ma?
you only like one person Q
'Do you only like one person?'

(61) ni zhi xihuan yige ren haishi bu zhi xihuan yige ren?
you only like one person or not only like one person
'Do you only like one person or not only like one person?'

4.3 *Parallels to* weishenme *'why' questions*

The surface scope restrictions on NQ seem to be for the most part parallel to the restrictions on *weishenme* 'why', as observed by Soh (2005). Just as *zhi* 'only' and *ye* 'also' interfere with the association of NQ to its scope position, so do they interfere with the association of *weishenme* to its scope position (62), unlike the association of nominal argument *wh*-phrases like *shei* 'who' (63):

(62) *ni zhi renwei Lisi weishenme kan zhentan-xiaoshuo?
you only think Lisi why read detective-novel
('What is the reason *x* such that you only think Lisi reads detective novels for *x*?')

(63) ta zhi renwei shei you qiantu?
he only think who has prospect
'Who does he only think has prospect?'

With respect to the interaction with clefting using *shi*, *weishenme* behaves differently from other *wh*-words, as Hu (2002) observes. Whereas a nominal argument *wh*-word like *shenme* 'what' cannot co-occur with a clefted constituent but can itself be focused (46–50), the distribution of *weishenme* is the reverse: *weishenme* can co-occur with a clefted constituent (64), and cannot usually itself be focused with *shi* (65–66):

(64) weishenme shi Zhangsan bixu cizhi?
why be Zhangsan must resign
'Why is it Zhangsan that must resign?'

(65) *women shi weishenme nianshu?
we be why study
('Why is it that we study?')

(66) *shi weishenme Zhangsan bixu cizhi?
be why Zhangsan must resign
('Why is it that Z must resign?')

Inspired by the other parallels we have seen between NQ and *weishenme*, we might expect to find that the same properties hold of NQ. However, it turns out to be difficult to test. Hu (2002) attempts to show this by noting that NQ in A-not-A questions repels focusing by *shi* (67), as *weishenme* does (65–66):

(67) *ni shi qu-bu-qu meiguo?
you be go-not-go America
('Do you go or not go to America?')

However, it is not clear that we can draw any real conclusions from the ungrammaticality of (67). First, as was noted earlier (11–12), the NQ morphology necessarily appears on a modal/auxiliary when present, and *shi* in (67) is arguably such an element, ruling (67) out independently. The other property of *weishenme* noted above is that it can co-occur with *shi*, which arguably holds between NQ and *shi* in B-not-B questions like (58). We will return to some other parallels in section 5.3 as well.

It seems that the distribution of NQ is at least consistent with that of *weishenme*, even if it is difficult to show the parallelism directly.

4.4 Discourse conditions on A-not-A questions

A-not-A questions and yes/no questions differ with respect to the types of discourse they fit into. One of the earliest discussions of this was in Li and Thompson (1979), who observed that A-not-A questions have an essential 'neutrality' causing them to seem inappropriate when the questioner has a predisposition toward one of the alternatives; in such a circumstance, a yes/no question with *ma* is used. A more recent study by Schaffar and Chen (2001) examined some of the pragmatic requirements of A-not-A, B-not-B, and *ma*-questions in some detail.

Schaffar and Chen (2001) put Li and Thompson's observation into more precise terminology by proposing that A-not-A questions are questions with a 'wide focus', where neither the entire proposition nor its negative alternative are presupposed. A-not-A questions contrast with B-not-B questions, formed using the narrow focus marker *shi*, and which are only felicitous where narrow focus is appropriate. Both types of questions differ from *ma*-questions, which do not have any information structure restrictions. The examples and contexts that follow are from Schaffar and Chen (2001).

The first context to consider is an 'out of the blue' question, with no presumption about what the answer is. An example is given in (68), where either an A-not-A question or a *ma*-question is felicitous:

(68) Context: After spending an evening at the cinema, a friend and I are hungry and are driving by a restaurant called 'Tabula Rasa.' I ask my friend:
   a. ni lai-mei-lai guo Tabula Rasa?
      you come-not-come asp Tabula Rasa
      'Have you been to the Tabula Rasa before?'
   b. ni lai guo Tabula Rasa ma?
      you come asp Tabula Rasa Q
      'Have you been to the Tabula Rasa before?'

In a more 'slanted' context like (69), where one alternative does have the upper hand, an A-not-A question is not appropriate, but either a B-not-B question or a *ma*-question (with sentence stress, indicated by capitals) is possible. Schaffar and Chen characterize this as 'verum focus', or contrastive narrow focus on the truth

value, taking as background the proposition (either affirmative or negative) as a whole.

(69) Context: I invite a friend to Tabula Rasa, which I have recently discovered. As we enter the restaurant, a waiter I don't know breaks into a smile and waves. I ask my friend:
   a. ni shi-bu-shi lai guo Tabula Rasa?
      you be-not-be come asp Tabula Rasa
      'Have you been to the Tabula Rasa before?'
   b. ni LAI guo Tabula Rasa ma?
      you come asp Tabula Rasa Q
      'Have you been to Tabula Rasa before?'

Narrow focus is of course possible on other constituents as well, for example in (70). In (70a), the focus is expressed entirely by the sentence stress, and in (70b) it is expressed with the help of the focus marker *shi*. The example in (70b) is interesting in that the sentence accent takes priority in marking the focused constituent, which in fact precedes *shi*. Often the use of the focus marker *shi* is characterized as focusing any constituents following it in the sentence, but (70b) suggests that this is not an absolute constraint:

(70) a. Peitela ZUOTIAN zuo-le suxi ma?
      Petra yesterday make-perf sushi Q
      'Did Petra make sushi YESTERDAY (not today)?'
   b. Peitela ZUOTIAN shi-bu-shi zuo-le suxi?
      Petra yesterday be-not-be make-perf sushi
      'Did Petra make sushi YESTERDAY (not today)?'

Based on facts like this, Schaffar and Chen (2001) propose that B-not-B questions unambiguously indicate narrow focus, either verum focus if there is no special sentence accent, or on the constituent marked with sentence accent. A-not-A questions, on the other hand, unambiguously indicate wide focus. Yes/no questions with *ma* do not have any special focus constraints; the same focus options are available to yes/no questions as to declaratives.

Judgments on what can be focused are quite difficult, and it is not surprising that there are conflicting judgments reported in the literature. To give an example, Zhang (2001) reports that the subject and any adverbials that precede NQ are unavailable to focus (71). Although Schaffar and Chen only address the A-not-A and B-not-B cases (71a, b), their analysis predicts that no narrow focus reading should be possible in (71a), and that all narrow focus readings should be possible in (71b):

(71) a. Lisi gangcai zheng-mei-zheng jidan?
      Lisi just steam-not-steam egg
   b. Lisi gangcai shi-bu-shi zheng-le jidan?
      Lisi just be-not-be steam-ASP egg

c. Lisi gangcai zheng jidan meiyou?
Lisi just steam egg not
d. Lisi gangcai zheng jidan mei-zheng?
Lisi just steam egg not-steam
'Did Lisi STEAM eggs just now?'
'Did Lisi steam EGGS just now?'
'Did Lisi STEAM EGGS just now?'
*'Did LISI steam eggs just now?'
*'Did Lisi steam eggs JUST NOW?'

Nevertheless, the basic characterization of A-not-A questions as being strictly restricted to neutral contexts (in which neither alternative is presupposed), as opposed to *ma*-questions (that allow – but do not require – a more slanted context), is undisputed. Future research may provide more clarification of the focus properties of sentence accent as compared to focusing with *shi*, and better diagnostics for discerning what can and cannot be focused in Mandarin questions. The null hypothesis is that *shi* has the same properties whether it carries NQ or not.

5 Further surface scope restrictions on NQ

Along with the restrictions discussed above on the surface scope of focus-sensitive adverbs and NQ in A-not-A questions, there are a number of other similar restrictions that have been discussed in the literature. We will review several such restrictions in this section, on adverbs, indefinites, and quantifiers.

5.1 Adverbs

In one of the earliest serious discussions of A-not-A questions, Li and Thompson (1979) pointed out that certain adverbs interfere with A-not-A formation, giving as examples *man-man-de* 'slowly' or *jing-jing-de* 'quietly'. Ernst (1994) explores these restrictions in much greater detail, showing that there is a structural explanation for this interference.

Ernst considers three classes of adverbial modifiers. The first class includes adverbs like *yiding* 'definitely'. Such adverbs seem to require an interpretation that puts them within the scope of a question. To give analogs from English, a question like 'Is he definitely going?' is fine, whereas 'Definitely: is he going?' is anomalous. A second class of adverbs includes the adverb *daodi*, which Ernst glosses as 'after all'. This adverb seems to require interpretation outside the scope of the question: an interpretation like 'After all: is he going?' is fine, whereas 'Is he after all going?' is anomalous. The third class, including adverbs like *jintian* 'today' do not seem to have any particular scope requirements.

Ernst shows that the scope requirement for any given adverb must be satisfied by the surface scope relation between the adverb and the NQ morphology. Ernst makes the further assumption (adopting Huang's (1982a) Isomorphism Principle)

that the surface scope relations must be preserved in the LF structure that feeds interpretation, so that if the adverb outscopes the NQ on the surface, it must also be interpreted outside the scope of the question (at LF).

Assuming, along with an essentially unanimous literature, that the question particle *ma* occupies a complementizer position high in the structure taking scope over the rest of the clause, we have a straightforward explanation for why adverbs like *yiding* 'definitely' are compatible with *ma*-questions like (72) but are incompatible with A-not-A questions like (73). In (72), *yiding* is in the scope of *ma*, so the adverb is interpreted within the scope of the question, as required for this class of adverbs. In (73), *yiding* outscopes NQ on the surface and thus would be forced to take scope outside of the question operator at LF, in violation of the requirements of this adverb class. Where the scope of NQ and *yiding* is reversed, as in the B-not-B question in (74), the question is fine:

(72) ta yiding qu ma? (Y/NQ)
he definitely go Q
'Is he definitely going?'

(73) *ta yiding qu-bu-qu? (A-not-A)
he definitely go-no-go
('Is he definitely going?')

(74) ta shi-bu-shi yiding qu? (B-not-B)
he be-not-be definitely go
'Is he definitely going?'

The class of adverbs that includes *jintian* 'today' is compatible with both A-not-A and *ma*-questions, as in (75) and (76).

(75) ni jintian qu-bu-qu? (A-not-A)
you today go-not-go
'Are you going today?'

(76) ni jintian qu ma? (Y/NQ)
you today go Q
'Are you going today?'

The remaining class, exemplified by the adverb *daodi* 'after all' shows the opposite pattern from the first. The adverb *daodi* is allowed in A-not-A questions (77), but not in *ma*-questions (78). The explanation of the patterning of *daodi* is the same as the explanation of *yiding*, but for the fact that *daodi* and *yiding* have opposite requirements. Since *daodi* must take scope outside the question operator at LF in order to be interpreted, (78) is ruled out because *daodi* is in the scope of *ma* on the surface. On the other hand, (77) is fine, since *daodi* has scope over NQ and if the scope relation is maintained at LF, the interpretive requirements of this

adverb class are satisfied. Testing B-not-B questions shows that *daodi* is permitted only when it outscopes NQ on the surface (79–80).

(77) Jinrong daodi qu-bu-qu? (A-not-A)
Jinrong after-all go-not-go
'Is Jinrong going or not?!'

(78) *Jinrong daodi qu ma? (Y/NQ)
Jinrong after-all go Q
('Is Jinrong going or not?!')

(79) *ta shi-bu-shi daodi qu? (B-not-B)
He be-not-be after-all go
('Is he really going?!')

(80) ta daodi shi-bu-shi qu? (B-not-B)
He after-all be-not-be go
'Is he really going?!'

The conclusion is that there is something interpretively significant about the surface position of NQ in A-not-A questions, and moreover, NQ is invariably in a lower structural position in A-not-A questions than the question particle *ma* is in yes/no questions.

It is also possible for NQ to appear on adverbs themselves, such as on *chang* 'often' in (15) above. Not all adverbs can appear with NQ, however; Hsieh (2001) notes that some adverbs, such as *guyi* 'deliberately', cannot be marked with NQ (81):

(81) *Ta guyi-bu-guyi qu?
he deliberately-not-deliberately go
('Did he not go deliberately?')

It is generally assumed that frequency adverbs like 'often' are lower in the structure than subject-oriented adverbs like 'deliberately' (see, e.g., Cinque 1999; Ernst 2002), and extending that line of thought, one avenue to explore would be to suppose that *guyi* 'deliberately' necessarily has a higher place in the structure than NQ, as does *daodi* 'after all', while other adverbs (possibly including *chang* 'often', *yiding* 'definitely', and *jintian* 'today') are more flexible and (may) attach lower than NQ – in fact, future research might be profitably done looking for subtle differences in meaning depending on the relative positions of NQ and such adverbs.

5.2 *Indefinite* wh-*words*

It is well known that *wh*-words in Mandarin act something like 'polarity items', acting like a variable bound by question or negation operators elsewhere in the

sentence (see, e.g., Li 1992; Lin 1996 for discussion). In a simple affirmative sentence, *wh*-words are disallowed (82), but they receive an indefinite interpretation under negation (83) and in conditionals (84). In *wh*-questions, of course, *wh*-words function as *wh*-words (85).

(82) *wo xihuan shenme ren.
I like what person
('I like somebody.')

(83) wo mei mai shenme (dongxi).
I not buy what (thing)
'I didn't buy anything.'

(84) yaoshi shenme ren qifu ni . . .
if what person bully you
'If someone bullies you . . .'

(85) ni xihuan shenme ren?
you like what person
'Who do you like?'

The indefinite interpretation for *wh*-words is also available in other contexts, for example in (86), with the sentence-final particle *le* indicating an inference, rather than a direct observation, and in yes/no questions formed with the sentence-final particle *ma* (87):

(86) ta kandao shenme le
he see what LE
'(It seems that) he saw something.'

(87) ta xihuan shenme ma?
he like what Q
'Does he like something/anything?'

The contexts in which a *wh*-word can be interpreted as an indefinite are characterized by Li (1992) as being 'uncertain' and by Lin (1996) as not entailing the existence of a referent for the indefinite. What allows the indefinite interpretation in (87), for example, is the presence of the question particle *ma*.

The prevailing opinion has been that *ma* will license an indefinite interpretation of a *wh*-word in any position, including the subject position. However, conflicting judgments have been reported in the literature (and in my own informal consultations), which may undermine the use of indefinites in subject position as a useful diagnostic for structure in A-not-A questions.

The paradigm examples are these: In A-not-A questions, a *wh*-word in object position (88), but not in subject position (89), can be interpreted as an indefinite.

However, in B-not-B questions, a *wh*-word in subject position can receive an indefinite interpretation (90).

(88) ta xi-bu-xihuan shenme ren?
he li-not-like what person
'Does he like someone?'

(89) *shenme ren xi-bu-xihuan ta?
what person li-not-like him
('Does someone like him?')

(90) shi-bu-shi shenme ren xihuan ta?
be-not-be what person like him
'Does someone like him?'

Li (1992) interprets this paradigm as an indication that NQ is the licensor of the indefinite interpretation, and can only license *wh*-words in its scope. It has also been pointed out (see Lin 1996; Schaffar and Chen 2001) that a B-not-B question in which the NQ appears question-finally also allows a subject *wh*-word to be interpreted as an indefinite (91). Assuming that this sentence-final position is within CP, at or near the position in which *ma* is found in yes/no questions, this again shows an indefinite interpretation licensed in the scope of NQ.

(91) shei/shenme ren xihuan ta shi-bu-shi?
who/what man like him be-not-be
'Does someone/anyone like him?'

The judgments above are not much in dispute, but whether the yes/no question operator *ma* can license an indefinite interpretation of a *wh*-word in subject position, and by extension, the validity of the generalization that a question operator (NQ or *ma*) can always license such an interpretation for *wh*-words in its scope, is less clear. Li (1992) gives (92) as an example of an indefinite in subject position licensed by *ma*, glossing it as shown, yet Huang (1982a) gives a nearly identical question (93), rating it as ungrammatical, a judgment endorsed by Cheng (1997):

(92) shenme ren xihuan ta ma?
what person like him Q
'Does someone like him?' (Li 1992: 128)

(93) *shei xiang chi pingguo ma?
who want eat apple Q
'Does someone/anyone want to eat apples?'
(Huang 1982a: 244; Cheng 1997: 108)

Lin (1996) provides (94) as an example like (92), but it is not completely clear whether *ma* or *le* is responsible for its acceptability:

(94) shei you qifu ni le ma?
who again bully you ASP Q
'Did somebody bully you again?'

Schaffar and Chen (2001) rate (92) as grammatical, but suggest that it actually has a reading much more like a *wh*-question, not allowing an answer of *shi (xihuan)* 'yes' or *bu (xihuan)* 'no', but only an answer like *Lisi xihuan ta* 'Lisi likes him', and suggesting a meaning more like 'Who likes him, doesn't somebody?' This interpretation is unusual in light of the fact that the question particle *ma* is almost universally judged to be incapable of appearing in *wh*-questions.

Schaffar and Chen (2001) and Hua (1999), in discussing examples like (91), observe that when a modal or auxiliary element bears NQ, even when it appears sentence internally, it can license an indefinite interpretation of a *wh*-subject. They provide examples like (95) and (96), to be compared to (89):

(95) shei/shenme ren shi-bu-shi xihuan ta?
who/what man be-not-be like him
'Does someone/anyone like him?'

(96) shei you-mei-you du-guo zhe-ben shu
who have-not-have read-asp this-cl book
'Has someone/anyone read this book?'

We cannot further resolve or clarify the disagreements in the judgments here, although this is clearly an area in need of more thorough investigation. It appears that judgments are particularly volatile on the availability of indefinite interpretations of *wh*-subjects. This may be due to independent factors affecting the subject position, which under most circumstances is construed as a topic and hence incompatible with an indefinite interpretation. In this connection, it is worth mentioning that placing *you* 'have' before a *wh*-subject in a sentence like (92) will uncontroversially permit an indefinite interpretation of the *wh*-word, which may interfere somewhat with judgments of such sentences lacking *you*. The *wh*-object examples in the first part of this section suggest that NQ is capable of licensing an indefinite interpretation, but several issues remain unresolved.

5.3 Intervening quantifiers

Wu (1997a) observes that in contrast to yes/no questions formed with the question particle *ma* (97), A-not-A questions have a restriction against having quantifiers outside the NQ. In (98), the quantifier is outside the A-not-A morphology, and the examples are degraded or ungrammatical.

(97) a. meigeren dou pao ma?
everyone all run Q
'Does everyone run?'
b. you ren pao ma?
someone run Q
'Does someone run?'
c. meiyou ren pao ma?
no body run Q
'Does nobody run?'

(98) a. ?meigeren dou pao ba pao?
everyone all run-not-run
'Does everyone run or not?'
b. *you ren pao bu pao?
someone run-not-run
('Does someone run or not?')
c. *mei you ren pao by pao?
no body run-not-run
('Does nobody run or not?')

The fact that (98a) is rated better than (98b, c) is attributed to the possibility of *meigeren dou* getting a group interpretation, parallel to (99):

(99) tamen pao bu pao?
they run not run
'Do they run or not?'

In a B-not-B question, such subject quantifiers are fine (100), so long as NQ is actually outside (101). In the absence of subject quantifiers, either position for *shi-bu-shi* is fine (102).

(100) a. shi-bu-shi meigeren dou pao?
be-not-be everyone all run
'Is it the case or not that everyone runs?'
b. shi-bu-shi you ren pao?
be-not-be someone run
'Is it the case or not that someone runs?'
c. shi-bu-shi meiyou ren pao?
be-not-be no body run
'Is it the case or not that nobody runs?'

(101) a. *meigeren dou shi-bu-shi pao?
everyone all be-not-be run
('Is it the case that everyone runs?')

b. *you ren shi-bu-shi pao?
someone be-not-be run
('Is it the case that someone runs?')
c. *meiyou ren shi-bu-shi pao?
no body be-not-be run
('Is it the case that nobody runs?')

(102) (shi-bu-shi) Zhangsan (shi-bu-shi) pao?
be-not-be Zhangsan be-not-be run
'Is it the case or not that Zhangsan runs?'

With respect to *meigeren dou* 'everyone', Wu observes that the scope requirements are actually on *dou*, as can be seen by comparing (101a) to (103). In the grammatical (103) and (100a), *shi-bu-shi* takes scope over *dou*, but in the ungrammatical (101a), the scope relation between them is reversed.

(103) meigeren shi-bu-shi dou pao?
everyone be-not-be all run
'Is it the case that everyone runs?'

It is worth noting that these same elements seem to block association of *weishenme* 'why' with its scope position (104), in contrast to nominal *wh*-words like *shei* 'who' (105) (Soh 2005). Sentence (106) makes the same point as (98), but is provided for parallelism to (104–105), showing the incompatibility of these subject quantifiers in A-not-A questions. Thus, if movement of the same type is implicated for both *weishenme* and NQ, this might be viewed as a type of weak island phenomenon, further supporting the view that NQ undergoes movement.

(104) *meiyouren/henshao ren/zuiduo liang-ge ren weishenme cizhi?
nobody/few person/at most two-cl person why resign
('What is the reason *x* such that nobody/few people/at most two people resigned for *x*?')

(105) meiyouren/henshao ren/zuiduo liang-ge ren gan gen shei dajia?
nobody/few person/at most two person dare with who fight
'Who is the person *x* such that nobody/few people/at most two people dare(s) to fight with *x*?'

(106) *meiyouren/henshao ren/zuiduo liang-ge ren qu-bu-qu?
nobody/few person/at most two-cl person go-not-go
('Is nobody/few people/at most two people going?')

6 Negative particle questions and VP-not-V questions

There are two other question forms that appear on the surface to be very similar to A-not-A questions. The first of these question types is the negative particle question, which ends in a negative morpheme (107); the second is what we will refer to as the VP-not-V question, which ends with a negative morpheme and a second copy of the verb (108):

(107) Hufei kan-wan-le nei-ben shu meiyou? (NPQ)
Hufei read-finish-perf that-cl book not-have
'Has Hufei finished reading that book?'

(108) ta xihuan neige dianying bu-xihuan? (VP-not-V)
he like that movie not-like
'Does he like that movie?'

A natural null hypothesis is that both NPQs and VP-not-V questions are derived from A-not-A questions; that is, we might suppose that a VP-not-V question arises from movement of the not-V from the V-not-V complex, and that an NPQ arises from additionally omitting the copy of the verb. However, appearances can be deceiving, and there has been debate as to which of these constructions, if any, are related to the others. Much of the discussion in this section draws upon work by Cheng et al. (1996), Zhang (1997), and Hsieh (2001).

6.1 Distributional similarities and differences

We will begin by looking at ways in which these question types are similar to one another. One property they have in common is that the verb being questioned cannot already be negated. While it is perfectly acceptable to ask a negative yes/no question with *ma* (109), such questions cannot be asked in the VP-not-V (110), NPQ (111), or A-not-A forms (112):

(109) ta bu chang jing-ju ma?
he not sing Beijing-Opera Q
'Does he not sing Beijing-Opera?'

(110) *ta bu chang jing-ju bu-chang?
he not sing Beijing-Opera not-sing
('Does he not sing Beijing-Opera?')

(111) *ta bu chang jing-ju bu?
he not sing Beijing-Opera not
('Does he not sing Beijing-Opera?')

(112) *ta bu qu qu?
he not go go
('Isn't he going?')

Just as in simple declaratives and in A-not-A questions, the choice of the negative morpheme in NPQs depends on the aspectual structure of the clause. Recall that there are two forms negation can take in Mandarin, *bu* (for bare verbs and modals, generally unbounded events), and *mei(you)* (for verbs that are marked with aspectual particles, and generally for bounded events), demonstrated in (113). NPQs can be formed with either (114), as can A-not-A questions (115), but which form of negation is used depends on the aspectual properties of the sentence in the same way it does in declaratives.

(113) a. Hufei bu/*meiyou hui qu
Hufei not/not-have will go
'Hufei will not go.'
b. Hufei meiyou/*bu qu-guo
Hufei not-have/not go-exp
'Hufei has not been (there).'

(114) a. Hufei hui qu bu?
Hufei will go not
'Will Hufei go?'
b. ta qu-guo meiyou/*bu
he go-asp not.have/not
'Has he been (there)?'

(115) a. Qiaofeng qu-bu-qu
Qiaofeng go-not-go
'Is Qiaofeng going?'
b. ta you-meiyou qu-guo meigo?
he have-not-have go-exp America
'Has he been to America?'
c. Qiaofeng qu-mei-qu? (Beijing Mandarin)
Qiaofeng go-not-go
'Did Qiaofeng go?'

VP-not-V questions show the same type of aspect agreement; for example, if *meiyou* is used instead of *bu* with an unbounded event, the result is ungrammatical (116); compare to (108):

(116) *ta xihuan neige dianying mei(you)-xihuan?
he like that movie not-like
('Does he like that movie?')

A natural question to ask is whether the three kinds of questions pattern together with respect to sensitivity to islands. Initially, this appears to be the case. As Hsieh (2001) observes, NPQs, like A-not-A questions, cannot take scope out of movement islands such as sentential subjects (117), relative clauses (118), or reason adjuncts (119):

(117) *[you qian meiyou] bijiao hao?
have money not.have more good
('Whether to have money is better?')

(118) *ni bijiao xihuan [you qian meiyou de ren]?
you more like have money not.have DE person
('Who do you like better, the people who have money or the people who do not?')

(119) *Zhangsan [yinwei ni chi-le fan meiyou], suoyi hen shengqi?
Zhangsan because you eat-asp rice not.have therefore very angry
('Zhangsan got angry because whether you ate or not?')

This would be a suggestive similarity, but for the fact that, as Zhang (1997) notes, neither NPQs nor VP-not-V questions are content inside such clauses even when they take scope inside. While A-not-A questions can be embedded in islands if the scope of the question is contained within the island as in (120), neither NPQs (121) nor VP-not-V questions (122) permit even this type of embedding. While the incompatibility with islands in A-not-A questions has to do with establishing a relation between NQ and the scope of the question, this cannot be the explanation for the ungrammaticality of (121–122) nor can it be the only explanation for the ungrammaticality of (117–119). This, then, seems to be a true difference between A-not-A questions on the one hand and NPQs and VP-not-V questions on the other.

(120) a. wo zai kaolu [ta mai-bu-mai shu] de wenti.
I at consider [he buy-not-buy book] DE question
'I am considering the question whether he will buy the books.'
b. ta qu-mei-qu-guo Beijing gen wo wuguan.
he go-not-go-asp Beijing to me irrelevant
'Whether he has been to Beijing is irrelevant to me.'
c. wulun/buguan ni xi-bu-xihuan ta, wo dou yao jia ta.
no-matter/regardless you like-not-like he, I all want marry he
'Regardless of whether you like him or not, I want to marry him.'

(121) a. *wo zai kaolu [ta mai shu bu] de wenti.
I at consider [he buy book not] DE question
('I am considering the question of whether he will buy the books.')
b. *ta qu-guo Beijing mei-qu-guo gen wo wuguan.
he go-asp Beijing not-go-asp to me irrelevant
('Whether he has been to Beijing is irrelevant to me.')

c. *wulun/buguan ni xihuan ta bu-xihuan, wo dou yao jia ta.
no-matter/regardless you like he not-like, I all want marry he
('Regardless of whether you like him or not, I want to marry him.')

(122) a. *wo zai kaolu [ta mai shu bu-mai] de wenti.
I at consider [he buy book not-buy] DE question
('I am considering the question of whether he will buy the books.')
b. *ta qu-guo Beijing meiyou gen wo wuguan.
he go-ASP Beijing not to me irrelevant
('Whether he has been to Beijing is irrelevant to me.')
c. *wulun/buguan ni xihuan ta bu, wo dou yao jia ta.
no-matter/regardless you like he not, I all want marry he
('Regardless of whether you like him or not, I want to marry him.')

There are other reasons to differentiate A-not-A questions from NPQs and VP-not-V questions as well. Zhang (1997) observes that, while the NQ morphology is possible on different kinds of predicates in A-not-A questions, for example the preposition in (123a), only verbs can participate in VP-not-V questions (123b):

(123) a. ni gen-bu-gen ta shuohua?
you to-not-to him speak
'Do you speak to him?'
b. *ni gen ta shuohua bu-gen?
you to him speak not-to
('Do you speak to him?')

Moreover, whereas in A-not-A questions the predicate copy can consist only of the first syllable (124a), the reduplicated verb cannot be truncated in a VP-not-V question (124b, c). Likewise, the negative morpheme *meiyou* may appear in its full form in an NPQ, but must be truncated to *mei* in an A-not-A question (125).

(124) a. ta xi-bu-xihuan zheiben shu?
he like-not-like this book
'Does he like this book?'
b. *ta xi-zheiben shu bu xi-(huan)?
he like-this book not like
('Does he like this book?')
c. *ta xi(huan) zheiben shu bu xi-?
he like this book not like
('Does he like this book?')

(125) a. ta chi-mei-chi zaofan?
he eat-not-eat breakfast
'Has he eaten breakfast?'

b. *ta chi-meiyou-chi zaofan?
he eat-not-eat breakfast
('Has he eaten breakfast?')
c. ta chi zaofan mei(you)?
he eat breakfast meal not
'Has he eaten breakfast?'

Cheng et al. (1996), citing a historical study by Zhang (1990), note that NPQs are much older than the other types of yes/no questions. In Classical Chinese, such questions were formed with a negative particle and an interrogative particle in final position. Over time the interrogative particle disappeared, leaving the negative particle alone to mark the question. Such evidence suggests that we may not want to derive NPQs from other A-not-A constructions, since in Classical Chinese only the NPQs existed. It also suggests that in Classical Chinese, and perhaps by extension in modern Chinese, the negation in an NPQ is doing 'double duty', carrying features of both negation and interrogativity.

Cheng et al. (1996) bring up a further potential difference between these question types. Recall that certain preverbal adverbs are disallowed in A-not-A questions (discussed in section 5.1), such as *chang* 'often' and *yijing* 'already' in (126). Cheng et al. observe that these adverbs are also ungrammatical in VP-not-V questions (127). Further, they rate these adverbs as being fine with NPQs (128).

(126) a. *ta chang qu-bu-qu?
he often go-not-go
('Does he go often?')
b. *ta yijing you-meiyou kan-wan shu?
he already have-not-have read-finish book
('Did he already finish reading the book?')

(127) a. *ta chang pian-ni-bu-pian?
he often cheat-you-not-cheat
('Does he often cheat you?')
b. *ta yijing kan-wan shu mei-kan-wan?
he already read-finish book not-read-finish
('Did he already finish reading the book?')

(128) a. ta chang qu bu?
he often go not
'Does he go often?'
b. ta yijing kan-wan shu mei(you)?
he already read-finish book not-have
'Did he already finish reading the book?'

Subsequent literature has not unanimously agreed with the judgments reported by Cheng et al. for (128), however; Hsieh (2001) judges (128a) to be ungrammatical,

and Zhang (1997) rates (128b) the same. At least for dialects in which all of the examples in (126–128) are ungrammatical, they cannot serve to support an argument for differentiating NPQs, VP-not-V questions, and A-not-A questions. There may in fact be prosodic constraints that have not been thoroughly explored influencing the acceptability of these sentences. Zhang (1997) agrees with Cheng et al. that (128a) is acceptable, but finds that replacing the monosyllabic adverb *chang* with the disyllabic synonym *jingchang* 'often' renders it ungrammatical, unless the sentence is longer, e.g. with an expressed goal argument (129). Pending further systematic investigation, the diagnostics based on the acceptability of adverbs with NPQs are of uncertain status.

(129) a. *ta jingchang qu bu?
he often go not
('Does he go often?')
b. ta jingchang qu Shanghai bu?
he often go Shanghai not
'Does he go to Shanghai often?'

6.2 *The location of* neg*(-V)*

Cheng et al. (1996) propose that the negative morpheme at the end of NPQs (in Mandarin) is located in a complementizer position, like the question particle *ma* in yes/no questions. In support of this conclusion, they observe that the negative particle in NPQs cannot co-occur with the question particle *ma*. Yet, *ma* is generally not allowed with alternative questions of any sort, so the inability of *ma* to co-occur with NPQs may well be due to an independent semantic constraint.

Cheng et al. (1996) also judge that the sentence-final particle *ne*, which can appear both in *wh*-questions and A-not-A questions, cannot appear in NPQs. However, both Zhang (1997) and Hsieh (2001) take issue with this judgment, indicating that for them questions such as (131–132) are grammatical:

(130) ta xihuan ni bu-xihuan ne?
he like you not-like Comp
'Does he like you?'

(131) ni gei-le ta qian meiyou ne?
you give-asp he money not.have prt
'Did you give him money?'

(132) ta chi-le fan meiyou ne?
he eat-asp meal not.have prt
'Has he eaten?'

James Huang (p.c.) suggests that (131–132) might be acceptable with *ne* if the final *meiyou* allows them to be analyzed as VP-not-V questions (negating the auxiliary

you) rather than as NPQs; he notes that if *meiyou* is shortened to *mei* (rendering the questions unambiguously NPQs), these examples degrade considerably.

Hsieh (2001) puts forth two further arguments against the claim that the negative morpheme in NPQs is in the same position that sentence-final particles such as *ne* and *ma* occupy. First, NPQs are possible in an embedded clause (133), while sentence-final particles are not (134–135). Examples (133b, c) show that the embedded clause is in fact an embedded clause, by showing that it can be circumscribed by *lian . . . dou* ('even') and can be replaced by *zhe-ge* 'this' (136):

(133) a. ta xiang zhidao [ta lai le meiyou]
he want know he come asp not.have
'He wants to know whether he came.'
b. ta bu zhidao ta ziji pang le meiyou
he not know he self fat asp not.have
'He does not know whether he gained weight.'
c. ta lian ta ziji pang le meiyou dou bu zhidao
he even he self fat asp not.have all not know
'He does not even know whether he gained weight.'

(134) ta xiang zhidao [shei lai-le (*ne)]
he want know who come-asp prt
'He wants to know who came'

(135) wo bu zhidao ta qu-guo Beijing le (*ma).
I not know he go-asp Beijing asp Q
'I do not know whether he has been to Beijing'

(136) ta lian zhe-ge dou bu zhidao.
he even this-cl al not know
'He did not even know this.'

Hsieh's (2001) second argument has to do with the distribution of *daodi* 'after all', which (as discussed in section 5.1) seems to be prohibited from the scope of the interrogative morpheme. Recall that this explained why *daodi* is not allowed in yes/no questions with the question particle *ma*: *ma* is so high in the structure that it takes scope over everything else. If the negative/interrogative particle in NPQs were also that high in the structure, it should have the same effect on *daodi*. However, as Cheng et al. themselves observe, *daodi* is just fine in NPQs (137), as it is in the other A-not-A questions.

(137) ni daodi gei-le ta qian meiyou?
you indeed give-asp he money not.have
'Did you indeed give him the money?'

Assuming that the constraint on where *daodi* can appear is accurately characterized, this, like (133) above, tells us that the position of the negative morpheme in NPQs is not as high in the structure as the position of *ma* in yes/no questions.

It is of course a separate question whether the negative morpheme in NPQs moves to its sentence-final position from lower in the clause. The arguments above suggest that there are at least two sentence-final positions, the position occupied by negation in NPQs being lower than the position occupied by *ne* and *ma*. Cheng et al. (1996) argue that in Mandarin NPQs, the negative morpheme has moved to its surface position based on the aspect agreement facts reviewed next.

Which negative morpheme is used in an NPQ depends on the aspectual properties of the sentence, just as in declaratives. Assuming that such agreement must be determined locally, this negative particle must have originated within the clause being questioned. As evidence for this, they observe that the form negation takes can disambiguate which verb is being questioned when there is an embedded clause. The question in (138) is ambiguous, since both the matrix and embedded clauses would use the *bu* form in the negative, and the question in (139) is ungrammatical, since *meiyou* is not compatible with either clause. Only a reading in which the matrix verb is being questioned is possible for (140), since *bu* is incompatible with the aspect-marked embedded verb, and only a reading in which the embedded verb is being questioned is possible for (141), since *meiyou* is incompatible with the modal *hui* 'will' in the matrix clause.

(138) ta yiwei ni qu bu?
he think you go not
'Does he think or not think that you are going?'
'Does he think that you are going or not going?'

(139) *ta hui yiwei ni yinggai qu meiyou?
he will think you should go not-have
('Will he think or not think that you should go?')
('Will he think that you should go or not go?')

(140) ta yiwei ni qu-guo bu?
he think you go-exp not
'Does he think or not think that you have been (there)?'

(141) ta hui yiwei ni qu-guo meiyou?
he will think you go-exp not-have
'Will he think that you have been (there) or you haven't been (there)?'

The question in (141) is of particular interest because, although the agreement is with the embedded verb, it is still a matrix question. Cheng et al. take this as an indication that the sentence-final particle has moved from the embedded clause to the matrix CP system, responsible for both interrogative and negative features.

One last point we might consider to help determine where in the structure *neg*-V appears in VP-not-V questions is the distribution of another clause-final particle, the (inchoative, perfective) *le*. Zhang (1997) observes that nothing can follow *neg*-V in a VP-not-V question, and furthermore that *neg*-V must follow the otherwise clause-final (inchoative) *le* (142). To this, I add (143), which shows that the same is true of NPQs.

(142) ta chi fan le mei chi?
he eat meal LE not eat
'Has he eaten the meal?'

(143) ta chi fan le mei(you)?
he eat meal LE not
'Has he eaten a meal?'

6.3 *Distributional similarities and differences revisited*

Collecting together the observations from this section, the picture we arrive at is that there are at least three distinct clause-final positions. The highest of these is where the yes/no question marker *ma* appears, and the lowest is where the sentence-final perfective/inchoative *le* appears. Between the two is the position in which *neg* and *neg*-V appear in NPQs and VP-not-V questions. For convenience, I will call these *ma*P, *le*P, and *npq*P, respectively.

That *npq*P is higher than and distinct from *le*P is clear from the surface forms, e.g., (142–143). The evidence from the distribution of *daodi* 'after all' indicates that *npq*P is distinct from and structurally lower than *ma*P: NPQs and VP-not-V questions are compatible with *daodi*, but yes/no questions with *ma* are not, indicating that there is a place in the structure for *daodi* that is between *npq*P and *ma*P.

The fact that NPQs and VP-not-V questions cannot be embedded within islands, regardless of the scope of the question (121–122), might be attributed to a syntactic impossibility: clause-embedding verbs embed structures smaller than a *ma*P (135), and for clausal adjuncts, even an *npq*P is too much structure (121–122).

Following Cheng et al. (1996), we can suppose that the long-distance agreement between the form of negation in NPQs and VP-not-V questions and the internal aspectual properties of the clause diagnoses an overt movement of NQ from its clause-internal position (presumably the position in which it would appear in an A-not-A question) to *npq*P.

This sketch of an analysis leaves unaddressed some of the facts in the preceding sections; in particular, it provides no clear explanation of the restriction to verbs in VP-not-V questions (as opposed to A-not-A questions, which allow NQ on adjectives, prepositions, and adverbs), nor does it add any immediate understanding of the prosodic requirements and restrictions on truncation of the predicate. However, it can serve as a simple model to work from in further exploration of these questions, and does at any rate serve as a reasonable synthesis of the facts so far accumulated.

7 VP-not-VP questions as VP-VP questions

There is still one further question type that has appeared in the literature in the context of A-not-A questions: the VP-not-VP question. These are questions in which the entire VP is repeated after the negative morpheme. It is tempting to think that these are simply alternative questions with *haishi* omitted, but there are some distributional differences between VP-not-VP questions and alternative questions.

As McCawley (1994) observes, VP-or-not-VP alternative questions are possible (even if somewhat unusual) when the order of the disjuncts is reversed: (144) is fine, but if *haishi* is missing, only the positive-negative order is possible (145–146):

(144) ni bu xihuan ta haishi xihuan ta?
you not like him or like him
'Do you not like him or like him?'

(145) ni xihuan ta bu xihuan ta?
you like him not like him
'Do you like him or not like him?'

(146) *ni bu xihuan ta xihuan ta?
you not like him like him
('Do you not like him or like him?')

Huang (1991) points out that it is possible to ask alternative questions without *haishi*; e.g., (147) and (148) receive essentially the same interpretation. The interpretation they receive is as a straightforward alternative question, not asking for a choice between two alternatives that differ only in truth value, but between two distinct propositions:

(147) ta chi fan haishi chi mian?
he eat rice or eat noodle
'Does he eat rice or noodles?'

(148) ta chi fan chi mian?
he eat rice eat noodle
'Does he eat rice or noodles?'

Zhang (1997) makes the interesting observation that even these affirmative disjunctive questions, when they lack *haishi*, cannot appear in islands (149–150). The implications of this observation are beyond the scope of this survey article, but it does suggest that the island sensitivity we see in A-not-A questions may not be specific to the properties of NQ, but rather to formation of this kind of alternative question in general (though not to alternative questions with *haishi*).

A similar effect arguably occurs in English with the association between *either* and *or* (Larson 1985b): in (151), the disjunction is easily interpretable outside of the embedded clause, but in (152) this reading disappears (leaving only the irrelevant reading comparing noodles to people who eat rice). Questions remain about what allows *haishi* its freedom from this kind of scope constraint.

(149) ni xihuan [chi fan haishi chi mian] de ren?
you like eat rice or eat noodle DE person
'Do you like people who eat rice or who eat noodles?'

(150) *ni xihuan [chi fan chi mian] de ren?
you like eat rice eat noodle DE person
('Do you like people who eat rice or who eat noodles?')

(151) I either like to eat rice or noodles (but I can't remember which).

(152) I either like people who eat rice or noodles.

James Huang (p.c.) also points out that disjunctive VP-VP questions (without *haishi*) are subject to a peculiar constraint requiring the two VPs to bear some phonological similarity: either the verb or the object must be identical between the two VPs; synonyms or pronouns will not satisfy the constraint.

The VP-not-VP question has not been much discussed compared to NPQs, VP-not-V questions, and A-not-A questions. From these initial observations, it seems that the VP-not-VP questions are most properly considered to be essentially VP-VP disjunctive questions like (149), but for the incidental property that the second VP is the negated version of the first.

8 Cross-linguistic notes

Although Mandarin Chinese is the language in which this family of question types has been most thoroughly studied, such questions appear in other languages as well. A full cross-linguistic and cross-dialectal comparison of question types is well beyond the scope of this review, and in fact only exists in the literature in bits and pieces, but we will briefly note some of the more prominent observations that have been made in this connection.

Huang (1991) noted that Taiwanese and several other dialects feature a question particle that appears to be parallel to the NQ of Mandarin A-not-A questions, and hypothesized that it is an alternative realization of the same underlying morpheme (recall section 2.1). In Taiwanese, *kam* appears in the same place that NQ does in Mandarin (153). Given that the evidence for the existence of NQ as a single morpheme is rather indirect (even if convincing) in Mandarin, the fact that NQ is realized as a free morpheme in other dialects lends credence to the NQ hypothesis in Mandarin. Huang (1991) provides more support for the parallel by

noting that *kam* in Taiwanese can take long-distance scope (154), and cannot appear in islands (155–156).

(153) li kam u chi:?
you Q have money
'Do you have money?'

(154) li siu: i kam e lai?
you think he Q will come
'Do you think he will come?'

(155) *[i kam u lai] kha hou?
he Q have come more good
('Is it better that he has come or has not come?')

(156) *li kha ai [kam u chi: e] lang?
you more like Q have money REL person
('Do you like the person who has money or doesn't?')

Huang (1991) also cites Zhu's (1985) cross-dialectal study, which showed, among other things, that A-not-A questions and *kam*-type questions generally do not co-occur in the same dialect, further supporting the idea that NQ and *kam* realize the same underlying morpheme.

It should be noted that much subsequent literature has questioned Zhu's (1985) conclusion about the complementary distribution of *kam* and A-not-A questions across dialects (see, e.g., Crosland (1998) for discussion), but it remains unclear to what extent this is theoretically problematic. In this connection, we can even point to Taiwanese as discussed by Huang (1991) which, in addition to the *kam*-type questions, does have a limited form of A-not-A questions that appear with a highly restricted subset of verbs. Hsieh (2001) provides a short list, including *si* 'be', *bat* 'know', and *kaN* 'dare', but notes that there does not seem to be a unifying property to the verbs which allow A-not-A questions and concludes that they must be lexically marked.

Cole and Lee (1997) explore the properties of Singapore Teochew (ST) which also seems to have both A-not-A and *kam*-type questions, which, moreover, can co-occur in the same question. In the ST example in (157), the *kam*-type particle is *ka*, and it precedes an A-not-A sequence:

(157) Ah Meng ka su m suka ji bun zi? (ST)
Ah Meng Q li- not like this CL book
'Does Ah Meng like this book?'

Cole and Lee review a number of syntactic tests, which show that the A-not-A forms are relatively unconstrained, able to appear within sentential complements and within movement islands. On the other hand, the *ka* question particle cannot

be contained in movement islands, even though it can appear in embedded clauses when not within an island.

These facts suggest that not everything that looks like an A-not-A question is the same: the A-not-A questions in Mandarin appear to be the analogs to *kam* questions in Taiwanese and to *ka* questions in ST, but crucially not analogs to the A-not-A questions in ST. Rather, ST A-not-A questions behave more like Mandarin alternative (*haishi*) questions. Although Cole and Lee essentially take this line, that ST A-not-A questions are just disjunctive questions, it is worth pointing out one fact that leans away from such a view: notice that in (157), the A-not-A formation shares with Mandarin the property that the first copy of the affected predicate is reduced to only its first syllable. This same phenomenon was used as an argument in favor of the existence of NQ in Mandarin, given that ellipsis of the non-initial syllables of a word is not generally a possible syntactic operation. Given the syntactic evidence, we seem to be forced to conclude that ST A-not-A questions are basically just alternative questions, but that leaves us in the position of having to allow this type of 'sub-word-level' ellipsis into the grammar.

The facts just reviewed from ST reveal that the sort of typological study embarked upon by Zhu (1985) is more daunting than it might at first appear. Specifically, Cole and Lee's evidence shows that identifying what qualifies as an A-not-A question in the relevant sense is not straightforward from the surface forms and requires more detailed investigation into the distributional properties within a given language/dialect.

Cheng et al. (1996) explore the properties of NPQs across Mandarin, Taiwanese, and Cantonese. In the discussion above (section 6), the conclusion for Mandarin was that NPQs and VP-not-V questions appear to result from movement of NQ into a clause-final position we called *npq*P. The movement analysis was primarily supported by the long-distance aspect agreement shown on the negative morpheme. Neither Taiwanese nor Cantonese, however, show the same kind of long-distance agreement in NPQs, despite the fact that there is agreement in both languages between clause-internal (*in situ*) negation and aspect. In Taiwanese, the negative morpheme used in NPQs is always the same (*mei*), and cannot be used in A-not-A questions. In Cantonese, on the other hand, NPQs can freely use any of the negative morphemes without regard to the aspect of the clause. Cheng et al. conclude from this lack of agreement that in Taiwanese and Cantonese, NPQs do not involve movement to a clause-final *npq*P position, but instead simply have a negative particle base-generated in its surface position.

9 Conclusion: closing remarks

In the sections above, we have reviewed a number of the characteristics of several kinds of questions that have fallen under the label 'A-not-A question', and most of their major distributional characteristics as they have been described in the generative literature. For the most part, we have steered clear of minute

syntactic analysis (e.g., debates about whether a [Neg] feature or a [+Q] feature is attracted to a functional head $\sum$ in overt syntax), but the broad characteristics that such an analysis must have and the facts it is responsible for should nevertheless be clear.

To review, it is clear that there are a number of different types of questions to consider. Alternative questions, which appear in Mandarin with an overt disjunctive word (*haishi*), are almost completely unconstrained, while questions formed by reduplication of a predicate *in situ* (A-not-A questions) are rather tightly constrained. Both kinds of questions are distinct from true yes/no questions, formed in Mandarin with the sentence-final question particle *ma*, as is clear from the kinds of answers they allow, the contexts they are allowed in, and from the distinctness of the syntactic constraints on *ma* questions and A-not-A questions. The VP-not-V questions and NPQs are not clearly different from one another, but have some properties that distinguish them from A-not-A questions, even if they may be derived from an underlying form that is very similar to A-not-A questions.

Cross-linguistically, the existence of a question type parallel to Mandarin A-not-A questions is relatively well-attested, e.g., the *kam*-questions in Taiwanese, but we also saw that not all questions with an apparent A-not-A form should properly be considered analogs to Mandarin A-not-A questions.

There is much more to say on the cross-linguistic implications and parallels, as well as on language-internal implications, some of which exists in the literature already but not covered here, but much of which remains to be systematically explored. Our understanding of this family of 'yes-no-like' questions has advanced a great deal over the last 20 years, and the field is now ready for more systematic, broad-ranging, and deeper cross-linguistic comparison. Also important for future theoretical understanding will be a concentration on points where judgments differ; as noted in a few places above, there are conflicting reports in the literature on certain crucial data points, some of which may be cleared up by more careful control of regional dialects and registers. One area that remains only relatively cursorily explored in the literature to date is the (admittedly difficult) determination of the pragmatic properties of the different types of questions: what can and cannot be focused, whether a certain type of question can be used in a pragmatically 'slanted' context. Such facts are increasingly widely assumed to have structural correlates (e.g., movement to a functional 'focus phrase' projection) and are at least potentially a fairly rich source of data.

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8 Bare Plurals

DENIS DELFITTO

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1 Introduction: the empirical issues

It is normally believed that noun phrases (NPs) in argument position must be introduced by a determiner, that is, they are in fact, under the so-called 'DP-hypothesis', determiner phrases (DPs). This requirement does not hold for NPs which do not count as arguments, for instance, NPs in predicative position (English is rather idiosyncratic in that respect) or vocatives. This contrast is shown in (1):

(1) a. Bill è medico. (Italian, predicative)
       Bill is a doctor.
    b. Doctor, come here! (vocative)
    c. *Doctor came immediately.
    d. *I saw doctor.

However, this observation does not seem entirely correct, since a large variety of languages apparently admit determinerless nouns in argument position. In certain languages (such as Chinese, where the count/mass distinction is apparently neutralized) there does not seem to be any restriction on the occurrence of bare nouns in argument position.[1] In many other languages, what seems to be relevant in order to establish which cases are grammatical is the count vs. mass distinction. Bare forms of mass nouns are admitted, but bare count nouns can be realized only as bare plurals (BPs).[2] This is shown, for English, in (2) below:

(2) a. Water is scarce in this country.
b. Dogs are intelligent.
c. *Dog is intelligent.

Nevertheless, it would not be correct to conclude that *every* language allows at least certain uses of bare nouns in argument position. There are in fact languages, exemplified by Modern French, where bare nouns are uniformly excluded from argument positions, quite independently of the interpretation they are assigned. Moreover, even in languages that allow bare nouns (bare plurals and bare mass nouns) to occur as arguments, there are, it seems, important constraints on their distribution. A relatively well-studied case is the fact that in most Romance varieties subject BPs tend to be excluded from the subject position unless modified or coordinated, whilst BPs occurring in other argument positions are more freely admitted as bare nouns.[3]

It should be noticed, at this point, that the distributional issue cannot be satisfactorily settled if we abstract away from the *interpretation* that BPs receive in argument positions. At first sight, it seems that BPs are interpreted as if a determiner were in fact present, with extralinguistic information deciding the choice between the universal and the existential reading of this (implicit) determiner. This is shown in (3):

(3) a. Dogs are mammals. (universal reading)
b. Dogs were sitting on my lawn. (existential reading)

However, matters are arguably somewhat more complex. It is clear what a sentence like (4a) should mean if the subject BP were assigned the existential reading (something like *some dogs are black (around here)*), on strict parallelism with one of the admissible interpretations of the subject BP in (4b) (*some firemen are available around here*). Nevertheless, no possible contextual setting is able to rescue the existential reading in (4a), whereas this interpretation is readily accessible in the case of (4b):

(4) a. Dogs are black.
b. Firemen are available.

Similarly, stressing the subject BP in (5a) strongly favors an existential reading, whereas assigning prosodic emphasis to the subject BP in (5b) is not sufficient

to elicit an existential reading (notice that, on pragmatic grounds, there is no compelling reason why the existential reading should be most readily accessible in (5a) than in (5b)):

(5) a. She thinks that COUNTEREXAMPLES are known to us.
b. Dogs are altruistic. (only: *all dogs are altruistic*)

On comparative grounds, it becomes clear that interesting constraints also apply to the universal reading. In Romance, for example, the universal interpretation of BPs appears to be uniformly ruled out (see, however, Chierchia 1998 for different idealizations concerning this set of data and the discussion in section 6 below). BPs are exclusively licensed with the existential reading, as shown by the ungrammaticality of (6a) and (6b) in Italian:

(6) a. *Cani sono mammiferi.
'Dogs are mammals.'
b. *Cani sono altruisti.
'Dogs are altruistic.'

This sketchy survey of some of the empirical issues that arise suffices to show that an empirically adequate theory of bare plurals has to account at least for the following facts:

(i) the relevance of argumenthood for the licensing of BPs (it is the distribution and interpretation of *argument* BPs that appears to be severely constrained in many languages);
(ii) the relevance of the mass/count distinction for the licensing of bare plurals and bare singulars (there is a rather solid cross-linguistic generalization according to which bare singulars of mass nouns and bare plurals of count nouns behave similarly);
(iii) the typological variation as to the presence of subject-object asymmetries in the licensing of BPs (for instance, Spanish does not allow bare nouns in subject position, contrary to English);
(iv) the total prohibition on bare nouns in languages such as modern French;
(v) the prohibition on the existential reading of subject and object BPs with certain predicates, even in contexts where this reading would be perfectly felicitous on pragmatic grounds (cf. 4a);
(vi) the interaction with focus (focusing a BP not only affects its informational status but also favors the existential reading in certain contexts, whereas it does not affect the quantificational reading in other contexts);
(vii) the strong comparative contrast found with respect to the licensing of BPs interpreted universally: the universal reading is possible and in some cases compulsory in English, but is arguably excluded in Romance, quite independently of the nature of the predicates/contexts involved.

To these, many other facts should be added, some of which we will take into account in the following sections. However, the data reviewed above suffice to show that the analysis of bare nouns is likely to involve many delicate issues concerning the syntax–semantics interface.

2 Theoretical issues

One might think that the analysis of BPs raises a number of intriguing but relatively circumscribed problems. However, it should be emphasized that BPs have constituted, especially in the last 20 years, one of the central and most inspiring case studies into the logical form of natural language and one of the most challenging empirical domains for generally (and quite often implicitly) accepted hypotheses on the syntax–semantics interface. Here are some of the reasons why a relatively peripheral set of facts has acquired a central role within the theorizing in formal linguistics (both syntax and semantics).

(i) The ambiguity of noun phrases which are not introduced by some quantifier, determiner, or article cannot be easily explained in terms of other well-known cases of quantification. We have seen, for instance, that this ambiguity might be tentatively expressed in terms of optionality between existential and universal quantification. Unfortunately, a closer examination of the data immediately reveals that this position is not tenable (cf. Carlson 1977a). Consider the sentences in (7):

(7) a. Dogs are mammals.
b. Dogs bark.
c. Musk-rats were brought to Europe in 1906.
d. Dogs are common.

If universal quantification (*all dogs*) seems to represent a convenient formal device for the expression of the interpretation of the BP in (7a), it cannot certainly be claimed that it constitutes an adequate solution in the other cases exemplified in (7). As for (7b), it is clear that the sentence would remain true even though not all, but just most dogs barked (as is probably the case in the real world). One might thus think that BPs are ambiguous between quantificational forms involving either the determiner *all* or the determiner *most*. This cannot be correct, however, since the truth of (7c) does not require that most musk-rats were brought to Europe in the year mentioned; rather, it suffices that a certain representative set of the kind of musk-rats has been imported to Europe, even though the actual cardinality of such a set is quite small (in fact, only some musk-rats have been brought to Europe). Finally, notice that the meaning of *dogs* in (7d) does not admit any logical paraphrase of the sort *all dogs*, *most dogs*, or *some dogs*. In the

presence of these facts, it is quite an issue to establish what all instances of BPs exemplified in (7) have in common, that is, which semantics must be associated to determinerless nouns.

Similar complications have been detected in the case of the existential reading of BPs. Consider the sentences in (8):

(8) a. John didn't see spots on the floor.
b. Dogs were everywhere.

At first sight, the BPs in (8) behave as the plural counterparts of the indefinite article *a(n)*, receiving the same reading as unstressed *some* in English (often referred to as *sm*). In other words, (8) should be logically equivalent to the sentences in (9):

(9) a. John didn't see some spots on the floor.
b. Some dogs were everywhere.

This is not quite true, however. As for (9a), it is easily assigned a quantificational reading involving wide scope of the indefinite object (*John possibly saw many spots on the floor, but there are some that he failed to see*). This reading is not available in (8a), which can only mean that John saw no spots on the floor (and not that he failed to see some of the spots). A solution to this asymmetry might consist in the assumption that the set of readings realized with BP indefinites is a subset of the readings realized with other lexical existential determiners (like *a* or *some*). Carlson (1977a) shows that there are reasons to assume that the two classes of readings are actually partially disjoint, as revealed by the observation that the narrow scope of the subject BP (*for every relevant place, a different group of dogs was present at that place*) is naturally instantiated in (8b), but is simply impossible in (9b) (which can only receive the absurd reading according to which a certain group of dogs was omnipresent), in spite of any consideration of pragmatic plausibility.

In view of these observations, which represented some of the main reasons for Carlson to reject the quantificational approach to BPs (cf. section 3.2 for a full discussion), the view that the semantics of BPs can be easily accounted for in terms of an ambiguity between canonical existential and universal quantification turns out to be more problematic than was expected at the onset.

(ii) The inquiry into the syntax and semantics of BPs revealed itself a productive tool in order to achieve a better understanding of the distinction between episodic and generic sentences in natural language (that is, the nature of genericity as represented in the logical form of natural language). Notice that all the sentences in (7) (including (7c), which seems to be about a specific event) appear to involve a sort of *generic* reading of the BP, in the sense that the relations involved by these sentences intuitively concern the kind of *dogs* or the kind of *musk-rats*, independently of the number of members of the kind

which enter the relations expressed by the different predicates. Consider now (10) below:

(10) Smokers are rude.

Although (10) would be naturally assigned the existential reading (*some smokers are rude*) on pragmatic grounds, this reading is completely inaccessible to (10), which exclusively exhibits the universal/generic reading of the BP. In other words, the problem raised by BPs is not limited to the difficulty of characterizing their interpretation in logical terms. It is also clear that sentences involving BPs are not simply ambiguous among different readings. There are many contexts in which only the universal/generic reading is available, and also contexts where the BP exclusively receives an existential reading.[4] Further inquiry reveals that lexical factors such as the choice of the predicate involved (for instance, *to be rude* vs. *to be available*) and morphosyntactic factors such as aspectual morphology might play a crucial role in explaining the absence of ambiguity in many contexts. An investigation into the nature of these factors is apparently of great importance to establish some of the properties of generics.

(iii) The interpretive properties of BPs, and in particular the traditional idea that BPs count as the plural counterpart of singular indefinites, are certainly relevant in order to evaluate the different theoretical approaches to indefinites, for instance the hypothesis that indefinites correspond to free variables, as has been developed in the framework of Discourse Representation Theory (cf. especially Kamp 1981a; and Heim 1982). At first sight, singular indefinites appear to behave as BPs, in that, for example, the former can give rise to the same sort of ambiguity detected with the latter, as shown in (11):

(11) a. A dog was sitting on my lawn. (existential)
b. A dog is intelligent. (universal)

A closer scrutiny immediately reveals that only a subset of the cases in which the BP can be assigned a universal/generic interpretation preserves this reading when the BP is replaced with a singular indefinite. This is shown by the paradigm in (12–13):

(12) a. Madrigals are polyphonic.
b. A madrigal is polyphonic.

(13) a. Madrigals are popular.
b. ??A madrigal is popular.

Carlson (1977a) provides other empirical arguments against the view that BPs are just plural indefinites, concerning the different behavior of singular and (allegedly) plural indefinites in pronominalization and deletion contexts (to be further

discussed in section 3.2). For instance, the interpretive effects of NP-deletion in coordinate structures seem to depend on the nature of the indefinite that has been deleted: deletion of the singular indefinite turns the sentence in (14a) into a pragmatically strange one (as shown in (14b)), whereby the same building must appear in two different cities. This effect is simply not detected in (15):

(14) a. A building will collapse in Berlin tomorrow, and a building will burn down in Boston the day after.
b. A building will collapse in Berlin tomorrow, and ___ will burn down in Boston the day after. (the same building must be involved, differently from 14a)

(15) a. Buildings will collapse in Berlin tomorrow, and buildings will burn down in Boston the day after.
b. Buildings will collapse in Berlin tomorrow, and ___ will burn down in Boston the day after. (different groups of buildings may be involved, exactly as in 15a)

Despite these observations, which show that merely assimilating BPs to other well-known instances of indefinite NPs would leave many facts completely unexplained, we will see that many scholars assumed that BPs can indeed behave as indefinites in certain circumstances. The behavior of BPs has constituted an important empirical argument in favor of the hypothesis that indefinites provide free variables with a predicative restriction which have to be bound from outside (that is, DP-externally), as in the different versions of the so-called Mapping Hypothesis.[5] Proponents of this approach assume that the nature of the binder depends on the syntactic position of the indefinite: indefinites realized VP-internally undergo a restricted operation of existential closure, whereas indefinites realized VP-externally are bound by some (implicit) adverb of quantification (roughly corresponding to frequency adverbs such as *often*, *always*, etc.), and are therefore mapped into the restrictive clause of the adverb of quantification. It has been argued that there are languages, such as German and Dutch, in which the syntactic position of the indefinite relevant for the mapping into quantificational structures is computed in overt syntax:[6] the VP-internal BP in (16a) can only be interpreted existentially, whilst the VP-external BP in (16b) is assigned a universal/generic interpretation (a crucial assumption here is that the adverbial particle *ja doch* in German marks the VP-boundary, cf. the discussion in Diesing 1992b):

(16) a. Weil [$_{IP}$ ja doch [$_{VP}$ Haifische sichtbar sind]]
. . . since 'indeed' sharks visible are
'. . . since there are sharks visible'
b. Weil [$_{IP}$ Haifische ja doch [$_{VP}$ sichtbar sind]]
. . . since sharks 'indeed' visible are
'. . . since (in general) sharks are visible'

Given these considerations, it is difficult to escape the conclusion that accounting for the syntactic and interpretive properties of BPs has to be an essential ingredient of any general theory of indefinites.

(iv) Last but not least, it seems that the inquiry into the semantics of BPs may have important consequences for an exact characterization of the domain of quantification presupposed by the semantics of natural language. In particular, the claim that BPs denote *kinds* (as in Carlson 1977a) entails that the domain of discourse must contain 'pluralities' as a specific sort of individual objects and that a multi-sorted (first order) language (that is, a logical language endowed with different sorts of variables) may well be needed in order to provide an adequate representation of the logical forms associated with the sentences of natural language.

Again, these sketchy considerations suffice to show the considerable theoretical potential of the topic we are investigating. In the next three sections, we will consider the main theoretical contributions that have been produced in this area of research, starting with the seminal hypothesis put forward in Carlson (1977a) for the analysis of English BPs and considering successively how the enlargement of the empirical domain has brought about significant changes in the theoretical formulations of the issues around the syntax and semantics of BPs.

3 Bare plurals as names of 'kinds'

The ambiguity of the sentences containing BPs between an existential and a universal reading has long been analyzed in terms of the presence of an ambiguous null determiner.[7] As noticed in Carlson (1977a) there has also been a certain amount of discussion over which form (either the zero determiner or unstressed *some*) can be assumed to constitute the plural correlate of the indefinite article *a*.[8] The quantificational analysis of BPs as the plural counterpart of a singular determiner has been rejected by Carlson (1977a), which represents the most influential approach to BPs that has been elaborated in the framework of formal semantics and generative grammar. We will first present Carlson's proposal about the nature of BPs (section 3.1) and successively discuss the empirical motivation used by Carlson in order to discard the quantificational analysis.

3.1 Individuals and stages

Carlson's main hypothesis is that BPs are kind-referring expressions (roughly, names for kinds). Formally, a kind is conceived of as a particular sort of individuals in the domain of discourse, on a par with the ordinary objects which provide the reference of pronouns and names.[9] Carlson does not provide any extensive discussion of the relation between his notion of *kind* and the philosophical notion of *natural kind*. Kinds are objects, and most BPs are assumed to refer to kinds, even those which cannot be easily assumed to refer to natural or well-established

kinds (for example, one might be inclined to think that a predicate like *Coke bottle* more readily individuates a kind than a predicate like *green bottle*, but in fact both *Coke bottles* and *green bottles* are assumed to denote kinds).[10] There are of course some enigmatic instances of BPs that appear to resist the kind-referring interpretation (cases such as *parts of that machine*, *people in the next room*, *books that John lost yesterday*, *bears that are eating*, etc.), but these are assigned a marginal and unclear status in Carlson's analysis (cf. Carlson 1977a: 5.4). If BPs uniformly denote kinds (and do not necessarily involve the presence of an ambiguous empty determiner or two phonetically unrealized homonymous determiners), the source of the apparent quantificational ambiguity must be independent of the semantics (and syntax) of BPs. Carlson's insight is that it is the predicate with which the BP combines that determines the observed variation between an existential and a universal reading. Roughly, verbal predicates may either make reference to specific events or ascribe a (stable) property to an individual. This bipartition has been extremely influential and has been successively analyzed, as we will see, in terms of a difference in argument structure, as in Kratzer (1995) and Diesing (1992a). However, Carlson's technical implementation of the proposed bipartition relies on a primitive ontological distinction between predicates denoting individuals (*i(ndividual)-level predicates*) and predicates denoting spatio-temporal 'slices' of those individuals (*s(tage)-level predicates*). Event predicates (that is, predicates that refer to specific events rather than ascribing a stable or essential property to an individual) are analyzed as stage-referring predicates. On conceptual and technical grounds, it is relatively easy to see why Carlson has adopted an *ontological* solution for the ambiguity between event and non-event predicates. The hypothesis that *kinds* are particular sorts of objects in the domain of discourse entails that what is needed for an adequate representation of the logical form of English sentences is a multi-sorted language (that is, a formal language containing at least two sorts of variables, one ranging over common objects and the other ranging over *kinds*). It is thus not particularly costly, from a conceptual perspective, to enrich the domain of quantification with a third sort of objects, corresponding to 'stages', that is, spatio-temporal slices of the first two sorts of individuals. Let us briefly see how the proposed account actually works.

Consider the sentences in (3), repeated below:

(3) a. Dogs are mammals. (universal reading)
b. Dogs were sitting on my lawn. (existential reading)

Let us start with (3a). Since *to be a mammal* is an individual-level predicate, that is, a predicate which denotes a set of individuals, and individuals are analyzed, within the formal language into which Carlson translates sentences of English (some version of Montague's Intensional Logic), as sets of properties, sentences such as (3a) will correspond to the assertion that the property denoted by the predicate belongs to the property set denoted by the subject BP. This means that (3a) will be true in the world *w* if and only if the kind referred to by the BP is in

the extension of the predicate at *w*. These truth-conditions are formally expressed in (17):

(17) λP P(d) (is_a_mammal) = is_a_mammal(d),

where 'd' is the individual constant which refers to the kind *dogs*.

If (17) is the logical form assigned to (3a), the apparent quantificational ambiguity exhibited by some of the sentences in (7) receives a rather straightforward explanation. The facts that a different quantifier seems to be involved in (7a, b) (*all* and *most* respectively) and that no form of quantification over the set members yields a convenient logical paraphrase in (7d) can be uniformly attributed to the pragmatically-conditioned vagueness typical of properties ascribed to kinds and of relations involving kinds. Kinds are inherently 'plural' objects. Associating a certain property with a 'plural' object does not entail that the same property holds of the individual members of this plurality. The same ambiguity arises in fact with the so-called 'collective' reading of singular definites (Carlson 1977a: 4.1).[11] An important consequence of this analysis is that the quantificational structures that seem to be associated with *generic* BPs are not part of the semantic interpretation, but rather correspond to the application of extralinguistic cognitive tasks directed at establishing what counts as 'evidence' for the claim expressed by the logical representations associated with a given sentence. This becomes extremely clear when Carlson's analysis is applied to *habitual* sentences, that is, sentences that have been traditionally interpreted as involving quantification over events/times (cf. Lawler 1973 and others). A sentence like (18) is likely to be perceived as true if there is more than one event in which Abigail is involved in car-chasing activities, whereas (19) appears to indicate that Abigail always (or at least most of the times) barks when the mailman arrives:

(18) Abigail chases cars.

(19) Abigail barks at the mailman.

In other words, the nature of the implicit quantifier over events seems crucially to depend on the lexical meaning of the predicate and, more indirectly, on the complex cognitive systems involved in our knowledge of the world. Carlson argues that this complies quite well with the predictions made by the analysis that he proposes. According to this analysis, the meaning expressed by the logical representation associated with (18) is merely that there is a set of individuals chasing cars and that Abigail belongs to this set. Similarly, the truth-conditions expressed by the logical form associated with (19) roughly establish that Abigail belongs to the set of individuals barking at the mailman. We know, of course, that (18) is true (that is, the individual referred to by Abigail belongs to the set of individuals that chase cars) if and only if Abigail has chased cars on a certain number of occasions. However, this knowledge corresponds to the pragmatic

knowledge that we need in order to look for empirical evidence that the truth-conditions established by the semantic component are actually satisfied. Quantification over events is certainly relevant, as well as the question how we infer this sort of quantification as part of the process of assessing the truth of sentences like (18) and (19). However, quantification over events is not part of the logical forms which express the meaning of these sentences, just as quantification over the members of a kind is not part of the semantic representation of *generic* sentences containing BPs. As a result of this discussion, it should be emphasized that Carlson's approach is not intended as a 'solution' of the quantificational puzzles that arise with BPs interpreted generically, but rather as a proposal to shift the burden of explanation from the semantic component (or, better, the system of formal representations which is assumed to encode the truth-conditions associated to the sentences of natural language) to the pragmatic component of linguistic knowledge.

Having examined Carlson's proposal with respect to the set of issues raised by sentences like (3a), let us now consider Carlson's solution to the issue raised by (3b), that is, sentences which apparently involve an existential interpretation of the BP. In intuitive terms, this interpretation has to follow from the presence of an s-level predicate: since s-level predicates refer to stages, the truth-conditions associated with (3b) should correspond to the claim that there exists a stage of the kind *dogs* (that is, a particular set of dogs at a given spatio-temporal location, not necessarily consisting of all or most dogs) and that this stage belongs to the set of stages referred to by the predicate *be_sitting_on_my_lawn*. However, on conceptual and technical grounds, this solution is not acceptable. Remember that Carlson's proposal is mainly motivated by the need of a unitary analysis of BPs (to be further justified, empirically, in section 3.2). This unitary analysis essentially consists in the hypothesis that BPs are names for kinds. This entails that the combination of a BP with a stage-denoting predicate (such as the predicate in (3b)) would give rise to a 'sortal' mismatch: the subject BP refers to a sort of objects (an *individual*, in Carlson's terminology) which cannot be a member of the set of objects (*stages*) referred to by the predicate. The solution consists in assuming that the relation between the subject and the predicate is mediated by a relation R (*realizes*) such that R(a, b) means that *a* is a stage of *b*. S-level predicates are thus formally defined as properties of individuals who have a stage-level predicate applying to one of their stages:

(20) $\lambda x \exists y [R(y,x) \text{ and } P'(y)]$,

where y is a variable ranging over *stages*, that is, spatially and temporally bounded sorts of things and P' is a stage-denoting predicate. In the case of a sentence like (3b), for instance, there will be an existential quantifier over stages introduced as a part of a predicate of individuals. In this way, the sortal mismatch is avoided while the logical representation can be reduced to one expressing the claim that there is a stage to which a predicate of stages applies, exactly what we were looking for:

(21) $\lambda P\ P(d)\ (\lambda x \exists y[R(y,x)\ \text{and}\ S'(y)]) = \exists y[R(y,d)\ \text{and}\ S'(y)]$,

where *d* is a constant for the kind 'dogs' and S' is the predicate *be_sitting_on_my_lawn*, applying to stages of things.

Notice that the source of the existential reading of the BP contained in (3b) is the existential quantifier introduced as part of the predicate (appearing not only when the subject is a BP, but also when the subject is a pronoun, a proper name, or a quantified DP) and not a hidden existential quantifier associated with the subject BP.[12] As we will see in section 3.2, this is intuitively the key for the solution of the puzzle posed by the narrow scope properties of existential BPs.

This completes our discussion of Carlson's proposal. The reader is referred to Carlson (1977b) (in particular section 5.2) for interesting amendments of the original approach.[13] The main fact to be kept in mind is that BPs are assigned a uniform analysis (they are names of kinds). The fact that BPs denote plural objects explains why they appear to be ambiguous among many quantificational readings. As for the existential reading that BPs are obligatorily assigned in certain contexts, it depends on the nature of the predicate with which the BP combines. The relevant distinction between stage-level and individual-level predicates is technically implemented in terms of a primitive ontological distinction between individuals and stages.

3.2 Against a quantificational analysis of BPs

In the course of the preceding discussion, we have already examined some of the observations that Carlson used as empirical evidence against the quantificational analysis of BPs (that is, the idea that the different readings of BPs are brought about by the interpretation of the empty determiner counting as their head). Here is a brief summary.

(i) Given the large variety of quantificational readings exhibited by BPs, it is very hard to establish what the quantificational interpretation of the empty determiner should actually be in order to produce the correct empirical results. A solution in terms of inherent ambiguity is quite problematic, since different lexical choices often force a particular interpretation and exclude others. Moreover, Carlson shows that modifying the semantics of the implicit operator in apparently ingenious ways (for example, by treating the generic quantifier as a universal operator ranging over *normal* instances of a certain kind) leads to wrong truth-conditions and even to contradictions (Carlson 1977a: ch. 3). Conversely, as we have seen in section 3.1, the hypothesis that generic sentences involving BPs essentially correspond to instances of predication over kinds permits an account in terms of the inherent vagueness of the semantics associated with structures where a property is applied to "plural" objects, even though this simply shifts the issue concerning the inferred modes of quantification from semantics to pragmatics.

(ii) Existential BPs are always assigned a narrow-scope reading with respect to other scope-taking elements (cf. 8a), even in contexts where this reading is excluded with other indefinites (cf. the interpretive contrast (8b/9b)). This fact is nicely accounted for as a direct consequence of the logical form associated to sentences like (8a). Namely, we have seen that the existential quantifier associated with the BP is formally represented as part of the logical form associated with the predicate (see the discussion about (21) as the logical representation of (3b)). If this is the case, the narrow scope of existential BPs can be directly reduced to the impossibility for a quantifier 'within' a (verbal) predicate to hold scope over elements that combine with that predicate (i.e., the actual arguments of the predicate). Under the usual hypothesis concerning the relevance of hierarchical structural conditions for the determination of relative scope, this is intuitively the correct result. Moreover, narrow scope is predicted to arise even in cases where it is blocked, for some reason or another, with other existential arguments (thus accounting for the contrast between (8b) and (9b)).

(iii) A similar explanation can be invoked in order to account for the lack of the 'transparent' reading of existential BPs realized in the scope of *intensional* predicates. It is well-known that (22) cannot be assigned the reading according to which 'there are certain policemen that Miles wants to meet', whereas this interpretation is naturally available in the case of (23):

(22) Miles wants to meet policemen.

(23) Miles wants to meet some policemen.

Again, the source of this phenomenon lies in the fact that the existential quantifier associated with the BP is formally part of the predicate *meet* and cannot therefore be assumed to hold scope over the higher intensional predicate *wants*.

(iv) In addition to the ellipsis facts already reviewed in (14–15), the deviant behavior of BPs with respect to quantificational arguments is further confirmed by the observation that pronominalization forces the transparent reading of indefinites in coordinated structures such as (24), but is perfectly compatible with the opaque reading of a BP in the analogous (25):

(24) Paul is trying to find a policeman, and Kate is trying to find him, too.

(25) Paul is trying to find policemen, and Kate is trying to find them, too.

The interpretive effect detected in (24) easily follows from the requirement that a pronoun, in order to be interpreted as a variable, be in the scope of the quantifier that semantically binds it. After the raising of *a policeman* to a position from which it holds scope over both conjuncts, the interpretation will be something like 'there is a certain policeman such that both Paul and Kate are trying

to find him'. Since wide scope is impossible with BPs, the prediction seems to be that (25) is anomalous, contrary to the facts. However, notice that raising of *policemen* in (25) to a position where it gets scope over both conjuncts and correctly binds the pronoun is likely to yield, under Carlson's approach, a semantic representation of the sort 'there is a kind p (*policemen*) such that Paul is trying to find some stage of p, and Kate is trying to find some stages of p'. These stages may well be different in the two cases (giving rise to the apparent opaque reading), but notice that the kind is always the same (*policemen*), accounting for the striking compatibility between opacity and wide scope exhibited by the BP in (25).[14]

(v) The same kind of explanation can be provided for the fact that a BP that is assigned an existential interpretation can serve as antecedent for a pronoun which is interpreted universally/generically (26). This is impossible with quantificational arguments, as shown by the fact that (27) cannot be assigned the pragmatically plausible reading according to which 'several critics left the movie, even though all critics have strong stomachs':

(26) Bill trapped eagles last night, even though he knows full well that they are on the verge of extinction.

(27) Several critics left the movie, even though they had strong stomachs.

Under the hypothesis that BPs uniformly refer to kinds, with the existential interpretation brought about by the presence of an existential operator over stages in the formal definition of the predicate, even this contrast receives a direct explanation. Both the BP and the pronoun represent in fact a kind-referring expression: the interpretive difference between pronoun and antecedent depends on their combination with two different sorts of predicates.

3.3 Problems with Carlson's analysis

Carlson's analysis is conceptually appealing and empirically well motivated. Although not all the empirical arguments he provides against the quantificational analysis are equally convincing (cf. for instance the doubts expressed over the argumentation at point (iv) of section 3.2), there is a large consensus, in the literature, that some of Carlson's insights still retain all their validity. However, many authors have pointed out (as well as Carlson himself in later work) that the theory as a whole has to face serious empirical difficulties. These problems have led to the proposal that at least some instances of BPs are in fact quantificational (or 'predicative', under the view of indefinites as free variables provided with a restriction), as we will see in section 4, and that the presence of an empty determiner, to be syntactically licensed and semantically interpreted, might well play a crucial role in explaining some of the most intriguing distributional and interpretive properties of BPs, as shown in section 5. In the remainder of this section,

I want to offer an overview of the problems that arise with Carlson's analysis, discussion of which has led to a number of influential proposals over the syntax–semantics interface.

(i) Carlson's analysis is essentially limited to English. It is not immediately obvious whether and how it can be extended or adapted in order to account for the comparative differences in the distribution and interpretation of BPs that we have observed above. How to derive, for instance, the prohibition on generic BPs that is almost generally observed in Romance? Or the neutralization of the count/mass distinction that is arguably found in another group of languages (like Chinese and Japanese)?

(ii) It has been observed that there are cases where a subject BP combining with an i-level predicate can be assigned an existential reading, a fact that is absolutely unexpected under Carlson's theory (see the discussion in section 3.1), as in (28) below:[15]

(28) a. Hurricanes arise in this part of the Pacific.
b. Computers compute the daily weather forecast.

It has also been suggested that this reading is possible (or at least particularly plausible) with subject BPs of unaccusative predicates and/or when the subject BP is focused (Kratzer 1995), raising the question, which does not receive an immediate explanation in Carlson's framework, why this should be the case.

(iii) There are also somewhat less debated cases in which a predicate that seems to express a transient property, and is thus likely to be s-level, is not compatible with subject BPs receiving an existential interpretation, as in the cases below:[16]

(29) People are sad/at work/rich. (*only generic*)

How can we derive the contrast between (29) and the cases, also involving non-verbal predicates, in which the existential reading is a rather natural option, as in *Firemen are available*? Moreover, there seem to be cases where s-level verbal predicates admit individual-referring subject BPs, as in (7c), repeated here as (30a), whose truth-conditions are intuitively distinct from those associated with the 'existential' (30b):

(30) a. Musk-rats were brought to Europe in 1906.
b. Some musk-rats were brought to Europe in 1906.

(iv) The narrow scope effects to which BPs give rise, while remaining one of the most convincing empirical arguments in favor of Carlson's analysis, are quite problematic in a number of respects. Subject BPs can in fact be assigned wide scope in certain contexts. As for generic BPs, this is certainly the case with sentences

like *Beavers have a tail*, and the formalism Carlson develops in ch. 5 (consisting among other things in the introduction of an intensional operator *G'* which maps predicates of individuals into predicates of kinds) is intended to provide an explanation for these facts, under the hypothesis that the object (*a tail* in the case under consideration) finds itself in an intensional context after the application of *G'* (in this way, the narrow scope of *a tail* is arguably reduced to the narrow scope of *a unicorn* in sentences like *John believes that a unicorn is approaching*). However, this solution cannot be applied to cases such as (31), where it is an existentially interpreted BP that may hold wide scope (since the predicate is s-level, no intensional operator is arguably present). Wide scope of subject BPs thus constitutes a problem for Carlson's approach:

(31) Influential scientists have endorsed many wrong ideas.

4 Bare plurals as indefinites

As mentioned in the previous section, sentences like (28a) (repeated below), discussed in Milsark (1974) and Carlson (1989), represent a serious difficulty for Carlson's (1977a, b) approach:

(28) a. Hurricanes arise in this part of the Pacific.

The point is that (28a) admits an interpretation according to which 'it is a property of this part of the Pacific that there are some hurricanes arising there'. In other words, there is a reading of (28a) in which the subject is interpreted existentially. In Carlson's approach, however, the existential reading is a function of the 'hidden' existential operator contained in s-level predicates, and the verb *arise* in (28a) is *not* an s-level predicate, to the effect that the reading of (28a) under discussion cannot be derived.[17] Facts like this have been taken to strongly suggest that the unitary interpretation of BPs proposed by Carlson cannot be maintained on empirical grounds and BPs *do* behave as indefinites in certain contexts, for instance in (28a) (cf. in particular Wilkinson 1986; and Krifka 1987). Similarly, it has been proposed that the analysis of genericity in terms of intensionally interpreted subject-predicate structures should be abandoned in favor of a view in which genericity may correspond to inherently relational meanings, whereby a relation is established between two classes of intensional objects, which are defined by an apparently arbitrary partition of the lexical material contained in the sentence (cf. especially Carlson 1989). According to this view, clearly inspired to the analysis of indefinites as free variables developed in the framework of Discourse Representation Theory (cf. especially Kamp 1981a; and Heim 1982), a sentence such as (28a) would receive a logical representation of the kind exemplified in (32) below, at least under the assumption that definites are also interpretable as free variables:

(32) Gen x [x is this part of the Pacific]$_{\text{restrictor}}$ [∃y (y are hurricanes and y arise in x)]$_{\text{scope}}$

A logical form such as (32) encodes the view that genericity expresses a relation between two sets (in the case under scrutiny, the set of locations which are in this part of the Pacific and the set of locations which have some hurricanes arising in them). The intensional/nomic force typically associated with generic sentences depends here on the *modal* interpretation of *Gen*, which is in fact analyzed as the intensional counterpart of extensional adverbs of quantification (or Q-adverbs, cf. Lewis 1975) such as *often*, *always*, etc.[18] As for the subject BP whose interpretation was problematic in Carlson's framework (*hurricanes* in our case), it is proposed that it corresponds to a *propositional function* of the form *Px*, mapped into the nuclear scope of the quantificational structure and hence undergoing, by hypothesis, an operation of existential closure of the kind proposed by Heim and Kamp. The generic reading that was not problematic for Carlson will obviously correspond, within this framework, to the logical representation with the BP in the restrictive clause, as in (33) below:[19]

(33) Gen x [x is a hurricane] [∃y (y is this part of the Pacific and x is in y)]

This view of genericity has especially gained support when the interpretation of indefinites as free variables has been combined with the Davidsonian analysis of predicates as endowed with an additional event argument, which seems able to provide suitable variables for *Gen* to quantify over in contexts where there are no other expressions interpretable as free variables. A case in point is constituted by (34), which is roughly assigned the logical form in (35) under the quantificational approach to genericity under discussion here (cf. Chierchia 1995b):

(34) Fred smokes.

(35) Gen s [C(F,s)] [smoke (F,s)]

The formal representation in (35) expresses a relation between a set of situations in which Fred is somehow involved (this is the meaning of the context variable *C*) and the set of situations in which Fred smokes. Here, the basic insight is that the modal force of *Gen* imposes the satisfaction of a specific set of felicity conditions to the situations in which we check the smoking habits of Fred. Accordingly, (35) encodes the fact that (34) will be true if and only if a pragmatically constrained set of situations involving Fred (for instance, those in which there is sufficient oxygen for Fred to engage in smoking, Fred feels compelled to smoke, etc.) overlaps with the situations in which Fred actually smokes.

Let us try to determine what all of this implies for the analysis of BPs. The essential hypothesis concerning BPs is that Carlson's kind-referring BPs are variables bound by an (often implicit) adverb of quantification provided with modal force (*Gen*), whereas Carlson's stage-referring BPs are existentially quantified

variables.[20] Since the domain of existential closure is assumed to correspond with the scope of *Gen*, it follows that the instances of BPs interpreted as kind-referring have to be mapped into the 'restrictor' of *Gen*, whereas the instances of BPs interpreted as existentially quantified variables have to be mapped into the 'scope' of *Gen*. This clearly entails that the explicative power of the theory that regards BPs as indefinites crucially depends on the possibility of providing an explicit clause-splitting algorithm for the production of the tripartite quantificational structures associated with Q-adverbs (cf. (32)), that is, on the possibility of determining in a principled way whether an arbitrary instance of BP is to be projected into the restrictor or the scope of the Q-adverb. In this respect, the strongest hypothesis that has been formulated is Diesing's Mapping Hypothesis (MH), according to which there exists a straightforward mapping between syntactic structures and tripartite logical representations which encode either the generic or the existential reading of BPs. Namely, *the material contained in the VP is uniformly projected into the scope, whereas the material present outside the VP is mapped into the restrictive clause of the relevant Q-adverb, possibly Gen* (cf. Diesing 1988a, 1992b). Empirically, MH is supported by the existence of languages in which the mapping procedure arguably applies to surface syntactic structures, as in the case of German subjects exemplified in (16) above (where the adverbial particle *ja doch* is assumed to mark the VP-boundary). The same facts essentially hold in Dutch, where the possibility of filling the spec-of-IP position with the expletive particle *er* gives rise to the sort of syntactic alternations exemplified in (36) (cf. Reuland 1988):

(36) a. Fred denkt dat koeien op het dak liggen.
'Fred thinks that cows are on the roof.'
b. Fred denkt dat er koeien op het dak liggen.
'Fred thinks that there are cows on the roof.'

The relevant observation is that only (36b) can be assigned an existential interpretation (*Fred thinks that there are some cows on the roof*). This reading is completely excluded in (36a), which can be interpreted only generically (*Fred thinks that cows have the habit of lying on roofs*): the truth of (36b) is still compatible with a scenario in which Fred is experiencing vision problems at the moment of utterance, whereas the truth of (36a) is likely to raise some more serious concerns about Fred's mental conditions. Under the reasonable hypothesis that the subject occupies the spec-of-IP position in (36a), but not in (36b), where this position is arguably filled by *er*, we might propose that the generic/existential reading of the subject depends on its overt syntactic position: subject BPs which are realized VP-internally, as in (36b), can be existentially closed (giving rise to the episodic reading of (36b)), whereas subject BPs which are external to VP are necessarily projected into the restrictor of an (implicit) Q-adverb (giving rise to the generic reading of the embedded clause in (36a)).

A related but more controversial claim is that the same interpretive effects are detected, in German and Dutch, with object scrambling: BPs that appear to the

left of an adverbial can be interpreted only generically, as shown by the contrast in (37) (cf. De Hoop 1992):

(37) a. Fred denkt dat de politie gisteren taalkundigen opgepakt heeft.
'Fred thinks that yesterday the police arrested some linguists.'
b. ?*Fred denkt dat de politie taalkundigen gisteren opgepakt heeft.
'Fred thinks that yesterday the police arrested some linguists.'
c. Fred denkt dat de politie taalkundigen altijd opgepakt heeft. (*only generic*)
'Fred thinks that the police always arrested linguists.'

The trouble with MH is that there are many languages, English among them, in which the surface position of the verb's arguments is not really telling with respect to the possibility that these arguments be interpreted generically or existentially.[21] This is revealed by the contrast detected with minimal pairs like (38): in both sentences the subject BP surfaces VP-externally (as a consequence of the Extended Projection Principle (EPP) or related conditions, let's assume), but only (38a) allows the existential reading of the subject BP (*there are some firemen available around here*), which is uniformly blocked in the case of (38b), independently of prosodic or contextual considerations:

(38) a. Firemen are available.
b. Firemen are altruistic.

In order for MH to be empirically feasible, one has to resort to extra hypotheses, for example the assumption that 'reconstruction' of subjects into their original VP-internal position (spec-of-VP, let's assume) applies in English. Furthermore, one has to assume that reconstruction is possible in the case of predicates such as *to be available*, but is ruled out with predicates such as *to be altruistic*. Again, the explicative power of such a theory would essentially depend on the possibility of deriving the required constraints on reconstruction in a principled way. Two proposals can be found in the literature. Diesing (1992b) suggests that the contrast between (38a) and (38b) essentially overlaps with the demarcation line between s-level and i-level predicates, in the sense of Carlson (1977a) (see the detailed discussion in section 3). The subject of i-level predicates would originate in spec-of-IP, and would be coindexed with an empty category (PRO) generated in spec-of-VP. The subject of s-level predicates, on the other hand, would be directly generated in spec-VP, and would successively undergo movement to spec-IP for independent syntactic reasons (say, case and EPP). Under this hypothesis, the difference detected in (38) reduces to the familiar contrast between control structures (38b) and raising structures (38a), whereby only the latter permit reconstruction, that is, obliteration of an NP-trace in the original VP-internal position. The syntactic difference argued for by Diesing receives some conceptual foundation within the analysis of i-level predicates put forward in Kratzer (1988) and Kratzer (1995), according to which the opposition between

the two predicate classes individuated by Carlson reduces to a difference in argument structure. Kratzer capitalizes on Davidson's proposal (cf. Davidson 1967) that predicates are endowed with an additional event argument by suggesting that the requirement that one of the predicate's arguments be realized VP-externally (cf. Williams 1980; Rothstein 1983) is satisfied, in the case of the s-level predicates, by the extra event argument. Thus, this is the reason why the subject BP *firemen* in (38a) can be generated VP-internally (undergoing existential closure as a consequence of MH). Conversely, i-level predicates are analyzed as inherently non-eventive, that is, as devoid of the event argument which counts as 'external' in the case of stage-level predicates. This immediately explains why the subject BP in (38b) must be generated VP-externally (being mapped into the restricted clause of an implicit Q-adverb and receiving thus a generic interpretation).[22]

Diesing/Kratzer's view is apparently corroborated by the observation that subjects of unaccusative predicates (for which it has been independently argued that they are generated VP-internally) lend themselves to the existential interpretation more easily than the non-unaccusative i-level predicates, for which this interpretation is virtually excluded, as emphasized above. The behavior of unaccusative i-level predicates is exemplified in (39) below, with (39a) corresponding to example (5a) of section 1, where the existential reading is actually favored, at least if the subject BP is assigned narrow focus:

(39) a. She thinks that COUNTEREXAMPLES are known to us.
b. PONDS belong to this lot.

A weaker version of MH, still fully compatible with a quantificational analysis of genericity and with the view of BPs as indefinites has been developed in Chierchia (1995b), where both Kratzer's analysis of the s-level/i-level distinction and Diesing's proposal that the domain of existential closure be identified with the VP are rejected.[23] As reasons for this choice, Chierchia provides both empirical and conceptual arguments. Empirically, one of the problems with Diesing's version of MH concerns the behavior of the predicates which are ambiguous between an s-level and an i-level interpretation, which already represented a serious issue within Carlson's approach (see section 3). A case in point is constituted by sentences involving non-unaccusative predicates such as (40) below:

(40) Computers route modern planes.

This sentence easily admits the interpretation according to which 'it is a general property of modern planes that they are routed by (some) computers' (the existential reading of the subject BP is especially prominent when the subject is focused). However, in Kratzer's terms the interpretation of the predicate in (40) is arguably i-level, since the predicate is assigned a non-eventive reading, consisting in the ascription of a property to an object. The subject BP should therefore count as the designated *external* argument, which originates VP-externally

and does not admit reconstruction into a position in which it can undergo existential closure. In order to circumvent this empirical difficulty, Chierchia proposes a version of MH *according to which the restrictor corresponds to the lexical material that is not c-commanded by the Q-adverb (say, Gen) in the (covert) syntactic representation*. *Gen* is assumed to freely adjoin to any 'propositional' projection (VP, IP, CP), and arguments may be (covertly) scoped out of its c-command domain via adjunction. In this way, the scope of *Gen* may but need not be identified with VP, subsuming Diesing's proposal concerning the 'syntactic domain' of existential quantification as one of the cases that may arise. In particular, the reading of (40) which has the subject interpreted existentially will correspond to a covert syntactic representation in which *Gen* has been adjoined to IP, with the direct object scoped out of IP:

(41) $[_{IP}$ modern planes$_i$ *Gen* $[_{IP}$ computers $[_{VP}$ route $t_i]]]$

This analysis has two important implications. First of all, the ambiguity of a large class of predicates between an s-level and an i-level interpretation is attributed to aspectual morphology: imperfective aspect is assumed to realize a polarity feature which has to be licensed by *Gen*. In this way, the burden of the explanation is partly shifted from the lexical meaning of predicates to *morphosyntax*. Second, the proposed approach can fully dispense with the idea that the subject of i-level predicates is generated VP-externally and represents thus an exception to the VP-internal subject hypothesis. Given the format of the LF-representations which are assumed to constitute the input for the mapping into quantificational structures, the fact that a subject BP is generated in spec-IP is not sufficient to ensure that it be projected into the restrictor, as shown by (41), apparently the correct empirical result. It is thus possible to adopt the VP-internal subject hypothesis in its most general form, assuming that subjects are uniformly generated in spec-VP, a position for which there seems to exist independent syntactic motivation. However, the issue becomes now how to account for the observation that unambiguous i-level predicates are *not* compatible with the existential interpretation of the subject BP: sentences such as (42) (cf. also (38b) above) cannot be assigned the pragmatically plausible meaning 'some smokers are rude', a fact that is elegantly explained under Diesing/Kratzer's version of MH but might well constitute a problem for Chierchia's weaker version:

(42) Smokers are rude.

Chierchia's proposal consists in the so-called 'inherent genericity hypothesis', according to which the polarity feature triggering the presence of *Gen* is *lexically* encoded in the case of unambiguous i-level predicates, instead of being optionally realized as an *aspectual* feature in the extended projection of the predicate, as is the case with verbs that are ambiguous between an s-level and an i-level interpretation. Since the polarity feature which is part of the lexical endowment

of the predicate must be locally licensed, *Gen* has to be obligatorily realized in the checking domain of the predicate (that is, as adjoined to the maximal projection of the predicate, VP in the case of verbs). This local licensing requirement explains why the subject of *inherent generic* predicates cannot be interpreted existentially: subjects are displaced to spec-IP for independent syntactic reasons, and thus find themselves outside the c-command domain of *Gen* (which cannot be inserted into a position higher than VP for local licensing reasons).[24]

Let us try to summarize. The view that BPs are indefinites seems to be supported by several empirical facts. It accounts for the existential interpretation of BPs in cases such as (28) and (40), which were problematic for Carlson's analysis. Moreover, it arguably explains the parallelism found between the cases of unselective binding that involve singular indefinites and those that involve BPs. This parallelism is shown in the minimal pair below (both sentences naturally admit the interpretation according to which 'most dogs are easy to train'):

(43) a. Dogs are usually easy to train.
b. A dog is usually easy to train.

There are two distinct ways of interpreting these facts. We may assume that BPs can behave as indefinites (roughly, this is the position originally taken in Wilkinson 1986; Krifka 1987). If this is the case, however, it is not obvious how to account for the asymmetries between BPs and singular indefinites detected in Carlson (1977a) (for instance, the scope asymmetries exhibited by the canonical pair *John didn't see a spot on the floor* vs. *John didn't see spots on the floor*). A second, perhaps empirically superior, approach might consist in adopting Carlson's hypothesis that BPs are in fact names of kinds. The fact that they are interpretable as free variables in contexts such as (43a) would depend on the application of a type-shifting operation mapping names into propositional functions of the form Px, on a par with the type-shifting operation which projects indefinites (interpreted as generalized quantifiers in the framework of Dynamic Intensional Logic) into propositional functions (Chierchia 1995b: 192). More explicitly, we may propose that BPs are shifted into propositional functions when the presence of an (implicit) Q-adverb requires the introduction of a free variable (in order to avoid vacuous quantification). There are, however, at least two problems with such a view. First of all, consider the pair in (44):

(44) a. Lions have manes.
b. Mice hate cats.

The object BP is interpreted existentially in (44a) and generically in (44b). The question is whether the existential reading found in (44a) follows from the interpretation of the object BP as a name or from the application of the type-shifting procedure that turns names of kinds into propositional functions. The first solution immediately raises the issue concerning the status of the predicates

involved in (44): which properties of the predicate can be taken to be responsible for the different interpretation of the object in the two cases exemplified in (44)? On the other hand, the second solution is likely to represent an important difficulty for both versions of MH considered above: the fact that the propositional function corresponding to the object BP is mapped into the scope of *Gen* in (44a) (undergoing existential closure) and into the restrictor of *Gen* in (44b) (giving rise to the universal/generic reading) is certainly in need of a principled explanation.

There is, anyway, a second and more important difficulty. If the application of the type-shifting operation that converts names into free variables depends on the presence of *Gen*, the prediction is that singular indefinites and BPs should pattern uniformly in contexts such as (45) below, as was the case in (43):

(45) a. Madrigals are polyphonic.
b. Madrigals are popular.

Both sentences exhibit the nomic force proper to generic contexts, with the subject BP interpreted generically. The trouble is that replacing the subject BP with a singular indefinite is acceptable only in the case of (45a), as shown in (46):

(46) a. A madrigal is polyphonic.
b. ??A madrigal is popular.

The issue is thus to understand why the type-shifting operation that applies to the BP in (45b) is apparently blocked in the case of the singular indefinite in (46b).[25]

The analysis of BPs as *propositional functions* leaves other problems unsolved. Here are some of them:

(i) According to this analysis, BPs are variables bound by an (implicit) Q-adverb. It is further proposed that generic sentences derive their 'nomic' force from the inherent modal semantics of the implicit *Gen* or some overt Q-adverb provided with modal force. However, the same intensional/modal interpretation is found in the variants of (43a) containing 'extensional' Q-adverbs, exemplified in (47), casting serious doubts on the feasibility of this 'quantificational' analysis of genericity:[26]

(47) Dogs are often/sometimes easy to train.

(ii) It is proposed that the existential interpretation of the subject BP in (38a), repeated here as (48), depends on the s-level interpretation of the predicate involved: the episodic reading intuitively assigned to (48) is incompatible with the presence of *Gen* in the corresponding logical representation:

(48) Firemen are available.

However, in section 3.3 we have already emphasized that many other predicates that seem to express a transient property, and are thus arguably s-level, are *not* compatible with the existential reading of the subject BP, as shown by (49) (= (29) above):

(49) People are sad/at work/rich. (*only generic*)

It is not obvious how the inherent genericity hypothesis might handle the difference between (48) and (49). It has been proposed (cf. Higginbotham and Ramchand 1996; Delfitto 2004) that the existential reading depends on the presence of an implicit spatio-temporal argument involving proximity to the speaker. Assuming that this is correct, it remains to be established what implications this observation has for the familiar distinction between s-level and i-level predicates and the presence of *Gen*.

(iii) Many of the comparative facts reviewed in section 1 (concerning for instance the constraints on the existential and generic interpretation of (subject) BPs) are still in need of a principled explanation. In the next section, we will examine some proposals that point to the possible relevance of the internal syntactic structure of BPs (and DPs in general) for a better understanding of the comparative issue.

5 The internal syntax of BPs

The distribution of BPs in Romance languages has given rise to new and stimulating comparative perspectives in the study of the syntax and semantics of BPs. Empirically, the research has mainly concentrated on the subject–object asymmetry that characterizes the distribution of existential BPs in Spanish and Italian: BPs are arguably licensed in governed positions in these languages, but are generally ruled out (unless some additional syntactic and/or prosodic requirements are satified) in the preverbal and (at least as far as Spanish is concerned) postverbal subject position. The proposals that have been formulated in the literature deal with a number of genuine syntactic issues and are relatively independent of the complex interpretive issues that characterize the literature on BPs in English (with some significant exceptions, such as Longobardi 1994). This does not really come as a surprise if we consider that the issue of genericity, which has long constituted the core of the reflections around BPs in English (starting from the canonical proposal in Carlson 1977a), essentially lies outside the scope of the empirical issues that have been debated in the analyses of Romance BPs. The fact is that determinerless nouns can be interpreted only existentially in Romance (with some potential exceptions, to be discussed later). The generic interpretation that is assigned to BPs in English (depending on factors whose nature has been investigated in the previous two sections) is normally realized, in Romance, by resorting to definite DPs (that is, noun phrases introduced by a definite article). The relevant contrast is instantiated in the examples below:

(50) a. Lions have manes.
b. I leoni hanno la criniera (Italian)
the lions have the mane

In Spanish, the literature on BPs in the framework of formal grammar includes at least Suñer (1982), Contreras (1986), Lois (1989), and Torrego (1984). As for Italian, the nature of the constraints affecting the distribution of BPs has been mainly investigated in Benincà (1980), Delfitto and Schroten (1991), Longobardi (1994, 1996, 2001), Chierchia (1998), Delfitto (2002), Zamparelli and Heycock (2003).

The constrained distribution of BPs in Spanish has been analyzed by Contreras (1986) in terms of an effect induced by the Empty Category Principle (ECP): BPs in direct object or prepositional object position can be assumed to be licensed by V or P under lexical government (51), whereas subjects and indirect objects yield a violation of the lexical government requirement (52):

(51) a. Quiero tortillas.
'(I) want tortillas.'
b. Ayer salí con amigos
yesterday went-(I) with friends
'Yesterday, I went out with friends.'

(52) a. *Esclavos construyeron las pirámides.
'Slaves built the pyramids.'
b. *El director ha devuelto los documentos a empleados.
'The director has returned the documents to employees.'

If BPs are analyzed as introduced by an empty determiner or quantifier (cf. the discussion in Carlson 1977a), the syntactic constraints on BPs can be arguably reduced to the requirement that empty categories, and especially empty functional heads, be lexically governed (cf. the licensing conditions for empty complementizers in Stowell 1981). On the other hand, Lois (1989) explains the acceptability of BPs in governed positions (as in (51) above) in terms of the requirement that the BP incorporate into its governor (a verb or a preposition). The nature of this incorporation requirement (hopefully related to case-theoretical considerations) remains however essentially unclarified (for the semantic side of incorporation processes, see especially Van Geenhoven 1998).

The proposals by Contreras and Lois have been largely influential on the subsequent literature on BPs. In particular, Contreras' hypothesis that the distribution of existential BPs depends on their internal syntax (that is, the conditions on licensing of DPs whose head is empty) has been essentially adopted, within a larger framework of assumptions concerning the syntax and the semantics of DPs, by Longobardi (1994). Longobardi observes that the relevance of the lexical government requirement is apparently confirmed by the exclusion of BPs from

other arguably non-lexically governed positions, such as the postcopular argument of 'inverted' copular constructions (see Higgins 1979; Moro 1993c):

(53) La causa delle rivolte sono spesso marocchini. (Italian)
'The cause of the riots are often Moroccans.'

The main interest of Longobardi's approach lies in the fact that he tries to account for the comparative differences between English and Italian (and, more generally, between Romance and Germanic) in the distribution of BPs: the fact that BPs cannot be interpreted generically in Romance and the fact that English, contrary to Romance and, arguably, the rest of Germanic, does not seem to impose constraints on the occurrence of existential BPs in the subject position. The source of this comparative contrast is essentially reduced to an important parameter on N-to-D raising: Longobardi convincingly argues, on the grounds of a large set of facts concerning the relative order of several categories of proper names and other DP-internal elements such as adjectives and possessives, that proper nouns *overtly* move from the N- to the D-position in Italian, whereas this kind of movement, which is assumed to be necessary in order for a name to be interpreted referentially, that is, as a *rigid designator*,[27] *takes place covertly* in English (i.e., at the more abstract level of syntactic representation (often referred to as LF) which represents the syntactic input to interpretation, as already pointed out, in section 4, in the course of our discussion of the Mapping Hypothesis). The relevant contrast between Italian and English is exemplified by the paradigm found in (54–55): the fact that the adjective must occur postnominally in Italian but prenominally in English is derived from the requirement that names overtly move to D in the former language but not in the latter:

(54) a. Old John came in.
b. *John old came in.

(55) a. E' venuto Cameresi vecchio.
has come Cameresi old
b. *E' venuto vecchio Cameresi.
has come old Cameresi

Longobardi 1994 essentially interprets the requirement that names fill the D-position overtly in Italian as the manifestation of a more general parametric difference between Italian and English, according to which the syntactic and interpretive conditions which are responsible for the licensing of DPs (including BPs) as well-formed interpretable objects necessarily apply in *overt* syntax in Italian (probably as a consequence of some Earliness Principle of the kind proposed in Pesetsky 1989), but can wait until LF in English.[28] These abstract conditions are identified with the requirement that an empty D, as every other empty (functional) head, be lexically governed (much in the spirit of Contreras 1986), and with a universal interpretive principle which establishes that empty

Ds be assigned a default *existential* reading at the interpretive interface (arguably corresponding with the semantic option that leads, in most cases, to the least easily falsifiable statements, to be related to criteria of interface economy). Given these conditions and their parametric application at different levels of syntactic representation, the contrast between Italian and English with respect to the interpretation and the distribution of BPs follows rather straightforwardly. A sentence like (56) in English not only has a BP in a non-lexically governed position, but also involves a generic interpretation of this BP:

(56) Beavers build dams.

In Longobardi's framework, the two facts are obviously related: since the syntactic licensing condition on empty Ds applies at LF in English, the presence of an empty D in overt syntax will not suffice to rule out the syntactic derivation; at LF, the noun can be assumed to substitute for the empty D, preventing a lexical government violation and ruling out the existential reading which would be associated with the empty D. As emphasized above, proper nouns are assumed to move to D (in syntax or at LF) as a consequence of their referential status. Common nouns are normally interpreted, in contexts where the D-position is filled by lexical determiners interpreted as variable-taking operators, as providing the range of quantification of these operators: in other words, common nouns refer to the *kinds* that provide the domains of restricted quantification in natural language.[29] On these grounds, it is quite natural to propose that abstract movement of a common noun to D assigns this noun the status of a kind-referring expression, that is, common nouns in D will be interpreted as names for *kinds*, essentially along the lines of Carlson's analysis.

In Italian, on the contrary, the sentence corresponding to (56) can be interpreted neither generically nor existentially:

(57) *Castori costruiscono dighe.

The reason arguably lies in the fact that the empty D must be licensed and interpreted in overt syntax in this language. Obliteration of the empty D by means of substitution of N into D (which leads to well-formedness and to a generic reading in English) comes too late in Italian, that is, after the relevant syntactic and interpretive conditions have already applied, ruling out the syntactic representation associated with (57) as ill-formed.

An important consequence of Longobardi's analysis is that generic DPs (or, better to say, *kind-referring* DPs) cannot be syntactically realized as determinerless nouns in Romance. In fact, the grammatical counterpart of (57) in Italian is a sentence containing a definite DP in subject position:

(58) I castori costruiscono dighe.
'The beavers build dams.'

A uniform analysis of genericity, that is, the hypothesis that the generic reading of BPs is produced by the application of a universal interpretive procedure to a uniform syntactic input, seems to require that the definite determiner found in (58) be accurately distinguished from the definite determiner which heads definite DPs that are not interpreted generically. Namely, remember that the kind-referring interpretation of BPs has been associated with a syntactic structure in which the common noun substitutes for D: (58) is compatible with this hypothesis only if the definite article is assigned the status of an *expletive* element, blocking the existential interpretation of the empty D in overt syntax and being replaced with N at the level of representation that constitutes the input to semantic interpretation. In other words, what is essential to the kind-referring interpretation of BPs is the requirement that a syntactic dependency be established between N and D: this abstract dependency is realized in the form of an LF-chain in English and in the form of an expletive-headed chain in Italian (cf. the notion CHAIN in Chomsky 1986b).[30] According to this analysis, *expletive* determiners are not a lexical peculiarity of Romance. In fact, they are attested also in English, in the context where the kind-referring interpretation is expressed by a singular count noun, as shown in (59) below, even though the derivation of these facts from abstract selection properties of the empty determiner requires a very intriguing line of argumentation (cf. Longobardi 1994: n. 45):

(59) a. *Lion has four legs.
b. The lion has four legs.

As we will see in section 6, the analysis put forward in Longobardi (1994) leaves a number of issues still unsettled. However, it represents a far-reaching attempt to derive the comparative differences noticed at the onset from the hypothesis that *the same* set of syntactic and interpretive conditions applies at *different levels* of syntactic representation. This analysis assigns a crucial role to the hypothesis that noun phrases (including BPs) are uniformly analyzed as DPs, with the NP coinciding with a complement of the head D (cf. especially Abney 1987), and to the head-movement processes which have been claimed to take place, on independent empirical grounds, within DPs, accounting for important aspects of the syntax of noun phrases.[31] It is worth noticing, in this respect, that the abstract operation of N-to-D movement may be interpreted as providing a convenient syntactic input, on compositional grounds, for the reading of BPs as kind-referring expressions (that is, names for kinds) and therefore represents a sort of *syntactic* implementation of Carlson's original proposal (or, if one wants to assume that BPs may also be interpreted as free variables, on a par with the other indefinites, of the type-shifting operation necessary to map predicative expressions into names).[32] Of course, some of the typical problems raised by a uniform analysis of genericity and bare plurals can be easily restated in Longobardi's framework. There is a clear sense, however, that the comparative dimension taken into account by Longobardi's approach has enriched the formal theorizing about bare plurals with a strong syntactic component which cannot be eluded by

any analysis which wants to meet acceptable standards of descriptive and explanatory adequacy.

6 Open issues and topics for future research

At the end of our discussion of the issues which are typically related to the syntax and semantics of BPs, it seems convenient to present a brief survey of the topics that have emerged as still in need of further investigation. We will also refer the reader to recent contributions that might be relevant for a better assessment of these problems and for possible suggestions towards their resolution.

6.1 The issue of reconstruction

As already mentioned in the course of our discussion in sections 4 and 5, the existential reading that may be associated to subject BPs in English is still something of a puzzling phenomenon. Diesing (1992b) proposes reconstruction into spec-VP as a solution, and this proposal is essentially adopted in Longobardi (1994). However, the question arises why reconstruction is generally excluded in Germanic, as revealed by the absence of an existential reading in Dutch examples such as (36) above. Diesing's answer consists in the hypothesis that clause-splitting applies to overt syntax representations in languages such as German and Dutch, to the effect that reconstruction is irrelevant. This claim certainly requires further qualification, since the spec-CP position, often moved into by subjects as a consequence of verb-second, is quite compatible with the existential reading across Germanic, suggesting an obvious parallelism with topicalization in Romance (cf. Longobardi 1994: n. 10 and n. 39):

(60) a. Studenten hebben gisteren het Academisch Gebouw bezet. (Dutch)
yesterday, (some) students have occupied the University building
b. ACQUA, ho preso dalla sorgente! (Italian)
WATER I took from the spring!

The whole issue is made even more complex by the observation that the existential reading of subject BPs in English is sensitive to a number of constraints whose precise nature is still poorly understood. The contrast between (48) and (49), discussed at the end of section 4, seems to indicate that the s-level/i-level distinction, interpreted as a primitive lexical distinction between two classes of predicates, is not sufficient to derive the facts. As far as verbal predicates are concerned, it has been suggested that subjects of unaccusatives and focused subjects are more easily assigned the existential reading (cf. (39) and (40) above, respectively). The aspectual distinction between perfective and imperfective contexts is also arguably relevant, as shown by the fact that sentences in the present tense (which exclusively admits an habitual, hence imperfective, reading in English) cannot be interpreted existentially, whereas sentences in the past tense

(which is clearly compatible with an episodic, hence perfective, interpretation) are essentially ambiguous between the existential and the generic reading.[33] This is shown by the minimal pair in (61):

(61) a. Firemen extinguish the fire. (only generic)
b. Firemen extinguished the fire. (ambiguous)

As for non-verbal predicates, it has been suggested that those compatible with the existential reading of the subject BP, as *available* in the canonical (48) above, crucially involve a notion of spatio-temporal location in their interpretation, in the form of spatio-temporal proximity to the speaker. This hypothesis seems to be confirmed by the subtle contrast exhibited by the minimal pair (62), under the plausible assumption that the proximity requirement is violated in (62b) (cf. Higginbotham and Ramchand 1996; Delfitto 2004):

(62) a. (Guess whether) firemen are nearby/at hand.
b. ?(Guess whether) firemen are far away/a mile up the road.

It is worth noting that the relevance of a lexical government requirement of the sort argued for by Longobardi (1994) is apparently corroborated by the observation, found in Higginbotham and Ramchand (1996), that the existential interpretation is *never* available in contexts without copular support, as shown by the contrast in (63) below:

(63) a. I consider firemen available/on strike. (only generic)
b. I consider firemen to be available/on strike. (ambiguous)

6.2 *Bare plurals, indefinites, and genericity*

As already observed in section 4, and confirmed by the paradigm in (12–13) above, singular indefinites and BPs are not interchangeable in generic contexts. Another case in point (cf. Dobrovie-Sorin and Laca 1996) is offered in (64) below:

(64) a. Americans are taller than Italians. (generic)
b. #An American is taller than an Italian. (awkward with the generic reading)

It has been noticed that (64b) substantially improves when an adverb of quantification is overtly realized, as shown by the fact that (65) is more acceptable than (64b) as a generic sentence:

(65) An American is always taller than an Italian.

These facts may be taken to indicate that generic sentences containing BPs, on a par with generic sentences containing other individual-referring expressions, are

not dependent, for the realization of the generic reading, on the presence of an implicit Q-adverb with an inherent modal semantics (i.e., *Gen*). When the 'normative' force associated with *Gen* is uncontroversially present, as in (66), generic sentences are in fact acceptable even with singular indefinites (cf. Dobrovie-Sorin and Laca 1996). For example, notice that *being polyphonic* is just a necessary condition that *every* madrigal must satisfy in order to count as a madrigal:

(66) A madrigal is polyphonic.

This state of affairs is compatible, in principle, with two different approaches. One might argue that the quantificational analysis of genericity (according to which generic sentences contain an implicit Q-adverb, *Gen*, endowed with modal force) cannot be empirically correct, given the contrast between singular indefinites and BPs exemplified above (cf. Delfitto 1998, 2002). Genericity must thus follow from the semantics of subject-predicate structures, much in the spirit of Carlson's original proposal. This neo-Carlsonian analysis has been implemented in Delfitto (2002), in terms of a general proposal concerning the semantics of grammatical aspect and predication. Alternatively, one might try to explain the contrast between (singular) indefinites and BPs by adopting Carlson's hypothesis that BPs are names for kinds (possibly undergoing type-shifting operations that explain their behavior as free variables in certain contexts), while still sticking to the insight that genericity is an essentially quantificational phenomenon (cf. Chierchia 1995b, 1997b, 1998).

6.3 Bare nouns in French and Chinese

A third class of problems concerns the presence of languages in which BPs in argument position are uniformly ruled in (Chinese, Japanese) or uniformly ruled out (Modern French).

As for the first group of languages, an interesting proposal for a principled approach is found in Chierchia (1997b), where the interpretation of NPs as argumental or predicative categories is essentially considered a matter of primitive parameter setting. In Chinese, for example, NPs are uniformly interpreted as arguments, a property to be put in relation with the absence of the mass/count distinction in the morphological system and with the presence of a generalized classifier system. In French, NPs would always be 'predicative' (and hence uniformly excluded from argument positions), whereas in other languages the setting depends on the mass/count distinction (for instance, argument bare NPs are mass in English) and shifting operations from the predicative to the argument type are allowed under certain conditions.

A specific proposal for French (which incorporates many insights of Longobardi's analysis) is found in Delfitto and Schroten (1991), where the comparative contrast between Spanish/Italian and English with respect to the licensing of existential BPs is argued to follow from the hypothesis that the empty D heading the BP is subject to an extra identification requirement. The latter is argued to be

satisfied under a local relation with a number agreement morpheme, via the independently motivated assumption that the number morpheme realized on the noun may have a different syntactic status crosslinguistically (cf. also Longobardi 1994: fn. 11).[34] This proposal can be further implemented in terms of an identification condition on the licensing of empty Ds as variable-taking operators. More specifically, it has been proposed that the interpretation of an empty D as an existential operator with the abstract form 'Ox' requires an event predicate for the identification of the operator type as existential, and abstract raising of the number morpheme to the D-position for the identification of the 'sort' of objects which constitute the range of quantification of the operator (see Delfitto 2002: ch. 3, section 2.1). According to this line of analysis, the lack of argument BPs in French depends on the absence of number agreement morphemes on the noun; namely, it can be argued that in these conditions the range of quantification of the existential operator cannot be defined and BPs are ruled out since they cannot be interpreted as quantificational structures at the interpretive interface (see Delfitto and Schroten 1991 for a detailed discussion of the morphological issues involved). There seems to be evidence that what has to be *identified* is not only the variable (by determining its 'sort') but also the operator (by determining its 'semantic content'). In fact, only *event* predicates are able to license existential BPs under government: object BPs lead to ungrammaticality in Italian in contexts such as (67) (notice that only the generic reading is available in its English counterpart):

(67) *Mario odia cani.
'Mario hates dogs.'

Here two issues arise. The first consists in establishing what counts as an event predicate. At first sight (as noticed by Dobrovie-Sorin and Chierchia) there seem to be stative (that is, non-eventive) predicates which are perfecty able to license object BPs with an existential reading, as shown by the Italian sentence in (68) (notice that its English counterpart also admits the existential reading besides the generic one, contrary to what happens in (67)):

(68) Mario possiede case. (existential)
'Mario owns houses.'

As noticed by Dobrovie-Sorin, verbs like *own* and *hate* appear to differ as to their capacity of licensing locative phrases, in that only *own* is compatible with a reading according to which the locative phrase modifies the predicate (cf. Kratzer 1995 for similar observations concerning the individual/stage level distinction). This seems to suggest that event predicates have to be identified with those which admit spatio-temporal modification: the predicate in (68), but not the predicate in (67) would thus qualify as eventive, as confirmed by the contrast detected in (69) in the acceptability of *where*-questions (see also Delfitto 2002, 2004):

(69) a. *Where does John hate dogs?
b. Where does John own houses?

Assuming this much to be on the right track, what remains to be established is the precise mechanism by means of which event predicates (and only event predicates) are able to *identify* an empty D as an existential operator under a government relation. For proposals somehow related to this important issue see Higginbotham and Ramchand (1996), Delfitto (1998, 2002).[35]

6.4 Non-existential readings

Finally, the set of non-existential interpretations found with BPs gives rise to rather intricate paradigms, leading to different idealizations and (thus) to different theories. A good example of this situation is the hypothesis, put forward in Chierchia (1998), that BPs in Italian admit a kind-referring interpretation, to the effect that Italian and English would pattern together in allowing type-shifting from predicative categories (logical type <e, t>) to object-referring categories (logical type <e>). As empirical evidence for his claim, Chierchia adduces the kind-referring reading found in Italian examples such as (70) below:[36]

(70) a. Cani di grandi dimensioni sono (spesso) aggressivi.
'Dogs of big size are (often) aggressive.'
b. Da queste parti, ragazze in minigonna sono rare/diffuse/scarse/abbondano.
'In this area, girls in miniskirts are rare/widespread/scarce/abundant.'

However, it has been noticed that the sentence-types exemplified in (70) arguably involve some form of *unselective binding*, turning the predicative BP into a generalized quantifier: *adverbial* quantification (by means of a possibly implicit frequency adverb) in (70a) and *lexical* quantification (by means of predicates that inherently express quantification over events) in (70b) (see Carlson and Pelletier 1995; Longobardi 2001; Delfitto 2002 for a detailed discussion of the issues involved).[37] The evidence points rather uncontroversially to the conclusion that unambiguous individual-level predicates cannot be assigned kind-reference in Italian (*contra* Chierchia's suggestion). It is a fact that kind-reference is marginally possible with the predicates that can easily be understood as involving event reference (*to be intelligent* can be easily reinterpreted as *to exhibit intelligent behavior*), whereas it is excluded with predicates that are less easily prone to this reinterpretation process (*to be dark* or *to be big*, for instance). Italian speakers have serious trouble interpreting/producing sentences like those in (71a) with the meaning proper to those in (71b), where the definite DP is clearly assigned kind-reference (see Longobardi 2001; Delfitto 2002):

(71) a. *Uccelli di zone paludose sono scuri/grandi.
'Birds from marshy areas are dark/big.'

b. Gli uccelli di zone paludose sono scuri/grandi.
'The birds from marshy areas are dark/big.'

Moreover, Longobardi (2001) discusses at least three other important pieces of evidence in favor of the view that kind-reference is not available to BPs in Italian.

First of all, there is the behavior of predicates for which the property ascribed to the kind cannot be ascribed to individual members of the kind. A case in point is the contrast between (72a) in English, that readily admits kind-reference for the subject BP, and its Italian counterpart in (72b), where the subject BP can be interpreted only existentially, in spite of pragmatic awkwardness:

(72) a. Tomatoes of big size taste nicer if one drives South.
b. Pomodori di grandi dimensioni diventano sempre più saporiti man mano che si va a Sud.

Second, it has been observed that Italian BPs pattern exactly like Italian singular indefinites. Since singular indefinites cannot be interpreted as kind-referring expressions (witness the well-known contrast between singular indefinites and BPs in English), this arguably constitutes an independent argument against kind-reference for Italian BPs. Third, the hypothesis according to which the non-existential reading of Italian BPs depends on the licensing of a non-existential unselective binder in the relevant linguistic structure makes the prediction that contexts that do not involve lexical quantification or frequency adverbs will not be able to license a non-existential interpretation of BPs, so that kind-reference effects will be excluded in these contexts. A case in point is aspectually perfective sentences, where non-existential quantification can be induced only by an overt frequency adverb (cf. the discussion in Delfitto 2002: ch. 2, section 3.3). The minimal pair in (73) exemplifies the clear contrast arising here between Italian and English: the Italian BP in (73a) admits only the existential interpretation, whereas the subject BP in its English counterpart (73b) freely allows kind-reference. In order to express the kind-reference effect proper to (73b), Italian has to resort to (73c), where the BP has been replaced by a definite DP:

(73) a. Elefanti di colore bianco passeranno il Giudizio Universale alle 5.
b. White colored elephants will pass the Final Judgment at 5 o'clock.
c. Gli elefanti di colore bianco passeranno il Giudizio Universale alle 5.

On the grounds of these facts, it is fair to conclude that English and Italian bare nouns differ radically, in that the kind-referring reading proper to the former is precluded to the latter. This conclusion arguably supports Longobardi's hypothesis that the range of interpretive variation concerning kind-reference is linked to the range of morphosyntactic variation concerning N-to-D raising.

7 Conclusion: summary

Let us try to recapitulate. There seems to be some consensus on the fact that Carlson's analysis of BPs as names for kinds still represents, in many respects, the most adequate theoretical foundation of the semantics of BPs. To put it in different terms, the assimilation of BPs to other sorts of indefinites (and in particular to singular indefinites), as in Kratzer/Diesing's approach, leaves the important asymmetries noticed by Carlson essentially unexplained. In a similar vein, it may be argued that the *quantificational* approach to genericity (at least in the variant according to which generic BPs are free variables bound by an implicit Q-adverb with modal force) does not score better, on empirical and conceptual grounds, than Carlson's original analysis, according to which genericity corresponds to the semantics of subject-predicate structures whereby subjects combine with individual-level predicates. One of the most promising lines of analysis of the syntax–semantics interface in this domain tries to combine Carlson's insights with more adequate assumptions on the internal syntax of BPs and the role of DP-internal syntactic processes such as the licensing of empty determiners and N-to-D raising. On the other hand, these analyses seem to indicate that one of Carlson's essential proposals, namely the idea of reducing the existential reading of BPs to the semantics of the predicate with which they combine, is in fact not correct, at least in the radical version proposed by Carlson. The existential reading of BPs arguably has its roots in the semantics associated with DPs headed by an empty determiner, even though the semantics of the predicate might well be crucial in order to recover the lexical content of this empty position. However, as we have seen, the precise interaction between syntax and semantics is still a matter of debate. According to a first class of proposals (cf. Longobardi 1994), BPs are uniformly DPs and the cross-linguistic variation is crucially limited to *syntactic* parameters. According to another class of proposals (cf. Chierchia 1997b), variability extends to the setting of semantic parameters. Future research will have to decide on this important issue.

NOTES

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1 In Chierchia (1996, 1998), the fact that bare nouns are freely allowed in Chinese/Japanese is derived from the hypothesis that bare nouns are generally set to type *e* in this group of languages, whereas they are set to type *e* depending on the mass/count distinction in languages such as English, where bare singulars of count nouns, contrary to BPs, have a *predicative* nature (type <*e*,*t*>).

2 Quite often in the text we will adopt the standard terminology (essentially dating back to Chomsky 1975b), which has the term 'bare plural' (properly referring to noun phrases that merely consist of a plural head noun) as covering all instances of noun phrases which are *not* introduced by a quantifier, a determiner, or more generally a

specifier or functional head of some sort. In this use, the term 'bare plural' (BP) 'improperly' extends to all instances of determinerless noun phrases, including modified head nouns and 'bare singulars' of mass (and in certain languages count) nouns.

3 Many Romance varieties seem to exhibit the behavior exemplified in the paradigm below for Italian, showing that BPs with an existential interpretation (that is, roughly interpreted as 'some N') are generally ruled out from the subject position (abstracting away from the cases where the subject is assigned narrow focus, corresponding to the application of a marked focus assignment procedure), but freely allowed in internal argument positions:

(i) ??Ieri, pompieri hanno spento l'incendio. (BP = subject)
'Yesterday, firemen have extinguished the fire.'
(ii) Non ho visto macchie sul pavimento. (BP = direct object)
'I have not seen spots on the floor.'
(iii) Sono uscito spesso con amici. (BP = indirect object)
'I have often gone out with friends.'

Determinerless subjects are quite acceptable, however, as far as the head noun is modified (by a relative clause, an adjective, or a PP) or coordinated, as shown below:

(iv) Ieri, pompieri con equipaggiamento speciale hanno spento l'incendio.
'Yesterday, firemen with special equipment have extinguished the fire.'
(v) Ieri, pompieri efficientissimi hanno spento l'incendio.
'Yesterday, very efficient firemen have extinguished the fire.'
(vi) Ieri, pompieri che non avevo mai visto hanno spento l'incendio.
'Yesterday, firemen that I had not seen before have extinguished the fire.'
(vii) Ieri, pompieri e volontari hanno spento l'incendio.
'Yesterday, firemen and volunteers have extinguished the fire.'

As is well known, the availability of subject BPs (with the limitations mentioned above) does not extend in Romance to the contexts in which the BP is interpreted 'generically', that is, roughly corresponds to a universal quantifier (see sections 2 and 3 for a more adequate characterization of the *generic reading* of BPs).

The constraints on the occurrence of BPs in the standard subject position (spec-of-IP under current versions of X-bar theory) are not a prerogative of Romance, being also found in Germanic SOV languages such as Dutch (see especially the discussion in Reuland (1988); and Diesing (1992a, b)), as exemplified below:

(viii) *Fred zag dat brandweerlieden het vuur aan blussen waren.
'Fred saw that firemen were extinguishing the fire.'

However, it should be emphasized that Dutch appears to behave like English (allowing the existential reading of subject BPs) in main clauses, where verb-second applies and the subject occupies the spec-of-CP position under current analyses:

(ix) Brandweerlieden waren het vuur aan het blussen.
'Firemen were extinguishing the fire.'

It seems we have clear evidence that different subject positions behave differently in licensing BPs with an existential interpretation. If we adopt the position that Dutch is like Romance with respect to the distribution of existential BPs, we have to account for the different status of the spec-of-CP position. Conversely, if we take Dutch to be like English, in that it freely allows subject BPs, it is the special status of the spec-of-IP position that has to be accounted for.

4 Carlson discusses examples such as *John notices plumbers in Jersey City,* which cannot mean that *all* plumbers were noticed in Jersey City, even though one might easily think of contexts which would clearly favor such a reading, for instance if there is a plumbers convention there attended by all, or most, plumbers.

5 See especially Diesing (1992a, 1992b), Kratzer (1995), and Chierchia (1995b).

6 We are presupposing a model of syntax in which covert operations may apply to surface structures. This possibility is clearly linked to the existence of a level of syntactic representations (traditionally referred to as LF) which may or may not be distinct with respect to the syntactic representations associated with surface structures (that is, the structure in which the elements of the syntactic elements have undergone phonological realization). In Chomsky (1995c) this idea is implemented by assuming that syntax corresponds to a computational system performing derivations, and that mapping to PF (that is, phonological realization) may take place at an arbitrary step of the derivation.

7 See Chomsky (1965), Gough (1969), Dowty (1972), Delorme and Dougherty (1972), Kroch (1974), Bartsch (1972).

8 See Stockwell et al. (1973), Perlmutter (1970a).

9 An important qualification is in order here. Strictly speaking, proper names are not individual-referring expression (type *e*) in the formal semantics framework in which Carlson embeds his analysis. In the Montague tradition proper names are in fact assigned a quantificational analysis (type <<e,t>, t>): they represent sets of properties (*Bill* is identified with the set of properties that hold of Bill), on a par with standard generalized quantifiers such as *most dogs*, *every man*, etc.

10 For the relevance of the notion of 'well-established kind' in the analysis of other sorts of generics, like singular definite generics, see especially Krifka (1987), Zwarts (1992).

11 The following examples clearly differ as to the quantificational import associated with the definite subject. If (i) tends to get interpreted as involving universal quantification over the members of the battalion, (ii) is better understood with an implicit quantifier of the kind of *most*, and (iii) can arguably be true even if a minority of the members of the battalion is involved in handling ammunition. As for cases like (iv), it is clear that the the predicate true of the battalion is completely false for any of its members:

(i) The battalion was wiped out.
(ii) The battalion is quite tired now.
(iii) The first battalion handles ammunition.
(iv) The first battalion has served its country for 200 years.

This kind of interpretive variation represents an important correlate of the sort of ambiguity that has been detected with BPs. Since the different readings cannot be consistently analyzed in terms of hidden quantification over the members of the relevant plurality, the claim that BPs are not quantified expressions gains further support.

12 A related consequence of Carlson's proposal is that natural language contains only expressions referring to ordinary objects and kinds, and not expressions referring to 'stages'. The presence of objects corresponding to spatio-temporal slices of things and of stage-referring expressions can be detected only by means of the explicit logical representations which express the semantic interpretation of the relevant sentences.

13 These amendments essentially consist in the assumption that in the case of predicates ambiguous between an s-level and an i-level interpretation, the i-level reading is derived by applying the 'generic' operator *G* to the s-level predicates. It is further assumed that a distinct operator *G'* maps predicates of individuals into predicates of kinds. These modifications certainly have some conceptual significance: in particular, the claim that the interpretive ambiguity detected with BPs extends in principle to sentences involving pronouns or proper names (an essential claim of Carlson's original proposal) can hardly be restated in the new framework, where predicates of kinds are derived from predicates of individuals by means of the operator *G'*. However, the motivation for these changes is essentially technical: the introduction of the new operators permits us, according to Carlson, to account for cases where a *generic* BP is assigned wide scope with respect to other scopal elements (as in *Beavers have a tail*). Given the role that hidden generic operators have played in successive analyses, it is worth emphasizing that Carlson's *G* neither corresponds to an implicit Q-adverb quantifying over events/situations nor can be identified with the empty determiner position postulated in the pre-Carlsonian quantificational analyses of BPs. Rather, *G* is an operator mapping predicates into predicates (technically, intensions into intensions).

14 Here, it should be noticed that not all speakers agree about the full acceptability of (25) and, to the extent they tend to accept it, they also tend to rule in the opaque reading of (24) besides the transparent one. There are also theoretical problems with Carlson's approach. He claims that *him* in (24) is a bound pronoun, and that the indefinite is raised to a position from which it has scope over both conjuncts (hence also over the conjuncts containing the pronoun). Both assumptions are problematic. Even if the raising operation is performed at an abstract level of representation (LF), it provides the wrong result with non-indefinites, as revealed by the ungrammaticality of **John is trying to find every policeman, and Kate tried to find him, too* (this observation has in fact provided important motivation for the analysis of the cases under discussion as involving E-type anaphora, cf. Evans 1980). Moreover, raising the indefinite to a position from which it takes scope over both conjuncts is likely to violate a well-known condition on movement (ATB-violation), as shown by the ungrammaticality of the cases where movement is overt (**Which book is John trying to find and Kate is trying to find it, too*).

15 Cf. Gerstner and Krifka (1993), Wilkinson (1986, 1989), Carlson (1989).

16 Cf. Dobrovie-Sorin (1996), Higginbotham and Ramchand (1996) for a detailed discussion of this issue and some articulated proposals for a principled derivation of the existential reading of subject BPs in English. For a recent analysis based on aspectual considerations and argument structure properties, see Delfitto (2004).

17 According to Carlson's formalism, verbs such as *arise*, which are aspectually ambiguous between an s-level and an i-level interpretation, are considered either as radically homophonous forms, corresponding in fact to two distinct lexical items, or as lexically related forms, the second of which derives from the application of the intensional operator *G* to the form that corresponds to the s-level predicate. According to the latter approach, the form of 'arise' present in (28a) results from the application

of *G* to the original form of the verb, which is intuitively s-level. Empirically, there can be no doubt about the fact that the predicate in (28a) is i-level: if it were s-level, we should expect an episodic interpretation roughly paraphrasable as 'some hurricanes are arising in this part of the Pacific'. This is not, however, an admissible reading of (28a), at least in English.

18 In Carlson's model, the nomic force of generic sentences is a function of the intensional interpretation of the subject-predicate structures that constitute the syntactic input to genericity, whereby the predicate expresses a property (that is, a function from possible worlds to sets) and the subject expresses a set of properties.

19 The operation of existential closure is actually not limited to nuclear scopes of quantificational structures in Kamp/Heim's original framework, but extends in fact to a more general sort of existential closure affecting texts. The original view is in many ways problematic, see Kratzer (1995) for an interesting discussion of this issue.

20 As the reader will remember, the terminology we have adopted for expository purposes is in fact partially misleading: for Carlson, all BPs are kind-referring, and the existential quantification on stages associated with certain BPs depends on the formal definition of the predicate with which the BP combines (it is this predicate which is formally characterized as containing an existential quantifier on stages).

21 For a radical criticism of the Mapping Hypothesis on empirical and conceptual grounds, based on the distribution and interpretation of postverbal subjects in languages such as Italian, see Longobardi (2000a).

22 The reader is referred to Kratzer (1995) for a detailed presentation of the empirical arguments in favor of the hypothesis that only s-level predicates are endowed with either a Davidsonian event argument, or a distinct spatio-temporal argument, arguably responsible for the spatio-temporal proximity to the speaker involved by the reading associated to sentences such as (38a) (*there are firemen available around here*, cf. Higginbotham and Ramchand 1996) and for the awkwardness of locative modification with i-level predicates (cf. the contrast between *??John is always a linguist in his car* and *John is always sick in France* especially discussed in Carlson 1982; Dobrovie-Sorin and Laca 1996; and Chierchia 1995b). One of the most intriguing arguments presented in Kratzer (1995) concerns the contrast between (i) and (ii), arguably derivable from the hypothesis that the implicit Q-adverb has a variable to quantify over (that is, the event variable) in (ii) but not in (i):

(i) *When Mary knows French, she knows it well.

(ii) When Mary speaks French, she speaks it well.

23 Chierchia argues that his analysis is neutral with respect to the choice among the most influential approaches to BPs, that is, the view that BPs are names for kinds and the view that BPs are indefinites translated into propositional functions of the form *Px* at the interpretive interface (Chierchia 1995b: 192). In fact, Chierchia emphasizes that Carlson's arguments in favor of a non-quantificational analysis of BPs cannot be conveniently addressed within the Discourse Representation Theory (DRT) approach. The question, however, is whether this is sufficient to really differentiate Chierchia's approach from the view that BPs may be indefinites. Chierchia acknowledges that sentences such as *Dogs are usually easy to train* can be naturally assigned the interpretation *Most dogs are easy to train*, involving the analysis of BPs as indefinites. However, he proposes that the status of variables attributed to BPs can be derived from the

application of a type-shifting operation to BPs as names of kinds, on strict parallelism with the type-shifting operations generally applied to indefinites in the framework of Dynamic Intensional Logic, which map generalized quantifiers into propositional functions. The availability of these type-shifting operations raises important issues concerning possible constraints on their application and the derivation, within this enlarged framework, of the properties of BPs reviewed by Carlson and discussed in section 3.

24 Technically, however, matters are less straightforward. Chierchia acknowledges that the explicative power of his proposal crucially depends on the possibility of ruling out movement of *Gen* to a higher position after *Gen* has licensed the polarity feature encoded on the predicate. Chierchia interprets this prohibition as a general fact about polarity licensing items. He claims that sentences like *Every student didn't come to the party* are acceptable with scope of the negation over the subject (a fact on which many speakers do not agree). On the contrary, he observes, negation cannot license a polarity word in subject position (**Anyone didn't come*), which suggests that the trace of the licenser is generally too weak to license polarity features. Even if we accept this analysis, some problems remain. Namely, notice that the local licensing requirement is also operative with those generic predicates for which it holds that the polarity feature is aspectually encoded. In this case, however, subjects *can* be interpreted existentially, as shown by (40) and the corresponding LF-representation in (41). Chierchia seems to suggest that the possibility that *Gen* be scoped out at LF depends on the fact that the polarity feature encoded in the aspectual projection is displaced to a higher position as a consequence of verb movement (the verb moves higher up combining with tense and aspectual morphology). One might assume, for instance, that once the polarity feature finds itself in Agr, *Gen* can simply be inserted as adjoined to AgrP, still satisfying the local licensing requirement. However, notice that the same reasoning might apply to 'inherently generic' predicates: at least in some languages, the verb moves higher up and the possibility arises for the licensing requirement to be satisfied in a syntactic configuration which has the subject BP in the scope of *Gen*, predicting the availability of the existential interpretation in cases such as (42), contrary to the facts. The conclusion is that Chierchia's hypothesis gives rise to non-trivial syntactic issues as for its precise technical implementation.

25 If singular indefinites are interpreted as inherent free variables, as in DRT, the issue boils down to consideration of how type-shifting can apply to yield a free variable in contexts where an inherent free variable is apparently excluded.

26 Notice that this problem does not arise within Carlson's original framework, according to which the intensional/nomic interpretations of generic sentences depends on the intensional semantics associated with subject-predicate structures. For a detailed defense of the advantages of a (neo-)Carlsonian analysis that explicitly links genericity to predication, see Delfitto (2002).

27 For a philosophical discussion on proper names as rigid designators, the canonical reading is Kripke (1980).

28 See Longobardi (1996) for technical and conceptual refinements of this analysis, related to the fact that the most recent trends in theoretical syntax admit only *one* interface level at which interpretation applies (cf. Chomsky 1995c), to the effect that earliness principles lose their conceptual foundation. For a different (though conceptually related) analysis, see Delfitto (2002). For a radically different view of the comparative difference between English and Italian BPs in terms of semantic parameters regulating type-shifting, see Chierchia (1998).

29 It is essential to Longobardi's analysis that *predicative* expressions referring to kinds and providing the domain of quantification of variable-taking operators be in N in surface structure. The assumption is that for an expression to be interpreted as *kind-referring*, this expression must be in the N-position at some level of syntactic representation. More generally, one could say that the D-position encodes reference/quantification and that the N-position encodes *predication*, in the sense that it hosts *predicative*, i.e., set-referring, elements.

30 The view that certain instances of the definite article are actually interpreted as expletives is apparently confirmed by the behavior of some Romance and Germanic varieties in which the form of the article used with proper nouns is different with respect to the form used in all other contexts (including the generic ones). These varieties include at least Catalan and the Frisian dialect studied in Ebert (1971; cf. Longobardi 1994). The presence of expletive determiners in the lexicon of Romance languages has also been advocated, on different empirical grounds (that is, the analysis of constructions of inalienable possession), by Vergnaud and Zubizarreta (1992).

31 For a recent overview of the syntax of noun phrases, see especially Longobardi (2000b).

32 It is important to emphasize that Longobardi's approach to existential BPs in terms of a lexical/proper government requirement on the empty D which is assumed to head these BPs provides a general alternative to the approaches inspired to Diesing's Mapping Hypothesis, according to which BPs are uniformly interpreted as free variables bound either by an existential or by a generic operator, depending on the syntactic position of the BP at the relevant level of syntactic representation.

33 As already discussed in section 4, the role of aspectual morphology in encoding a habitual or episodic reading of verbal predicates is explicitly acknowledged within the approach to genericity developed in Chierchia (1995b). In this way, the systematic ambiguity of event predicates such as *extinguish* between an s-level and an i-level interpretation receives a morphosyntactic explanation instead of being made dependent on the presence of two homophonous lexical items (as in Carlson's original proposal) or on the presence of an implicit operator *Gen* mapping s-level predicates into i-level ones.

34 Delfitto and Schroten (1991) argue that the D-position cannot be identified as a variable-taking operator by means of abstract Num(ber)-to-D movement in languages such as Italian and Spanish. The reason is that covert head-movement of the number affix to D gives rise to a Minimality violation in these languages (contrary to what happens in English). This idea is technically implemented in the following way. The N + Num complex is analyzed in terms of an X^{-1} affix (Num) that morphologically selects the incorporee (that is, the noun). The incorporee can be an X^0-level category (as in English, where stems qualify as independent words) or an X^{-1}-level category (as in Italian and Spanish, where nouns arguably qualify as bound morphemes). As a consequence, the noun counts as a potential antecedent for the number affix in Italian and Spanish (blocking excorporation of Num to the D-position), but not in English, given the categorial asymmetry between Num and N (excorporation of Num will therefore be possible, explaining why the existential reading is legitimate with subject BPs; see however section 6 for the constraints on the existential reading of subject BPs in English). For a detailed discussion of the issues involved, see Delfitto and Schroten (1991).

35 A problem which clearly deserves further investigation is the set of syntactic conditions which interacts with the possibility of the existential reading of subject BPs in

languages such as Italian and Spanish. As for (adjectival) modification, Longobardi (1994) suggests that the presence of a modifier seems to suffice in order to license an empty D as an existential operator (presumably under some form of spec–head agreement which induces the required feature in D). However, the real issue is the mysterious nature of the features involved, especially under the view that licensing requires recovering the semantic content of the empty position as an operator of the form ∃x (cf. Delfitto 1998 for detailed discussion). For a radically different approach to the existential interpretation of modified determinerless nouns in Romance, based on the insights offered by Kayne's theory of antisymmetry, see Delfitto (2002: ch. 3, section 2.2). It is worth emphasizing that modification seems able to rescue the existential interpretation of BPs governed by a non-eventive predicate (cf. the ungrammatical (67) in the main text), as shown by the acceptability of (i) below:

(i) Mario odia cani piccolissimi.
'Mario hates some very small dogs.'

36 All these examples concern modified BPs. According to Chierchia, this is a consequence of a formal licensing requirement on empty Ds that does not hold for English: bare nouns are excluded in Italian on purely formal syntactic grounds, independently of issues of interpretation. In this way, Chierchia seems to enrich his semantic framework with some of the results of the most recent syntactic investigations, according to which noun phrases (crucially including BPs) are DPs. However, it is fair to say that Chierchia's style of explanation is essentially Montagovian, in that syntactic choices (BPs as NPs or DPs, existence of a formal licensing requirement on empty Ds) are not independently motivated but rather made totally parasitic on the requirements of semantic analysis, and in particular on the model of semantic parameterization proposed by Chierchia. For a critical discussion of these and related matters, see Delfitto (2002: ch. 3, section 3).

37 As a confirmation of this line of analysis, notice that kind-reference is completely excluded in Italian with kind-level predicates such as *to be extinct* (contrary to what happens in English), as shown by (i) below:

(i) *Da queste parti, ragazze in minigonna sono estinte.
'In this area, girls in miniskirts are extinct.'

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9 Binding Theory: Terms and Concepts

ERIC REULAND

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1 Introduction

Natural language allows different expressions to receive identical values in some actual or virtual world. To take a venerable example, in the world as we know it, English *morning star* and *evening star* both have the planet Venus as their value. That is, both *refer* to Venus. Such expressions are *coreferential*. Coreference may hold on the basis of an empirical fact, as in the Venus case, but also speakers' intentions may suffice to establish coreference. A pronominal such as *he* can be used to refer to any object that is linguistically classified as masculine and singular, as in *John's mother thought he was guilty*. Here, *he* may refer to John but also to some other masculine individual.

Coreference is not the only way in which the interpretation of two elements can be related. *No one* in *no one believes he is guilty* does not refer to an individual, hence *a fortiori*, *he* cannot refer to that individual. Under the most salient reading *he* does, nevertheless, depend on *no one* for its interpretation. In this case the dependency is linguistically encoded, and is called *binding*.

The difference between binding and coreference can be further illustrated by the contrasts between the following mini-texts (as discussed in Heim 1982). Although coreference is possible across sentences, as in (1a), where *John* and *he*

can be independently used to refer to the same individual, *everyone* and *no one* in (1b) are not referential; hence, an interpretive dependency between *he* and these expressions cannot be established through coreference. Binding, the other option, is not available cross-sententially. Hence the sequel in (1b) is not felicitous. That there is nothing wrong with *he* being *bound* by a quantificational expression is shown by (2):

(1) a. *John* has a gun. Will *he* shoot?
b. *Everyone*/*No one* has a gun. *Will *he* shoot?

(2) a. *John* was convinced that *he* would be welcome.
b. *Everyone*/*No one* was convinced that *he* would be welcome.

Binding is thus an interpretive dependency that is linguistically encoded by means available within sentence grammar. Not only is it the case that some elements can be bound, other elements must be bound. As any traditional grammar of Latin notes, certain elements (*se*, *sibi*, etc.) must have an antecedent. Similar facts are duly observed in traditional grammars of Dutch, English, etc.

Traditional grammars, generally, do not devote much space to this type of fact. There is usually just a brief paragraph about reflexives and reciprocals, and that's it. A typical statement is that a reflexive pronominal is used in the object position (to avoid 'repetition of the subject') when the verb expresses a reflexive relation (e.g. Jespersen 1933/1983; Gleason 1965).

On the other hand, after the emergence of Generative Grammar, with its focus on explicit description and explanation, binding increasingly attracted attention. Starting out with seminal works such as Lees and Klima (1963), Postal (1969, 1971), Ross (1970), Helke (1971), to mention a few, it soon developed into an important grammatical field.

Providing an overview of the development of binding theory and the various issues it gives rise to is surely beyond the scope of this contribution. Doing so would require more than a book. Recent works with such an ambitious aim include Safir (2004a, 2004b) and Büring (2005). Huang (2000) presents an overview attempting to cover a range of variation in anaphoric systems. An earlier endeavor within the framework of Lexical Functional Grammar is Dalrymple (1993). Binding also plays a significant role in the framework of Head-driven Phrase Structure Grammar (Pollard and Sag 1992, 1994).

Here I will limit myself to a number of issues that arose over the last decades in works following up on the approach to binding set out in Chomsky (1981) and subsequent work. My main goal is to provide the background necessary to assess the various discussions of binding phenomena in other chapters in these volumes. Therefore this will not be a 'comprehensive' overview and many issues in binding that are not discussed elsewhere in this *Companion* will not be dealt with here.

2 Binding

Over the last decades many ideas have been developed about the linguistic mechanisms involved in encoding of binding. A recurrent idea is that at least at some level binding reflects a logical operator–variable relation. For instance, Reinhart (2000a) presents the following definition of binding:

(3) *Logical syntax binding: Binding is the procedure of closing a property*
A-binding
α A-binds β iff α is the sister of a λ-predicate whose operator binds β.

The way this definition captures binding in contrast with coreference is illustrated by the two readings of (4a), given in (4b) and (4c):

(4) a. Only Lucie respects her husband.
b. Only Lucie (λx (x respects y's husband)) (y could be valued as any female individual)
c. Only Lucie (λx (x respects x's husband))

In (4b) the property that is ascribed only to Lucie is that of respecting a certain individual (Mr X), who happens to be her or somebody else's husband. All other women do not respect this person, but they may well respect their own husbands. In (4c) the property ascribed only to Lucie is that of respecting her own husband. By implication, all other women do not respect their own husbands.

In order for binding to obtain at all, it is necessary that the dependent element can be translated as a variable in logical syntax. But, as is well known, binding is subject to further constraints, which cannot be explained on the basis of its logical properties alone. These constraints will be discussed below.

3 The canonical binding theory of Chomsky (1981)

In Chomsky's binding theory (1981), the theory of A(rgument)-binding describes the interpretive dependencies between phrases in argument positions, or A-positions, briefly arguments. A-positions are taken to be the positions in which a lexical item assigns a semantic role (*agent*, *patient*, *beneficiary*, etc.) to an expression, or in which the latter's Case is determined (nominative, accusative, etc.).[1] Arguments can be dislocated ending up in a non-A-position (by topicalization, question formation, etc.), as in (5). Here, *t* indicates their canonical position.

(5) a. *Him*, I never believed the baron to have pulled out *t*.
b. *Which man* did he think *t* fell off the bridge?
c. *Himself*, the driver pulled *t* out immediately.

The rules of A-binding apply to dislocated elements in their canonical position (for complex phrases this is an approximation; for current purposes any complications can be disregarded).

Arguments are classified as R-expressions, pronominals, or anaphors. If the head of a phrase has lexical features (or certain grammatical features, such as *wh*) this phrase is an R-expression. Thus *the merry linguist*, *the idiot*, *no one*, *everyone*, *which man*, etc., are all R-expressions. R-expressions cannot be bound.[2] *Pronominals* (*I*, *you*, *he*, etc.) are elements that are only specified for person, gender, and number (the phi-features) and grammatical category. They may, but need not, depend on another argument for their interpretation and they can be accompanied by a pointing gesture, that is, used deictically. Anaphors are referentially defective nominal elements. They cannot be used deictically. In the literature the term reflexive is often used as a synonym for anaphor. One also finds pronoun as a cover term for anaphors and pronominals.[3]

Anaphors can be classified in two general types: simplex anaphors and complex anaphors. In many respects, reciprocals, such as *each other*, behave as anaphors as well, although their semantics is rather more complex (see, for instance, Heim, Lasnik, and May 1991).[4] Also elements like *(his/her) own*, *(the) other*, *(the) same* are inherently anaphoric, see Safir (1996b). Their binding properties differ from canonical anaphors, however, and I will not discuss them here.

Lexically, simplex anaphors are like pronominals; they are different in that they are underspecified for certain features. Quite generally a specification for number is lacking, as is a specification for gender; a specification for person may be lacking as well (as, for instance, (Mandarin) Chinese *ziji*, Japanese *zibun*, or Slavic (Russian *seb'a*, Serbo-Croation *sebe*, etc.)). English lacks simplex anaphors, but cross-linguistically they occur frequently. Some well-studied examples are Dutch *zich*, Icelandic *sig*, Chinese *ziji*, and Japanese *zibun*. In many contexts their interpretation just corresponds to English *himself*.

Complex anaphors generally consist of a pronominal or a simplex anaphor and some other element. These other elements may be of various sorts (doubled pronominal forms, intensifiers, body-parts, etc.); see section 6.

If *a* binds *b*, it is said that *a* is the antecedent of *b*. Since potential binding relations cannot be read off from the content of the expressions involved they must be annotated in the linguistic representations. To this end, Chomsky (1981) and much of the subsequent literature uses a system of indexing. Each argument is assigned a certain integer as its index. If two arguments are assigned the same integer they are co-indexed. In practice one uses subscripts such as *i*, *j*, *k*, etc. as variable indices. If *a* and *b* are co-indexed this is indicated by an identical subscript. Thus, in an expression ($a_i \ldots b_i$) *a* and *b* are co-indexed. Since indices are nothing more than linguistic markers in the structure it is still possible for two expressions to be assigned the same object in some outside world if they are not co-indexed (*morning star* and *evening star* are not necessarily co-indexed). Binding without co-indexing is not possible, though. In order for *a* and *b* to be co-indexed (6) must be satisfied:

(6) *a* and *b* are non-distinct in features for person, number, and gender.

Non-distinctness, rather than identity of features, is required for co-indexing, since in many languages one anaphoric element is compatible with masculine or feminine, singular or plural antecedents. This property is illustrated by, for instance, Dutch *zich* and Icelandic *sig*. On the other hand, both are specified as 3rd person, and cannot have 1st or 2nd person antecedents. In other languages (for instance Slavic languages like Russian) a person specification is lacking as well, and we find one anaphoric form for all persons.

Whereas the use of indices as descriptive devices is generally accepted, their precise status in the grammar has been the subject of considerable debate.[5] It has become an important theoretical issue whether they can be eliminated from the grammar, and their effects reduced to more basic properties of the grammatical system.[6]

In order for binding to be possible the binder must c-command the element to be bound. The standard definition is given in (7).

(7) *a* c-commands *b* if and only if *a* does not contain *b* and the first branching node dominating *a* also dominates *b*.

More schematically, one can say that *a* c-commands *b* iff *a* is a sister to γ containing *b*:

(8) [a [$_{\gamma}$ . . . b . . .]]

Binding by a non-c-commanding antecedent is impossible as illustrated by the ungrammaticality of **John$_i$'s mother loves himself$_i$*. Putting both conditions together yields (9) as the standard condition on binding:

(9) *a* binds *b* iff *a* and *b* are co-indexed and *a* c-commands *b.*

In addition, anaphors and pronominals impose specific locality conditions on their binders. A binder of an anaphor may not be 'too far away', the binding of a pronominal may not be 'too nearby'. One of the recurrent themes in binding theory is how precisely these locality conditions are to be captured. (10) presents the binding conditions proposed in Chomsky (1981):

(10) Binding Conditions:
(A) An anaphor is bound in its governing category.
(B) A pronominal is free in its governing category.
(C) An R-expression is free.

This formulation of the binding conditions expresses that bound pronominals and anaphors are in complementary distribution. Although, as discussed below, binding theory has subsequently undergone considerable revision, the conditions

as formulated here still constitute a fairly good first approximation. These definitions express locality by the notion of a 'governing category', as in (11). In the case of anaphors, the basic intuition is that they do not allow a binder that is beyond the nearest subject.

(11) γ is a governing category for α if and only if γ is the minimal category containing α, a governor of α, and a SUBJECT *(accessible to α).*

A governor of α, in this framework is an element assigning a semantic role or Case to α. (12) illustrates the paradigm case that is captured by (11). Binding is indicated by italics; $[_{GC\text{-}\alpha}$ stands for the *governing category of α.*

(12) a. *John* expected $[_{GC\text{-himself/him}}$ the queen to invite *him/*himself* for a drink]
b. $[_{GC\text{-himself/him}}$ *John* expected $[_{IP}$ *himself/*him* to be able to invite the queen]]

Ignoring, for the moment, the italicized condition, (12) exemplifies what is knows as the Specified Subject Condition (SSC); the governing category of α is the domain of the subject nearest to α. For *him/himself* this subject is *the queen* in (12a) and *John* in (12b). Unlike what is seen in infinitives, a finite clause comes out as the governing category for its subject. One way of capturing this is to assume that the finite inflection, which is a carrier of nominal features (agreeing for person, number) also counts as a subject for the computation of the governing category. The notion SUBJECT (in capitals) thus generalizes over the DP in canonical subject position and the Agreement on the tensed verb/auxiliary.

Under certain conditions, an anaphor can be appropriately bound by an antecedent that is outside the finite clause containing the anaphor. This is illustrated in (13):

(13) *The boys* were afraid [that [pictures of *themselves*] would be on sale]

This 'domain extension' is captured by the italicized condition in (11). In order to count for the computation of the governing category of an anaphor, a SUBJECT must be accessible to the anaphor. Accessibility is defined in (14):

(14) α is accessible to β if and only if β is in the c-command domain of α, and assignment to β of the index of α would not violate the i-within-i condition.
i-within-i condition
$[_{\gamma} \ldots \delta \ldots]$, where γ and δ bear the same index.

In the case of (13), co-indexing *[pictures of themselves]* and *would* by 'subject-verb' agreement (irrespective of the fact that the auxiliary *would* does not carry overt agreement in English), and subsequently co-indexing *themselves* and *would* by the 'test indexing' of (14), yields the indexing configuration of (15):

(15) *The boys* were afraid [that $[_{\gamma}$ pictures of *themselves*$_i]_i$ would$_i$ be on sale].

This configuration violates (14), hence is marked illicit, and therefore *would* does not count as an accessible SUBJECT for *himself*. Hence, γ is not a governing category for *himself*, which may therefore look for an antecedent in the next higher clause. As will be discussed in section 9, the configuration in (15) is not the only case where an anaphor may be unexpectedly bound by a more distant antecedent. This is one of the reasons for exploring alternative ways to account for this type of fact.

4 Chomsky (1986b)

As noted by Huang (1982a) the canonical binding theory as summarized above does not capture the fact that in the possessor position of a DP bound pronominals and anaphors are not in complementary distribution, as illustrated in (16):

(16) a. *The girls* admired [$_{\gamma}$ *their* friends]
b. *The girls* admired [$_{\gamma}$ *each other*'s friends]

On the basis of this, Chomsky (1986b) following insights from Huang (1982a), develops an alternative for computing the local domain. The core domain is that of a Complete Functional Complex (CFC), a domain in which all grammatical functions of a given predicate are realized. It is, then, proposed that the Binding domain of some element α is the smallest CFC containing α for which there is an indexing I which is BT compatible, where BT-compatibility reflects the following assumptions: (i) anaphors must be bound; (ii) pronominals need not be bound; (iii) that any indexing to be taken into consideration must obey the i-within-i condition; (iv) nominal heads may carry indices, but are not possible antecedents. So, for an anaphor the binding domain is the smallest CFC in which it can be bound under some indexing I, for a pronominal the binding domain is the smallest CFC in which it can be free under I. So, for *their* in (16a) it is sufficient if it is free in γ, which it is. For *each other* in (16b) it is sufficient if it is bound in the next higher binding domain, which it is too.

In order for an anaphor in the subject position of a finite clause to be correctly ruled out Chomsky adopts a proposal by Lebeaux (1983), who assumes that anaphors undergo abstract movement towards their antecedents at LF; anaphor-movement from the subject position of a finite clause leaves a trace that does not meet general conditions on traces.[7]

5 Predicates and reflexivity

Languages often have a richer anaphora system than modern English. Many languages have a three-way or even four-way distinction between pronominals, simplex anaphors (henceforth SE-anaphors), and complex anaphors (with a possible subdivision), instead of the two-way distinction found in English. Furthermore,

certain languages admit bound pronominals in environments where the canonical binding theory only allows anaphors.

Much of the complexity of binding systems results from the interaction between binding and properties of predicates. Consider a situation where binder and bindee are both arguments of the same predicate. This is represented in (7), where *Pronoun* is used as a cover term for anaphors and pronominals:

(17) DP_i P(redicate) $Pro(noun)_i$

Such a predicate is defined to be reflexive, as in (8):

(18) A predicate is reflexive iff two of its arguments (e.g. subject and object) are co-indexed. (Reinhart and Reuland 1993)

On the basis of the surface form the following two cases can be distinguished: (i) P allows subject and object to have different values; (ii) P does not allow this. In the latter case P is intrinsically reflexive. In English this is exemplified by predicates such as *behave*, and in Dutch by its counterpart *gedragen*: *John behaved X* is ill-formed for any expression but *himself*. The only options are *John behaved* and *John$_i$ behaved himself$_i$*. In the former, *behave* clearly denotes a property. Assuming standard translation procedures from syntactic structure to 'logical syntax' (19a) yields the logical syntax representation in (19b):[8]

(19) a. John behaved
b. John (λx (x behaved))

On the other hand, the form *John$_i$ behaved himself$_i$* is technically reflexive. Both *John* and *himself* are syntactic arguments of *behave*, and they are co-indexed. Given standard translation procedures (in which a bound anaphor translates as a bound variable) (20a) will be translated as a logical syntax representation of the form (20b):

(20) a. $John_i$ behaved $himself_i$.
b. John (λx (x behaved x)).

However, semantically it makes no sense to interpret the sentence (20a) as denoting a reflexive relation. Despite the differences in surface syntactic form and in logical syntax, semantically (19a) and (20a) are equivalent, simply because *behave* denotes a property, not a relation. Consequently, either some process must allow (20b) to reduce to (19b), or else some process must prevent (20a) being translated as (20b), and instead translate it as (19b).

Other verbs, such as *wash* allow a transitive use, but also allow object omission. Thus, one can have the transitive *John washed the kids*, a reflexive *John washed himself*, and also *washed* without an object as in *John washed* (note that this use of *washed* is infelicitous if inserted in *John washed the kids and . . .*). This raises the

question of how the two types of *wash* are related. (That it has a dual entry shows up independently in the fact that in nominalizations with no marking whatsoever, it allows a reflexive interpretation as in *wassen in gezond* 'washing (oneself) is healthy'. Non-reflexive predicates do not allow such a reflexive interpretation under nominalization.)

Reinhart (2002) develops a general theory about relations between verbal concepts and about the way their properties are formally coded to be legible to the computational system. Her approach to lexical alternations captures by a limited set of operations the different ways in which one verbal concept can be realized. One of these is a lexical operation that reduces the internal role.[9] So, the predicate resulting from applying this reduction operation to the transitive predicate *wash* is an intransitive variant of *wash*, denoting a property.

In Dutch, verbs like *gedragen* 'behave', *schamen*, 'be ashamed', etc. do not allow the object to be absent. Instead they require the simplex anaphor *zich*. Verbs such as *wassen* 'wash' do not require the simplex anaphor, but allow it. Reinhart (2002) argues that Dutch, like English, allows internal role reduction, but, unlike what happens in English, a reflex of transitivity is left in the form of a structural Case residue. This Case residue is also there in the other verbs discussed, and what the simplex anaphor *zich* does is check this Case (as would be independently required by current theories of Case as in Chomsky 1995c).

In English only a limited number of verbs (primarily verbs of 'grooming') allow object omission. In Dutch such verbs all have *zich*, but the class of Dutch verbs allowing *zich* is considerably larger. It includes transitive verbs like *verdedigen* 'defend', *snijden* 'cut', verwonden 'hurt', *ontwapenen* 'disarm', etc. Unlike the verbs of the *behave* class these verbs also allow a complex anaphor. Vikner (1984) describes a relatively small closed class of verbs with mixed reflexivization properties in Danish. In Dutch, however, this class of verbs appears to be open; Barnes (1986) describes a similar situation for Faroese. Yet, there is an important class of verbs that do not allow *zich*, but instead require the complex anaphor *zichzelf* = *himself*, as in *George*$_i$ *bewondert zichzelf*$_i$/**zich*$_i$ 'George admires himself'. This class of verbs includes: (i) transitive verbs such as *haten* 'hate', *bewonderen* 'admire', *kennen* 'know', *bezitten* 'possess'; (ii) all verbs with a subcategorized PP object, such as *vertrouwen op* 'rely on', *afhankelijk zijn van* 'depend on'.

In some of its uses Dutch *zich*, like its cognates in other languages, looks like an expletive, as the counterpart of object omission in English. Yet, *zich* cannot be an expletive intrinsically, since in other environments it behaves as a real argument anaphor. For instance, it alternates with the pronominal *hem* in *Jan*$_i$ *legde het boek naast zich*$_i$/*hem*$_i$ 'John put the book next to him' and it occurs as a small clause subject in *Jan*$_i$ *voelde* [*zich*$_i$ *wegglijden*] 'John felt [himself slide away]'. Given that *zich* is a possible argument it is surprising that it cannot occur in the object position of predicates of the non-mixed type, such as *bewonderen* 'admire'.

This leads to the following conclusions: (i) The lexical operation of internal role reduction is restricted in its scope; (ii) Where role reduction does not apply some independent principle must rule out the simplex anaphor. That is, apparently, role reduction cannot apply to *bewonderen* 'admire', but, if it does not, why cannot

Jan bewonderde zich nevertheless be interpreted as *John (λx (x admired x))*? Although the complex anaphor has a somewhat wider distribution than just the environments where it is required (it may also be used for contrast, etc.), the general pattern comes down to this: A complex anaphor is required in cases where binding creates a reflexive predicate by 'brute force'. It is not required when the predicate is 'prepared' for reflexivity, either as a primitive property, or as a result of role-reduction. If the anaphor and its antecedent are not co-arguments, as in *Jan$_i$ voelde zich$_i$ wegglijden* 'John felt himself slide away', where the anaphor is a small clause subject, a complex anaphor is not required either. In Dutch sentences with locative of directional PPs, the simplex anaphor is allowed as well. Here, a pronominal is also possible (*Jan$_i$ zag een slang achter zich$_i$/ hem$_i$* 'John saw a snake behind him'). *Zichzelf* is infelicitous here. For further discussion, see section 6.[10]

6 Reflexivity and licensers

A recurrent cross-linguistic pattern is that reflexivity of predicates must be licensed. Reflexivity of a predicate can be licensed by its lexical properties, as we saw in the previous section, or if one of its arguments is a SELF-anaphor (i.e., an element such as English X-*self*, or Dutch X-*zelf*, where X may vary over (a subset of) pronominals or SE-anaphors). This is represented in (21):

(21) A reflexive predicate is reflexive-marked.

The requirement that reflexivity must be licensed is pervasive across languages. Faltz (1977) and Schladt (2000) present extensive overviews. Schladt, for instance, includes in his overview 147 languages from many different linguistic families, which all require special marking of reflexive constructions instead of a locally bound pronoun (simplex anaphor or pronominal). The means languages employ to license reflexive constructions are varied, but the need to do so is rather general. Faltz's typology distinguishes between 'head-reflexives' and 'adjunct reflexives'.[11] Schladt presents a wider variety of possibilities. Languages may use SELF-type elements as in various branches of Germanic, but also forms duplicating the bound element, clitics, a range of verbal affixes, and prepositional constructions are used in addition to clear instances of body-parts or focus markers. Not all licensers are part of the anaphoric element, or even nominal. In some languages even a different construction is used, such as embedding the bound element in a PP.

Whether the element used to license reflexivity is infelicitous or ungrammatical if it does not reflexivize a predicate may vary. In English, certain environments exempt a SELF-anaphor from this requirement. (22a), where the SELF-anaphor is not a syntactic argument of the predicate, is felicitous with *himself* bound by *Max*, whereas (22b), where *himself* is a syntactic argument of *invite* is ill-formed (see section 9 for further discussion):

(22) a. *Max* boasted that the queen invited Mary and *himself* for a drink.
b. **Max* boasted that the queen invited *himself* for a drink.

In some other languages, for instance Malayalam, the licensing anaphor does not need to be locally bound at all (Jayaseelan 1997). This is illustrated by (23):

(23) a. raaman$_i$ t̲an-ne$_i$ *(t̲anne) sneehikunnu
Raman SE-acc self loves
'Raman loves himself.'
b. raaman$_i$ wicaariccu [penkuttikal t̲an-ne$_i$ t̲anne sneehikkunnu ennə]
Raman thought [girls SE-acc self love Comp]
'Raman thought that the girls loved him(self).'

In (23a) local binding requires the presence of the full *t̲an-ne$_i$ tanne*. But in (23b) the anaphor *t̲an-ne t̲anne* in the downstairs clause is bound by the upstairs *raaman*, indicating that it is not subject to a local binding requirement.

As discussed in chapter 38 in this volume and section 9 below, certain exempt anaphors receive a logophoric interpretation. The core property of logophoricity is that the logophoric element is felicitous only in reportive contexts transmitting the words or thoughts of an individual or individuals other than the speaker or narrator and designates the individual or individuals whose words or thoughts are transmitted in the reported context in which the logophoric pronoun occurs (Clements 1975: 171–172). Also exempt anaphors in English may show such an effect, as illustrated in (37) below.

7 Types of anaphoric expressions

As discussed in section 3, the canonical binding theory distinguishes between anaphors, pronominals, and R-expressions. For present purposes no further discussion of R-expressions is needed.

We thus have an anaphoric system with essentially a two-way distinction between anaphors and pronominals. Pronominals have the capacity for independent reference (abbreviated as [+R]), anaphors lack this capacity (abbreviated as [–R]). The typology of anaphoric expressions in Chomsky (1981) and subsequent work also includes the element PRO, as the understood subject of nonfinite clauses (*Gerhard asked George [PRO to leave]*). In the canonical binding theory PRO was analyzed as <+pronominal, +anaphoric>. The binding conditions as formulated in (10) entail that bound pronominals and anaphors are in complementary distribution. Hence, PRO's distribution is limited to positions where it is exempted from the binding requirements.[12] Although the details of the original analysis do not carry over to current theories (as in Chomsky 1995c and related work), one insight has turned out to be important: whether or not an element requires a binder is not only determined by its intrinsic properties. It may also depend on how these properties interact with the syntactic environment. This is

relevant for an understanding of the phenomenon of exemption in general (see section 9 for further discussion of exemption and its relation to logophoricity).

If we make the proviso that in certain environments SELF-anaphors in English are exempt from a binding requirement (as illustrated in (22)), this two-way system essentially captures the situation in English. Other languages have a three-way or a four-way distinction however.

Dutch, for instance, distinguishes between pronominals (1st and 2nd person singular and plural; 3rd person singular masculine, feminine, and neuter; 3rd person plural common gender). Furthermore, pronominals occur in a weak or a strong form. The pronominal paradigm has rudimentary Case distinctions. Furthermore, there is a simplex anaphor *zich*, which only occurs in 3rd person (no singular/plural contrast). Here, and elsewhere we will use the term SE-anaphor as follows:

(24) A SE-anaphor is a non-clitic pronoun that lacks a specification for gender and number, and is therefore deficient in phi-features.[13]

In environments where *zich* would be used for 3rd person, 1st and 2nd person are realized by a canonical pronominal form (either the strong or the weak form in 1st person, the weak form in 2nd person). There is a complex anaphor *zichzelf* consisting of *zich* plus the morpheme *zelf*, which is a cognate of English *self*. *Zichzelf* is thus a SELF-anaphor in our terms. In 1st and 2nd person the SELF-anaphor is realized as the corresponding pronominal with *zelf*. The contexts in which SE-anaphors occur include the object position of predicates that are intrinsically reflexive, whereas SELF-anaphors occur with predicates that are not. This pattern is reflected in the following typology for anaphors and pronominals (see Reinhart and Reuland (1993)).

(25)

	SELF	SE	(Pro)nominal
Refl(exivizing function)	+	−	−
R(eferential independence)	−	−	+

It is to be expected that the properties of complex anaphors follow from the properties of their parts (Hellan 1988). Hence, an element of the form SE-SELF is expected to combine referential dependence with a reflexivizing function, as is the case. Contrary to what one would expect, in many contexts the combination pronominal-SELF in English or Frisian behaves identically, that is also as [+Refl, −R]. Anagnostopoulou and Everaert (1999) show that, in any case, the Modern Greek anaphor *o eafto tu* is [+Refl, +R]. Therefore these feature values are not incompatible. They show that *eafto* is a nominal head and argue that Modern Greek instantiates a more general pattern of inalienable possession anaphors.

Full pronominals also combine with *zelf* in Dutch. Koster (1985) argues that the resulting element is an anaphor that is not subject to a local binding requirement. In fact, its interpretation is arguably logophoric. For instance, the Dutch

counterparts of the English (37) discussed below show the very same contrast. Logophoric interpretation of *zich* and *zichzelf* is only marginal to impossible in Dutch. Logophoric interpretation of 1st and 2nd person SELF-anaphors is easily available, though, and subject to similar constraints as their English counterparts.[14] The facts that English SELF-anaphors just like 1st and 2nd person SELF-anaphors in Dutch, and Dutch 3rd person pronominal + SELF can be interpreted when they are in an exempt position, but *zichzelf* cannot, should follow from their differences in feature composition. Further exploring the insights of Hellan (1988) they do. In the standard case the properties of a complex element are determined by the properties of its components together. In the case of a Pronominal + SELF, it must be the SELF that in interaction with the environment contributes the –R-property. However, exemption implies that SELF is not the active component.[15] Hence, it cannot determine –R-status of the expression as a whole. As a consequence, in the relevant environments the properties of the other component, namely the pronoun, will determine whether the expression of the form <*pron SELF*> is +R or –R. *Zich* is phi-feature deficient, hence it cannot be anything else but –R, hence <*zich SELF*> is illicit if not bound. However if *pron* is not phi-feature deficient, nothing precludes its interpretation as +R if SELF cannot come into play. This is precisely the pattern found.

Scandinavian languages (Icelandic, and Norwegian with the other mainland Scandinavian languages) uncontroversially have a four-way system: Pronominals, SE-anaphors, SE-SELF, and Pronominal-SELF. Anaphor selection has a similar sensitivity to predicate structure as in Dutch, but complex anaphors come in two types: pronominal-SELF and SE-SELF; SE-SELF is required if the antecedent is a subject, pronominal-SELF if it is not. Moreover, these languages have a possessive anaphor, in addition to a possessive pronoun. The possessive anaphor must be selected if the antecedent is a subject. In Icelandic, the SE-anaphor allows a logophoric interpretation, notably in the domain of a subjunctive. Logophoric interpretation of the other forms has not been reported. See Hellan (1988), Thráinsson (1991), Sigurjónsdóttir (1993), Sigurjónsdóttir and Hyams (1992).

Frisian has a two-way system, but different from English. Its system is, in fact, rather like Dutch. Only, it lacks the SE-anaphor *zich*. Instead it has the pronominal *him* 'him', *har* 'her', *har(ren)* 'them' (given in their strong forms) where Dutch has *zich*. Frisian has local binding of pronominals in all persons (see Everaert 1986b, 1991). These elements are true pronouns. Consequently, a sentence like *Jan fielde him fuortglieden* 'John felt PRON slip away' is ambiguous between a reading in which John slips away and a reading in which someone else slips away, unlike its Dutch counterpart with *zich*. Reuland and Reinhart (1995) relate local binding of this class of pronominals in Frisian to an independent property of the Case system; these pronominals are underspecified for structural Case. Although, just like Dutch, Frisian pronominals have weak forms alongside strong forms, the weak/strong distinction is irrelevant to local binding. In other respects the Frisian anaphoric system is like Dutch. Where Dutch has *zichzelf*, Frisian has *himsels*, etc.

German (notably, the standard variant High German) superficially has a two-way system, distinguishing between pronominals and anaphors. The canonical 3rd person anaphor is a monomorphemic *sich*. It occurs regardless of the properties of the predicate. So, one has *er schämt sich* 'he is ashamed' alongside *er hasst sich* 'he hates himself'; the same holds true for all persons. The one indication of a potential structural difference is that the *sich* in *er hasst sich* can be topicalized and stressed as in *sich hasst er*, whereas the sich in *er schämt sich* cannot. In Dutch *zich* can never be topicalized, even when it is a true argument, as in **zich voelde hij t wegglijden* 'himself he felt slip away'. In such a case *zichzelf* must be used. If the possibility to bear stress is reflects differences in internal structure, the two types of *sich* could be argued to be structurally distinct. Although German allows the morpheme *selbst* to be attached to *sich* and pronominals, there is little evidence that it is more than an emphatic element (but see the discussion of datives in Reinhart and Reuland 1993; and Reuland and Reinhart 1995).

It follows from this typology that SELF-anaphors are local, unless they are exempt. For the binding properties of SE-anaphors, see section 8.

Extending this discussion to cover a substantial part of the languages of the world would lead beyond the confines of a quick overview. The literature contains substantial discussion of contrasts in Mandarin Chinese between a simplex anaphor *ziji* and a complex anaphor *ta ziji*, where the former is often classed as long-distance and the latter as local (see the literature cited in section 8). A contrast between a simplex anaphor *zibun* and a complex anaphor *zibun zisin* has been reported in Japanese. Whereas *zibun zisin*, like other complex anaphors based on *zibun* is local, the precise properties of *zibun* are much debated. It has been typed as an element much like a typical SE-anaphor (Aikawa 1993), but also as an element more like a Frisian type pronominal, which in some of its uses hides the more complex structure that has been claimed for German *sich* (Hara 2001). Matters tend to be obscured by the fact that its interpretation is much more sensitive to discourse factors that generally enter into logophoric interpretation than its counterparts in Germanic.

8 Long-distance anaphora

In general an anaphoric relation is defined as long-distance when the antecedent is outside the governing category of the anaphoric element as defined in (11), or, to put it informally, when the binding relation crosses a subject. Since in the case of pronominal binding this is nothing special, more specifically the term is used whenever an anaphor depends for its interpretation on an antecedent outside its governing category. Much of the discussion in the literature centers on the question of whether long-distance anaphora is restricted to certain anaphor types, and on the question of what motivates it. Another issue, discussed in section 9, is that not all anaphor-antecedent relations are of the same type. Structural binding relations must be distinguished from relations governed by a logophoric strategy. In this section we will summarize the structural binding part.

Bouchard (1984) argued that in order to be interpreted, an argument must be fully specified for phi-features. Many languages have anaphors that lack a full specification for phi-features. If so, it follows from this requirement that they must acquire a full specification in order to be interpreted. This type of element includes Dutch *zich*, Icelandic *sig*, Norwegian *seg*, (Mandarin) Chinese *ziji,* and Japanese *zibun*, etc. In line with a proposal by Lebeaux (1983), for such anaphors, binding is taken to require abstract movement to an element supplying them with phi-features. If the moved element is just a head, standard conditions on movement yield that subjects do not count as interveners. Hence, one would expect only those locality restrictions on their binding domains that follow from general properties of movement (see Faltz 1977; Pica 1987, 1991).

Following this line, it has been proposed that long-distance anaphora in Chinese is licensed by abstract movement of the anaphor *ziji* in Chinese to a source for phi-features (Battistella 1987; Cole et al. 1990). These authors assume that *ziji* is an X^0 constituent that undergoes head-movement to a suitable target. A c-commanding NP will not do, since it is a maximal projection. The only element that meets the requirements that it c-commands the anaphor, is in head position, and carries phi-features is AGR. The result is summarized in (26):

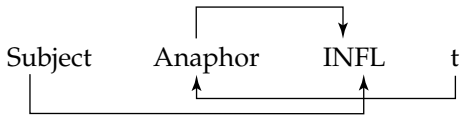
(26) SE-heads move to AGR at LF.

It is assumed that AGR is inside I, so the movement is to I. Since AGR is always co-indexed with the subject and SE-anaphors always associate with AGR, it follows that SE-anaphors, in their grammatical (non-logophoric) use are subject-oriented. It is assumed that movement of *ziji* is not restricted, since any higher subject is a possible antecedent, provided no blocking effect obtains.

The blocking effect in Chinese can be briefly characterized as follows: the path between *ziji* and its envisaged antecedent may not contain a possible antecedent with a different specification for person from the latter.

Huang and Tang (1991) retain the idea of LF-movement, but argue that *ziji* is syntactically *pro-ziji*. Movement of *ziji* is, then, in fact successive-cyclic A'-movement of an XP, adjoining it to IP, instead of X^0-movement. This movement, they argue is not subject to antecedent-government requirements. They assume that *ziji* picks up its phi-features immediately in the local domain. Once it has phi-features it may be interpreted as bound by any potential higher-up antecedent provided it has moved into the latter's domain. Thus, in each of the positions it occupies *ziji* may undergo local binding. The blocking effect reduces to a mismatch between phi-features initially acquired and the phi-features of an intervening potential binder. Once movement leads to a configuration in which there is a mismatch, as between 3rd person and 1st person, the derivation is blocked. Such blocking effects have not been reported for languages with a relatively strong verbal inflection.[16]

This relation between verbal inflection and blocking can, then, be understood on the basis of the following informal representation, with the relevant dependencies indicated regardless of details of order and hierarchical structure:

(27) 

As a widely adopted implementation runs, an INFL entirely without phi-features is susceptible to adopting features from the anaphor, which leads to a clash with the subject features if they are different. An INFL with phi-features stays firm and limits feature exchange to the subject as its canonical 'mate'. An LF-movement approach has also been argued for Japanese *zibun* (Katada 1991).

Across the Germanic languages the binding domain of SE-anaphors shows considerable variation. From the LF-movement perspective this requires an independent explanation. See chapter 40.

9 Binding vs. logophoricity

Many approaches to long-distance binding make the empirical assumption that the dependencies under consideration invariably reflect structural binding relations. One of the important results of the study of anaphora is the discovery of a systematic distinction between true structural binding, either local or long-distance, and the interpretation of anaphoric elements in exempt positions. Already in the seventies Ross (1970b), Cantrall (1974), and Kuno (1972b, 1975, see also Kuno 1987a) observed that 1st and 2nd person anaphors in English can occur without a linguistic antecedent, as illustrated in (28):

(28) Physicists like yourself are a godsend. (Ross 1970b)

In fact, violations of condition A are not limited to 1st and 2nd person anaphors. As noted by Pollard and Sag (1992), already Postal (1971) observed that picture nouns reflexives are not subject to the same constraints as ordinary reflexives. Bouchard (1984) concluded that a general distinction exists between true anaphors and exempt anaphors. In line with this, Zribi-Hertz (1989) discusses about 130 examples from actual texts of English anaphors not obeying the binding conditions, hence logophoric in our present sense, including cases with a 1st person anaphor like (29a) as well as cases with a 3rd person anaphor like (29b):

(29) a. She gave both Brenda and myself a dirty look.
b. It angered him that she . . . tried to attract a man like himself.

The earliest discussion pointing towards a systematic distinction between structural binding and logophoricity is by Clements (1975), elaborating on Hagège (1974) (see chapter 38), followed by Sells (1987). Extensive investigation of logophoricity versus structural binding has been conducted on Icelandic (based on

Thráinsson 1976a; and Maling 1984, 1986). Anderson (1986), Hellan (1991a), and Thráinsson (1991) found systematic differences in Icelandic between long-distance 'binding' into finite clauses (indicative or subjunctive) and long-distance binding into infinitival clauses indicating that only the latter falls under the structural binding theory. The other occurrences of long-distance anaphors are logophoric. As such, their distribution is much freer, and they are governed by discourse, rather than by purely structural considerations (see chapter 33 for further discussion). Some of the earlier work on anaphors in Italian also addresses issues that in retrospect typically involve binding versus logophoricity (Napoli 1979; Giorgi 1984; see Reuland 1990 for some discussion).

English shows a clear and systematic pattern in the distribution of bound versus exempt anaphors, which is illustrated by the contrasts in (30–34):

(30) a. Physicists like yourself are a godsend.
b. *A famous physicist has just looked for yourself.

(31) a. She gave both Brenda and myself a dirty look.
b. *She gave myself a dirty look.

(32) a. It angered him that she … tried to attract a man like himself.
b. *It angered him that she tried to attract himself.

(33) a. Max boasted that the queen invited Lucie and himself for a drink.
b. *Max boasted that the queen invited himself for a drink.

(34) a. This letter was addressed only to myself.
b. *This letter was addressed to myself.

What the exempt cases have in common is that the anaphor is not itself a syntactic argument of the main predicate, rather it is contained in such an argument. For instance, in (32a), the object argument of *attract* is *a man like himself*, in (33a) the object argument of *invite* is *Lucie and himself*, not just *himself*, in (34a) *myself* bears focus. Systematic accounts of the distribution of true versus exempt anaphors are presented in Reinhart and Reuland (1991, 1993) and Pollard and Sag (1992, 1994).

Pollard and Sag base their approach on an obliqueness hierarchy:

(35) An anaphor must be co-indexed with a less oblique coargument, if there is one.

If an anaphor fails to have a less oblique coargument it is exempt.[17]

Reinhart and Reuland (1991, 1993) analyze anaphors such as *himself* (SELF-anaphors) as reflexive markers. SELF-anaphors mark a predicate of which they are arguments as reflexive. A syntactic predicate, i.e., a predicate with a subject, must be interpreted as reflexive if it is reflexive marked. If a SELF-anaphor is not an argument of a syntactic predicate, it is exempt.[18]

Regardless of further differences in scope, in this particular domain both theories capture essentially the same pattern, and both entail that the interpretation of exempt anaphors, and only of these, is subject to processing and discourse constraints, rather than to structural conditions. The role of processing constraints is illustrated by sensitivity to the nature of interveners, as illustrated in (36) (examples from Pollard and Sag (1992), with some indexings added):

(36) a. Bill_j remembered that *Tom*$_i$ saw [a picture of $\text{himself}_{i/*j}$] in the post office.
b. Bill_j remembered that the *Times*$_i$ had printed [a picture of $\text{himself}_{*i/?j}$] in the Sunday Edition.
c. Bill_j thought that *nothing*$_i$ could make [a picture of $\text{himself}_{*i/j}$ in the *Times*] acceptable to Sandy.

As these examples show, an intervening argument does or does not block a crossing dependency depending on whether it qualifies as a potential antecedent. The relevance of discourse conditions to the interpretation of exempt anaphors is illustrated by contrasts as in (37):

(37) a. John_i was going to get even with Mary. That picture of himself_i in the paper would really annoy her, as would the other stunts he had planned.
b. *Mary was quite taken aback by the publicity John_i was receiving. That picture of himself_i in the paper had really annoyed her, and there was not much she could do about it.

There is a clear difference in well-formedness between these two discourses. Yet, structurally the position of the anaphor *himself* is identical in both cases. The only relevant contrast is in the discourse status of the antecedent. In (37a) John's viewpoint is taken, in (37b) Mary's. Hence, in (37b) *John* does not yield a proper discourse antecedent for *himself*.

It is important to distinguish between the syntactic notion of an exempt position, and the semantic notion of logophoricity. It is an empirical issue to what extent all English anaphors in exempt position are indeed sensitive to the factors typically involved in logophoricity. The same holds true for exempt anaphors in other languages. In (37) exemption and logophoricity coincide. In other cases, for instance (22), this remains to be established. But note, that discourse based interpretation strategies may vary. See Cole et al. (2001a) for much material and discussion, and Cole et al. (2001b) for a case of striking variation between closely related languages. Hence, certain discourse based interpretation strategies may in fact not involve logophoricity in any strict sense.

We can conclude this overview with an important methodological conclusion for the study of long-distance anaphora:

In each case of a non-local dependency it is crucial to determine whether interpretation involves binding or a discourse based strategy.

NOTES

I would like to thank an anonymous reviewer for helpful comments.

1 Pre-theoretically, these are the positions associated with grammatical functions, such as subject, object, etc. I will refrain from discussing issues in current theories of Case assignment or Case checking.

2 This does not imply that they cannot be used anaphorically, or that for some an anaphoric use cannot be strongly preferred, as in the case of epithets.

3 In part of the literature the term *anaphor* is used for any expression that refers back to an individual previously mentioned. So, under that use *the idiot* in *George decided to attack. The idiot thought he could fool everyone* is an anaphor. Here I will follow the standard usage in the generative literature and reserve the term *anaphor* for 'specialized' anaphors. So, *the idiot* 'is' not an anaphor, although it 'is used' here as anaphoric to George.

4 For discussion of reciprocals see also Williams (1991), or Dalrymple et al. (1994).

5 Roughly, the issue is whether indices directly reflect the referential properties of nominal expressions, or are annotations of the structure that can only be interpreted when they express binding relations. See Chomsky (1980a), Fiengo and May (1994), Lasnik (1989a), and Reinhart (1983a) for different stands on that issue.

6 See, for instance, Pollard and Sag (1994), Chomsky (1995c), Reinhart (2000a), Reuland (2001), and with a different perspective, Kayne (2002), and Hornstein (2001).

7 Within the framework of Chomsky (1986b) the trace was required to be antecedent-governed. Failing this it violated the empty category principle. In current theory these effects are derived from more fundamental properties of the grammar. Discussion would lead us beyond the scope of this contribution.

8 It is important to stress that 'logical syntax' does not equal semantics. Two different expressions in logical syntax may well be semantically equivalent as a matter of contingent fact. Such equivalences may even be systematic and stateable in terms of properties of their form. So one may well wish to say that one form reduces to another as a matter of fact, without implying that there is a logical equivalence relation between the two.

9 For earlier relevant discussion, see Chierchia (2004).

10 Note that strictly speaking role reduction is not the only factor that could account for the simplex anaphor being allowed. Also internal structure of the predicate could conceivably play a role. However, I will not pursue that here.

11 In Faltz's typology, head reflexives are based on an element that occurs independently as a nominal head (not rarely a body part), generally with a pronominal specifier. The relation may be understood as one of inalienable possession (Pica 1987, 1991). Faltz gives a few examples (including Basque, Fula, Malagasy, and Hebrew) one of which is repeated here for illustration:

Basque

(i) a. aitak bere burua hil du
father+ERG 3SGPOSS head+NOMDEF kill have+3SG+3SG
'The father killed himself.'

b. bere buruan txapeli ipiñi du
3SGPOSS head+LOCDEF cap+NOM put have+3SG+3SG
'He put the cap on his head.'

The same stem which occurs as a lexical N meaning 'head' in (ib) is used as a reflexive in (ia).

Adjunct reflexives are constructed of a pronoun or simplex anaphor and an adjunct, marking emphasis or focus, which may also attach to lexical NPs. According to Jayaseelan (1997), Malayalam represents this option. One of the examples Faltz gives is Irish:

Irish:

(ii) a. ghortaigh Seán é
'Sean hurt him.'
b. ghortaigh Seán é féin
'Sean hurt himself.'

12 Within the framework of Chomsky (1981) this explains why PRO's distribution is limited to positions where it lacks a governor/Case assigner, the 'subject' position of tense-less clauses. Consequently, in precisely these positions it lacks a governing category in which it 'has to be' bound or free.

13 Although clitics in Romance may share with *zich* a phi-feature deficiency, their clitichood may entail properties that do not necessarily obtain for *zich* and its cognates. Hence, they are not SE-anaphors in the present sense.

14 The following contrasts illustrate that Dutch *mezelf*, just like English *myself*, reflexivizes a syntactic predicate only if it is a syntactic argument of the latter:

(i) Er waren vijf toeristen in de kamer behalve mezelf.
'There were five tourists in the room apart from myself.'

(ii) *Vijf toeristen praatten met mezelf in de kamer.
'*Five tourists talked to myself in the room.'

15 For discussion of the precise role of SELF see Reuland (2001).

16 Romanian may be an exception, though (Anca Sevcenco, work in progress).

17 For ease of reference I summarize the definitions and conditions given in Pollard and Sag (1992):

(i) *Definitions of o-command and o-binding*
A *o-commands* B just in case A locally o-commands some C dominating B.
A *o-binds* B just in case A and B are co-indexed and A o-commands B. If B is not o-bound it is said to be *o-free*.

(ii) *Binding theory*
A. A locally o-commanded anaphor must be locally o-bound.
B. A personal pronoun must be locally o-free.
C. A non-pronoun must be o-free.

18 For ease of reference, I summarize the definitions and conditions from Reinhart and Reuland (1993):

(i) *Definitions*:
a. The *syntactic predicate* formed of (a head) P is P, all its syntactic arguments and an external argument of P (subject).

The *syntactic arguments* of P are the projections assigned theta-role or Case by P.

b. The *semantic predicate* formed of P is P and all its arguments at the relevant semantic level.
c. A predicate is *reflexive* iff two of its arguments are co-indexed.
d. A predicate (of P) is *reflexive-marked* iff either (i) P is lexically reflexive or (ii) one of P's arguments is a SELF-anaphor.

(ii) *Binding conditions*:
A: A reflexive-marked syntactic predicate is reflexive.
B: A reflexive semantic predicate is reflexive-marked.

(iii) *Generalized chain definition*:
$C = (\alpha_1, \ldots, \alpha_n)$ is a chain iff C is the maximal sequence such that:
(i) there is an index i such that for all j, $1 < j < n$, α_j carries that index, and
(ii) for all j, $1 < j < n$, α_j governs α_{j+1}

(iv) *Condition on A-chains* (condition on well-formedness):
A maximal A-chain $(\alpha_1, \ldots, \alpha_n)$ contains exactly one link – α_1 – which is completely specified for grammatical features.

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10 Bridge Phenomena

NOMI ERTESCHIK-SHIR

1 Introduction
2 Structural approaches
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1 Introduction

The term 'bridge' was coined in Erteschik-Shir (1973) to characterize the matrix clause in cases in which extraction out of an embedded clause is licensed.[1] The (a) examples below illustrate such bridges. The (b) examples illustrate nonbridges:

(1) a. What did she say (that) Fred had done?
b. *What did she simper that Fred had done?

(2) a. What did she make a claim that he had done?
b. *What did she discuss the claim that he had done?

(3) a. What did she see a picture of?
b. *What did she destroy a picture of?

(4) a. This book she knows who has written.
b. *This book she inquired who had written.

(5) a. Det har jeg set mange der har gjort. Danish
That have I seen many that have done
'I have seen many that have done that.'
b. *Det har jeg drillet mange der har gjort.
That have I made fun of many that have done
'I have made fun of many that have done that.'

Example (1) shows that extraction out of simple *that*-clauses depends on the matrix verb. The verb *say* provides a bridge, the verb *simper* does not. (2) shows that a *that*-clause embedded in a complex NP may or may not allow extraction. Again this depends on the lexical content of the matrix. (3) shows that extraction out of picture noun phrases is also lexically determined. (4) illustrates a *wh*-island. Here again certain verbs which select embedded questions provide bridges, others do not. Finally (5) illustrates extraction out of Danish relative clauses. (5a) is a violation of the Complex Noun Phrase constraint which blocks extraction out of relative clauses. In Danish extraction out of object relative clauses is possible when the matrix provides a bridge.

There are two basic ways of looking at extraction phenomena. Under one view, certain subordinate clause types are viewed as islands. Extraction is predicted to be blocked only from these structures. According to Ross (1967), the examples in (2), (4), and (5) are islands predicting the ungrammatical cases in (b), but not the ones in (a), in which the matrix clauses can be viewed as providing bridges. The *that*-clauses in (1) are, however, not islands. Therefore only the grammatical case in (a) is predicted. The ungrammatical (b) case must be blocked by some additional principle. Under the other view the matrix clauses in all (tensed) subordinate clauses are islands. Extraction is therefore generally blocked except for the complements of certain matrix clauses which provide bridges. The latter view allows for a unified view of bridges

2 Structural approaches

Most of the references to bridge phenomena in the literature address the distinction between verbs of saying, which allow extraction, and manner-of-speaking verbs, which do not.[2] An early discussion of manner-of-speaking verbs is Dean (1967) who argues that the deletion of *that* converts a subordinate clause into a non-subordinate one. She suggests that those verbs that allow the deletion of *that* are the same verbs that license extraction:

(6) a. Mike quipped that she never wore this hat.
b. *Mike quipped she never wore this hat.
c. *Which hat did Mike quip that she never wore?

This is explained by the general hypothesis that extraction out of all subordinate clauses is blocked. Dean thus adheres to the view that all subordinate clauses are islands.

Dean herself notes the following problem with her generalization: extraction out of *that*-clauses does not depend on *that*-deletion:

(7) a. What do you believe that John bought?
b. What do you believe John bought?

She comments that for her (7b) is preferable to (7a), but does not offer a solution to the problem.

Ross (1967: 138–140) is intrigued by Dean's constraint on extraction from all (finite) subordinate clauses. Ross rejects Dean's proposal in view of the variation in acceptability of extraction out of different subordinate clauses.

Chomsky (1977b: 85) observes that *wh*-movement from within a clause is lexically determined (his (42)):

(8) a. *What did John complain that he had to do this evening?
b. *What did John quip that Mary wore?
c. ?Who did he murmur that John saw?

He notes that it is not clear what permits a matrix VP to be a bridge but assumes (following Erteschik-Shir 1973) that "the 'bridge' conditions fall within the interpretive rules," leaving the following condition on *wh*-movement: "where there is a bridge, there is an apparent violation of subjacency, PIC and SSC."[3] Bridge phenomena are thus used by Chomsky as one of the ways to identify an occurrence of *wh*-movement.

Bach (1977a: 149) notes that quantifier scope is sensitive to bridge properties as well:

(9) a. John thinks that everyone is crazy.
b. John regrets that everyone has a nickel.
c. Sally disputed the claim that everyone had a nickel.
d. Walter knows a man who every woman loves.

(9a) and (9b) exhibit bridge properties and allow a wide scope interpretation of the quantifier. (9a), for example, receives the following wide scope interpretation in (10a) and the narrow scope interpretation in (10b):

(10) a. for every x, John thinks that x is crazy
b. John has the belief that everyone in the universe is crazy

The complex noun phrases in (9c) and (9d) allows only narrow scope of the quantifier. Bach argues that if sensitivity to bridge properties is limited to *wh*-movement, there is no explanation for the data in (10) due to there being no movement.

May (1977) argues that the wide scope of quantifiers is accounted for by Quantifier Raising, an interpretive movement rule which applies in Logical Form (LF). May shows that Quantifier Raising is sensitive to the same bridge conditions described in Erteschik-Shir (1973).

Koster (1978a) also adheres to the view that clauses are islands, i.e., *wh*-movement is bounded. For Koster this has to be the case in view of the fact that many languages have only bounded rules, and unbounded processes are very limited in all languages. According to Koster extraction is, however, possible

from the complements of a subclass of categories of the type [+V] (verbs and adjectives). For Koster bridge phenomena are thus limited to verbs and adjectives. His account is therefore also limited to those bridge phenomena involved with extraction from *that*-clauses.

Chomsky (1980a) adapts Koster's idea that bounded *wh*-movement is the unmarked case and that 'bridge conditions' must be specifically stipulated. It follows that languages such as Russian, which do not appear to permit unbounded *wh*-movement, would reflect the unmarked case. Chomsky attributes this to Subjacency according to which extraction is blocked across more than one bounding node. For English, at least, S is a bounding node for Subjacency. If S' is also a bounding node then *wh*-movement is always 'local' (bounded). The bridge conditions would in effect state that with certain matrix verbs, S' does not count as a bounding node for Subjacency, a marked property of these verbs.

Stowell (1981, 1986) and Fukui (1986) base their analyses on the intuition that the complements of nonbridge verbs are not real complements, but are more like adjuncts. Stowell's implementation of this idea is that manner-of-speaking verbs do not assign a theta-role to their 'complements'.

Stowell proposes an interesting account of bridge phenomena: complements with overt complementizers are argued to be adjuncts and extraction out of adjuncts is blocked. He thus predicts that nonbridge verbs such as *mumble*, *quip*, and *simper*, which require an overt *that*-complementizer, do not allow extraction. Note that nonbridge verbs generally do not require complements in accordance with Stowell's proposal:

(11) a. John mumbled/quipped/simpered.
b. *John thought/believed/said.

According to Stowell, the correlation between the possibility of that-deletion and extraction possibilities follows from the ECP.[4] This he derives from a distinction between the properties of bridge verbs and nonbridge manner-of-speaking verbs. Only the former assign a theta-role directly to the *that*-clause:

(12) a. Ben knew [[e] [the teacher was lying]]
b. [Who]$_i$ did Ben know [[e]$_i$ was lying]?

(13) a. *Bill muttered [[e] [Denny was playing too much poker]]
b. *[Who]$_i$ did Bill mutter[[e]$_i$ [[e]$_i$ was playing too much poker]]?

In (12a), the empty complementizer is properly governed by the matrix verb, since it is the head position of the clause to which the verb assigns the direct object theta-role. In (12b), the trace in subject position is properly governed by the trace in the head position in COMP. The trace in COMP, in turn, is properly governed by the matrix verb, by virtue of appearing in the head position of the clause.

In (13a) the governing head, the nonbridge verb, does not assign a theta-role directly to the clause of which the empty COMP position is the head. And in

(13b) the trace in COMP violates the ECP, since there is no external governor with which it can be co-indexed.

Whereas Stowell's analysis in terms of the ECP predicts a strong correlation between *that*-deletion and extraction, the correlation is, in fact, weak, as noted by Dean (1967) and also shown in (14) and (15) (from Erteschik-Shir 1973: 62):

(14) a. *He regretted you did it.
b. What did he regret that you did?

(15) a. *It alarmed me she liked it.
b. What did it alarm you that she liked?

Stowell's analysis predicts that extraction from object position, as in (16), should always be possible since this position is always governed. He cites the following examples to support this prediction.

(16) a. $[\text{What}]_i$ did John just whisper to you $[_{S'}$ that [he ate $[e]_i$]]?
b. $[\text{Who}]_i$ did Bill mutter $[_{S'}$ that [he doesn't like $[e]_i$]]?

Although it is generally agreed that ECP infractions are worse than extraction from the object position of nonbridge verbs, the sentences in (16) are clearly ungrammatical.

Depiante (1993) offers a lexical account of manner-of-speaking verbs which explains why they do not assign a theta-role to their complement. Nonbridge verbs are derived verbs (as in Hale and Keyser 1993a). These verbs contains an adverb of manner that has been incorporated into a light verb with the semantic import of *say*. The process of incorporation discharges the internal theta-role and makes the verb intransitive.

Chomsky (1986a) proposes an explanation for island constraints in terms of Barriers. Whether or not extraction is licensed depends on the number of barriers between the moved constituent and the extraction site. Barrierhood is indirectly dependent on L-marking (only a non-L-marked maximal projection can be a barrier) and the latter is defined in terms of government as follows (Chomsky 1986a: 15):

(17) α L-marks β iff α is a lexical category that θ governs β.

Chomsky (1986a: 35) employs L-marking to explain the weak island effect (see chapter 64) in noun complements:

(18) a. which book did John hear $[_{NP}$ a rumor $[_{CP}$ that you had read t]]
b. which book did John announce $[_{NP}$ a plan $[_{CP}$ for you to read t]]
c. which actor did you see $[_{NP}$ a picture of t]

In (18a) and (18b) the CP is L-marked and therefore does not transfer barrierhood to the complex NP. In the picture noun phrase in (18c) the NP is L-marked and

therefore not a barrier. These examples do not exhibit island violations as does extraction out of relative clauses:

(19) a. *which book did John meet [$_{NP}$ a child [$_{CP}$ who read t]]
b. *which book did John have [$_{NP}$ a friend [$_{CP}$ to whom to read t]]

The relative clause CP is a barrier since it is not L-marked; the NP inherits barrierhood from CP. The two barriers cause a Subjacency violation, explaining the ungrammaticality of these sentences.

Chomsky (1986a: 34) states that it is a property of Subjacency violations (but not ECP violations) that they are variable and weak. He also notes that "a number of factors (including lexical choice) appear to enter into acceptability judgments in these cases, many of them poorly understood." He chooses to factor out the subpart of the phenomena which can be explained by Subjacency and thus does not offer an account of bridge phenomena.

Cinque (1990c) argues that the weak islandhood (see chapter 64) of the CP complements of both factive and manner-of-speaking verbs is due to their not being L-marked by V. He achieves this result by assuming that these complements are not dominated by V', but are adjoined in a higher position, hence not governed by V, a condition for L-marking. The problem with this type of structural analysis is that manner-of-speaking and factive verbs do not form a uniform class with respect to islandhood. The examples of manner-of-speaking verbs in (20) and factive verbs in (21) are from Erteschik-Shir (1973: 51–56):[5]

(20) a. ?What did she mumble that he had done?
b. ??What did the paper editorialize that McGovern had done?
c. *What did she simper that home economics was?

(21) a. This is the girl that I regret that Peter likes.
b. ?This is the girl that I resent that Peter likes.
c. *This is the girl that I rejoice that Peter likes.

Cinque's account would predict that all the examples in (20), in which the extracted element is non-referential, are equally bad and that the examples in (21), in which the extracted element is referential are equally good.

Manzini (1998) develops a minimalist theory of weak islands revising the Minimal Link Condition in Chomsky (1995c). Within this framework she offers a syntactic account of factive islands which builds on the idea that a factive complement is a Topic. Her idea is that a Topic is licensed only in the presence of a Focus which is syntactically projected:

(22) a. *Why do you regret [that they fired him t_{why}]
b. [do-Q] [you [F regret [that they fired him why]]]

According to Manzini, it is the projecting of F that prevents Q from attracting *why*. Although Manzini's account explains the fact that factives generally are

more resistant to extraction than nonfactives, her structural implementation of topic/focus concepts cannot explain squishes within factives such as illustrated in (21).

The main concern of Fodor (1992) is to account for the repercussions of bridge phenomena on learnability. In that context she argues that bridge verbs are subcategorized for both an S sister and an S[SLASH NP] sister, whereas nonbridge verbs are subcategorized only for the former. (In GPSG a SLASH category is a category which includes a gap, i.e., a category from which extraction has occurred.)[6]

Erteschik-Shir (1973) argues that subcategorization cannot explain bridge phenomena even for simple cases such as *that*-complements. The first argument is that such an approach predicts that extraction is either completely good or completely bad. The data in (20) and (21) show that the extraction facts are squishy, an indication that subcategorization cannot provide the correct explanation. Another argument has to do with contextual effects on extraction: if a verb is subcategorized as a nonbridge verb then extraction should not be licensed in any context, but extraction is contextually determined as the following example shows:

(23) a. *What did John lisp that he'd do?
b. ?What did Truman Capote lisp that he'd do?

(19b) shows that if it is contextually known that the subject has a lisp, as it is in the case of Truman Capote, then extraction is much improved. This follows, according to Erteschik-Shir, from the fact that *lisp* in (19b) is stripped of much of its meaning and is almost equivalent to *say*.

A similar example of how context influences extraction facts is offered by Kuno (1987a):

(24) Speaker A: Right after Chairman Mao died, they started taking pictures of the Central Committee members off the wall.
Speaker B: Who did they destroy more pictures of, Chairman Mao or Jiang Qing?

Again, the meaning of the verb *destroy* is contextually given by Speaker A's assertion.[7]

A third argument against the subcategorization approach is provided by (25) in which the matrix verb is emphatically stressed and extraction is degraded:

(25) ??Who did you BELIEVE that Bill would hit?

Speaker-specific squishy data, contextual factors, and emphasis not only provide strong arguments against an account in terms of lexical subcategorization, they also indicate that any purely structural analysis will fail to account for bridge phenomena.

3 Non-structural approaches

Erteschik-Shir (1973) argues that extraction is conditioned by focusability:[8] only those subordinate clauses which can be focused allow extraction. Focus is roughly defined as a constituent which the speaker intends to draw the attention of the hearer to. This condition on extraction explains all island effects including bridge phenomena according to the intuition that *wh*-movement is restricted to focused or foregrounded constituents to which the attention of the hearer is drawn. Backgrounded constituents to which the attention of the hearer is not drawn are processed in a different manner and therefore gaps within them cannot be detected. The unmarked case is for subordinate clauses to be backgrounded, i.e., in the unmarked case, syntax mirrors the discourse function in that main clauses are foregrounded and subordinate clauses are backgrounded. In order for a subordinate clause to be focused the main clause must not draw the attention of the hearer. It follows that bridges are those matrix clauses that need not be focused, and the question arises as to which factors are involved in the assignment of foci to sentences. In Erteschik-Shir (1973) it was argued that semantically complex and/or infrequent lexical items are necessarily focused. An explanation for the problematic data illustrated in (23–5) follows naturally. Squishy data is predicted since semantic complexity and frequency are themselves squishy notions. Context is predicted to determine the assignment of focus in such a way that focus will not be assigned to a contextually given constituent (as in (23) and (24)) and finally in (25) focusing the verb blocks the assignment of focus to the subordinate clause, in turn blocking extraction. Similarly, the rest of the data listed in the introduction are accounted for.[9]

Cattell (1978: 61) discusses the ambiguity of interrogative sentences such as the following:

(26) Why do the police believe (that) Sue killed Harry?

According to Cattell, verbs that allow the interrogative to be interpreted within the subordinate clause, i.e., verbs that allow extraction, are those he calls volunteered-stance verbs. Stance verbs are those verbs for which the complement is NOT part of the common background. Volunteered-stance verbs are a subset of stance verbs, namely those for which "their subject accepts some kind of responsibility for the proposition that follows." The class of stance verbs has in common with bridge verbs (as characterized in Erteschik-Shir 1973) that their complement must not be backgrounded. It is not easy, however, to apply Cattell's classification of stance verbs to verbs he does not discuss, e.g., manner-of-speaking verbs. These must be stance verbs since their complement is not part of the common background, but it is not clear whether Cattell would classify them with *say* as volunteered-stance verbs. It is therefore unclear whether Cattell's approach can make the correct prediction for these verbs.

Kluender (1992: 247) introduces the Predication Principle to account for extraction facts:

(27) Predication Principle: initial argument expression NPs must be as referentially specific as possible; all heads and specifiers occurring in complex predicates must be as non-specific in reference as possible.

He shows how bridge phenonema follow from this principle. For example his account of bridge verbs is that they "are typically statives or achievements. Manner-of-speaking verbs, on the other hand, are invariably activity verbs. Since the lexical semantics of manner-of-speaking verbs includes not only the meaning of 'say' but also a specific manner component . . . there is a sense in which these verbs are referentially more highly specified than bridge verbs" (p. 245).

The intuitive basis of the Predication Principle is similar to the account offered in Erteschik-Shir (1973). Kluender (1992: 249) concludes that the basic effect of the Predication Principle is to ensure that logical subjects of predication are as salient as possible while the heads and specifiers occurring in complex predicates remain as unobtrusive as possible.

In the framework of Erteschik-Shir (1997), the basic intuitions of Erteschik-Shir (1973) have been developed into a comprehensive theory of focus structure which provides an account of all island phenomena, weak and strong.

4 Bridge phenomena cross-linguistically and learnability

A serious problem for both structural and nonstructural approaches is to explain why languages differ with respect to bridge phenomena.

Fodor (1992: 109–180) points out that Polish does not permit extraction out of tensed clauses except for complements of a very small number of verbs (*say, tell, think*), a small subset of the verbs which allow extraction in English. None of the approaches to bridge phenomena cited above can explain this. Fodor (p. 123) argues as follows: "the existence of even one non-bridge item in even one language would constitute a serious challenge for learnability. Once an extraction rule . . . is in a grammar, limiting its application to some items and not others would apparently call for complication of the grammar. And why would a learner bother, when his (positive) data are perfectly compatible with the unrestricted rule?" Fodor further reasons that "linguistic theory must FORCE extraction to be described in such a way that the lexicon is necessarily implicated." Fodor suggests (following Erteschik-Shir 1973, 1982) that synonymous verbs in English and Polish occupy identical positions on a scale and that the two languages have different cut-offs with respect to extractability. In other words bridge phenomena might be conceived of as a universal property of language. Extraction in a particular language will be constrained syntactically and limited by the

cut-off point identified for a particular language on these scales. An argument in favor of this approach offered in Erteschik-Shir (1973) is the fact that the English equivalents of acceptable extractions out of relative clauses in Danish, although degraded, are not as bad as those that are also unacceptable in Danish. Thus the English version of (5a) is much better than that of (5b).

NOTES

1 Extraction is *wh*-movement out of a subordinate clause.
2 See Zwicky (1971) for a systematic account of some properties of manner-of-speaking verbs.
3 PIC and SSC are the Propositional Island Constraint and the Specified Subject Condition, respectively.
4 ECP: A trace must be properly governed.

Proper Government: α properly governs β if and only if
(i) α governs β, and
(ii) α is lexical
(iii) α is co-indexed with β.

5 Kiparsky and Kiparsky (1970) categorize verbs whose complements are presupposed as factive. They argue that the reason extraction is blocked from the complements of factive verbs is that they are derived from complex noun phrase islands. Under this analysis the source of (i) would be the structure of (ii):

(i) I resent that Peter likes this girl.
(ii) I resent the fact that Peter likes this girl.

6 Fodor argues for a modified version of GPSG which she calls LPSG (Learnable Phrase Structure Grammar). We return to Fodor's discussion of learnability with respect to bridge phenomena in section 4.
7 Kuno explains these and other extraction facts as follows: only constituents which qualify as the topic of a sentence can be extracted. For arguments against this type of approach see Erteschik-Shir and Lappin (1981).
8 The term Dominance was used in this work instead of Focus.
9 See Erteschik-Shir (1973), Erteschik-Shir and Lappin (1979), and Erteschik-Shir (1981) for details. In this work independent tests for focusability are also provided.

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11 Case (with Special Reference to Japanese)

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1 Introduction

Surface case distributions reflect an intricately interrelated system of semantic roles, grammatical relations, and language-particular case marking systems. A historical review of the development of research in this area in the generative theoretical framework reveals an illuminating process of integration and disintegration.

Research on case has a long history covering a variety of surface phenomena involving morphology, syntax, and semantics. It is rather curious that in the generative tradition case had not been a central research topic until the emergence of Government and Binding Theory (henceforth abbreviated as GB) in the early part of the 1980s, which proposed Case Theory, a theory of abstract case (often termed 'Case'), closely tied to Theta Theory.[1] These theories are part of the subsystems of principles proposed by GB. The reason for the non-central role that research on case played in this era lies partly in the assumption of Standard Theory (ST) that grammatical relations, subject, object, and so on, are derivatively determined by syntactic structures and that structurally determined grammatical relations determine grammatical functions of noun phrases.[2]

In this general theoretical trend, research on case played a central role in Japanese grammars supporting the transformational approach to syntax. For example, the hypothesis of ST of the cyclic application of transformations was supported by Japanese case marking transformations, and the adequacy of assumptions of sentential complementation and Equi-NP deletion was attested by the derivation of Japanese complex predicates like causative and passive verb complexes.

The purpose of this chapter is, in the first place, to show the main issues involved in research on case in Japanese, which have contributed to the formation of a series of new theories up to the Minimalist Program (henceforth abbreviated as MP). Second, this chapter attempts to contribute to the refinement of

the MP by revealing the syntactic mechanism employed in the construction of Japanese major syntactic structures, in which structural and inherent case particles play significant roles.

This chapter contains reviews of major generative works on case in Japanese during the past 35 years. Sections 2 through 5 review how research on the Japanese case system developed within the frameworks of ST and Extended Standard Theory (EST) with their basic tenet of structural determination of case. It is shown that during this period of transformational pursuits, most of the relevant facts were discovered, and these facts have been used as crucial data and recast over and over again in new frameworks as theoretical changes evolved. Gruber's prelexical transformation and Fillmore's 'Case grammar' are outlined because they have played important roles in the development of a syntactic theory of case. Section 5 brings up technical improvements made in the transformational approach during the 1980s within the framework of GB, later called the Principles and Parameters Approach (PPA). In this period, case in various typologically different languages was studied extensively from the point of view of Universal Grammar. Marantz (1984) and Baker (1988a) are representative of these studies. Unfortunately, their works are not included in this review because our main task is elucidating the results of research on Japanese case.

Section 6 presents an outline of case checking theory, a fast developing theory within the framework of MP. It is shown that as far as Japanese is concerned the descriptive data coverage of the works examined in this section is almost the same as previous works, only with a few additions of novel data. Their merits seem to be basically the effort to deal with case variations among many languages in the framework with minimum mechanical tools. To the extent they are successful, they achieve the goal of filling out Universal Grammar. This section is included despite the fact that the section itself is unduly brief and schematic due to its fast changing nature, because it is necessary to see the actual working of MP in dealing with the Japanese case phenomena.

Now let us point out some specific features of representative works reviewed in this chapter. The first stage in the 1960s emerged as a reaction to the thesis of ST, which claimed that semantic interpretation of a sentence is based solely on deep structure. Gruber (1965) proposed that prelexical structures in which semantic roles, represented by abstract prepositions like FROM, TO, and so on, are subject to prelexical transformations, which depend on the specification carried by each verb as to which role can be the subject. On the other hand, Fillmore (1968), for example, proposed that semantic roles, labeled as AGENT, PATIENT, GOAL, and the like called case (C) are syntactic primitives and a transformation called 'subjectivization' moves the highest case in the case hierarchy to the surface subject position. Both of these approaches are based on an awareness of the fact that semantic roles and grammatical relations do not maintain one-to-one correspondences. The important aspect of these claims is that they are sensitive to the case alternations observed in pairs of sentences with verbs like *sell* and

those like *buy,* and some other sentence relations of this type. In this point of view, there is no basic line of demarcation between structural cases and inherent cases (or semantic cases) marked by postpositions in Japanese grammars. Section 3 gives details of their proposals.

Kuroda (1965) emphasized the distinction between structural and inherent cases and made a proposal for cyclic linear case marking transformations for the structural cases. Inherent case particles, called postpositions, did not attract attention from generative researchers at that time. Kuno (1973c) is an extension of Kuroda (1965). Details of these analyses are given in section 4.

Kuroda's transformational approach was followed persistently through the 1960s, 1970s, and to the middle of the 1980s, with minor modifications or refinements. All these grammars tried to relate grammatical relations to surface case alignments, disregarding the semantic roles noun phrases bear. Section 5 deals with modifications and attempts to refine Kuroda (1965, 1978) and Kuno (1973c).

With the appearance of GB, case theory and theta theory were highlighted as core principles of syntax. In its later development as the PPA in the middle of the 1980s, its case theory, enforcing case checking in terms of agreement, aroused lively discussions. One is Kuroda's proposal for the parameter of forced vs. non-forced agreement, discussed at the end of section 5.

Marantz (1992) also called into question the validity of case checking in the PPA, making an alternative proposal for the case realization rules, which are discussed in section 6, together with an application of some of his rules to Japanese by Aoyagi.

These and other works along this line of argumentation against case theory have motivated a good deal of research on case in Japanese in the Minimalist framework. Watanabe (1996), Koizumi (1998), Ura (1996, 1999, 2000, 2001), and Fukui and Takano (1998) are reviewed in section 6 as representatives of these works.

2 Semantic roles, grammatical relations, and case marking (case realization)

The term 'case' has been used ambiguously at least in the following three ways: one standing for 'theta-roles' in the recent framework of generative grammar, the second used in place of grammatical relations such as 'subject', 'object', and 'indirect object', and the third as the actual case realization such as *ga* (nominative), *o* (accusative), and *ni* (dative) in Japanese.

The ambiguous uses do not necessarily mean that there has been little awareness of the fact that there are not always one-to-one correspondences among these three types of case. It is closer to the truth to say that due to this awareness the linguists working on this problem have investigated how some semantic roles come to be identified with grammatical relations. Gruber (1965) and Fillmore (1968, 1971b, 1973, 1977) represent this approach. These works made a

tremendous contribution to the theory of case by showing that well-formed syntactic structures are guaranteed mostly by lexical information carried by predicates (usually verbs and adjectives) as to the number of co-occurring obligatory noun phrases and semantic roles they bear. Information of this kind has later been formalized as argument structures of predicates (Grimshaw 1990, for example). In the framework of the PPA, 'theta-positions' play a crucial role in guaranteeing well-formed syntactic structures.

The study of case in Japanese in the generative framework started with the investigation of the Japanese case marking mechanism on the basis of grammatical relations, assuming the distinction between structural case markers, *ga*, *o*, *(ni)*,[3] and semantic case markers (conventionally called postpositions) such as *de* (locative: 'at' or 'in', or instrumental: 'with'), *kara* (ablative: 'from'), and *to* (commitative: 'with'). Since changes of grammatical relations lead to changes in distribution of structural case particles, the study of case in this sense has developed hand in hand with the study of major Japanese syntactic structures such as causatives, passives, desiderative sentences, and so on, whose derivations involve changes in grammatical relations. As a result it has been revealed that there is a considerable discrepancy between grammatical relations and the distribution of structural case particles. For example, nominative *ga* does not necessarily mark the subject, the particle *o* is the surface realization of both the structural accusative case and the semantic role 'path', and the *ni* of so-called 'double object constructions' is treated as a structural case by a group of linguists, while it is a postposition according to another group. Moreover, *ni* appears as a postposition denoting 'location'.

Traditional Japanese linguists regard all noun phrases with case particles as modifiers of predicates. This school has never given special status to the subject, nor has it recognized the unique syntactic functions of the subject. One of the influential Japanese linguists Akira Mikami (1953, among other works by the same author) reacted against the use of the notion of subject in some Japanese grammars, claiming that the notion is not relevant to the Japanese language but was simply borrowed from grammars of European languages where subject–verb (in the generative framework subject–auxiliary) agreement is observed. In contrast to this opinion, Shibatani (1978) argues that the notion of subject and the nominative *ga* as a marker of subject should be distinguished, pointing out the functions of the subject as the trigger of subject-orientated honorification, which is independent of *ga* marking, as is shown by the sentences in (1), and its function as the antecedent of the reflexive form *zibun* ('self'), as in (2):

(1) a. Katoo- sensei ga kono hon o o- kaki-ni nat-ta.
Katoo teacher Nom this book Acc Hon- write-Hon- Past
'Mr Kato wrote this book.'

b. Katoo-sensei ni wa konpyuuta ga o- tukai-ni nar-e-ru.[4]
Dat Top computer Nom Hon- use- Hon-Pot-Pres
'Mr Kato can use a computer.'

In (1a) the nominative subject triggers subject-orientated honorification, *o-V-ni naru*, while in (1b) the dative subject is the trigger.

(2) a. Hirosi$_i$ ga zibun$_i$ o seme- te i-ru no wa kare no hutyuui kara
Hirosi Nom self Acc accuse Prog that Top his carelessness due to
kazi ga de- ta kara de-su.
fire Nom take place-Past because Cop
'The reason why Hirosi accuses himself is that his carelessness caused the fire.'

b. Hirosi$_i$ ni (wa) zibun$_i$ no kangae ga umaku hyoogen deki na- i.
Dat Top self Gen idea Nom well express can Neg- Pres
'Hirosi cannot express his own ideas well.'

In (2) the subjects marked with *ga* and *ni* stand as the antecedents of the reflexive form *zibun*.

On top of the emphasis on distinct status given to the subject by generative grammarians, the nominative and accusative agreements have been given an important role of licensing argument noun phrases since the inception of the PPA. In view of the fact that Japanese does not show case agreement, it is very natural that various recent works on Japanese syntax claim licensing mechanisms other than agreement. The details of this new direction in the study of case will be given in section 5.

3 Semantic roles in relation to grammatical relations

In this section, a review will be given of two representative works that emphasize the semantic roles noun phrases bear as the basis of grammatical relations, 'subject' and 'object'. There was keen awareness underlying all of these works that the interpretation of a sentence cannot be determined solely by deep structure, as assumed by ST.

3.1 Gruber: prelexical transformation

Gruber's prelexical structures depend on the following assumptions:

(i) base rules:
(a) S ⇒ (Agt)[5] Event
(b) Event ⇒ Theme Qualifier
(c) Qualifier ⇒ Verb PP*

(PP* means that more than one prepositional phrase can be selected by a verb.)

(ii) lexical verb classification:

	Positional	*Possessional*	*Identificational*	*Circumstance*
Motional	go	lend	change	coerce
Durational	remain	keep	leave	prevent
Non-descript	be	have	be	be

A motional verb *go*, for example, has the following prelexical structure:

(3) $[_{\text{Theme}}\ \text{NP}][_{\text{Qualifier}} \begin{bmatrix} \text{V} \\ \text{Motional} \\ \text{Possessional} \end{bmatrix} [_{\text{PP}}\ [_{\text{Prep}}\ \text{FROM}]\ \text{NP}][_{\text{PP}}[_{\text{Prep}}\ \text{TO}]\ \text{NP}]$

The structure (3) underlies (4a) given below:

(4) a. The car went from John to my brother.
b. John sold the car to my brother.
c. My brother bought the car from John.

When the prelexical transformation moves $[_{\text{PP}}[_{\text{Prep}}\ \text{FROM}]\ \text{NP}]$ to the sentence initial position replacing $[_{\text{Theme}}\ \text{NP}]$ followed by incorporation of FROM into the verb, the prelexical structure (5a) is derived, into which verbs like *sell* are inserted (as in (4b)), while the replacement of the theme with $[_{\text{PP}}[_{\text{Prep}}\ \text{TO}]\ \text{NP}]$ results in the prelexical structure (5b) which permits the insertion of verbs like *buy* (as in (4c)). (The incorporation of the preposition is indicated by + in (5).)

(5) a. NP FROM+ $\begin{bmatrix} \text{V} \\ \text{Motional} \\ \text{Possessional} \end{bmatrix}$ Theme TO NP

b. NP TO+ $\begin{bmatrix} \text{V} \\ \text{Motional} \\ \text{Possessional} \end{bmatrix}$ Theme FROM NP

Verbs like *sell*, *lend*, *give*, and so on have the specification (6a) as the frame for their insertion into deep structures, while those like *buy, borrow, obtain*, and so forth are with (6b):

(6) a. /sell/ in environment of FROM V, Motional Possessional

b. /buy/ in environment of TO V, Motional Possessional

Thus, Gruber is the first to explicitly point out the discrepancy between semantic roles and grammatical relations. The important facts accounted for by this grammar

are that the subject bears various semantic roles such as source (FROM in Gruber), Goal (TO), and theme and that theme can both be a subject and an object in syntactic structures. The incorporation of prepositions into verbs fits well in the syntax of languages in which the subject and the object appear without any case marking. For languages with overt case marking on every noun phrase, this grammatical model apparently does not seem appropriate. However, it is undeniable that Kuroda's (1965) hypothesis (to be summarized in section 4) of unmarked noun phrases, standing for structural case bearers, shares the same insight with Gruber. Gruber's term 'theme' is employed by the later generative grammars in their technical terms 'thematic structure', 'theta-role', 'theta position', and so on.

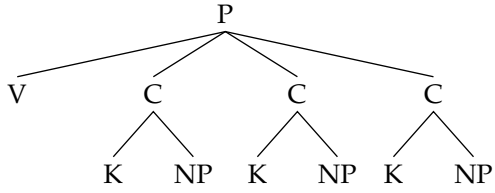
3.2 Fillmore: 'Case grammar'

Fillmore (1968) claims that a structure deeper (or more abstract) than the deep structure as conceived of by ST is necessary for adequate interpretation of a sentence. According to him the primitives of syntactic structure must be 'cases' (or semantic roles) such as agent, patient, source, goal, and so on, which are introduced by the base rules in (7):

(7) a. $S \Rightarrow M + P$
b. $P \Rightarrow V + C_1 + \ldots + Cn$
c. $C \Rightarrow K + NP$

In (7) M stands for modals including negation, tense, mood, and aspect. P stands for proposition consisting of a verb and any number of Cs (Cases), K for any types of case markers, prepositions, postpositions, inflection, and so on, C (Case) for A(gentive), D(ative), O(bjective), I(nstrumental), L(ocative), and the like. The rules in (7) generate structures like the following:

(8)



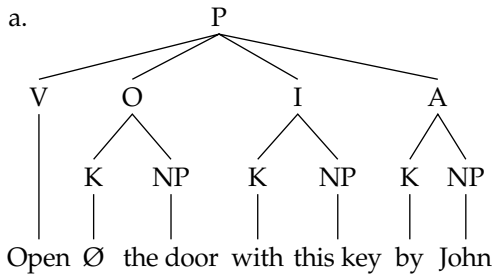
Each verb carries the specification for the case frame (like (9)) that it can be inserted into:

(9) V : + [___ C (C) (C)]

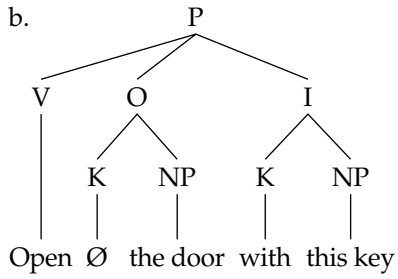
Take the verb *open* for example. It has the specification (10), which can be realized as the structures (11a–d):

(10) open : + [___ O (I) (A)]

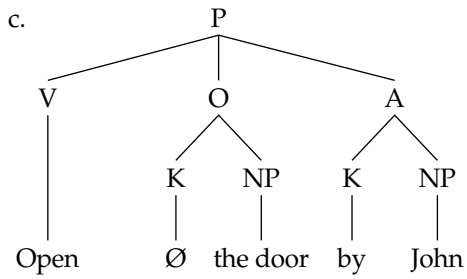
(11) a.



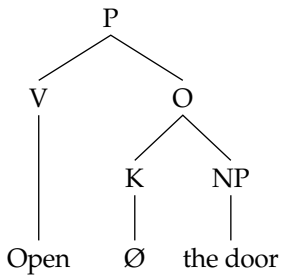
b.



c.



d.



(Fillmore 1968)

In Case grammar, the subject is derived by a transformation called 'subjectivization', which chooses as a subject the highest C in the case hierarchy, which goes as follows: agent, experiencer, instrument, object, source, goal, location, time (Fillmore 1971b).

The deep structures (11a–d) are realized as (11'a–d) by 'subjectivization':

(11') a. John opened the door with this key.
b. This key opened the door.
c. John opened the door.
d. The door opened.

The distribution of Cs is constrained by the condition that "P must be thought of as a list of formulas of the form seen in (11) [(7b) above] where at least one case category must be chosen and where the same case category never appears more than once" (Fillmore 1968: 24). This condition was adopted by the PPA as the Theta Criterion, with the addition of a clause that each noun phrase must have only one theta-role.

Fillmore shares with Gruber the idea that deep structure assumed by ST does not give sufficient information for the interpretation of sentences. Both of them contributed to the advancement of generative theory by showing the importance of semantic roles, which have a function distinct from grammatical relations of showing lexical relations of transitive and intransitive verbs, relations of sentences with source or goal for subjects, and similar structural relations. Fillmore went a step ahead by making claims for Universal Grammar, in particular claims

for the condition of "only one instance of each case in a simple sentence" and "subjectivization." His 'K', standing for all sorts of case markers, makes it easier to use the Case Grammar for analysis of languages with various types of case marking systems. For example, some Japanese linguists, especially those working on machine translation, found Case grammar most adequate to the description of Japanese syntactic structures, mainly because Japanese noun phrases, both arguments and adjuncts, are followed by case particles and because the Japanese subject does not have the same syntactic roles as the subject in languages like English.

With the works represented by Gruber and Fillmore, semantic roles, grammatical relations, and actual case marking started to be integrated into a modular system of grammar.

4 Transformational analyses of case in Japanese

In this section, systems of transformational case marking (or assignment) are reviewed, covering works ranging from Kuroda (1965) up to those based on the PPA in the 1980s.

Kuroda's seminal work (1965) laid the foundation for the transformational analysis of case in Japanese generative grammar. For more than 15 years, the basic tenet of his work was retained with only minor modifications. Kuroda himself summarizes his study along the line of this work in 1978, which will be reviewed in this section together with important modifications and additions by other linguists, working in the framework of EST in the 1970s and the PPA in the 1980s.

4.1 Structural cases vs. postpositions (unmarked vs. marked NPs in deep structure)

Kuroda (1965) proposed to introduce certain NPs without case particles into deep structures. Those NPs are called unmarked NPs, which are ready to get structural cases *ga* and *o* by case marking transformations. All the other NPs are introduced into deep structures already marked with postpostions. At the time of its appearance, the idea of distinguishing structural case particles from postpositions was in sharp contrast with the idea of introducing NPs marked by case particles (both structural case particles and postpositions) into the base. These particles were assumed to subcategorize verbs and adjectives (Inoue 1964, 1969, for example). Kuroda's concentration on the study of structural cases laid the foundation for research on the Japanese case system. This idea is maintained basically even in works under the MP.

The salient feature of Kuroda's approach is the cyclic assignment of *ga* and *o* according to the linear order of unmarked NPs. Let us call this approach linear cyclic case marking.

The ideas of unmarked NPs and transformational case marking were challenged by lexicalist approaches in the late 1970s and the early 1980s. However, the idea of linear case marking itself had never been called in question until the

emergence of recent works based on the PPA and the MP. The recent development in the framework of MP will be outlined in section 6.

4.2 Structural case marking dependent on transformational derivation of complex predicates

Beyond simple sentence structures, namely, transitive and intransitive sentences with root predicates, Japanese major sentence structures involve suffixation of bound forms with syntactic properties and semantic contents, such as the causative *(s)ase*, passive *(r)are*,[6] potential *(r)e* or *(r)are*, desiderative *ta(k)*, and so on. Furthermore, it is possible to chain them together as, for example, root-*sase-rare-tak* ('want to be caused to root'), deriving complex predicates. Under this circumstance it seems natural to assume lexical derivation of complex predicates disregarding syntactic changes caused by such derivational processes. However, this alternative has a serious drawback because it is impossible to show the case particle alternations caused by affixation of this sort by simply analyzing internal structures of predicates.

The sentence types extensively discussed by supporters of the transformational approach in relation to the Japanese case system are as follows:

A *o*- and *ni*-causatives

(12) a. Taroo ga Hanako o hatarak- ase- ta. (*O*-causative)
Taroo Nom Hanako Acc work- Cause- Past
'Taro made Hanako work.'

b. Taroo ga Hanako ni hatarak-ase-ta. (*Ni*-causative)
Nom Dat
'Taro let Hanako work.'

B Double object construction

(13) Titioya ga Taroo ni taikin o watasi-ta.
father Nom Taroo Dat a lot of money Acc give-Past
'Father gave Taro a lot of money.'

C Direct and indirect passives

(14) a. Katoo-san ga sinyuu ni damas-are-ta.
Katoo Nom best friend by deceive-Pass-Past
'Mr Kato was deceived by his best friend.' (Direct passive with an animate subject)

b. Seimon ga syuei niyotte maiasa ake- rare- ru.
main gate Nom guard by every morning open- Pass-Pres
'The main gate is opened by the guard every morning.' (Direct passive with an inanimate subject)

c. Taroo ga ototoo ni zyuuyoo syorui o yom-are- ta.
Taroo Nom brother by important document Acc read-Pass- Past
'Taro had his brother read the important document.' (Indirect passive)

D Sentences with stative psychological predicates

(15) a. watasi-tati ni mondai no honsitu ga yoku
we Dat problem Gen real nature Nom well
wakar-u koto.[7]
understand-Pres that
'that we can understand well the real nature of the problem.'

b. Boku ga Mary ga kowa- i koto.
I Top Nom fearful of-Pres that
'I am afraid of Mary.' (Kuno 1973c: 82)

c. watasi-tati ga mondai no honsitu ga yoku wakar-u koto.
Nom Nom

E *Ga-o*, *ni-ga*, and *ga-ga* potentials

(16) a. Katoo-san ga konna muzukasi-i zi o yom-e-ru.
Katoo Nom such difficult character Acc read-Pot-Pres
'Mr Kato can read such difficult characters.' (*ga-o* Potential)

b. Katoo-san ni konna muzukasii zi ga yom-e-ru.
Katoo Dat Nom (*ni-ga* Potential)

c. Katoo-san ga konna muzukasii zi ga yom-e-ru.
Katoo Nom Nom (*ga-ga* Potential)

F Desiderative sentences

(17) a. watasi-tati ga ongaku o narai-ta-i koto.
we Nom music Acc learn-want-Pres
'that we want to practice music.' (*ga-o* desiderative)

b. watasi-tati ga ongaku ga narai-tak-i koto.
Nom Nom (*ga-ga* desiderative)[8]

G Multiple nominative construction

(18) Bunmeikoku ga dansei ga heikinzyumyoo ga mizika-i.
civilized countries Nom men Nom average life span Nom short- Pres
'It is civilized countries that men-their average life-span is short in.'
(Kuno 1973c: 71)

H 'Tough' sentences

(19) Sensyu ni wa kono dai (kara) ga tobi-niku-i.
athlete Dat Top this springboard (from) Nom jump-hard-Pres
'This springboard is hard for athletes to jump from.' (Inoue 1978b: (6))

Hot issues involved in these sentence types are: (i) case marking with *ni* in (A), (B), (C), (D), (E), and (H); (ii) optional *ga* case marking on the object in (D) to (H), whose predicates are all stative.

On top of these sentence types the Double *O* Constraint as exemplified by (20) has been an issue involving the case system. (20a) is an *o*-causative with a transitive complement sentence:

I *O*-causative with transitive complement sentences

(20) a. Katoo-san ga kodomo ni nimotu o hakob-ase-ta.
Katoo Nom child Dat baggage Acc carry-Caus-Past
'Mr Kato made the child carry the baggage.'

b. *Katoo-san ga kodomo o nimotu o hakob-ase-ta.
Nom Acc Acc

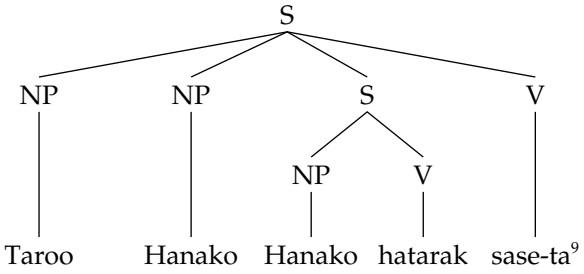
(20b) is derived by the regular *o*-causative derivation, but is ungrammatical due to the violation of the Double *O* Constraint. Details are given in 4.2.3.

4.2.1 Sentential complementation

The transformational approach assumes, in the first place, that the predicative affixes such as *(s)ase* (causative), *(r)are* (passive), *(r)e*, *(r)are*, (potential), *ta(k)* (desiderative), and so on are independent predicates requiring sentential complementation. (21b) is a rough sketch of the sentential complement structure of *o*-causative (12a), repeated below as (21a) (Kuno 1978b):

(21) a. Taroo ga Hanako o hatarak-ase-ta.
Taroo Nom Hanako Acc work-Caus-Past
'Taro made Hanako work.'

b.



The fact that in Japanese only the subject can be the antecedent of the reflexive form *zibun* was used as evidence for the assumption of sentential complement structures for complex predicates. Take (22) for example, both *Taro* and *Hanako* can be interpreted as the antecedents of *zibun*:

(22) [Taroo$_i$ ga Hanako$_j$ o [Hanako$_j$ ga zibun$_{i/j}$ no heya de hatarak] aseta]

Unless Hanako$_j$ is assumed to be present as the complement subject in deep structure, as indicated by (21b), its function as the antecedent of *zibun* cannot be accounted for.

As a corollary to the assumption of sentential complement structures for complex predicates, case marking is assumed to apply cyclically to this structure. This

assumption, originated by Kuroda (1965) and shared by the linguists supporting transformational case marking (Kuno 1973c; Inoue 1976; Kuroda 1978; Tonoike 1978, among others), reflects the insight that both simple and complex predicates require the same basic case alignments, namely, *ga*, *ga-o*, *(ga-ni-o)*.[10]

4.2.2 Cyclicity, verb raising, and Equi-NP deletion

Cyclic case marking and verb raising have been employed in all transformational case marking systems, with differences only in the treatment of the particle *ni* and Equi-NP Deletion. As for the analysis of major sentence structures, there have been various different proposals. Kuroda (1965) is based on ST. With the basic ideas of Kuroda (1965) intact, Kuroda (1978) extended its coverage of data, taking into consideration various claims and proposals made through the 1960s and 1970s, among which the most influential were Kuno (1973c) and Harada (1973). To discuss the whole range of structural case particle distribution, Kuroda (1978) is summarized as the point of departure, followed by alternative proposals relevant to case marking.

Despite all the original contributions to the theory of case marking in Japanese, Kuroda's system has certain limitations. One limitation is given here, because it is a keystone of the whole system. That is his admission of only *ga* and *o* as structural cases, as shown by (23), excluding all kinds of *ni* as postpositions, which results in an inability to account for the fact that an indirect object is readily passivized, as shown by the passive counterpart of (13), given below as (24).

(23) Mark the first unmarked noun phrase with *ga*, and mark any other unmarked noun phrase or phrases with *o*.

(24) Taroo ga titioya ni taikin o watas-are-ta.
Taroo Nom father by a lot of money Acc give-Pass-Past
'Taro was given a lot of money by his father.'

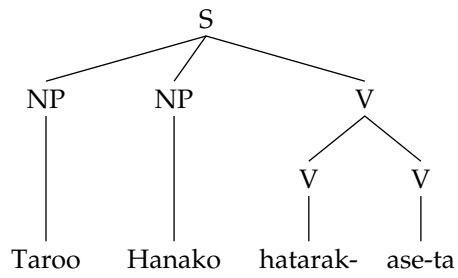
Applied to a simple transitive sentence, (23) derives the standard *ga-o* (Nom-Acc) case array of simple transitive sentences.

With this much overview, let us proceed with the discussion of Kuroda's case marking system.

Taking (21b) as an example let us see how (23) is applied. First *Hanako* in the complement sentence gets *ga* marked, since it is the first unmarked NP on this cycle. There is no other unmarked NP in the complement sentence, so we proceed to the second cycle, deleting the already case-marked NP *Hanako* by Equi-NP deletion on the basis of its coreferentiality with the object NP *Hanako* in the matrix sentence. (For the analysis of *o*-causative without the matrix object (Inoue 1976; Tonoike 1978), Equi-NP deletion is inapplicable.) Next the complement predicate *hatarak-* ('work') is raised and adjoined to the matrix predicate *(s)ase* deriving the complex predicate *hatarak-ase* ('cause to work'). Since the complement sentence loses its subject and predicate by Equi NP deletion and

Verb Raising respectively, the complement S node is deleted, resulting in the structure in (25):

(25)



To this structure rule (23) applies again. Since *Taroo* is the first unmarked noun phrase it gets *ga* marked, and Hanako, the other unmarked noun phrase, gets *o* marked on it. Thus, case marking proceeds cyclically based on the linear order of unmarked NPs. This is how (23) derives the case alignment of transitive sentences both simple and complex.

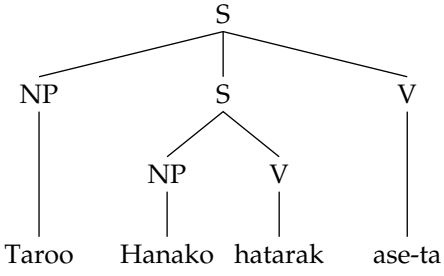
4.2.3 Subject ni*-raising and counter Equi-NP deletion*

To account for the other type of causative, namely *Ni*-causative, Kuroda introduces a transformational rule called subject *ni*-raising, "which makes the embedded subject a clause mate of the matrix verb and assigns it the particle *ni*"[11] (Kuroda 1978: 30).

The *Ni*-causative such as (12b), given below as (26a), is assumed to have the structure in (26b):

(26) a. Taroo ga Hanako ni hatarak-ase-ta.
'Taro let Hanako work.'

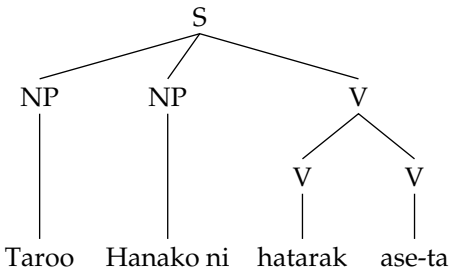
b.



Note that there is no extra NP in the matrix of this sentence. In the first cycle the first unmarked NP *Hanako* gets *ga* marked on it, followed by subject *ni*-raising and verb raising. Due to subject *ni*-raising, the complement subject *Hanako* receives *ni* on top of *ga*, resulting in Hanako *ga ni*. Since a noun phrase with *ga* or *o* is regarded as unmarked, doubling of structural cases as in *Hanako ga ni* is an inevitable consequence of cyclic case marking, so the deletion of the first case particle from such a sequence of structural case particles becomes obligatory.

(This rule is formalized by Kuno (1973c: 335) as *ga/o* Deletion, which reads: Delete *ga* and *o* if they are followed by some other particle.) After the embedded S node is deleted the sentence has the following structure:

(27)



Since *Hanako* is already marked with *ni*, Taroo is the first and only unmarked NP which receives *ga* by Rule (23). Thus, (A) sentence types, i.e. both *o*- and *ni*-causatives, are derived with the two additional rules, subject *ni*-raising and *ga/o* Deletion. This much has been widely accepted through the 1970s and the early part of the 1980s.

Subject *ni*-raising is employed extensively by Kuroda, in the derivation of the (A) *ni*-causative as given above, (C) indirect passive (14c), (E) *ni-ga* potential (16b), and (I) *o*-causative with a transitive complement sentence (20), most of them different in syntactic properties. They are all repeated below in (28):

(28) a. Taroo ga otooto ni zyuuyoo syorui o yom-are- ta. (= (14c))
Taroo Nom brother by important document Acc read-Pass-Past
'Taro had his brother read the important document.' (Indirect Passive)
b. Katoo-san ni wa konna muzukasii zi ga yom- e- ru. (= (16b))
Katoo Dat Top such difficult character Nom read-Pot-Pres
'Mr Kato can read such difficult characters.' (*Ni-Ga* Potential)
c. Katoo-san ga kodomo ni nimotu o hakob-ase-ta. (= (20a))
Katoo Nom child Dat baggage Acc carry-Caus-Past
'Mr Kato made the child carry the baggage.' (*o*-causative with a transitive complement sentence)

The complement sentences for those in (28) are (29a–c):

(29) a. Otooto ga zyuuyoo syorui o yon-da.
'His brother read the important document.'
b. Katoo-san ga konna muzukasii zi o yom-u.
'Mr Kato reads such difficult characters.'
c. Kodomo ga nimotu o hakon-da.
'The child carried the baggage.'

The indirect passive such as (28a) has a structure similar to that of *ni*-causatives like (26a), the only difference being in the matrix predicate selection, namely,

the selection of the passive *-are-* instead of the causative *-ase-*. The derivation proceeds exactly the same way as that of *ni*-causative.

For the analysis of direct passives, there have emerged two significant proposals, the uniform and non-uniform theories. The former proposes the same deep structure with a complement sentence for both direct and indirect passives. The latter proposes a derivation of direct passives distinct from that of indirect passives. (See Howard and Howard 1976 for details.) An early example is Kuno's (1973c) derivation of direct passives from their active counterparts.[12] The non-uniform analysis in the EST framework like Kuno (1973c) proposes a deep structure similar to that for English passives, as shown by (30):

(30) a. ___ be Verb-en NP (by NP) (English)
b. ___ (NP ni) NP Verb-rare (Japanese)

Both of these deep structures involve an empty subject position, which is filled by the moved object NP. In Kuno (1973c) the movement of the object NP precedes the case marking transformation, thus preventing the accusative case marking from applying to the object NP. In the subject position the object NP gets *ga* marked by subject *ga* marking. In the PPA, a rationale is given to object NP movement, roughly as motivated by the passive morpheme absorbing abstract case assigning ability from the transitive predicate it is attached to and suppressing the theta-role assigned by the predicate to the empty subject position. Thus, the object is left caseless, and its movement to the subject position is obligatory due to the case filter requiring that every lexical NP must have case assigned to it. Because of the subject theta-role suppression, the object NP carries on the theta-role assigned by the verb without violating the theta criterion, which requires only one theta-role for each NP. This basic tenet of passive derivation remains the same regardless of the changes of the case system through the development of generative theory.

Going back to Subject *ni*-Raising, which assigns *ni* to complement subjects, the use of this rule for the derivations of *ni*-causative and indirect passive has enjoyed acceptance, but the same does not hold with the use of this rule for potentials like (28b, c).

The base structure of a potential was assumed to be something like (31):

(31) [Katoo-san [Katoo-san konna muzukasii zi yom]e]ru

Applying rule (23) on the first cycle, we get [Katoo-san ga konna muzukasii zi o yom]. Equi-NP deletion and verb-raising derives [Katoo-san konna muzukasii zi o yom-e-ru]. To this structure (23) applies again, deriving (16a), repeated below as (32):

(32) Katoo-san ga konna muzukasii zi o yom-e-ru.
Katoo Nom Acc

Ni-ga potential sentences ((16b) = (28b) for example) pose a problem for Kuroda's system. To derive (28b) from (31), Kuroda has to resort to a nonstandard device, namely Counter Equi deletion, "a deletion rule that wipes out the copy of a noun phrase in the matrix clause under the control of the coreferential copy of the same noun phrase" (Kuroda 1978: 30). Here lies a theoretical problem, since this device is hardly legitimate under the present framework of generative grammar, because the structures derived by Equi-NP deletion were reanalyzed in EST as structures with PRO occupying the complement subject position. Application of Counter Equi results in a structure with PRO in the matrix subject position of (31) governed by the matrix I(nflection). This is counter to the PRO theorem, which requires that PRO be ungoverned. In Kuroda (1978) after Counter Equi wipes out the matrix subject, the complement subject is marked by *ni* and raised to the matrix clause. Since *ni* is treated as a postposition, and the complement subject is marked with a postposition, the first unmarked NP is *konna muzukasii zi* ('such difficult characters'), which is to be marked with *ga*. Thus (28b) is derivable in this system only by positing Counter Equi.

Even though the *Ni-ga* Potential case alignment is accounted for by this device, there are a few empirical problems. First, simple sentences of the (D) type, for example (15a), given below as (33a), can have the same case array. (33b) is an additional example:

(33) a. watasi-tati ni mondai no honsitu ga yoku
we Dat problem Gen real nature Nom well
wakar- u koto
understand-Pres that
'that we can understand well the real nature of the problem.'

b. kono gakusei ni konpyuuta ga deki- ru koto.
this student Dat computor Nom can do-Pres that
'that this student can use computers.'

In Kuroda's system, simple predicates like *wakar* ('understand') and *deki* ('can do') have to be analyzed as complex predicates involving a sentential complement structure.

The second empirical problem is the inability of this system to account for the *ga-ga* potential ((16c) for example, repeated below as (34)), since the object *ga* marking is dependent on the dative subject derived by subject *ni*-raising:

(34) Katoo-san ga konna mutukasii zi ga yom-e-ru.
Nom Nom

Due to the same reason, Kuroda (1978) is unable to derive (G) multiple nominative construction.

Counter Equi is also used by Kuroda to derive (28c), *o*-causative with a transitive complement, whose deep structure is assumed to be (35). In the first cycle of (35), *kodomo* ('child') and *nimotu* ('baggage') are assigned *ga* and *o* respectively.

In the second cycle Counter Equi is applied deleting the matrix object *kodomo*. The complement subject gets *ni* and is raised to the matrix:

(35) [Katoo-san kodomo [kodomo nimotu hakob] ase-ta]
'Mr Kato made his child carry the baggage.'

Putting this analysis in the EST framework, we have the deleted matrix object (kodomo) in (35) appear as PRO, governed by the matrix verb *-ase*. Thus, neither the PRO in (28b) nor that in (28c) is legitimate in EST and its followers.

If Equi-NP deletion is applied after *ga* and *o* marking to the complement subject and object, the complement subject *kodomo ga* is deleted and the case marking rule (23) is applied in the second cycle, resulting in (36):

(36) *Katoo-san ga kodomo o nimotu o hakob-ase-ta. (= (I) – (20b))
Nom Acc Acc

This sentence is ungrammatical due to the so-called Double *O* Constraint, originally proposed by Harada (1973). This is a problem for those following EST and subsequent theories along this line. One of the solutions by Kuno is given in the following section.

Finally Kuroda proposes the templates called 'canonical sentence patterns', which apply at the end of each cycle. These templates are necessary because he assumes that both Equi and Counter Equi-NP deletion are applied freely. The free application of these rules leads to overgeneration, which requires some filters to screen out ungrammatical case alignments.

(37) Canonical sentence patterns:

I	Transitive sentence pattern:	NP *ga* NP *o*
II	Ergative sentence pattern:	NP *ni* NP *ga*
III	Intransitive sentence pattern:	NP *ga*

Since Counter Equi-NP deletion is not permitted in the present framework, the templates (37), applied cyclically, have ceased to function in the intended way. Moreover, the surface filter makes cyclic transformational case marking redundant, since the filter admits only correct forms regardless of what kind of derivational processes have been followed.

The redundancy of cyclic transformational case marking was noted by lexicalist approaches, such as those proposed by Miyagawa (1980), Ostler (1980), Farmer (1980), and Inoue (1982a, 1982b), which worked out mechanisms for surface case marking.

However, surface templates of this type may be necessary anyway. (See for example Inoue 1997a for discussion of the Double *O* Constraint as a surface phenomenon.) There is also an important claim made by (37), namely the requirement that every sentence must have one Nominative NP. (Minimum One Nominative Requirement (Inoue (1998).) This requirement was called into

question by Inoue (1998), in the face of sentences with subjects marked with postpositions like *kara* ('from') and *de* ('with'), rather than *ga*.

Kuroda's original contributions to the theory of case can be summarized as follows: (i) the distinction between structural and inherent cases in terms of unmarked and marked NPs; (ii) the cyclic transformational case marking by which structural case alternations among *ga*, *o*, and *ni* are captured on the basis of syntactic derivation of complex predicates; (iii) the formulation of case marking rules as general as possible, avoiding the use of specific rules to deal with distributional facts.

Shortcomings of Kuroda's work on case in Japanese are amply revealed in (i) his proposals for Counter Equi-NP deletion, deriving the *ni-ga* potential as well as avoiding the Double *O* Constraint; (ii) the failure in accounting for multiple nominative constructions including the *ga-ga* potential; (iii) the inability to account for the occurrences of the *ni-ga* case alignment in sentences without sentential complements; (iv) the inability to account for the structural function of the indirect object, as exemplified by (24); (v) the proposal for canonical sentence patterns applying at the end of every cycle, invalidating his own cyclic case marking system.

4.3 Structural cases and grammatical relations 'subject', 'object', and 'indirect object'

Kuno (1973c) proposed a modification and extension of Kuroda (1965). His case marking system uses the notion of grammatical relations, as those in (38), in sharp contrast with Kuroda's linear case marking. Since grammatical relations are identified by syntactic structures, namely, the subject is defined as the NP immediately dominated by S, and the object as the one immediately dominated by VP, Kuno's case marking appears to be configurational. However, syntactic configuration is not crucially used in Kuno's system, as is clear from (38):

(38) a. Indirect object marking: Attach *ni* to the second of three unmarked NPs, that is, to the NPs that do not yet have a particle.
b. Subject marking: Attach *ga* to the subject NP.
c. Object marking: Attach *o* to the first nonsubject unmarked NP to the left of the main verb if it is [–stative], and *ga* if it is [+stative].

(Kuno 1973c: 330)

Employing Equi-NP deletion, Kuno has (38b, c) for marking both the subject and the object of potentials like (16c) with *ga* in the second cycle, deriving the *ga-ga* case alignment, thus overcoming Kuroda's limitation (ii). Since (38b, c) apply to sentences with simple stative predicates as well, the *ga-ga* case array, as in (15c), is also derivable. This saves Kuno's system from Kuroda's limitation (ii). As Object *ga* marking of stative predicates (38c) is optional in case the object is already marked with *o*, the *ga-o* potential case alignment (as in (16a) is derivable. Kuno avoids using Counter Equi and subject *ni*-raising to derive *ni-ga* combinations,

but uses the surface case alternation rule deriving the surface *ni-ga* sequence from the *ga-ga* case alignment (Kuno's *ga/ni* conversion). The problem with this device will be taken up in section 4.4 in relation to Saito's (1982) analysis.

In Kuroda's system the *ni* that marks the indirect object is a postposition rather than a structural case. However, the indirect object functions as a structural case, as shown by (24). Kuno provides indirect object *ni* marking (38a). Thus, the *ni* that marks the indirect object is a structural case particle in Kuno's system, which frees the system from Kuroda's limitation (iv) in relation to passivization using the indirect object.

4.4 Subjectivization

Sentence (18), repeated as (39), is a celebrated example of sentences with multiple nominative noun phrases given in Kuno (1973c). Multiple nominative noun phrases are restricted to sentences with stative predicates and predicates with the generic sense.

(39) Bunmeikoku ga dansei ga heikinzyumyoo ga mizika-i.
civilized countries Nom male Nom average life span Nom short- Pres
*'It is in civilized countries that men are such that their average life-span is short.'[13]

Kuno derives sentences like (39) by the transformational rule called Subjectivization:

(40) Subjectivization (tentative formulation) [optional]:
Change the sentence-initial NP-*no* to NP-*ga*, and make it the new subject of the sentence.
(Kuno 1973c: 71)

Rule (40) is applied to structures like the following:

(41) Bunmeikoku no dansei no heikinzyumyoo ga mizika-i.
Gen Gen Nom

By iterative application of this rule, (42) and (39) are generated step by step:

(42) Bunmeikoku ga dansei no heikinzyumyoo ga mizika-i.
Nom Gen Nom

Subjectivization was extended to apply to the first noun phrase either with *no* or *ni* (locative) iteratively. (43b) is an example of Subjectivization of a locative noun phrase:

(43) a. Sinsyuu ni taka-i yama ga takusan ar- u.
Sinsyuu Loc high mountain Nom many exist-Pres
'In Sinsyuu there are many high mountains.'

b. Sinsyuu ga taka-i yama ga takusan ar-u.
Sinsyuu Nom Nom

Subjectivization certainly filled the gap left by Kuroda's system.

The relevant transformational rules proposed by Kuno on top of Kuroda's rules are as follows:

(44) (i) Indirect object marking, (ii) Object *ga* marking in a sentence with a stative predicate, (iii) *ga*/*ni* conversion, (iv) Subjectivization.

To summarize, transformational analysis of case in Japanese made various claims, which laid the foundation for later development of this area of research. Important claims are repeated in (45) given below:

(45) a. distinction of structural cases from postpositions (unmarked vs. marked NPs in deep structure),
b. sentential complement structure for complex predicates,
c. cyclic application of case marking rules,
d. marking of the complement subject with *ni*,
e. linear case marking.

The following distributions of structural case particles were given special attention by those supporting transformational case marking and have continued to be targets of intensive study of case in Japanese. It is interesting to note that most of the important distributional facts about structural cases were already elucidated by the transformational study of case.

(46) a. *ga*:
i. assigned to subjects of sentences with finite predicates,
ii. assigned to objects of stative predicates,
iii. assigned to the first genitive or locative noun phrases in sentences with stative predicates (the case of multiple nominative construction).
b. *o*: 'Double *O* Constraint.'
c. *ni*:
i. assigned to subjects of certain stative predicates, those in (D), (E), and (H) in section 4.2,
ii. assigned to complement subjects of *ni*-causative and indirect passive,
iii. assigned to indirect objects.

The underlying principles of transformational case marking were maintained up to the end of the 1980s, with various modifications within the framework of the PPA. Among quite a number of proposals for refinements, Saito (1982), Takezawa (1987), and Kuroda (1986, 1988) will be taken up in section 5.

5 Refinements of transformational case marking under GB theory

Most of the works during the 1980s deal with the specifics of case marking mechanisms listed in (45). Saito (1982) makes various proposals for refinements of past works that depend upon a certain amount of specific structural devices.

Kuroda (1986) gives a detailed account of the *ga* marking of postpositional phrases in 'tough sentences' like (47):

(47) Sensyu ni wa kono dai (kara) ga tobi- niku-i.
athlete Dat Top this springboard (from) Nom jump- hard-Pres
'This springboard is hard for athletes to jump from.' (Inoue 1978b: (6))

Kuroda (1986) is a detailed study of nominative case marking on the basis of the linear case marking system proposed in his work in 1978. Takezawa (1987) proposes the 'Configurational Case-Marking' system on the basis of GB Case theory, while Miyagawa (1989b) follows standard GB Case marking with emphasis on the distinction between arguments and adjuncts in terms of the phrase structural difference between structural case marking (Miyagawa's cliticization of case particles to the preceding NPs) and the projection of postpositions into postpositional phrases (PPs).

Kuroda (1988) makes a claim against uniform employment of agreement induced by the case checking mechanism, which was proposed in the later development of GB theory. This work of Kuroda's is a kind of bridge to the MP.

5.1 Saito (1982)

Saito (1982) argues against Kuno's object *ga* marking for sentences with stative predicates (38c) and Subjectivization (40). (Problems (46)a(ii), (iii)). He proposes to assume *ga*, together with *ni*, as a base generated inherent case marker. He starts building his theory using arguments and data from Inoue (1978b), which proposes some revision of Kuno's case marking on the basis of her analysis of 'tough sentences' of Japanese.

Inoue (1978b) classifies 'tough sentences' into the following four types:

Type I: Gakusei ni wa kono zisyo ga tukai- yasu-i.
student Dat Top this dictionary Nom use- easy-Pres
'This dictionary is easy for students to use.' (Inoue 1978b: (1)).
(More examples are given below in (48).)

Characteristics:

(i) Undergoes subject *ni*-raising by Kuroda and object *ga* marking for stative sentences by Kuno, resulting in the *ni-ga* case alignment.

(ii) Requires [+Self-controllable] complement predicates.[14]
(iii) Requires that an intransitive sentence have an additional NP other than the subject.
(iv) Permits *ga* marking on postpositional phrases.

Type II: Saikin watasi wa netuki- niku-i.
Recently I Top get to sleep hard-Pres
'It has recently been hard for me to get to sleep.' (Inoue 1978b: (10))

Characteristics:

(i) Disallows subject *ni* raising.
(ii) Requires [+Self-controllable] complement predicates.
(iii) Behaves like psychological predicates, expressing the subject's judgment. (See Inoue 1978b for details.)

Type III: Senzai wa yu ni toke- yasu-i.
detergent Top warm water in dissolve easy-Pres
*'Detergent is easy to dissolve in warm water.' (Inoue 1978b: (25))

Type IV: Awatemono wa ziko o okosi- yasu-i.
hasty people Top accident Acc cause tend to-Pres
'Hasty people tend to cause accidents.' (Inoue 1978b: (31))

Characteristics shared by types III and IV:

(i) Disallows object *ga* marking.
(ii) Requires [-Self-controllable] complement predicates.

The class most relevant to Saito's case system is type I, in which not only objects but also other oblique NPs originally with various postpositions are marked with *ga*, as shown in (48):

(48) a. Gakusei ni wa kono zisyo ga tukai- yasu-i.
student Dat Top this dictionary Nom use- easy- Pres
'This dictionary is easy for students to use.' (object NP)
b. Tosiyori ni wa kono toori ga kaimono o si- niku-i.
aged people Dat Top this street Nom shopping Acc do- hard-Pres
'This street is hard for aged people to shop around.' (NP with *de*)
c. Kodomo ni wa ano isu ga suwari- niku-i.
child Dat Top that chair Nom sit- hard-Pres
'That chair is hard for a child to sit on.' (NP with *ni*)
d. Sensyu ni wa kono dai (kara) ga tobi- niku-i.
athlete Dat Top this springboard (from) Nom jump- hard-Pres
'This springboard is hard for athletes to jump from.' (NP with *kara*)
(Inoue 1978b: (1), (2), (4), (6))

What is important here is that Kuno's rules cannot account for (48b, c, d), in which postpositions are replaced by *ga*. (48d) even has the possibility of retaining the postposition *kara*. Inoue proposes to generalize the application of object *ga* marking to cover NPs with postpositions.

In view of these facts, Saito (1982) assumes that the nominative case particle *ga* is inherent in that it is base generated with an NP, whereas accusative case is assigned by the verb. First he takes up sentences with multiple subjects like (39), repeated below as (49), those with objects and oblique arguments marked with *ga* as in (50) and (51) respectively, and those derived by a rule called *ga-no* conversion, exemplified by (52b):

(49) Bunmeikoku ga dansei ga heikinzyumyoo ga mizika-i.
*'It is in civilized countries that men are such that their average life-span is short.'

(50) Dare ga/ni kore ga deki- ru ka.
who Nom/Dat this Nom can-do-Pres Q
'Who can do this?' (Saito 1982: (3))

(51) Sensyu ni wa kono dai (kara) ga tobi- niku-i.
athletes Dat Top this springboard from Nom jump hard-Pres
'This springboard is hard for athletes to jump from.' (Inoue 1978b: (6))

(52) a. John ga hon o kai- ta.
John Nom book Acc write- past
'John wrote a book.'
b. John ga/no kai- ta hon
Nom/Gen write- Past book
'the book John wrote'
c. hon o/*no kai- ta John
book Acc/Gen write- Past

The sentences in (52) show that in a relative clause the nominative *ga*, but not the accusative *o*, can be converted to genitive *no*.[15]

Saito calls the *ga* phrases traditionally derived by Subjectivization 'focus with nominative case' in order to distinguish them from the 'subject'. He bases his assumption on distributional facts about multiple nominative phrases and semantic characteristics of sentences with them. In the first place, he argues that *ga* appears with a locative phrase as in (53b):

(53) a. Los Angeles ni nihonzin ga oo- i.
Los Angeles in Japanese Nom many- Pres
'There are many Japanese people in Los Angeles.'
b. Los Angeles ga [$_S$ nihonzin ga oo-i]
Nom
'Los Angeles is such that many Japanese reside there.' (Saito 1982: 7)

Next, the ungrammaticality of (54b) indicates that there should be some kind of 'aboutness' relation between the *ga* phrase and the remaining portion of the sentence:

(54) a. [$_{NP}$ ame no hi] ga tuzuite i-ru
rain Gen day Nom continuing Pres
'It has been raining for several days.'
b. *ame ga [$_{S}$ hi ga tuzuite i-ru]
Nom
(Lit. 'Rain is such that days are continuing.') (Saito 1982: 8)

Since it is impossible to perceive an 'aboutness' relation between *ame* and the rest of the sentence, (54b) is ungrammatical. The fact that multiple nominative phrases usually appear in sentences with stative verbs and verbs with generic tense can be accounted for by this requirement of 'aboutness' relation, which leads to the interpretation of the rest of the sentence as a statement about a property of the subject.

The 'focus with nominative' phrases in (49–51) and (53) can be replaced by topic phrases. Moreover, topic phrases require the 'aboutness' relation as well, and might be assumed to be base generated. This gives support to the assumption of base generation of 'focus with nominative case'. As additional support for this assumption, Saito uses the fact that 'focus with nominative case' behaves in the same way as topics in terms of the Double *O* Constraint:

(55) Kono hon wa [$_{S}$ Mary ga John *o/ni [e_i] yom- ase- ta].
this book Top Mary Nom John Acc/Dat obj read- cause- Past
'This book, Mary made John read it.' (Saito 1982: 17)

(56) a. John wa Tom *o/ni ano hon o yom- ase-ta-katta n daroo.
John Top Tom Acc/Dat that book Acc read- cause-want-Past tagQ
'John wanted to make Tom read that book, didn't he?'
b. Iya, kotti no hon no hoo$_i$ ga [$_{S}$ John wa Tom *o/ni [e_i]
No, this side Gen book Gen rather Nom Top Acc/Dat
yom- ase-ta- gatte i-ta.
read- Cause- want-appear- Past
'No, it was rather this book that it appeared that John wanted to make Tom read it.'

In order to support his assumption, rather than Subjectivization, Saito gives multiple nominative phrases underivable by this transformation. (53) with a Locative phrase is one of them. Some additional examples are given below:

(57) a. Kono atari no biru kara wa (gozi goro ni naru to)
this around Gen building from Top 5 o'clock about become when
hito ga oozei de-te ku- ru ne.
person Nom many getting out come- Pres Tag
'When it becomes about 5, there are many people coming out from buildings around here, aren't there?'

b. Aa, nakademo soniibiru (kara) ga [$_S$ itiban hito ga
yes among them Sony Building from Nom most person Nom
ooku dete kuru yo].
many getting out come
'Yes, among those buildings, the one from which the largest number of people come out is the Sony Building.' (Saito 1982: 13)

(57b) is an example of *ga* following an oblique argument, the *kara* phrase.

(58) ?Kono syu no hon$_i$ ga [$_S$ kodomo- tati ga [e$_i$] yomi-ta- gar- u].
this kind Gen book Nom child- pl Nom obj read-want- appear- Pres
'It is this kind of book that it appears that children want to read.'
(Saito 1982: 13)

(58) is the case of an object marked with *ga*, while in (59) the object modifier *Chicago no hoo* has this type of *ga*:

(59) Boston yori mo Chicago no hoo ga [$_S$ John wa (sono) huyu no
Boston than Chicago Gen rather Nom John Top its winter Gen
samusa ga tae rare-nakat- ta].
coldness Nom bear can not- Past
'It was Chicago rather than Boston that John could not stand its cold winter.'
(Saito 1982: 14)

Furthermore, in some cases the nominative phrase does not bind any position in the sentence, as in (60) and (61):

(60) (Yahari) natu ga [$_S$ biiru ga uma- i].
after all summer Nom beer Nom tasty Pres
'After all, it's during the summer that beer tastes good.'

(61) (Sizenkagaku no naka de wa) kotosi wa buturi ga
natural science Gen within Top this year Top physics Nom
[$_S$ syuusyoku ga taihen da].
getting a job Nom difficult- Pres
'Among the natural sciences, this year, physics is the area where it is difficult to get a job.' (Saito 1982: 14)

To account for all these facts Saito postulates (62), which recursively generates 'focus with nominative case':

(62) S $\Rightarrow$ XP S, where X = [–V]
[nom.] (Saito 1982: 16)

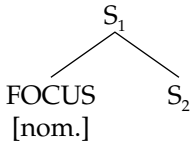
This rule permits free generation of "focus with nominative case," and in order to block over-generation, exemplified by (54b), the semantic constraint in terms of 'aboutness' requirement is utilized.

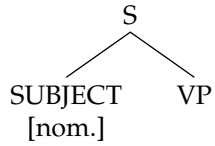
Examples like (63) indicate that nominative case is allowed in the subject position of a nonfinite clause. It is impossible to assume that the focus phrase in the complement of (63) gets *ga* assigned to it by Infl of the matrix, since this implies case assignment across the sentence boundary:

(63) [$_S$ ame ga huri] hazime- ta
rain Nom fall start- Past
'It started to rain.'

This is a piece of evidence in conflict with the assumption of nominative Case assignment by Infl(ection), which is one of the claims of GB Case theory.

Saito concludes, "both 'focus' and 'subject' take nominative case because nominative case marks the semantic role 'recipient' on the NPs that are immediately dominated by S, and their case is inherent in that it is not given by any element" (Saito 1982: 3). In this grammar, 'focus' and 'subject' are not distinct syntactic elements, but only different in the configurations in which they appear, as shown by (64):

(64) a. 

b. 

The object and oblique phrases marked by *ga*, as those in (48), are also claimed to be a case of 'focus with nominative case'. Saito's argument starts with *ga* marked objects in potential sentences like (34), and (28b), repeated below as (65):

(65) a. Katoo-san ga konna muzukasi-i zi ga yom-e- ru.
Nom such difficult character Nom read-Pot- Pres
b. Katoo-san ni (wa) konna muzukasi-i zi ga yom-e-ru.
Dat Nom
'Mr Kato can read such difficult characters.'

Compare this analysis with Kuno's. The objects are marked with *ga* in (65a, b) by Kuno's object *ga* marking for stative verbs, (38c) given above. Kuno further derives (65b) from (65a) by the *ga-ni* conversion rule.

Saito takes up potentials that contain oblique phrases with *ga*. The situation is the same as has been demonstrated with 'tough' sentences:

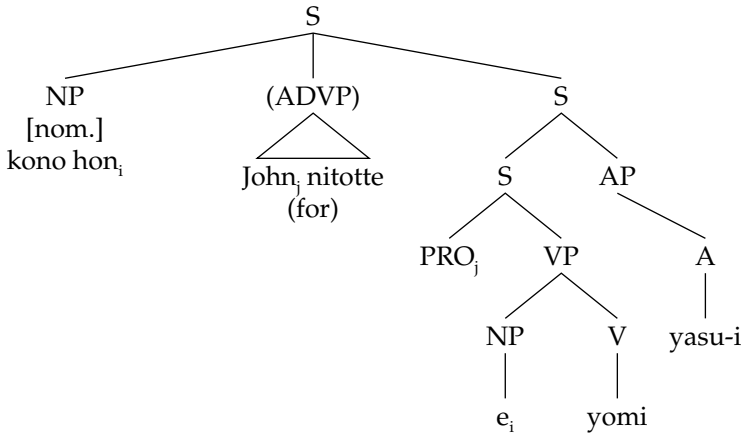
(66) Yahari bokura ni wa [daigaku no tosyokan ga itiban otituite
after all we for Top university Gen library Nom best calmly
benkyoo deki- ru.
study can- Pres
'After all, for us, the university library is the place we can study quietly.'
(Saito 1982: 64)

Using the fact that arbitrary PRO can appear only in an embedded clause as is shown by (67b), he argues for the underlying structure (67c), which he assumes for potentials like (67a):

(67) a. Kooitta gorakueiga ga rirakkususite tanosim-e- ru.
this kind of entertainment movie Nom relaxing while enjoy-Pot- Pres
'You can relax and enjoy this kind of entertainment movie.' (Saito 1982: 31)
b. *PRO_{ARB} kooitta gorakueiga o rirakkususite tanosim-e-ru
c. kooitta gorakueiga$_i$ ga [$_S$$PRO_{ARB}$ [e$_i$] rirakkususite tanosim-e-ru]

A discussion in the same vein is given to type I 'tough' sentences, with the proposal of (68b) as the underlying structure for a type I like (68a):

(68) a. kono hon ga (John nitotte) yomi-yasu-i (Saito 1982: 38–39)
b.



It is concluded that the *ni*-phrase in potentials and the *ni* or *nitotte* phrase in 'tough' sentences are postpositions "that govern an argument of a verb that cannot be lexically expressed as the subject or the object" (Saito 1982: 88). Their function is that "of specifying the semantic content of the unexpressed subject" (p. 86). This generalization is claimed to account for all the functions of *ni* in the following constructions: (i) the subject marker in a potential sentence such as (66), (ii) the complement subject marker in *ni*-Causatives like (12b), (iii) the *o*-causative with a transitive complement sentence such as (28c), (iv) the agent marker in direct and indirect passives such as those in (14), (v) the indirect object marker in double object constructions exemplified by (13).

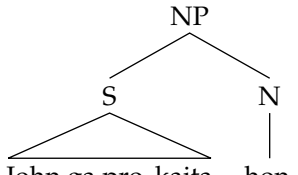
Thus, the case marking system is simplified tremendously in that *ga* and *ni* are treated as inherent case markers, and *o* is the only structural case assigned by the verb.

Finally, Saito follows Bedell's (1972) restructuring analysis of *ga-no* alternation in a relative clause, shown by (52), repeated below as (69):

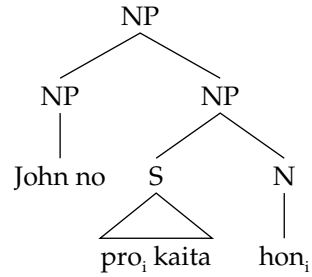
(69) a. John ga/no kai-ta hon.
'The book John wrote.'
b. hon o/*no kai-ta John

The reanalysis goes as in (70):

(70) a.



b.



No is assigned in the configuration (70b). Since restructuring does not leave a trace, the verb, an accusative case assigner, loses its assignee if the object NP undergoes restructuring. This is why (69b) with *o-no* alternation is not permitted. *ga-no* conversion does not cause ungrammaticality because pro$_i$ remains as the case assignee in (70b).

(71) and (72) give a summary of Saito's analysis in comparison with assumptions and specific proposals made by influential transformational analyses of Japanese case, given above as (45) and (46). (The proposals explicitly or tacitly adopted by Saito are omitted.)

(45) a. the distinction of structural cases from postpositions

(71) a. The distinction is kept, but the object is the only unmarked NP, the subject being marked inherently with *ga*.

(45) d. marking of the complement subject with *ni*

(71) d. All the following functions are borne by *ni* as an inherent case marker: (i) the subject marker in a potential sentence such as (65b), (ii) the complement subject marker in *ni*-causatives like (12b), (iii) the *o*-causative with a transitive complement sentence such as (28c), (iv) the agent marker in direct and indirect passives such as those in (14), (v) the indirect object marker in double object constructions exemplified by (13). (Due to this analysis the structural relations among relevant sentences are left unaccounted for.)

(45) e. linear case marking

(71) e. Rejected. In accordance with GB theory, accusative case marking by the verb is assumed.

(46) a. *ga*: (i) assigned to subjects of sentences with finite predicates

(72) a(i) *ga* is an inherent case, and an NP with *ga* is inserted in the position dominated by S as the sister to VP (see (64b)).

(46) a. *ga*: (ii) assigned to objects of stative predicates

(72) a(ii) inherent case, which marks foci. It is a well-known fact that *ga* marked objects are not necessarily interpreted as foci. (This is one of the weaknesses of this analysis.)

(46) a. *ga*: (iii) assigned to the first genitive or locative noun phrases in sentences with stative predicates.

(72) a(iii) inherent case, which marks foci. (The relation between sentences with genitive such as (41) and those with nominative like (39) is lost entirely.)

(46) b. Double *O* Constraint

(72) b. used only as a piece of evidence for the discussion of the similarity between sentences with foci and those with topics, saying that they both obey the Double *O* Constraint.

(46) c. *ni*: (i) assigned to subjects of potential and 'tough' predicates, (ii) assigned to complement subjects of *ni*-causatives and indirect passives, (iii) assigned to indirect objects.

(72) c. *ni*: (i), (ii), and (iii) are treated in the same way, as postpositional phrases adjoined to S. (i) and (ii) have the *ni*-phrases co-indexed with PRO in the complement sentences. These postpositional phrases specify the content of the empty subject PRO. (iii) has the *ni*-phrase co-indexed with a lexically unexpressed object, a kind of empty category, whose content is specified by this postpositional phrase.

Even though there is not much support for Saito's claim that there is no difference between 'focus with nominative case' and the subject in terms of their syntactic and semantic function, this work is a step toward a unified approach to the analysis of nominatives in Japanese, which involves three distinct rules in Kuno's system, namely, subject marking, stative object *ga* marking, and Subjectivization. It should be noted that this work rejects structure dependent *ga* assignment. By positing PRO co-indexed with 'focus with nominative case' or the subject, both of which are dominated by S, Saito maneuvers to account for the specific syntactic and semantic role the subject plays, that is, the role as the antecedent of anaphors and as the trigger of subject-orientated honorific expressions.

5.2 Kuroda (1986)

5.2.1 Movement of noun phrases

Kuroda (1986) is an extended study of *ga* marking on the basis of Kuroda (1978), more specifically, Linear Case Marking (LCM), Equi and Counter Equi, and verb raising, renamed Predicate Agglutination. His careful study of type I 'tough' sentences has led him to contend that movement of noun phrases to subject position (A movement) is involved in the derivation of this type of construction. This analysis is extended to the analysis of multiple *ga* constructions.

Note first the contrast between 'tough' sentences and potentials as revealed by the sentences in (73) and (74):

(73) a. Masao nitotte (wa) sono yuubinkyoku kara ga kozutumi o
Masao to that post office from Nom package Acc
okuri-yasu-i.
send-easy-Pres
'It is easy for Masao to send packages from that post office.' ('tough')

b. *Masao ni (wa) sono yuubinkyoku kara ga kozutumi o okur-e- ru
Acc send-Pot-Pres
'Masao is able to send packages from that post office.' (potential)
(Kuroda 1986: (14), (15))

(74) a. Masao nitotte (wa) sono yuubinkyoku kara kozutumi
from
ga okuri-yasu-i.
Nom ('tough')

b. Masao ni (wa) sono yuubinkyoku kara kozutumi
from
ga okur-e-ru.
Nom (potential)

Kuroda assumes the deep structures (75) and (76) for 'tough' and potential constructions respectively. [e] is in the matrix non-theta subject position.

(75) [Masao nitotte [e] [Masao sono yuubinkyoku kara kozutumi okuru] yasu-i]

(76) [Masao [Masao sono yuubinkyoku kara kozutumi okur] e-ru]

(74a) is the result of moving *sono yuubinkyoku kara* ('from that post office') to the empty subject position ([e]). To permit *ga* marking on this phrase, Kuroda introduces the following principle:

(77) NP movement makes an inherent case-marker (a postposition) attached to an NP invisible to LCM. (Kuroda 1986: 31)

'Invisible' means that LCM ignores the presence of postpositions attached to moved NPs and interprets them as unmarked NPs subject to LCM. Since no movement is involved in (74), there is only the possibility of *ga* marking of the object (as in (74b)), which is the first unmarked NP after Counter Equi is applied and the complement subject is marked with *ni* by subject *ni*-raising. (75) can follow the same procedure of *ga* marking on the object.

Thus, *ga* marking on postpositional phrases is permitted in 'tough' sentences but not in potentials. The former involves NP movement, while the latter does not. This is the cause for the difference in grammaticality.

When NP movement is applied to *sono yuubinkyoku kara* and object *ga* marking to *kozutumi*, the result is the multiple *ga* sentence (78a). A similar situation holds with potentials as revealed by (78b):

(78) a. Masao ni totte sono yuubinkyoku kara ga kozutumi ga okuri-yasu-i.
Nom Nom

b. Sono yuubinkyoku kara ga ookina kozutumi ga okur-e- ru.
that post office from Nom big package Nom send-Pot- Pres
'One can send big packages from that post office.'
(Kuroda 1986: (92))

Kuroda claims that potential and 'tough' sentences with multiple *ga* phrases can be derived by Subjectivization together with those already discussed in section 4.4, namely (39), (43b), and those introduced in section 5.1 as focus phrases by Saito, namely, (53b), (56b), (57b), (58), (59), (60), and (61). Subjectivization is assumed by Kuroda as a phenomenon "which results as an effect of a rule making a constituent of a surface sentence with a stative predicate a 'major' subject" (Kuroda 1986: 274). "A (syntactically defined) stative predicate may be generated with a non-theta subject site Chomsky-adjoined to the main S node" (p. 274). This non-theta subject site may be filled by an argument or an adjunct moved from inside S. The deep structure of sentences of this type of subject (called 'major' subject) is (79a) with the surface structure (79b). (79c) is the deep structure of further multiplication of *ga* phrases.

(79) a. $[[e]\ [\ \ldots NP \ldots\ ]_S]_S$
b. $[NP\ [\ \ldots [t] \ldots\ ]_S]_S$
c. $[[e]\ [\ \ldots [[e]\ [\ \ldots NP \ldots\ ]_S]_S \ldots\ ]_S]_S$

Instead of *nitotte*, *ni* may appear in 'tough' sentences, which is the result of Counter Equi and subject *ni* raising in Kuroda's grammar.

5.2.2 Two types of potentials

As stated before, Kuroda's system does not permit postpositional phrases in potentials to get *ga* marked, contrary to the case of 'tough' sentences, since there is assumed to be no non-theta empty subject position in potentials as indicated by the deep structure (76). (80) is judged as ungrammatical by Kuroda and many

other native speakers, since *kono bed* ('this bed') is originally marked with the postposition *de* ('in'):

(80) *Masao ni (wa) kono beddo ga nemur-e- ru.
Masao Dat Top this bed Nom sleep-Pot- Pres
'Masao can sleep in this bed.'

However, there are counterexamples like (66) given by Saito (1982), repeated below as (81):

(81) Yahari bokura ni wa [daigaku no tosyokan ga itiban otituite
after all we for Top university Gen library Nom best calmly
benkyoo deki- ru.
study can- Pres
'After all, for us, the university library is the place we can study calmly.'

(82) Kotosi wa Amerika-zin ni wa yooroppa (ni) ga yasuku ik-e- ru.
this year Top American Top Europe Nom cheaply go-Pot- Pres
'Americans can go to Europe economically this year.'

Since this type of potentials typically have adverbs like *itiban* ('best') and *yasuku* ('economically'), Kuroda proposes (83), similar to that of 'tough' sentences, for the deep structure of sentences like (81) and (82). *Nitotte* in (83) alternates with *ni*, as in the case of 'tough' sentences.

(83) NP_1 nitotte [e] [NP_1 . . . V] Adv e-ru (Kuroda 1986: (80))

5.2.3 Focus reading

The subject of a root (matrix) sentence with a stative predicate is interpreted as a focus, which is phrased as 'exhaustive listing' by Kuno. Since *yasu-i* ('easy') and *niku-i* ('hard') are adjectives and necessarily stative, the noun phrase or postpositional phrase moved to the empty subject position gets this 'focus' reading. Kuroda's focus is thus in sharp contrast with Saito's, which is assumed to be syntactically determined. Kuroda's focus reading is predicted by the general interpretive rule (84):

(84) The subject *ga* phrase of a root sentence describing a state (as opposed to a specific event, action, situation, etc.) is interpreted as 'focused'.
(Kuroda 1986: (42))

The major subject is given interpretation by (84) as well.

5.2.4 Wa-ga *alternation*

The *wa* attachment transformation proposed in his dissertation (1965) is one of the most important theoretical contributions Kuroda made. ST assumed that

transformations do not change meaning, which was called into question by this transformation because noun phrases, adverbs, verb and adjective stems assume an additional meaning 'topic' when they get *wa* attached to them. Since the time of appearance of this dissertation, topicalization has been intensively studied from the point of view of Universal Grammar. Among many questions raised in this process, the question of whether topic phrases are derived by movement transformation or are base generated is still a lively issue. Kuroda (1986) contends that all *wa* phrases are derived by movement.

As for the semantic distinction between *wa* and *ga*, Kuno (1973c) gives the following distinctions: *wa*: theme and contrast; *ga*: exhaustive listing, neutral description, and object marking (1973c: 38).[16] These distinctions have been accepted widely. Kuroda's focus reading, given above, corresponds to Kuno's exhaustive listing. Kuroda (1992) gives a detailed account of the judgment forms expressed by topicalized and nontopicalized sentences, more specifically the topic *wa* phrase as the subject in logic and the subject *ga* phrase as a syntactic subject. A sentence with a topic *wa* phrase expresses categorical judgment (subject–predicate relation in logic), while one with a subject *ga* phrase expresses thetic judgment, which describes perceived events.

Inoue (1982a) is a study of *wa* and *ga* as syntax and semantics interface problems. With regards to the syntactic aspect, Inoue points out that topic phrases and *ga* phrases with an exhaustive listing reading share the following characteristics: both must be definite or generic noun phrases, and both must permit multiple occurrences. Neither the contrastive *wa* nor the neutral description *ga* has these characteristics.

As Kuroda (1986) admits, the semantic and pragmatic functions of *wa* still await thorough studies before a relevant generalization emerges. Thus, an all round discussion of topic phrases will take us too much afield, so they are discussed here only with respect to *wa-ga* alternation.

Even though an extensive parallel distribution is observed between *wa* and *ga*, there are cases where *wa* phrases cannot be replaced by *ga* phrases as in (85c, d):

(85) a. Masao ga eigo o hanas- u.
Masao Nom English Acc speak- Pres
'Masao speaks English.'

b. Masao wa eigo o hanas- u.
Top English Acc speak- Pres (topicalized version)

c. Eigo wa Masao ga hanas- u.
English Top Nom speak- Pres
*'English, Masao speaks.'

d. *Eigo ga Masao ga hanas-u
English Nom Nom speak-Pres (subjectivized version)

(Kuroda 1986: 281)

Kuroda claims that some apparent in situ major subjects like those in (60), (61), and (66) are derived by Subjectivization, thus binding some positions in base sentences, and that subjects and major subjects can be moved to the topic position dominated

by S'. In (85b) the subject *Masao* is topicalized, while *eigo* in (85d) is unable to be subjectivized due to the non-stativity of the predicate *hanas* ('speak'). Even though *eigo* can be topicalized as in (85c), its subjectivization is impossible. In the potential sentences in (86), *eigo* can undergo topicalization as well as subjectivization:

(86) a. Masao ga eigo ga hanas-e- ru.
Masao Nom English Nom speak-Pot- Pres
'Masao can speak English.'
b. Eigo ga Masao ga hanas-e-ru. (subjectivized version)
Nom Nom
'It is English that Masao can speak.'
c. Eigo wa Masao ga hanas-e-ru. (topicalized version)
'As for English, Masao can speak it.'

5.3 Takezawa (1987)

By 'configurational case marking', Takezawa means a system within GB theory which crucially uses the principle of government,[17] structurally determined on the basis of the notion of C-command.[18] Even though the works by Kuroda, Kuno, and some others use configurational structures in their grammars, their case marking systems are linear rather than configurational.

Takezawa (1987) depends fully on GB Case theory, which consists of (i) abstract Case assignment, namely Nominative is assigned by (I)nflection to the NP in the specifier position of IP,[19] while accusative is assigned by V, and (ii) Case filter (87).

(87) *NP if NP has phonetic content and has no case. (Chomsky 1981: 49)

Besides case theory Takezawa makes crucial use of Chomsky's (1981) rule R (the former affix hopping, namely, lowering tense to attach to [+V] lexical items), and S' deletion to trigger exceptional case marking.

5.3.1 Ga *marking*

Let us start with the *ga* marking in Takezawa's analysis. First taken up are familiar examples (49), (50), and (51), which are representative of sentences with multiple *ga* phrases, the *ni-ga* case alignment, and postpositional phrases with *ga*:

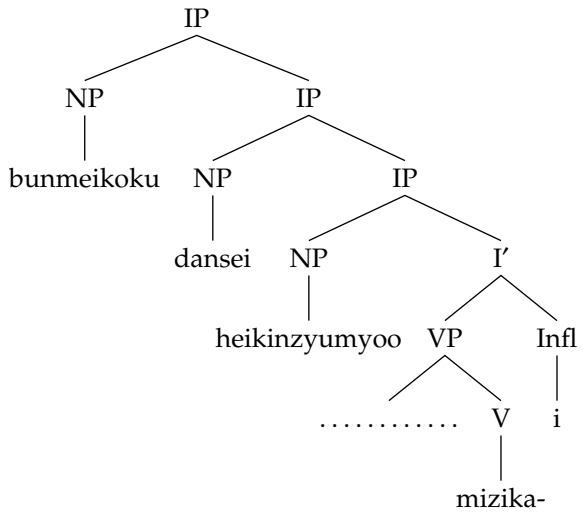
(49) Bunmeikoku ga dansei ga heikinzyumyoo ga mizika-i.
'It is in civilized countries that men are such that their average life-span is short.'

(50) Dare ga/ni kore ga deki-ru ka.
'Who can do this?'

(51) Sensyu ni wa kono dai (kara) ga tobi-niku-i.
'This springboard is hard for athletes to jump from.'

According to GB case theory, *ga* is marked by the tense dominated by Infl(ection) (Infl-tense by Takezawa). The subject of (49), *heikinzyumyoo* ('average life span') is generated in the IP Spec position, and case marked with *ga* by its governing head Infl-tense. The extra NPs, *bunmeikoku* ('civilized countries') and *dansei* ('men') can be similarly case marked by Infl-tense, by assuming the adjunction of these NPs to IP, generating a structure like (88):

(88)



Since in the structure (88) Infl governs all the NPs in the IP Spec position, Infl can be assumed to assign Nominative case to more than one NP, if the unique assignment of abstract case to one NP, as is assumed by GB, is discarded. Kuroda (1988) gives convincing arguments for this point. See section 5.4 for details. Ura (1996) uses the multiple nominative construction as evidence most relevant to the assumption of multiple feature checking (section 6).

Ga marking of the object of the stative predicate was first formalized by Kuno as (38c). Takezawa tries to give principled arguments, rather than a stipulative statement like (38c), to account for this phenomenon on the basis of each predicate's case assigning property. For example, *wakar* ('understand'), the potential *(r)are/(r)e*, the passive *(r)are*, and the tough morpheme *yasu-i/niku-i* are devoid of this property. Takezawa summarizes the object *ga* marking mechanism in (89):

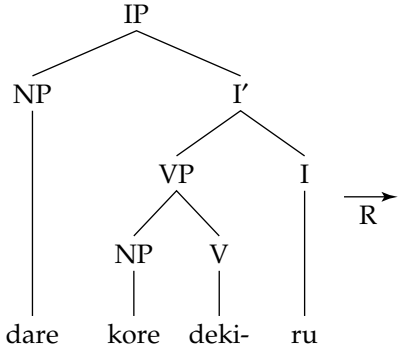
(89) a. Stative verbs like *wakar* ('understand') do not have case assigning ability, although they have an 'unmarked' (i.e., non-pp) internal argument.
b. Japanese does not have a P-insertion rule analogous to English *of*-insertion (that inserts a dummy P to the un-case marked object position).
c. The internal argument cannot undergo movement to the subject position because the subject position is a theta position.
d. Therefore, rule R, which lowers Infl into VP, must apply to assign case to the internal argument.

e. After being moved into VP, the lowered Infl may or may not govern the subject ("optionally governs" the subject). (Takezawa 1987: 104)

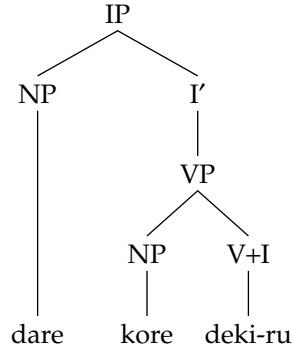
The analysis of stative sentences like (50) goes as follows, using rule R:

(50) Dare ga/ni kore ga deki-ru ka?
'Who can do this?' (Takezawa 1987: 84)

(90) a.



b.



R

Due to the factors listed as (89a–c), application of rule R yields the result that the internal argument *kore* is governed by the lowered Infl (I in (90b)) and assigned *ga*. Without Infl in the matrix the external argument (the subject) is no longer governed in the usual way. Here comes in the stipulation (89e). If the lowered Infl governs the subject, *ga* assignment to the subject takes place. Without government by Infl the subject must wait for another device to avoid the Case filter.

5.3.2 Ni *marking*

Takezawa continues his summary (89):

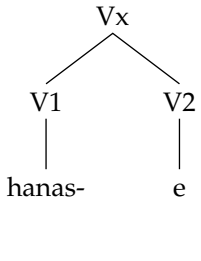
(89) f. Because Japanese has a rule which inserts the dummy postposition *ni* after the subject when the subject is not governed by the lowered Infl, the subject of stative sentences can be marked with *ni* and the non-accusative case pattern is obtained (the *ni-ga* case array).

g. When the subject is governed, *ga* can be assigned to it because Infl can assign case to more than one NP in Japanese, and the double-nominative case pattern is obtained (the *ga-ga* case array).

Ni insertion as specified in (89f) is similar to Kuroda's subject *ni*-raising. However, reformulation by Takezawa makes it possible to account for case alignments in sentences with simple stative predicates, which Kuroda fails to deal with.

Ga and *ni* marking in stative sentences is extended to those with complex stative sentences like potentials and 'tough' sentences. Verb raising in the previous transformational approaches is replaced by restructuring. However, its structural effect is the same as Verb Raising, creating complex predicates in the form (91a):

(91) a.



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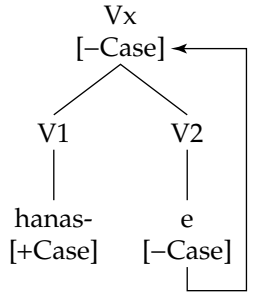
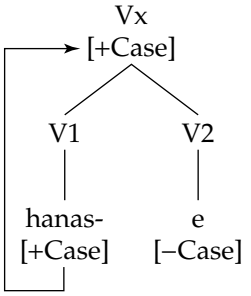


c.

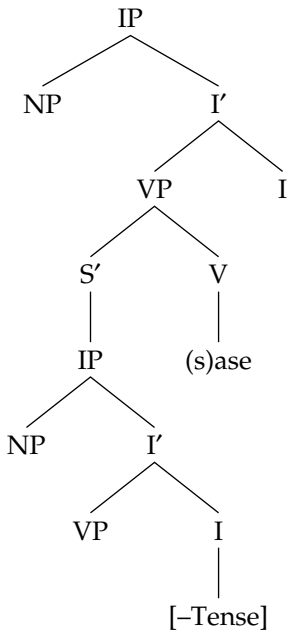


(Takezawa 1987: 144)

In (91b) the restructured complex predicate gets the feature [−Case] percolated to the complex verb Vx from the potential morpheme *(r)e*, while in (91c) [+Case] of *hanas* ('speak') is percolated up to the Vx, the former deriving the *ni-ga* and the *ga-ga* potentials by means of Infl lowering and the optional government of the complement subject by the lowered Infl. [+Case] on Vx in (91c) is responsible for the *ga-o* potential.

For *o*- and *ni*-causative, Takezawa does not assume an extra NP for either of them. The causative formative *(s)ase* selects S′ as the only internal argument. The distinction between these two types of causatives is due to optional S′ deletion. The structure (92) is the deep structure of both *o*- and *ni*-causatives. Deletion of S′ makes the matrix verb *(s)ase* govern and assign accusative case to the complement subject in the IP Spec position, resulting in an *o*-causative. In case S′ deletion does not take place, S′ blocks government of the complement subject by *(s)ase*. Then the ungoverned subject gets *ni* by (89f):

(92)



(Takezawa 1987: 163)

5.3.3 'Tough' sentences

Another important claim Takezawa makes is concerned with the analysis of 'tough' sentences. He refutes Kuroda's NP movement analysis on the basis of sentences like those in (93), in which the moved NPs, those italicized in (93a, b), are not the arguments of the verbs, which are raised and adjoined to 'tough' morphemes. They are in the complement sentences selected by these verbs.

(93) a. [*Kono te no zassi*]$_j$ ga (John$_i$ nitotte) [$_{S'}$ pro$_i$ maituki e$_j$
this kind of magazine Nom John for every month
teikikoodokusite-i- ru to] hito ni ii- niku- i.
subscribe regularly- Pres Comp people to say- hard- Pres
(Lit.) '[This kind of magazine]$_j$ is hard (for John$_i$) to say to (other) people [$_{S'}$ that he$_i$ takes e$_j$ regularly every month]'

b. [*Zibun no otooto kara*]$_j$ ga (John$_i$ nitotte) [$_{S'}$ pro$_i$ e$_j$ okane o
self's brother from Nom John for money Acc
takusan karite-i- ru to] mitome- niku-i
lot of borrow Pres Comp admit- hard-Pres
(Lit.) '[From self's brother]$_j$ is hard (for John$_i$) to admit [$_{S'}$ that he$_i$ has borrowed a lot of money e$_j$]' (Takezawa 1987: 195–196)

The syntactic structure of these sentences is roughly as follows:

(94) [$_S$ NP$_i$ [$_{AP}$ . . . [$_{S'}$ [$_S$ NP [$_{VP}$ . . . e$_i$ . . . V]] to] V-yasu]] (Takezawa 1987: 198)

If this is NP movement, as Kuroda claims, these traces are anaphors and must be bound in their minimal governing domain, in this case the embedded S'. Since the traces are not bound there, they violate Binding Condition A, which makes them ungrammatical, contrary to fact.

Takezawa claims that the movement, if involved in the derivation of sentences like (93a, b), must be an empty operator movement, since it seems to obey the characteristics of *wh*-movement: (i) it leaves a 'gap', (ii) where there is a bridge verb, there is an apparent violation of subjacency due to a COMP-to-COMP escape hatch; in other words, 'long distance' movement is possible, (iii) it observes island constraints (the Complex NP Constraint and the *wh*-island constraint) (Takezawa's slightly modified version of Chomsky 1977b: 86).

As a matter of fact, sentences with PP *ga* phrases such as (93b) show that they observe island constraints as in (95b), while those with NP *ga* phrases (like (93a)) are grammatical even when they violate island constraints, as shown by (95a):

(95) a. [Kono te no zassi]$_i$ ga (John nitotte) [$_{S'}$ e$_j$ maituki e$_i$
this kind of magazine Nom John for every month
teekikoodokusite-i- ru] hito$_j$ o sagasi-yasu- i.
subscribe regularly- Pres person Acc search-easy- Pres
(Lit.) 'This kind of magazine is easy for John to search a person who takes it regularly.'

b. *[Kono ginkoo kara]$_i$ ga (John nitotte) [$_{S'}$ e$_j$ e$_i$ okane o takusan
this bank from Nom John for money Acc a lot of
karite-i-ru] hito$_j$ o sirabe- niku- i.
borrow-Pres people Acc find out- hard- Pres
(Lit.) 'From this bank is hard to find out people who borrow a lot of money.'

On the basis of this fact Takezawa concludes that 'tough' sentences with PP *ga* phrases in the subject position are derived by an empty operator movement, as shown by (96a), while those with NP *ga* phrases can involve either an empty operator movement or a pronominal (pro) as indicated by (96b):

(96) a. [$_S$ NP/PP$_i$ ga [$_{AP}$ (NP$_j$ nitotte) [$_{S'}$ *0*$_i$ [PRO$_{(j)}$ . . . . . t$_i$ . . . . . V]] yasu]]
predication movement

b. [$_S$ NP$_i$ ga [$_{AP}$ (NP$_j$ niyotte) [$_{S'}$ [$_S$ PRO$_{(j)}$ . . . . . pro$_i$ . . . . . V]] yasu]]
aboutness relation

(Takezawa 1987: 218)

The empty operator (*0*) in (96a) is co-indexed with the NP or PP, base generated in the subject position, by the predication relation. This structure is the same as that proposed by Chomsky (1977b) for English 'tough' sentences. Pro in (96b), on the other hand, is co-indexed with the base generated subject NP by the aboutness relation. The use of pro is proposed by Saito (1985) for topicalization of NPs and relativization, which violate the subjacency condition. Takezawa uses the fact that topicalization and relativization may involve resumptive pronouns, as was first pointed out by Perlmutter (1972). The sentences in (97) contain resumptive pronouns (cited by Saito from Kuno (1973c)):

(97) a.[?] Sono hito$_i$ wa [John ga kare$_i$ no imooto o yoku sitte-i- ru
that person Top John Nom him Gen sister Acc well know- Pres
rasi- i.]
seem- Pres
'Speaking of that person$_i$, it seems that John knows his$_i$ sister very well.' (topicalized sentence)

b.[?] [$_{NP}$ [$_{S'}$ watasi ga kare$_i$ no namae o wasurete-simat- ta]
I Nom he Gen name Acc forget- Past
okyakusan$_i$]
guest
'the guest$_i$ who I have forgotten his$_i$ name' (relativized clause)

(Takezawa 1987: 208–209)

Inoue (1976) shows that in Japanese resumptive pronouns appear to avoid island constraints in island contexts, and that the more complex the contexts

the stronger the requirement for the use of resumptive pronouns. She also points out that the relativization of arguments generally prohibits the use of resumptive pronouns with a certain gradation among arguments and adjuncts (postpositional phrases) in their permissibility. (See Inoue 1976: 171–191 for details.)

Takezawa concludes, "Given the fact that overt resumptive pronouns and their antecedents can be related only by the 'aboutness' relation, phonologically null pronouns also should naturally be able to be related to their antecedents in the same way" (Takezawa 1987: 209).

Following Kuroda (1986), Takezawa admits the third possibility of 'tough' sentences with *ga* marked objects in situ. Rule R will lower Infl-tense to adjoin to the complement predicate and assign *ga* to the complement objects. In this case, the empty subject position remains empty, as it is claimed by Kuroda that Japanese allows the possibility of an unfilled subject position. Thus, 'tough' sentences with *ga* marked NPs have three derivations in Takezawa's grammar, namely, one involving movement of an empty operator as represented by (96a), the second with pro holding an aboutness relation with the matrix subject as in (96b), and the third with the *ga* marked object in situ leaving the matrix subject position unfilled.

The merit of Takezawa (1987) lies in the systematic application of GB theory to the analysis of the Japanese case system. In the framework of the PPA, this is one of the most dependable grammars. However, this structure dependent analysis of case along the PPA is replaced by agreement based case theory of the MP due to the elimination of theoretical artifacts like 'government' from the MP.

5.4 Kuroda (1988)

Kuroda (1988) is an attempt to solve problems involving the Japanese case system in the framework of the PPA. More specifically, he casts doubt on the Case theory of the PPA, which has Case checking by means of Agreement as its core. His conclusion is, "languages are parameterized as to whether Agreement is forced or not," and that Japanese is a language with non-forced Agreement.

Languages with forced agreement are subject to the principle of the uniqueness of agreement: An agreement inducing base category agrees with at most one Max (X) (maximal projection of X). This principle accounts for the fact that English, as a language with forced agreement, permits only one subject and one object per sentence. As a corollary from this principle it follows that languages with non-forced agreement are free from the uniqueness constraint. A clear cut support for this principle comes from the existence of multiple subjects in Japanese, exemplified by (39) and (43b) in section 4.4.

How about objects in Japanese? We have already mentioned a well-known constraint, the Double *O* Constraint (DOC), which is counter to Kuroda's claim. However, Kuroda goes on to deny the DOC itself, using the fact that unacceptability is ameliorated by clefting, which places adjacent *o* phrases apart from each other, as is shown by (98):

(98) a. *Masao ga ano uma o ano mon o toosita.
Masao the horse the gate pass through
'Masao passed the horse through the gate.'
(Kuroda 1988: (28))

b. Masao ga ano uma o toosita no wa ano mon o da.
'It was that gate that Masao passed the horse through.'
(Kuroda 1988: (29))

c. Masao ga ano mon o toosita no wa ano uma o da.
'It was that horse that Masao passed through that gate.'
(Kuroda 1988: (30))

Kuroda renames his linear case marking (used in 1978) as lower-case case marking and assumes that this case marking applies in deep structure. He admits the case marking (abstract case marking) by the PPA into his system as the case assignment to bare object noun phrases like those in (99) (a bare noun phrase = a noun phrase without a case particle):

(99) a. Masao wa dono uma o dono mon toosita no?
'Which gate did Masao let which horse go through?'

b. Masao wa dono mon o dono uma toosita no?

Dono mon (which gate) in (99a) is a bare noun phrase, whereas in (99b) *dono uma* is a bare noun phrase. The bare NPs in (99) are case checked by the head verb. Those with *o* are the result of the lower-case case marking.

Thus, Kuroda concludes, "a verb in Japanese may subcategorize for more than one object," and "the verb agrees with (assigns case to) only one of them; the other is licensed by lower-case case" (1988: 337).

However, 'case-drop' as in (99) is observed only in colloquial Japanese, whereas it is nonexistent in the formal standard Japanese, where all argument noun phrases are case marked. This means that all arguments are licensed by lower-case case marking.

It is significant that Kuroda dropped his former claim that the *o* phrases like *mon o* in (98), with the theta-role path, are adverbial, and that the particle *o* here is a postposition, not a case particle. Now he says, "I take the term object broadly and mean by it any complement of a verb that potentially receives case from it, that is, in other words, a complement of a verb which is not inherently case marked" (p. 337).

There are two other constructions Kuroda assumes to contain two objects, as in (100) and (101) given below:

(100) a. Masao ga Hanako no hoho o butta.
Masao Hanako cheek hit
'Masao hit Hanako's cheek.'

b. *Masao ga Hanako o hoho o butta.

c. Masao ga Hanako o butta no wa hoho (o) da.

d. Masao ga hoho o butta no wa Hanako (?o) da. (Kuroda 1988: (35))

(101) a. Masao ga kono sakazuki ni ano sake o mitasita.
this sake-cup that sake fill
'Masao filled that sake in this cup.'
b. Masao ga ano sake de kono sakazuko o mitasita.
'Masao filled this cup with that sake.'
c. *Masao ga kono sakazuki o ano sake o mitasu.
d. ?Masao ga kono sakazuki o mitasita no wa ano sake o da.
e. ?Masao ga ano sake o mitasita no wa kono sakazuki o da.
(Kuroda 1988: (44a–e))

On the basis of (100c, d) and (101d, e), in which the DOC is ameliorated by clefting, Kuroda assumes both (100a) and (101a) have double *o* constructions at some stages of the derivation. The particle *o* is distributed from the head *hoho* ('cheek') to *Hanako*, which is adjoined to it in the NP *Hanako no hoho* ('Hanako's cheek'). The predicate *mitasu* ('fill') in (101), on the other hand, is assumed to subcategorize for two objects. Thus, there are three double *o* constructions, the first, the second, and the third exemplified by (98), (100), and (101) respectively.

Kuroda's admission of double *o* constructions reveals the difficulty of setting a fast dividing line between structural and inherent cases. This fact is further elaborated in Inoue (1997a) motivating her claim that some inherent cases should not be excluded from syntactic accounts of case in Japanese.

In this grammar of Kuroda's, a subject is generated as Ext(V), the external argument of V, with the possibility of another subject and possibly still another adjoined to the same Max(V). These subject positions are not the case position, but the *ga* assigned by the lower-case case marking in deep structure licenses subject NPs. Ext(I) is not a case position, either, but the landing site for scrambled elements. Subjects thus generated in Ext(V) do not have to move to Ext(I) unless it is scrambled.

There are three multiple subject constructions, as exemplified by the sentences in (102–104).

(102) a. Zoo ga hana ga nagai.
elephant trunk long
'Elephants have long trunks.' (derived by Subjectivization of (102b)
(Kuroda 1988: (45))
b. Zoo no hana ga nagai.
'Elephants' trunks are long.'

(103) a. Kono koma ga iro ga kirei da. (Kuroda 1988: (48))
this top color beautiful
'This top is a pretty color.'
b. #Kono koma no iro ga kirei da.[20] (Kuroda 1988: (49))

(104) a. Watasi ga mizu ga hosii.
I water want
'I want water.' (Kuroda 1988: (56))
b. *Watasi no mizu ga hosii. (Kuroda 1988: (57))

While (102a) is the result of subjectivization, discussed in section 4.4, the (a) sentences of (103) and (104) are assumed to have different derivational processes. The double subjects in (103) are the result of distributed *ga* assignment to the underlying structure (103b) just in the way *o* phrases are distributed in (100). The *ga* marked object in (104a) is claimed to be a subject on some semantic grounds, with the predicate *hosi-i*, *-ta-i*, and the like subcategorizing for two subjects. Both these subjects are generated as Ext(V), one of which is adjoined to Max(V). All the multiple *ga* phrases in these three constructions may stay in the Ext(V) position unless scrambled out to the Ext(I) position.

These facts about *o* and *ga* phrases naturally follow from Kuroda's assumption that languages with nonforced Agreement do not obey the uniqueness condition.

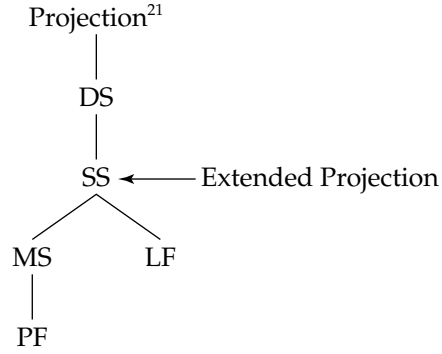
In restrospect, the transformational approach to the study of case in Japanese pointed out most issues relevant to this area of research through careful study of crucial data, which have been repeatedly used in attempts to build up theories of explanatory adequacy.

6 Studies of case in Japanese on the basis of the Minimalist Program

This section picks up only a few of the works relevant to the future development of this research area since it is impossible to make a general survey of the present state of research development in the fast changing theoretical framework.

Marantz (1992) is discussed because this work indicates a break from the syntactic analysis of case, establishing morphological structure (MS) as a representation between surface structure (SS) and phonological form (PF), as shown by (105). This approach is elaborated in Halle and Marantz (1993). Let us call this approach 'morphological case theory', following Aoyagi (1998).

(105)



This claim reflects one of the factors deciding a new direction of research in the MP since the MP reduces the functions of syntax to the minimum. Marantz (1995a) describes the MP as a computational system, a simple system of compositions, "constrained by a small set of economy principles, which Chomsky

claims enforce the general requirement, 'do the most economical things to create structures that pass the interface conditions'." He continues, "Chomsky's vision of the end of syntax should have the positive consequence of forcing syntacticians to renew their interface credentials by paying serious attention to the relevant work in phonology and semantics." The addition of MS on the PF branch is certainly a necessary step for the development of a theory.

Aoyagi (1998) presents the Japanese case system based on Marantz's morphological case theory. This is an extensive study of the distribution of case particles in relation to the relational particles *wa* (topic marker) and *mo* ('also') and adverbial particles such as *dake* ('only') and *sae* ('even'). Since a review of the whole work would take up too much space, only Aoyagi's case particle assignments, which are in fact a morphological spell-out of case features, will be reviewed.

Next, we take up Watanabe (1996), a revised version of his dissertation (1993a), which adopts agr(eement) based syntactic case checking for licensing argument NPs, a standard practice at that time. Koizumi (1995, 1998) follow this work. Ura (1996, 1999, 2000, 2001) are reviewed to the extent that they contain discussions relevant to the comparison with Watanabe's proposal for a system using a case checking mechanism without AgrP.

Finally, we review Fukui and Takano (1998), which discards the Case checking mechanism altogether, employing the function of case particles as licensers of NPs (or DPs).

All the reviews may be unduly brief, but this is inevitable due to the nature of these works reflecting the instability of the rapidly evolving theoretical models.

6.1 Case realization

6.1.1 Marantz (1992)

Marantz (1992) claims that the "mapping between semantic roles and argument positions, augmented by the subject requirement of the Extended Projection Principle (EPP), is suficient to license NPs in argument positions" (p. 234). This means that if abstract case theory functions only in licensing NPs, not in deciding actual case realization, it is eliminable from syntax. He shows that this is in fact true, using facts about Georgian with its split ergative system, Icelandic with its quirky case, and some other languages with rich morphological case and agreement.

It is well known that theta positions, positions assigned theta-roles by predicates, are relevant to abstract case assignment. This situation is depicted by Burzio's generalization, given below as (106).

(106) Burzio's generalization: A verb (with an object) case-marks its object if and only if it theta-marks its subject. (Chomsky 1986b: 139)

Marantz discusses the case of Georgian, in which nominative case on the subject and dative case (dative = accusative) on the object appear in present, future, and other 'series I' tenses, while in the aorist or simple past ('series II') ergative case and nominative case are found on the subject and the object respectively.

Furthermore, ergative case is restricted to subjects of transitive and unergative sentences, excluding derived subjects of unaccusatives. This means that ergative case does not appear when the predicate requires a non-thematic subject. This fact is stated as the 'ergative case generalization', given below as (107):

(107) Ergative case generalization: Even when ergative case may go on the subject of an intransitive clause, ergative case will not appear on a derived subject. (Marantz 1992: (6))

Such distribution of ergative case cannot be accounted for by abstract case theory.

Moreover, Georgian agreement is always based on the Nom-Dat pattern even when morphological case alignment follows the Erg-Nom pattern in the aorist. This means that the subject position is licensed by tense/aspect inflection. The Ergative case generalization is thus about the morphological realization of case on subjects, not about NP licensing, while Burzio's generalization is meant to be about NP licensing.

However, Marantz argues that there are cases in English where predicates, requiring a non-thematic subject position, still assign accusative case, as in (108).

(108) a. It struck me that I should have used 'Elmer' in the sentence.
b. There struck me as being too many examples in his paper.
c. Elmer_i struck her as [t_i being too stubborn for the job].
(Marantz 1992: (13))

As is shown by the sentences in (108), *strike* requires a non-thematic subject position, but it assigns case to the objects, *me* and *her* in (108).

Marantz further argues that the typical examples supporting abstract case theory, those in (109), can be accounted for by the EPP and an assumption that "movement comes for free while insertion of a dummy subject in environments (deep structures like (109e, f)) is a last resort option for satisfying the Extended Projection Principle (EPP)" (Marantz 1992: 240).

(109) a. The man arrived.
b. The porcupine was sold.
c. *It arrived the man.
d. *It was sold the porcupine.
e. e arrived the man.
f. e was sold the porcupine.

These facts make Marantz conclude that abstract case theory is eliminable from the theory of syntax.

Noting the similarity between the two generalizations, Burzio's and ergative, namely, that they both depend upon the presence of the thematic subject position, Marantz introduces the idea of 'dependent' case in his case realization disjunctive hierarchy, shown in (110):

(110) Case realization disjunctive hierarchy:
a. lexically governed case (so called inherent case),
b. 'dependent' case (accusative and ergative),
c. unmarked case (environment-sensitive),
d. default case. (Marantz 1992: (29))

(a) = takes precedence over everything else, for example, the Icelandic quirky case (lexically governed) is preserved when an NP moves from its original position, where it is marked by the quirky case, to a position of nominative or an ECM accusative case position. (b) = Acc and Erg are assigned by V+I to one argument position in opposition to another argument position (dependent case):

(111) Dependent case is assigned by V+I to a position governed by V+I when a distinct position governed by V+I is:
  a. not 'marked' (not part of a chain governed by a lexical case determiner),
  b. distinct from the chain being assigned dependent case.

(c) for example, genitive may be the unmarked case inside NPs (or DPs) while nominative may be the unmarked case inside IP's. (d) appears when no other case realization principle is available.

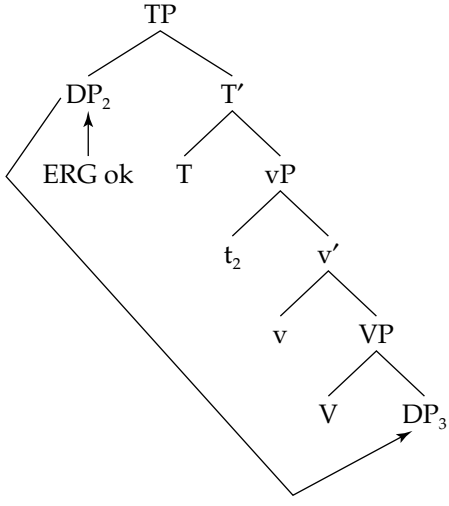
6.1.2 Aoyagi (1998)

Marantz assumes V-to-I movement, which makes him set the condition of dependent case realization as in (111b). Aoyagi rephrases it without using V+I:

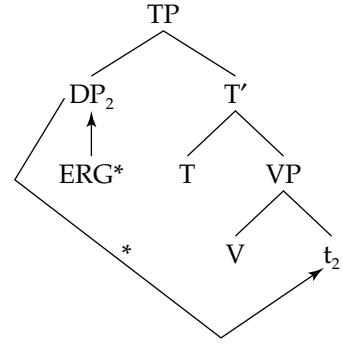
(112) A dependent case is assigned to a thematic position in a given domain (e.g., a finite tense) when there is a distinct unmarked thematic position in the same domain.

Aoyagi schematizes dependent case assignments as follows:

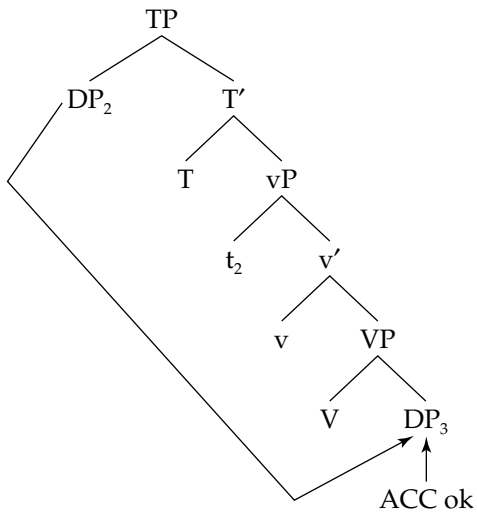
(113) a. Ergative languages
Transitives (unergatives)



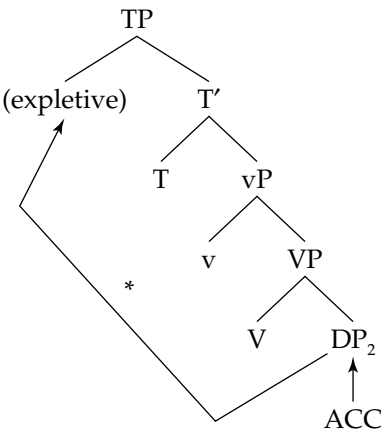
b. Unaccusatives/passives



c. Accusative languages
Transitives



d. Unaccusatives/passives



(Aoyagi 1998: 91–92)

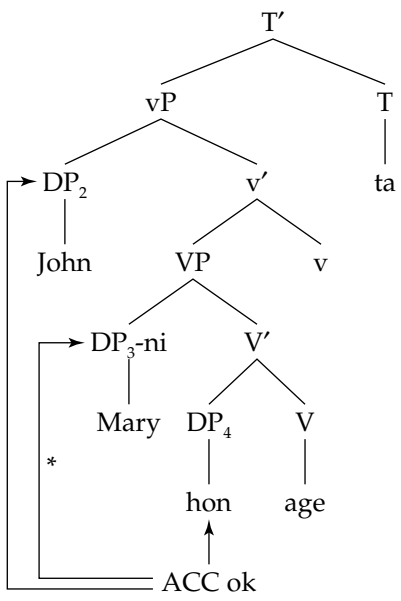
In (113a) DP_2 can refer to DP_3, a distinct unmarked thematic position, so it has ERG assigned to it, while in (113b) t_2 is not a distinct unmarked position because it forms a chain with DP_2. This accounts for the fact that ERG cannot be assigned to a derived subject. In (113c) DP_3 can refer to DP_2, the thematic subject position for DP_3 to refer to, while in (113d) the subject position is non-thematic, and may be filled by an expletive, so Acc cannot be assigned to DP_2, which ends up with the default case particle *ga*.

Now let us follow Aoyagi's application of this idea to the analysis of the Japanese case system. First, Kuroda's canonical sentence patterns are slightly modified with the addition of the inherent case *ni* in the transitive case alignment.

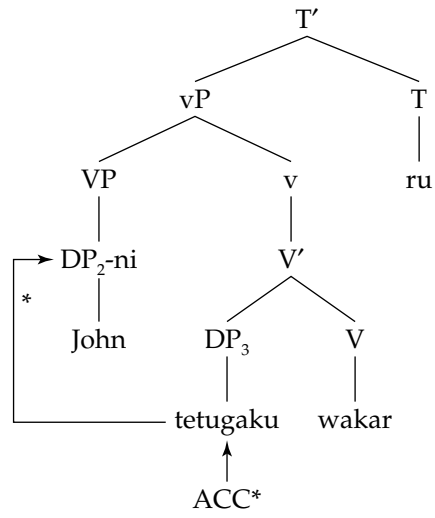
(114) a. (Di)transitive: NOM-(DAT)-ACC
b. Ergative: DAT-NOM
Intransitive: NOM

In Marantz's case realization hierarchy, DAT (*ni*) is lexically governed, ACC (*o*) is dependent, and NOM (*ga*) is unmarked or default in Japanese.

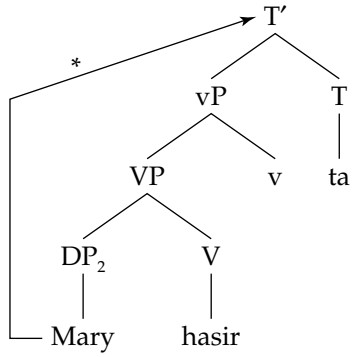
(115) a. (Di)transitive Pattern
(John ga Mary ni hon o age-ta.)
('John gave Mary a book.')



b. 'Ergative' Pattern
(John ni tetugaku ga wakar-u.)
('John understands philosophy.')



c. Intransitive pattern
(Mary ga hasit-ta.)
('Mary ran.')



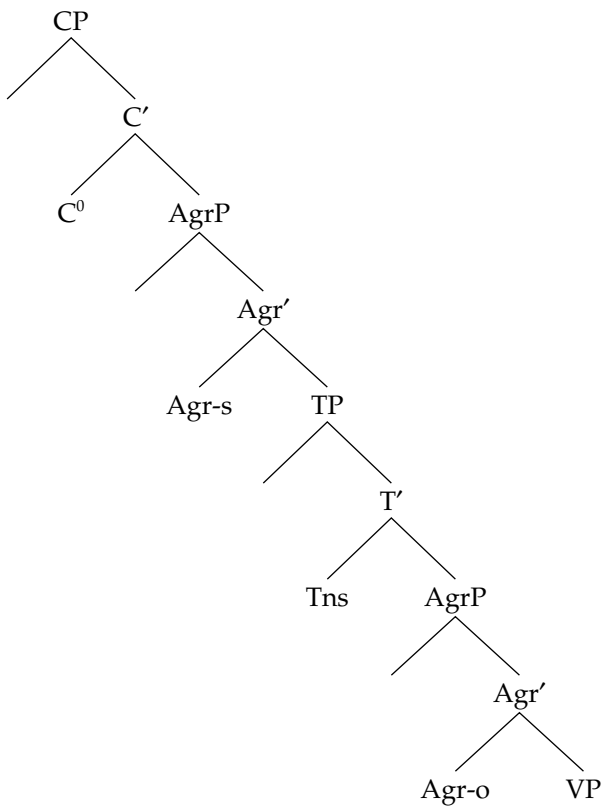
In (115a) DP_4 (*hon*) can refer to DP_2 in the unmarked distinct theta position, but not to DP_3 (Mary-*ni*) in the inherently marked position. Since DP_2 meets the condition of dependent case assignment, DP_4 is assigned ACC. In (115b) DP_3 (*tetugaku*) cannot refer to any unmarked distinct theta position; thus it is unable to get ACC assigned to it. Instead, it gets the default *ga*. The same situation holds in (115c).

The merit of dependent case theory is its capacity of giving a principled basis for Burzio's generalization together with the ergative principle within the framework of the morphological case system. Dependent case theory succeeds in specifying interrelationships of structural case particles. Aoyagi's work supports this hypothesis with data from Japanese. Unfortunately, the main theme of this work, the study of relative distributional facts among case particles, relational and adverbial particles, cannot be taken up in this review.

6.2 Watanabe (1996)

As a modification of the Agr-based case theory of Chomsky (1991, 1993), Watanabe proposes the Three-Layered Case Checking Hypothesis, which does not make use of the notion of government but employs an X-bar theoretical scheme with a crucial notion of the Spec–head and head–complement relations. Chomsky's Agr-based case theory adopts the split INFL Hypothesis by Pollock (1989), which is extended by Watanabe in (116) as the basis of the full clause structure:

(116)

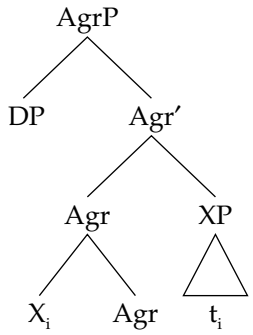


(Watanabe 1996: (1.8))

6.2.1 Nominative and accusative case checking

According to Agr-based case theory, the configuration necessary for both nominative and accusative case checking is (117), where X stands for case-bearing heads, the finite Tns for Nominative, a verb for Accusative, the infinitival Tns for null case borne by PRO:

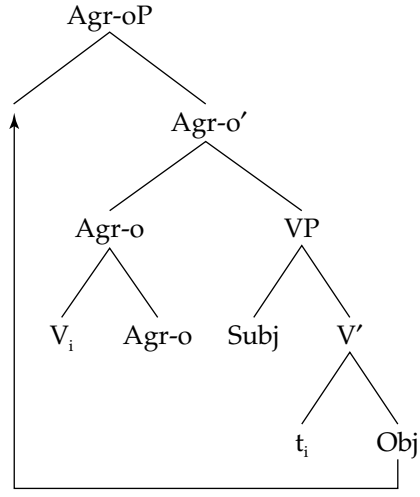
(117)



(Watanabe 1996: (1.10))

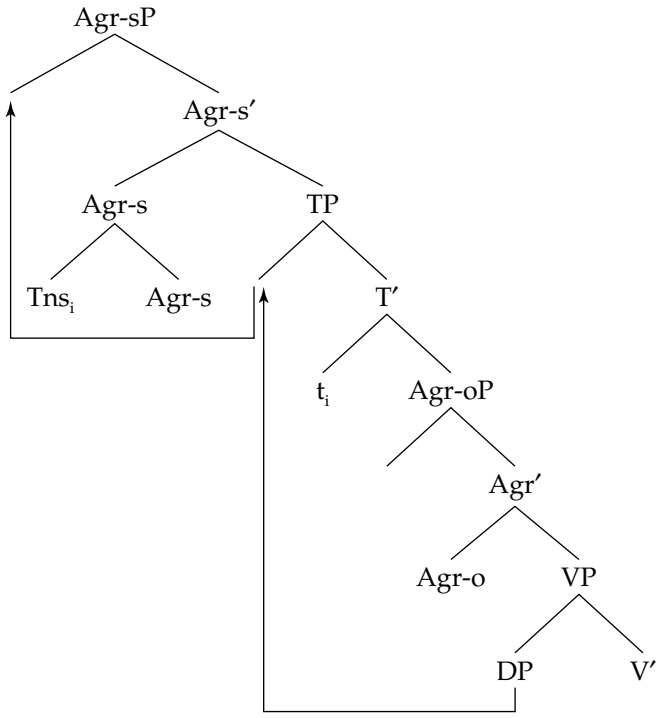
The DPs with nominative and accusative Case feature are moved to the Agr-Spec positions after the case-bearing heads are adjoined to Agr, as shown by (118a, b):

(118) a. Movement of a DP with the case feature accusative



(Watanabe 1996: (1.12) slightly modified)

b. Movement of a DP with the case feature nominative

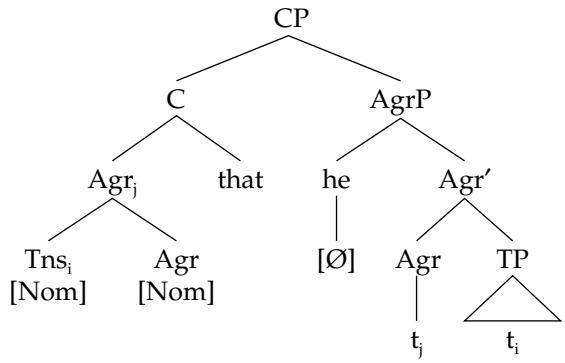


In (118a) the movement of the object DP is legitimate due to the minimal domain created by the adjunction of the case-bearing head V to Agr. In other words, the Spec of Agr-oP and the Spec of VP are equidistant from the object DP.[22] The nominative case feature is checked after the VP internal subject DP is moved to the Spec of Agr-sP as in (118b). For Watanabe, case checking is the transference of the case feature of the DP in the Spec of AgrP to Agr. Thus case checking is carried out between the DPs and the case-bearing heads standing in the Spec–head relation.

6.2.2 Follow-up case checking

On top of this basic assumption of the mechanism of Agr-based case checking, Watanabe makes precise the notion of case absorption crucially used to account for universal syntactic phenomena like passivization. His original contribution is his assumption of follow-up checking. In (118b) the DP, the VP internal subject, moves to the Agr-Spec position carrying the case feature [Nom], which is checked and transferred to Agr-s. The feature [Nom] copied onto Agr will become invisible in LF together with Agr itself. However, the feature [Nom] borne by Tns remains, waiting for elimination by the end of LF. Using *he* as an example of the subject DP, Watanabe gives (119a) as the syntactic representation after [$_{\text{Agr}}$ Tns Agr] is adjoined to C:

(119) a.

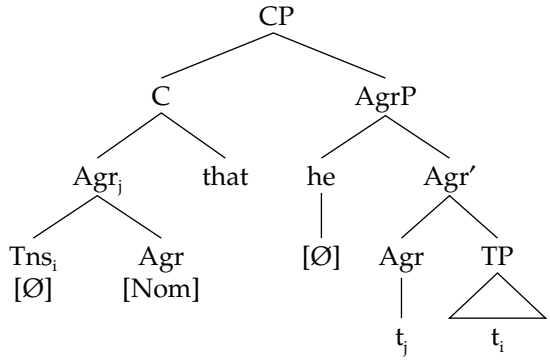


(Watanabe 1996: (1.20a))

The feature [Nom] transferred onto Agr will become invisible in LF together with Agr itself.

Now the [Nom] of Tns is checked by the follow-up checker C^0 *that*, as in (119b):

(119) b.



(Watanabe 1996: (1.20b))

Similarly V^0 with [Acc] is first adjoined to Agr and checks the [Acc] carried by the object DP, transferring its case feature to Agr. Then [$_{Agr}$ V^0 Agr] is adjoined to Tns, which checks the [Acc] carried by V^0. Thus, the follow-up checker for [Acc] borne by V^0 is Tns.

The follow-up case checking hypothesis accounts for the legitimate and illegitimate appearances of PRO as embedded subjects, whose structures are assumed to be (120a) and (120b) respectively.

(120) a. John tried [$_{CP}$ e [$_{Agr\text{-}sP}$ PRO to win the race]] (control construction)
b. *John believed [$_{Agr\text{-}sP}$ PRO to have won the race] (ECM construction)
(Watanabe 1996: (2.13))

The null Case feature borne by PRO is checked off by the same case feature of the infinitival Tns. This much is the same in both (120a and b). However, the

follow-up case checking is possible only in (120a) thanks to the presence of empty C^0 (*e* in (120a)), the head of CP, while (120b), which lacks CP, is not allowed this possibility. Thus, this hypothesis accounts for this distributional fact without using the PRO theorem based on the notion of government.[23]

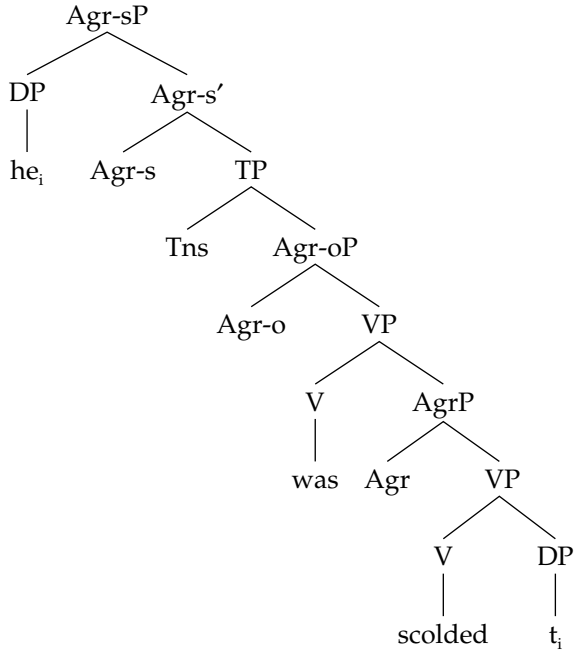
6.2.3 Case absorption

In case there is no follow-up checker in the appropriate position, as in the case of (120b), case absorption rather than case checking takes place, putting the case feature of the head onto Agr leaving the case feature of a DP unchecked. Now the DP must move to a position where its case feature can be checked. In the ECM construction, whose embedded clause is IP, rather than CP with the follow-up checker C^0, the embedded subject DP must move to Agr-o-Spec to get its [Acc] checked by V^0 adjoined to Agr-o. The follow-up checking of [Acc] on V^0 is carried out by Tns.

In the case of a Participial Passive such as (121a), the structure (121b) is assumed, omitting the 'by phrase' and including only relevant positions:

(121) a. He was scolded by Mary. (Watanabe (3.2b))

b.



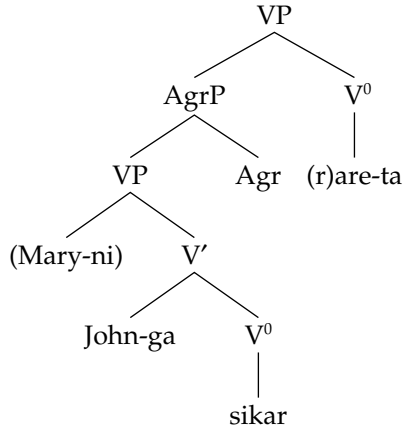
(Watanabe 1996: (3.4))

Since the verb *be* cannot check off [Acc], case absorption takes place transferring the [Acc] of the participle *scolded* to Agr. Agr can take only one case feature, so the object DP has to move to the Agr-sP-Spec position in order to get its remaining case feature checked off.

Parallel to the participial passive, the Japanese direct passive like (122a) is assumed to have (122b) as its underlying structure:

(122) a. John ga Mary ni sikar-are-ta

b.

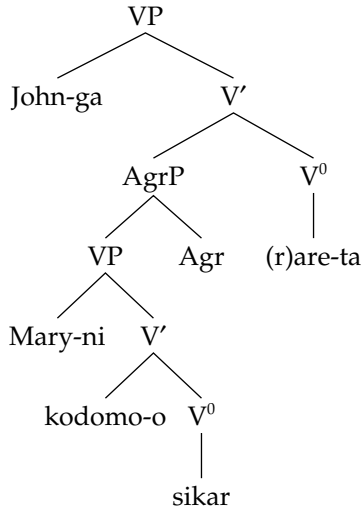


(structurally the same as Watanabe 1996: (3.86))

The passive morpheme *(r)are*, which corresponds to *be* in (121b), does not project an external argument, nor does it carry the accusative case feature. In contrast, the indirect passive morpheme *(r)are* projects an experiencer external argument and has the accusative case feature. The indirect passive like (123a) is assumed to have (123b) as its underlying structure:

(123) a. John-ga Mary-ni kodomo-o sikar-are-ta

b.



(structurally the same as Watanabe 1996: (3.87))

Since there is no follow-up checker beyond Agr in (122b), Agr absorbs the feature [Acc] borne by V^0 *sikar* leaving the DP *John-ga* with [Acc]. Thus, *John-ga* must move through the Spec of the embedded AgrP to the matrix Spec of Agr-sP to get its nominative case feature checked off, which results in the case switch from accusative to nominative.

As for the indirect passive, the object DP gets its case feature [Acc] checked in the matrix Agr-oP by *(r)are* with the same feature. The DP in the lower VP-Spec position in the indirect passive is assumed to stay there as an argument of V^0, to account for the fact that it binds an anaphor in the embedded clause.[24] The embedded subject DP in the direct passive is adjoined to the VP, since it is devoid of this capacity. Observe the following contrast:

(124) a. *John ga Mary$_i$ niyotte zibun$_i$ no heya ni tozikome- rare- ta.
John Nom Mary by self Gen room in lock up- Pass- Past
'John was locked up in her room by Mary.' (direct passive)

b. Tom ga Mary$_i$ ni John o zibun$_i$ no heya ni tozikome-
Tom Nom Mary Dat John Acc self Gen room in lock up-
rare- ta.
Pass- Past
'Tom was adversely affected by Mary's locking up John in her room.'
(indirect passive) (Watanabe 1996: (3.116a, b))

Schematically the direct and indirect passive have (125a, b) respectively as underlying structures:

(125) a. [$_{VP}$ BE [$_{AgrP}$ Agr VP]
b. [$_{VP}$ Experiencer V [$_{AgrP}$ Agr VP] (Watanabe 1996: (3.136))

6.2.4 Causatives

There is a type of causative, called the reduced causative, which shares a similar structure and syntactic behavior with the indirect passive, as shown by (126). It is to be noted that the reduced causative embeds a simple AgrP, which allows the embedded object *o* to get to the matrix Agr-oP moving through its Spec.

(126) [$_{VP}$ Agent V $_{Caus}$ [$_{AgrP}$ Agr VP]]

In this type of causative, the embedded object becomes the subject of the direct passive. The Japanese *o*-causative like (28c), with an embedded transitive sentence, does not permit this possibility, as is indicated by (127b), while the passivization with the embedded subject is legitimate, as in (127c):

(127) a. Katoo-san ga kodomo ni nimotu o hakob- ase- ta. (= (28c))
Katoo Nom child Dat baggage Acc carry- Caus- Past
'Mr Kato made the child carry the baggage.'
b. *Nimotu ga Katoo-san niyotte kodomo ni hakob-ase-rare-ta.
c. Kodomo ga Katoo-san ni(yotte) nimotu o hakob-ase-rare-ta.

In the reduced causative with an embedded transitive sentence case absorption takes place as in the case of the direct passive, that is, the Agr in the embedded clause takes in the accusative case feature of the embedded verb, so that the DP with [Acc] must move to the Spec of the matrix Agr-oP to get its Case feature checked off. With an intransitive embedded sentence, the complement subject DP simply moves to the matrix Agr-sP for feature checking, since there is no case feature borne by the verb.

Japanese causatives are not of this type as is clear from the contrast in (127). Watanabe assumes the underlying structure (128) for causative sentences like (127a):

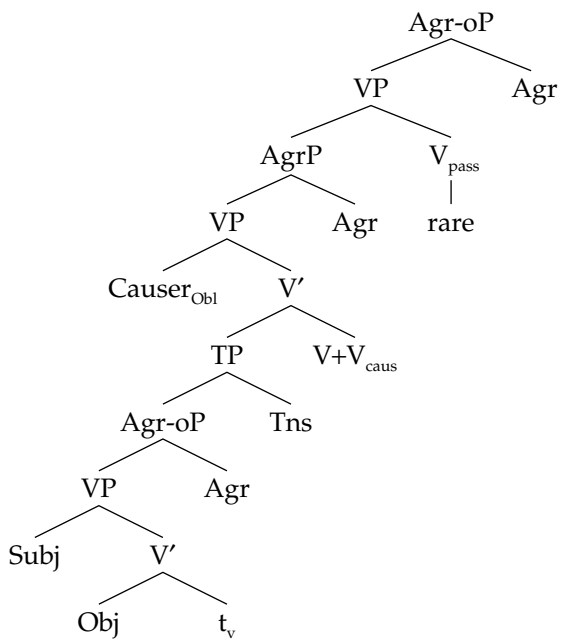
(128) $[_{VP}$ Agent V_{Caus} $[_{AgrP}$ Agr-s $[_{TP}$ T $[_{AgrP}$ Agr-o VP]]]]

(Watanabe 1996: (3.137a))

The subject DP must stay in its original position, Spec of the embedded VP, in overt syntax to achieve its function of binding an anaphor. It is not possible for this DP to move to the matrix Spec of Agr-oP in LF because the Agr-o chain created by adjunction of its head onto Tns is not available at LF due to deletion of Agr there. Oblique marking of the embedded subject (in Japanese by *ni*) saves this situation, that is, there is no need for movement of the subject DP. The object DP under the embedded VP gets its case feature checked in Agr-oP followed by follow-up checking by Tns in LF.

Causative passives such as (127c) are assumed to have something like (129) as their underlying structure:

(129)



(Watanabe 1996: (3.147))

In this case the subject DP is assumed to move to the Spec of the matrix Agr-sP in overt syntax before the object DP is moved to the embedded Spec of Agr-oP in LF. Thus, there is nothing blocking the movement of the subject. The embedded object has to be raised to the Agr-oP-Spec to get its case checked in LF. Thus, there is no hope of the embedded object turning to the passive subject, a result consonant with the fact revealed in (127). The causer argument gets an oblique marking.

So far we have seen the mechanism of the Three-Layered Case Checking System[25] as a representative of the refinement of Agr-based case theory. This theory clearly laid an important step toward a refinement of the new theory, discarding the government based case theory of the PPA.

As Watanabe admits, the main concern of this work is the licensing of argument DPs, rather than case realization. As far as the issues taken up in this work and the solutions given to them are concerned, it does not seem to have added very much to the empirical study of case in Japanese. However, its value lies in the fact that within the framework of the MP this theory gives an account of a variety of linguistic facts revealed by past works on quite a number of languages. In this respect the analysis of the Japanese case system in this framework has played an important role in leading the theory toward establishing a better universal grammar. As stated before, this work is not aimed at dealing with a wide range of facts about case realizations. Take for example the Japanese nominative *ga*, which appears not only with the subject of a finite clause or multiple subjects but also with the object of a stative predicate. Possible case alignments in major sentence structures such as potential and 'tough' sentences are actually out of consideration of this work. Therefore, from the point of view of case realization, it is doubtful whether or not efforts to deal with all these facts on the basis of this theory will prove to be revealing.

6.3 Koizumi (1998)

Koizumi (1998) is taken up in this review, as it offers an alternative mechanism supporting Watanabe's Three-Layered Case hypothesis originally proposed in Watanabe (1993a). Koizumi bases his argument on this version rather than the revised one (1996) reviewed in the preceding section. However, the gist of Koizumi's claim is not affected by Watanabe's new case checking mechanism, namely the follow-up case checking described in section 6.2. Koizumi claims that Japanese, lacking overt morphological agreement, has an invisible AgrP, which motivates object raising. He uses as evidence the scope interaction between the delimiter *dake* ('only') and three types of Japanese complex predicates, namely, raising, control,[26] and stative predicates exemplified by the sentences in (130):

(130) a. John wa niku dake o tabe-sugi- ta.
John Top meat only Acc eat- overdo-Past (raising predicate)
'John overdid eating only meat.'

i. only > overdo
('Among many things John ate, it is only meat that he overate.')
ii. overdo > only
(For too long time, John ate nothing but meat.)
(Koizumi 1998: (9))

b. John wa ringo dake o tabe-wasure-ta.
Top apple only Acc eat- forget- Past (control predicate)
'John forgot to eat only apples.'
i. only > forget
('Among many things John was supposed to eat, it is only apples that he forgot to eat.')
ii. *forget > only (It is eat only apples that John forgot to do.)
(Koizumi 1998: (11))

c. John ga migime dake o tumur-e-ru.
Nom right eye only Acc close Pot-Pres (potential with Acc)
'John can close only his right eye.'
i. can > only ('John can wink his right eye.')
ii. ?*only > can (It is only his right eye that he can close.)
(Koizumi 1998: (25a))

d. John ga migime dake ga tumur-e- ru.
Nom right eye only Nom close-Pot-Pres (potential with Nom)
'John can close only right eye.'
i. *can > only
ii. only > can (Koizumi 1998: (25b))

In (130a) with a raising predicate *sugi-* ('over-'), the object in the complement sentence can take both narrow (embedded) and wide (matrix) scopes, which causes the ambiguity shown in the interpretations (i) and (ii), while in (130b) with a control predicate the narrow scope reading of the complement object is disallowed as indicated by the reading (ii) with a star. As for potentials, it was already stated in section 4 ((31) in particular) that the potentials *(r)are*, *(r)e* require matrix and complement subjects in deep structure. In terms of GB theory, potentials theta-mark their external arguments resulting in the requirement of the PRO complement subject. In other words, they are control predicates. (130c) does not conform to the descriptive generalization given above, revealing a scope phenomenon (narrow scope) different from (130b) with a control predicate. However, (130d) with the complement object marked with the nominative *ga* shows that only the wide scope reading is permitted as is the case with control predicates.

The relevant question to ask about the facts given above is: How can we account for (i) the fact that the raising predicate permits narrow and wide scope interpretations for the complement object, (ii) the fact that the control predicate permits only wide scope interpretation, and (iii) the fact that the potential with the *o*-marked complement object does not permit wide scope reading, while the *ga*-marked complement object permits only wide scope reading?

Koizumi (1998) and Watanabe (1996) share the basic mechanism of Case checking, namely, raising both Case bearing heads (V with [Acc] and T with [Nom])

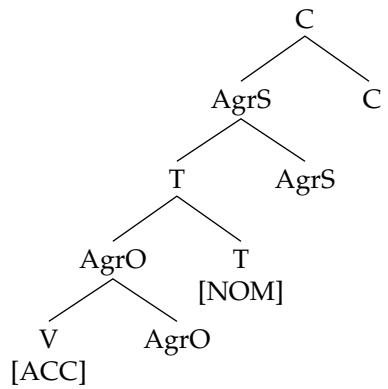
and the case checked DPs to the same checking domains. V and the object DP are raised to the checking domain of Agr-o, whereas T and the Subject DP go to that of Agr-s. The resulting structures are the same as (118a and b) in Watanabe's system. In Watanabe, case checking is transference of the case feature of DP to Agr, while in Koizumi case checking is carried out by copying the case features of DP and V or T to Agr. If the two copied features are of the same type, case checking is successful. Thus, Koizumi's case checking is carried out by case matching. Watanabe motivates follow-up case checking by the obligatory elimination of case features left with the case bearing heads, since case features are uninterpretable. Koizumi motivates the same three-step process by the invisibility of Agr with copied features at the LF interface, where the success of the case matching is checked. Thus, the feature copied on Agr must be copied onto the lexical elements T or C, which have semantic contents and are visible in LF. This corresponds to Watanabe's follow-up checking. The structures for the three-step case checking are the same as Watanabe's structures (119a and b) for follow-up case checking.

On top of this basic mechanism, Koizumi provides the following condition on feature copying:

(131) Features may be copied to an item with an original case feature, but they may not be recopied from that item.

In the partial structure (132), the case features previously copied to AgrO from the object and the verb can be copied to T with the original case feature [NOM], but not to C due to the intervening T with the original case feature.

(132)

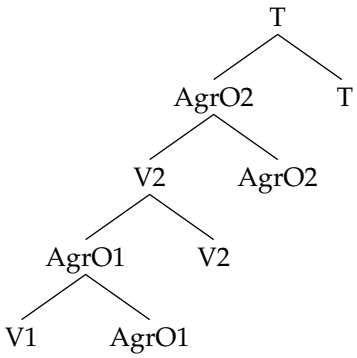


(Koizumi 1998: (31))

Now let us see how the three questions raised in connection with the data given in (130) are answered. The raising verb, V2 in (133) given below, is without the case feature [ACC]. When AgrO1 receives [ACC] from V1 (the embedded verb) and its object, these features can be copied onto T since V2 is without a case feature. This means that feature copying within the domain of AgrO1 licenses the

object, so it takes the narrow scope, i.e., the embedded scope. When V1 is raised to V2 without its case feature copied to AgrO1, the case feature [ACC] is transferred to V2. Now the object of V1 cannot be licensed within the domain of AgrO1. Thus, it has to move to the Spec of AgrO2, where it is licensed and yields the wide scope reading. The raising of an embedded verb to the matrix verb, specified as Restructuring, is optional in the case of raising predicates, which is the source of ambiguity between wide and narrow scope readings.

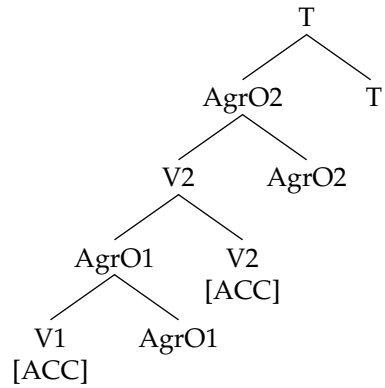
(133) V2 = Raising



(Koizumi 1998: (33))

In the case of control verbs, both V1 and V2 have [ACC], so that [ACC] copied onto AgrO1 cannot be recopied to T due to the presence of V2 with the original case feature [ACC] (Condition (131)). Since the third step, copying the case feature carried by AgrO1 onto T, is imposssible, the complement object must move to the Spec of AgrO2 to get licensed. This is why control predicates permit only the wide scope reading. (134) is the intermediate structure of the control predicates relevant to the feature copying mechanism:

(134) V2 = Control



(Koizumi 1998: (34))

The potentials are control predicates, but without [ACC], so AgrO1 with the Case features copied onto it from V1 and its object can be recopied to T without being blocked by V2. This is the reason for the narrow scope reading. When V1 is raised to V2, its Case feature is tranferred to V2 as in the case of raising predicates. The object with [NOM] must be adjoined to TP to get its case feature checked in the domain of AgrS. The two case features carried by T are recopied onto C. This is the cause of the wide scope reading for the nominative object in (130d).

Koizumi claims that Japanese, without overt morphological agreement, has AgrP, using the scope interactions observed in sentences with complex predicates exemplified by those in (130). To be more specific, unless object movement to AgrP-Spec is assumed, the scope interactions cannot be accounted for, since the differences of interpretations are dependent on the positions of the specifiers of AgrP, either in the embedded or the matrix clause, that moved complement objects occupy.

Koizumi's work is supported by the fact of Scandinavian languages, which are reported to have overt object raising. Thus, this work is interesting in terms of UG.

Now that Agr as a functional head has been discarded, how to account for these facts in the framework of the MP is the problem for all those who have worked on Agr-based case theory. In the appendix to his chapter 1, Watanabe (1996) casts his case checking system in the new framework without Agr, which is given in section 6.4.1.

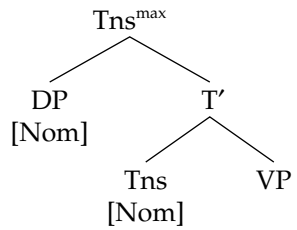
6.4 Ura (1996, 1999, 2000, 2001)

6.4.1 From Agr-based case checking to Agr-less

Ura (1996) gives a solution to the problem as to how to switch from Agr-based case checking to Agr-less case checking. To avoid involvement in too much theory internal discussion, this section concentrates on Ura's proposal relevant to Watanabe's case checking.

In order to capture the essence of his Layered Case Checking hypothesis without the use of Agr, Watanabe gives basic ideas for the modifications of his theory given in section 6.2. First he proposes that nominative and null case checking are carried out in TP, as in (135):

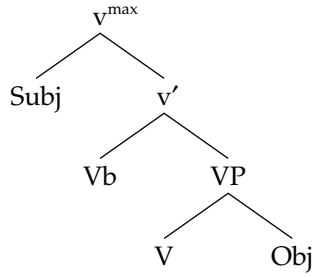
(135)



(Watanabe 1996: (1.28))

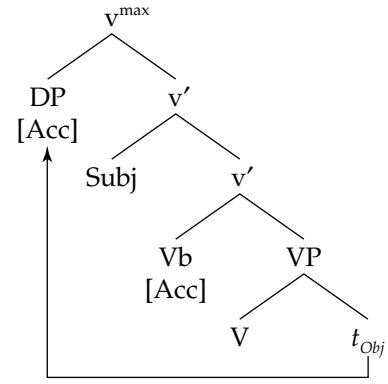
For accusative case checking, Watanabe makes crucial use of the multiple Specifier construction proposed in Chomsky (1995c) and followed by Ura, the gist of which is given below after presenting Watanabe's idea.

(136) a.



(Watanabe 1996: (1.30))

b.

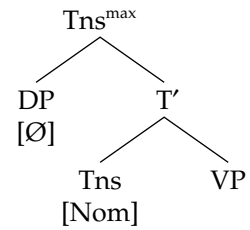


(Watanabe 1996: (1.29))

Vb in (136a, b) is *v* in Ura, which stands for a light verb representing a transitive verb. As is shown by (136a) the Subj is in Vb-Spec as in the standard case, while the moved Obj occupies another Vb-Spec position. This means, according to Ura, that Vb allows multiple spec positions due to its parametric positive value of 'violability of procrastinate'. Procrastinate is an economy condition that forces the choice of movement in LF (covert movement) over that in syntax (overt movement). There is assumed a parametric variation of verbs between those permitting violation of this condition and those disallowing it. Since the violability is optional, i.e., not forced on all the verbs but tolerated by some verbs, it is called by Ura 'an unforced violation of procrastinate'. When the head verb has this property, it projects multiple specifier positions as landing sites of moved elements. Thus, (136b) is a legitimate structure.

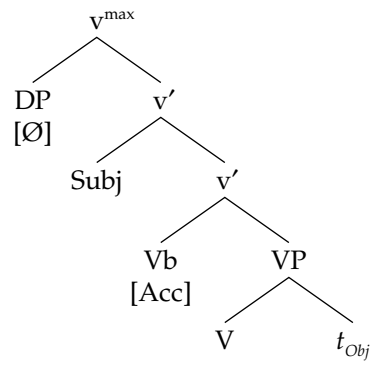
With the structures (136a, b), Watanabe's case checking proceeds as indicated by (137a, b) for [Nom] and [Acc] respectively:

(137) a.



(Watanabe 1996: (1.31a))

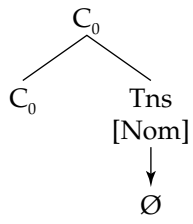
b.



(Watanabe 1996: (1.31b))

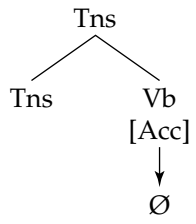
Watanabe's follow-up checking results in the structures (138a, b):

(138) a.



(Watanabe 1996: (1.32a))

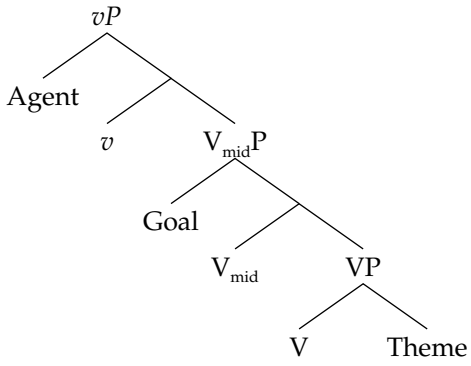
b.



(Watanabe 1996: (1.32b))

The two-layered VP shell, as given in (136b) is proposed by Chomsky (1995c). Ura extends it to a three-layered VP shell by adding $V_{mid}P$, which stands for verbs with the ability of discharging the theta-roles EXPERIENCER, GOAL, or BENEFACTIVE. The underlying structure for verbs like *give* with this ability is (139) given below:

(139)



(*v* = Watanabe's Vb)
(*vP* = Watanabe's Vmax)

(Ura 1996: (2.15))

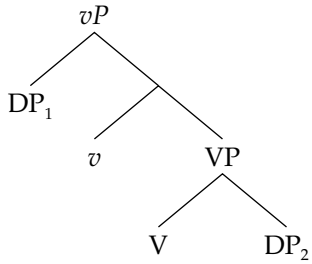
6.4.2 Mutiple feature checking

Ura (1996) is concerned with the explication under the MP of the widely observed facts that grammatical relations (GR), subject, object, and so on, do not always show one-to-one correspondences to grammatical functions (GF) such as playing the role of the antecedent of a reflexive form, the controller of the PRO subject of an adjunct clause,[27] or the trigger of the so-called subject triggered honorification in Japanese. Ura calls the discrepancy between GR and GF Grammatical Function Splitting (GFS). Typical examples of GFS can be drawn from facts about various types of ergative languages (Ura 1996, 2000). GFSs are observed in syntactic, morphological, and mixed ergativity. Take for example the case system of Georgian, which Marantz (1992) describes. In Georgian morphological ergativity is observed in sentences with simple past tense while accusativity shows up in sentences with the other tense forms. Furthermore, the agreement is dependent

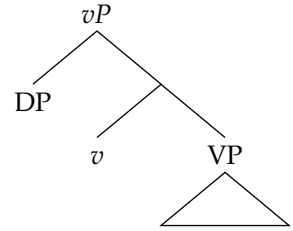
on the accusative case system. Now we can see that case analysis cannot be determined solely in terms of structural configurations. Due to space limitation, it is impossible to summarize Ura's arguments for the necessity of multiple feature checking to deal with such problems. The gist of the multiple feature checking Ura proposes is that multiple functional features borne by a single functional head are permitted to enter into multiple feature checking relations.

Another important proposal of Ura in relation to the idea of multiple feature checking is the 'Theta-Position Checking' parameter (θPC-parameter), which "states that elements can enter into a formal feature-checking relation at their theta-position in a language L only if the value of L's θPC-parameter is set as [+θPC]" (Ura 2000: 206). The base structures for transitive and intransitive (unergative) clauses are assumed as follows:

(140) a. Transitive



b. Intransitive (unergative)

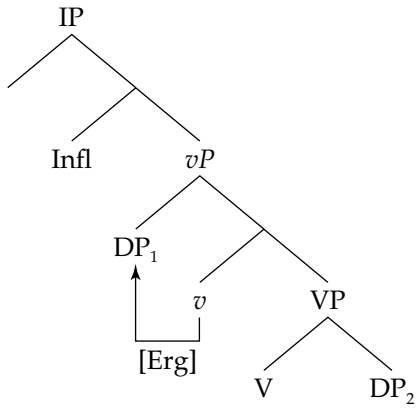


(Ura 2000: 206–207, slightly modified)

Let us see how Ura's multiple feature checking works to account for morphological characteristics of ergative languages with [+θPC]. On the basis of this assumption, DP_1 in (140a) enters into a case checking relation with *v* without moving out of its theta-position, vP-Spec.[28] In this case the case feature [Erg(ative)] is borne by DP_1 and *v*, thus, [Erg] on DP_1 is checked off.

Next, through Merge the finite Infl is introduced to (140), as in (141):

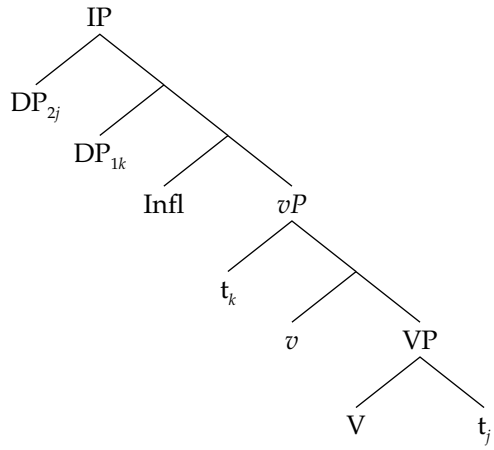
(141)



(Ura 2001: (43))

DP_1 in (141) is closer than DP_2 to the target of movement, IP-Spec. However, DP_1 has already lost its case feature through ergative case feature checking. DP_2 is the only candidate to hold a case checking relation with Infl, so it has to move to IP-Spec. However, DP_1 too has to move to a Spec position, it is assumed, to check off the [EPP] feature. Now the extra Spec position (the outer Spec) is utilized as in (142):

(142)



(Ura 2001: (45))

The checked case is absolutive in this case. Thus, the logical object (not the subject) enters into the case checking relation with Infl.

In a language with [–θPC], DP_1 must move from its theta-position to a position where its case feature can be checked off; namely, to the Spec of IP.

With this brief outline, let us try to account for the case of split ergatives in Georgian. The case feature checking carried out thus far accounts for morphological case distribution. Recall that Georgian follows the accusative pattern in agreement, according to Marantz (section 6.1.1). This means that agreement in Georgian is based on DP_1 in the inner Spec position. As a result, Infl checks off two different features (the EPP feature and the case feature) of two distinct DPs using multiple Spec positions.

To show how this multiple feature checking works with Japanese, the Dative Subject Construction (DSC) is taken up. Sentences with stative psychological predicates and potentials, those with the *ni-ga* case alignment exemplified in (15) and (16), are analyzed together as the DSC. The subjecthood of DPs marked with *ni* and the non-subjecthood of nominative objects in the DSC have already been discussed above. Ura states that "this fact indicates that T's nominative case-feature and its ϕ-feature can be checked independently in Japanese and Korean; for, from its morphological manifestation, it is natural to assume that T's nominative case-feature is checked off by the nominative object, and T's ϕ-feature is checked off by the dative subject" (Ura 1999: 231).

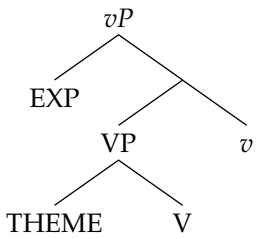
Ura's basic assumptions for the analysis of Japanese and Korean case systems are listed below, in order to see the real nature of the whole case checking system as applied to Japanese.

(143) (i) The EPP-feature of T is strong; (ii) the EXPERIENCER (EXP) of the psych-verbs that can occur in the DSC is generated at the Spec of a kind of light verb, which takes a VP with THEME in its complement position; (iii) the light verb in the two-layered VP shell of the psych-verbs that can occur in the DSC may assign a dative case to EXP as an inherent case, and they are allowed not to have an accusative case feature as a lexical idiosyncracy; (iv) agreement may be independent of nominative case; (v) T's phi-feature is strong, but its nominative feature is weak; (vi) T's nominative feature may enter into multiple feature checking relations.[29]

With these assumptions, Ura (1999) proceeds to show that the DSC provides supporting evidence for the assumption of multiple feature checking. Sentences (15) and (16b) are typical examples of this construction, whose case alignment, *ni-ga*, has been discussed in this paper repeatedly in different theoretical frameworks. Ura gives (144b) as the basic structure of sentences like (15), repeated below as (144a):

(144) a. watasi-tati ni mondai no honsitu ga yoku
we Dat problem Gen real nature Nom well
wakar- u koto
understand-Pres that
'that we can understand well the real nature of the problem'

b.



(Ura 1999: (26))

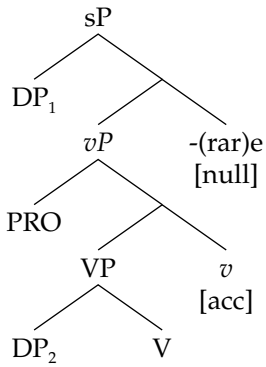
A dative subject, EXP in (144) is merged in the *vP*-Spec position. The dative marker *ni* is an inherent case marker, so it does not enter into a case checking relation with anything, even though it is raised to TP-Spec attracted by the strong EPP feature borne by T. Thus, its D feature is checked off in this checking relation.[30] This accounts for its function as subject, in playing the roles of the antecedent of an anaphora, and the trigger of subject orientated honorification and so on. The case feature [Nom] carried by T attracts DP with [Nom], THEME in

(144), and enters into the case checking relation with it, checking [Nom] off from the THEME DP. Thus two different features, [EPP] and [Nom], borne by T independently enter into different checking relations with different DPs.

Ura's analysis of the DSC provides evidence for his claim that individual features borne by a single head are checked independently, and that a single feature can check the same feature carried by multiple DPs, as in the case of multiple subjects in Japanese.

Ura continues to demonstrate the derivation of the three case arrays of potentials in this framework with quite a few additional assumptions. The structure posited by Ura (1999) is (145):

(145)



(Ura 1999: (38))

In (145) sP stands for the maximal projection of the potential suffix *(r)are* or *(r)e*, which bears the [null] case feature, which is to be checked by PRO. This is the same assumption as Watanabe's. Without case absorption, [acc] borne by *v* is checked off by DP_2, and DP_1 is raised to TP-Spec to check off its weak nominative case feature at LF. The result is *ga-o* case alignment. Due to (143iii) the potential suffix optionally assigns *ni* to DP_1 and absorbs the case feature [acc] of *v*. Now DP_1 is raised to TP-Spec attracted by T's strong features, the EPP and phi-features. When [acc] of *v* is absorbed by the potential affix, DP_2 has to move to another TP-Spec position in LF to check off T's nominative case feature. Thus, T enters into feature checking relations with both DP_1 and DP_2, resulting in *ni-ga* case alignment. When *ni* is not assigned to DP_1 and case absorption is applied, *ga-ga* case alignment emerges.

To summarize, case feature checking theories, either Agr-based or not, aim at (i) accounting for the distribution of DPs on case theoretic grounds, (ii) identifying subjecthood of DPs, (iii) motivating NP movement (A movement) in the MP framework, i.e., in the framework without the notion of government, and (iv) accounting for the distribution of PRO, which is tied to the case system.

In terms of (iii) and (iv), the theories taken up in section 6, together with a fairly large number of works currently going on, may be successful, especially in view of their coverage of quite a number of typologically different languages. As

for (i) and (ii), there is room to reconsider whether there are other means to achieve these aims, especially concerning (i) languages like Japanese with overt case particles and postpositions invite different approaches to this problem. Kuroda (1988) in section 5.4 and Fukui and Takano (1998) in section 6.5 propose alternatives. Concerning (ii), case checking as a means of identifying subjecthood depends on T(ense), with the case feature [Nom] or [Null]. This means that embedded non-finite clauses must be generated as IP or TP. Kuroda (1988), on the other hand, convincingly argues that Japanese is a language with "non-forced agreement," and proposes an alternative, which claims that a subject is generated as the external argument of a verb (Ext (V)). Following this proposal, we can account for the subjecthood borne by both matrix and complement subjects. In fact, as has been repeatedly emphasized in sections 5 and 6, the underlying complement subject marked with *o* in the *o*-causative and those marked with *ni* in the *ni*-causative and the indirect passive have the typical functions of a subject mentioned above. In view of this fact, Kuroda's proposal must be seriously studied together with the function of T(ense) from the point of view of UG.

6.5 Fukui and Takano (1998)

Supporting the claim by the MP that linear ordering does not play a role either in LF or in the computation from numeration to LF and that it is part of the phonological component, Fukui and Takano propose the operation of demerge in the phonological component. Demerge recursively applies to the topmost construct formed by Merge and detaches the maximal projection first and starts the concatenation from the first detached element.[31] (See Fukui and Takano (1998) for a formal and detailed presentation of demerge and concatenate.) The result is Specifier-Complement-Head order, namely head final order. The Spec-Head-Comp order in head initial languages is the result of verb raising triggered by the strong feature of the functional head *v*. The presence or absence of the functional head with the strong feature of attracting a verb to its specifier position accounts for the linear order variation in languages.

According to the above theory, Japanese does not undergo verb raising since its head final order is base generated. As a consequence the standard analysis of accusative case checking based on verb raising is not available for Japanese.[32] This is a desirable consequence in view of the lack of evidence in Japanese for the relevance of the abstract case system. Roughly speaking, Fukui and Takano have come up with a conclusion similar to Kuroda's (1988), that is, in Japanese, subject and object NPs are licensed by *ga* and *o*, not by Case checking. The significance of Fukui and Takano's work lies in the account of the process of uninterpretable feature 'elimination'. The case feature carried by NP and the feature 'Assign the accusative case' ([+Acc]) carried by the transitive verb must be eliminated before the derivation terminates in LF, since they are not interpretable. Fukui and Takano claim that "Case particles make case features visible to Spell-Out," which triggers the elimination of the case feature of an NP because

spell-out takes away visible features relevant to the phonological component. Without the case feature, the NP proceeds to LF and the derivation successfully terminates in the covert component, if the other conditions are met. Fukui and Takano further assume that the accusative case in Japanese is an inherent case and that it is linked to a particular theta-role. This means that [+Acc] on the transitive verb can stay on in the covert component as an interpretable feature.

As for the nominative case, it is assumed that T(ense) in Japanese does not carry the case feature 'Assign the nominative case'. The case particle *ga* makes the case feature of its complement NP visible, which leads to the elimination of this case feature by spell-out. The case particle *ga* licenses the multiple subject NP in the same way.

This is a very rough outline of Fukui and Takano's approach to the Japanese case system within the MP framework. This approach seems to be on the right track, but there are some serious problems yet unsolved. One of them is the question of how to account for interrelationships of structural cases and other distributional facts described in sections 4 and 5.

7 Conclusion

This summary reveals that the distinction was made between structural and inherent cases already in Kuroda's dissertation (1965), written in the framework of the early generative grammatical model. This distinction has been one of the basic points in Japanese generative grammars up to the present time. However, neither this distinction nor case itself had been included in the main research agenda until the emergence of the ideas of principles and parameters in the early part of the 1980s. Chomsky himself admits, "But as far as I can determine, there was never any distinction made between what we now call structural and inherent Case; I don't know the literature well enough to check, but I asked other people like Giuseppe Longobardi, and apparently there is no clear recognition of the distinction . . . As far as I am aware, this split was not noticed until the P&P approach came along" (Chomsky 2002: 112–113). It is surprising how poorly the results of long and continued efforts of Japanese generativists have fared in the generative tradition.

As was pointed out in the introduction, Japanese traditional linguists did not make the distinction, treating all case particles as markers of noun phrases functioning as predicative modifiers. According to Chomsky, the same applies to research on case in the European tradition. Neither Gruber nor Fillmore made this distinction. Kuroda (1965) achieved an integration of various ideas on case into a well-articulated system.

It is interesting to note that there has emerged a move toward disintegration. Kuroda (1988) is one example, treating the structural *o* and inherent *o* together as complements of verbs, structural cases in other words. Inoue (1997a) shows that there is no fast and hard line dividing the structural case particle *o* and inherent *o*, using various structural tests. Fukui and Takano admit only the inherent particle

o, related to various theta *roles*. It is hoped that this kind of trend in Japanese linguistics will give some impact on the refinement of the MP, contrary to the fate of the very early efforts to integrate ideas into a claim for the basic distinction among particles.

In the presence of sentences without nominative subjects, as described in Inoue (1998), Ura's assumption that [EPP] is strong in Japanese cannot be maintained. Instead, we have to assume that there are parametric differences among languages in terms of the requirements of sentencehood. Inoue (1998) contends that some languages require the subject–predicate relation, most typically realized as 'forced agreement' in Kuroda's terms. Others are satisfied with a topic–comment relation. Still others permit both of them. Japanese falls into the third group, with the subject orientated honorifics and the subject antecedent requirement for anaphora depending on the subject–predicate relation, permitting at the same time the topic–comment relation.

The status of *ga* is certainly more complex than the nominative case in English. This summary is an attempt to show various approaches to account for its multiple functions. Saito (1982) and Kuroda (1986) are in sharp contrast with respect to the treatment of *ga* as the subject and focus marker. The former distinguishes them by giving them different syntactic structures, the latter by providing a semantic account for the difference. The multiple subject construction has been approached as well from several theoretical perspectives; Kuno and Kuroda using the subjectivization transformation, Takezawa with the configurational approach utilizing the mechanism of adjunction of a subject to IP, and Ura with the multiple specifier positions for subjects. Finally, the *ga* marking the object of a stative predicate looks like a default case in Marantz's case realization. All these studies show that the presence or absence of the subject–verb agreement is an important factor in deciding typological differences. In this respect, Kuroda (1988) offers an important perspective for future studies.

NOTES

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Comments by T. Ito and Y. Ueda helped revision of the preliminary version of this chapter. Special thanks are due to B. Horton, who patiently read through the first manuscript and helped editing. Y. Furukawa's comments on Koizumi (1995, 1998) and Ura (1996, 1999) led me to decide the inclusion of these papers in the review given in section 6.

Abbreviations used in this chapter: Adj-aff = adjectival affix, Acc = accusative, Caus = causative, Compl = completive aspect, Cop = copula, Dat = dative, Desid = desiderative, DP = determiner phrase, Foc = focus, Gen = genitive, Hon = honorific, Neg = negative, Nm = nominal marker, Nom = nominative, NP = noun phrase, Pass = passive, Past = past tense, Perf = perfective aspect, Pol = polite form, Pot = potential, Pres = present tense, Presum = presumptive, Prog = progressive aspect, SF Par = sentence final particle, State = stative, Top = topic, VP = verb phrase.

1 Government Binding (GB) Theory is based on the following subsystems:

(i) bounding theory
(ii) government theory
(iii) theta-theory
(iv) binding theory
(v) Case theory
(vi) Control theory

(Chomsky 1981: 5)

All these subsystems are closely tied to each other. With respect to case theory, the abstract Case (nominative and accusative) is assigned to the NPs generated in the positions identified by verbs and verb phrases as theta-positions, that is, theta-role assignable positions. It is further claimed that "a verb with a complement assigns case if and only if it theta-marks its subject" (Chomsky 1986b: 141, (185)). The core of theta-theory is the theta-criterion, which reads as follows: Each argument bears one and only one theta-role, and each theta-role is assigned to one and only one argument (Chomsky 1981: 36). Case theory consists of abstract case assignment to the NPs governed by case assigning heads, Tense and verbs, and the Case filter which requires that every lexical NP must get case assigned to it.

(i) NP* if NP has phonetic content and has no case. (Chomsky 1981: 49)

2 Grammatical functions are basically those functions as subject and object. Especially, the subject plays important functions as the antecedent of anaphora (in Japanese *zibun* ('self') or *otagai* ('each other')), the trigger of the subject orientated honorific expressions, and the controller of the null subject PRO of an embedded adjunct. Some examples follow:

(i) Katoo-san$_i$ ga zibun$_i$ o seme-te i-ru
Katoo Nom self Acc accuse-Prog-Pres
'Mr Kato accuses himself.' (the antecedent of an anaphor)

(ii) sensei ga kono hon o o-kaki ni nat-ta
Nom this book Acc Hon-write-Hon- Past
'The teacher wrote this book.'(the trigger of subject orientated honorification)

(iii) [PRO$_i$ ie o deru mae ni] Katoo-san$_i$ wa hisyo ni denwa si-ta
home Acc leave before Katoo Top secretary to call- Past
'Before leaving home Mr Kato called his secretary.' (the controller of PRO)

3 *Ni* is put within parentheses because linguists like Kuroda and Saito regard all sorts of *ni* as an inherent case marker (postposition).

4 The base form is *nar-re*, from which the first consonant of the affix *re* is deleted because it is attached to the verb with the final consonant *r*. If it is attached to a verb with a final vowel *r* is retained as in (i) below. More is given in note 6.

(i) ne-ru ('sleep'), ne-rare-ru ('can sleep')

5 Agt stands for Agent. Gruber gives a special status to Agent; namely, in his grammar Agent is optionally selected by Event, rather than by VP.

6 The verbal suffixes like *sase* (causative), *rare* (passive), *rare* or *re* (potential) start with consonants, which are deleted when attached to verbs with final consonants to avoid consonant clusters. This is shown by enclosing the initial consonant with parentheses in the exposition as in *(s)ase* and *(r)are*, whereas in example sentences the actual form without a consonant is given. When they are attached to verbs with final vowels the initial consonants of these affixes are retained. The adjectival suffix *tak* (desiderative) loses its final consonant when the present tense morpheme *i* is attached to it. Thus, *tak-i* becomes *ta-i*. In the exposition the form *ta(k)-i* is used, while in examples the actual form *ta-i* is given.

7 The *ga*-marked subject of a sentence with a stative predicate has the sense of 'exhaustive listing', the term used by Kuno (1973c), which means an exclusive selection of an NP from among all the other candidates. In an embedded clause this sense is not kept. Using this fact, *koto* ('that') is added to turn these sentences to embedded clauses and eliminate the sense of 'exhaustive listing' from them.

8 Desideratives do not permit *ni-ga* case alignment. In Inoue (1997b) this type of *ni* is treated as an inherent case marker of the subject selected by stative psychological predicates like *wakar* ('understand') and potentials. The desiderative *ta(k)* does not select *ni* for its subject.

9 (21b) is a non-configurational tree structure following the general acceptance around the end of the 1970s of non-configurationality of languages like Japanese. Kuno (1973c) employs configurational tree structures (with the node VP) for Japanese. The structures like (21b) are used here to simplify arguments involving cyclic case assignments, where the VP node does not play any role.

10 The case alignment (*ga-ni-o*) is not treated as a structural case array by some linguists. The parentheses are meant to show this situation.

11 In Kuroda's system, the NP that is assigned *ni* by subject-*ni* raising is not affected by the structural case assigning rule (23) as shown by (27) and the following discussion. This means that this *ni* is treated by Kuroda as a postposition. An anonymous reviewer pointed out that there are "a number of works to suggest that *ni* is case or postposition." This is exactly what this summary is meant to convey. Kuno, for example, regards the indirect object *ni* as a structural case, and the locative *ni* as a postposition. The test of Q float was used rather frequently around the latter part of the 1970s. However, it did not yield a decisive result. See Inoue (1978a) for details.

12 Kuno follows the ST derivation of direct passives, that is, the subject NP is first postposed and the object NP is moved to fill the vacated subject position.

13 This is the rendition given by Saito (1982) rather than Kuno's. This is used to give a more natural reading.

14 [+Self-controllable] is assumed to be a feature of a predicate that selects an agentive subject.

15 Some nominal clauses other than relative clauses also permit the conversion of *ga* to *no*. Clauses with *no*, *koto* (nominalizers) and lexical NPs like *zizitu* ('fact') and *hookoku* ('report') permit this conversion under certain conditions. We can, therefore, generalize the applicability of this conversion to complex NPs.

16 Exhaustive listing and neutral description are the semantic terms originally used by Kuno. Note 7 above gives the sense of the first. Saito claims that the *ga* marked NPs with the sense of exhaustive listing must be treated as focused elements.

Neutral description can be taken to be a semantic interpretation given to sentences without foci.

17 α governs β iff α m-commands β and there is no γ, γ a barrier for β, such that γ excludes α (Chomsky 1986a: 9, (18)). α excludes β if no segment of α dominates β (p. 9, (17)).

18 α c-commands β iff α does not dominate β and every γ that dominates α dominates β. Where γ is restricted to maximal projections α is said to m-command β (Chomsky 1986a: 8, (13)).

19 Chomsky (1986a) extended the X' scheme to functional categories, I(nflection) and C(omplementizer). IP corresponds to S and CP to S' of the EST framework.

20 The symbol # is added here to show that the structure underlying (103b) is not assumed to underlie (103a). Kuroda assumes that in (103a) *koma* ('top') is adjoined to Max(N), whose head is *iro* ('color'), and Max(N) is assigned *ga* by the predicate *kirei*. Then *ga* is distributed from Max(N) to both *koma* and *iro*.

21 Projection principle: Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items (Chomsky 1981: 29, (38)). In other words the projection principle requires that complements of heads must be represented at each syntactic level. For example, a verb projects its complements according to its subcategorization property. The projection principle, together with the requirement that every clause must have a subject, constitutes the extended projection principle (EPP). In the GB framework this means that the head of IP must project its specifier position for the subject to occupy, thus leading to the obligatory existence of a subject for each clause. Later in the MP, feature strength (strong or weak) is assumed to decide the movement of feature-bearing items to positions where feature checking can take place. For example, the strong EPP feature triggers the movement of the D feature carried by DPs (determiner phrases) in the specifier position of VP to that of IP resulting in the elimination of the D feature from the subject DPs. (Instead of assuming that the determiner occupies the NP-Specifier position, Abney's (1987) claim is accepted in recent works that the determiner is the head of the determiner phrase which takes NP as its complement.)

22 'Equidistance' is defined as: If α and β are in the same minimal domain, they are equidistant from γ. The minimal domain is: MIN(S), S a set of categories, is the smallest subset K of S such that for any $\gamma \in S$, some $\beta \in K$ reflexively dominate γ (Watanabe 1996: 4–6).

23 The PRO theorem requires that PRO be not governed. In (120a) PRO is not governed by the matrix verb *tried* thanks to the presence of *e* in CP, while in (120b) there is nothing blocking the government of PRO by the matrix verb *believe*.

24 'Mary' in (124b) is the embedded subject binding the anaphor *zibun* in the embedded clause.

25 'Three-layered case checking': Watanabe proposed follow-up case checking in addition to nominative and accusative case checking. These three types of case checking involve three layers of syntactic configuration.

26 Raising verbs like English *seem* and Japanese *sug*i ('overdo') require the movement of the complement subject to the matrix subject position, while one type of control verbs like English *try* and Japanese *wasure* ('forget') require that the PRO complement subject be coreferential with the matrix subject and the other type like English *persuade* and Japanese *tanom* ('ask') requires the PRO complement subject to be coreferential with the matrix direct or indirect object.

27 The adjunct subject PRO is controlled only by the matrix subject unlike the PRO as the complement subject discussed in note 26:

(i) [PRO_i ryokoo ni de-ru mae ni] Katoo-san_i ga tomodati o syootai-si-ta.
trip to go-Pres before Nom friend Acc invite- Past
'Before going on a trip Mr Kato invited his friends.'

28 The specifier of XP is abbreviated as XP-Spec in the following.

29 This assumption accounts for multiple nominative DPs. The early MP assumes that strong features are checked in the overt component (syntax) while the checking of weak ones is carried out in the covert component (LF). Since it is assumed that the nominative feature is weak, the feature checking of multiple nominative DPs are carried out in LF. T's phi-feature is responsible for the functions of subjects. Now in Chomsky (2000, 2001b) the idea of feature strength is discarded together with the distinction of overt and covert components. It is unknown at the present stage what effects will emerge involving all the grammars using these assumptions.

30 D feature is checked off as the result of the EPP feature checking.

31 It is implied that Demerge is an operation undoing the result of Merge and mapping it into an unstructured (linearized) sequence of elements. "Our hypothesis is that human language is designed in such a way that merge and demerge are in a symmetric relation with respect to their applications" (Fukui and Takano 1998: 36).

32 As was explicated in section 6.2.1, using the structure (118), V^0 must be raised and adjoined to Agr-o to carry out accusative feature checking.

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12 Chinese *Ba*

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1 Introduction

In Mandarin Chinese,[1] there is a construction sometimes referred to as simply the *ba* construction: *ba zi ju* (sentence with *ba*). It is one of the most famous constructions in the grammar of Chinese and has attracted the attention of almost every linguist interested in the grammar of Chinese. However, it has also consistently eluded a satisfactory analysis. The construction is complex and seems to be subject to a myriad of difficult-to-characterize, fuzzy constraints. It is generally one of the most difficult constructions for foreign language learners of Chinese. Yet it is an extremely prominent pattern in Chinese, very commonly used in daily speech. In fact, it seems to be gaining even more prominence in so-called Taiwan Mandarin (Mandarin spoken in Taiwan) because of influence from the even more extensively used corresponding *ka* construction in Taiwanese.[2]

It would be impossible, within the limits of this chapter, to do justice to the complexity of this construction and the rich, endless literature on this topic if we aim for a comprehensive presentation of the properties, problems, and past analyses, and also present a detailed and extensive review of published works. In order to at least provide an understanding of the complexities, we will, therefore, devote much space to the properties of each of the components of the structure which must be considered when analyzing this construction. Moreover, with an aim to setting an appropriate direction for a more satisfactory analysis, we will bring more empirical generalizations from a closely related structure, providing a new perspective to this study: a comparative dimension based on contrasts between the *ba* construction in Mandarin and the corresponding *ka* pattern in Taiwanese. Phrase structures for both *ba* and *ka* constructions will be proposed to reflect the similarities and differences between the two constructions. In addition, a substantial part of this chapter will focus on the constraints on the usage of the *ba* construction, the aspect of the construction which has been the most controversial in the literature. We will review the recent, important analyses of the various constraints – approaches from the perspective of event structures, aspectual structures, and pragmatics – and discuss the strengths and weaknesses of each of these analyses. We will show that all these different approaches accommodate the typical or canonical cases of the *ba* construction. However, there are many 'non-canonical' instances of the *ba* construction which elude any precise structural account. More specifically, the accounts based on aspectual structures and event structures are both too weak and too strong empirically. An account based on pragmatic constraints is vague and uncertain. Nonetheless, vagueness and uncertainty are in the nature of the constraints on this construction. There also exist many minimal pairs of sentences which are structurally identical (including identical aspectual and event structure) but differ in acceptability as a *ba* sentence. Accordingly, we suggest that it is important to distinguish form from usage. Form can be represented precisely by syntactic phrase structure. Usage, however, is influenced by pragmatic factors which cannot be accommodated solely by clearly defined grammatical accounts.

We first characterize in section 2 the syntactic properties of the *ba* construction by describing each component of the *ba* construction in turn, including a *ba* sentence and a non-*ba* counterpart, *ba*, the types of NPs which can follow *ba*,[3] and the possible following verbal constituents. We then turn, in section 3, to the *ka* construction in Taiwanese, comparing the similarities and differences between *ba* and *ka* constructions, which leads to the establishment of an analysis of the syntactic structure of both of these constructions in section 4. Section 5 discusses constraints on the usage of the *ba* construction. The main proposals in the literature will be discussed in detail, revealing the strengths and weaknesses of each of them. We show why precise structural accounts cannot capture the complex constraints on the usage of the *ba* construction and why it is important to distinguish form from usage.

2 Properties

Schematically, a *ba* sentence always has the form in (1a–b), disregarding optional elements.[4] That is, a *ba* sentence has a subject (NP* in (1a–b)), followed by *ba* and 'the *ba* NP' (the NP directly following *ba*), followed by a verb and something else before or after the verb, i.e., the X (X is non-null) in (1a–b):

(1) a. NP* + *ba* + NP + V + X
b. NP* + *ba* + NP + X + V

In addition to the uncertainty of whether a *ba* sentence always has a non-*ba* counterpart,[5] controversy exists with respect to the proper description of almost every component of this construction: (i) the categorial status of *ba*; (ii) the types of NPs allowed in this construction; (iii) the types of Vs allowed; and (iv) what the X is. There have also been substantial and endless debates on whether the *ba* construction carries a special interpretation: whether the *ba* construction expresses some notion of 'affectedness' and whether all the constraints on this construction are reducible to this notion. To begin to understand the controversies, we attempt to describe in the following subsections the important syntactic properties of each component of the *ba* construction.

2.1 Ba *sentences and their non-*ba *counterparts*

We begin with the overall pattern. We claim that a *ba* sentence always has a non-*ba* counterpart. The first component of a *ba* sentence is the subject, which is also the subject of the corresponding non-*ba* sentence. The following two examples illustrate some straightforward cases:

(2) a. wo ba ta sha-le
I BA him kill-Le[6]
'I killed him.'
b. wo sha-le ta-le.
I kill-Le him-Le
'I killed him.'

(3) a. wo ba yaoshi wang-le.
I BA key forget-Le
'I forgot the key.'
b. wo wang-le yaoshi-le
I forget-Le key-Le
'I forgot the key.'

These two types of sentences differ only in where the thematic object of the verb occurs: in a non-*ba* sentence, it occurs postverbally, whereas in a *ba* sentence, it occurs between *ba* and V (see note 6).

In less straightforward cases, it is still possible to state that a *ba* sentence has a non-*ba* counterpart with an identical subject. For instance, in a case like (4a), where it is not immediately obvious that the subject 'this bottle of wine' is directly related to the verb *zui-dao* 'be drunk and fall' thematically, there is still a non-*ba* counterpart with the same subject (4b):

(4) a. zhe-ping jiu ba ta zui-dao-le.
this-bottle wine BA him drunk-fall-Le
'This bottle of wine made him very drunk.'
b. zhe-ping jiu zui-dao ta le.
this-bottle wine drunk-fall him Asp
'This bottle of wine made him very drunk.'

Zui-dao is a compound verb used causatively in (4b).[7]

There are also cases where a verb is followed by a complement, such as a resultative complement or a locative complement, initially complicating the assessment of whether or not there is a non-*ba* counterpart. When a resultative or locative complement occurs, it is generally the case that an object cannot occur postverbally because, independently, Chinese restricts the number of elements that can occur postverbally (the postverbal constraint): generally only one constituent is allowed in postverbal position[8] (see, for instance, Chao 1968; Huang 1982a; Koopman 1984; Travis 1984; Li 1985, 1990; Tang 1990; Sybesma 1992).[9] Under such circumstances, a non-*ba* counterpart is generated by placing the *ba* NP in some preverbal position (such as pre-subject as a topic or post-subject as a preposed object). (5a), for instance, has a non-*ba* counterpart in (5b) by topicalization and (5c) by object-preposing. In addition, verb-reduplication, as in (5d), is another mechanism to create a non-*ba* counterpart without violating the general postverbal constraint of only one postverbal constituent:

(5) a. wo ba zhe-shi xiang-de hen ziji.
I BA this-matter think-De very carefully
'I have thought about the matter carefully.'
b. zhe-shi, wo xiang-de hen zixi.
this-matter I think-De very carefully
'The matter, I have thought about carefully.'
c. wo zhe-shi xiang-de hen zixi.
I this-matter think-De very carefully
'I, the matter, have thought about carefully.'
d. wo xiang zhe-shi xiang-de hen ziji.
I think this-matter think-De very carefully
'I have thought about the matter carefully.'

Alternatively, a non-*ba* counterpart may also be generated by placing the *ba* NP counterpart in the subject position of a resultative complement or a locative complement:

(6) a. haizi ba wo ku-de tou-teng.
child BA me cry-De head-ache
'The child cried so much that my head ached.'
b. haizi ku-de wo tou-teng.
child cry-De me head-ache
'The child cried so much that my head ached.'

(7) a. zhe-ping jiu ba ta zui-dao-zai di-shang.
this-bottle wine drunk-De him fall-at ground-on
'This bottle of wine made him drunk and fall on the ground.'
b. zhe-ping jiu zui-de ta dao-zai di-shang.
this-bottle wine drunk-De him fall-at ground-on
'This bottle of wine made him drunk and fall on the ground.'

The examples above show that a *ba* sentence always has a non-*ba* counterpart. They only differ in the presence/absence of the morpheme *ba* and word order: the *ba* NP corresponds to an NP in postverbal position in a non-*ba* counterpart or in some other position when necessary to avoid violating the general constraint on the number of postverbal NPs possible. The subject of a *ba* sentence and its non-*ba* counterpart stays constant.

Following the subject in a *ba* construction is the key word *ba*, which we turn to next.

2.2 *Ba*

Let us begin with some clear facts about the nature of *ba* and then turn to the analyses of *ba* that have been proposed in the literature.

2.2.1 *The categorial status of* ba

Historically, *ba* was a lexical verb meaning 'take, hold, handle' (see L. Wang 1954; H. Wang 1957; Bennett 1981, for instance). It also occurred in the so-called serial verb construction [V1 + NP + V2 + XP],[10] with *ba* as V1 [*ba* + NP + V + XP]. The pattern can mean 'to take NP and do [V XP] (to it)'. Such a historical origin seems to still be detectable in many contemporary *ba* sentences.[11] For instance, the following question-and-answer pairs in modern Chinese look like serial verb constructions:

(8) a. ni ba juzi zenmeyang-le?
you BA orange how-Le
'What did you do to the orange?'
b. wo ba juzi bo-le pi-le.
I BA orange peel-Le skin-Le
'I peeled the skin off the orange.'

(9) a. ni yao ba ta[12] zenmeyang?
you want BA him how?
'What do you want to do to him?'
b. wo yao ba ta da-duan tui.
I want BA him hit-broken-Le leg
'I want to break his leg.'

These sentences bear great similarity in form to the serial verb construction [Subject + V1 + NP + V2 + XP]. They are interpreted as 'Subject takes NP and does [V + XP] to it; what the subject does to NP is [V+XP]': (8b) means what I did to the orange was peel its skin and (9b) means that what I want to do to him is break (his) leg.

Ba in modern Chinese, however, has lost standard verbal properties, according to most of the works on this construction (see Zou 1995 for an extensive review of relevant works). It has become 'grammaticalized'[13] and does not behave like a verb according to traditional verbhood tests: (i) it cannot take an aspect marker (10b); (ii) it cannot form an alternative V-not-V question (10c); and (iii) it cannot serve as a simple answer to a question (10d) (see, e.g., Chao 1968; Li and Thompson 1981):[14]

(10) a. ta ba ni hai-le.
he BA you hurt-Le
'He hurt you.'
b. *ta ba-le ni hai(-le).
he BA-Le you hurt(-Le)
c. *ta ba-mei/bu-ba ni hai(-le).[15]
he BA-not-BA you hurt-Le
d. *(mei/bu-)ba.
(not-)BA

Such morphosyntactic tests, however, are not quite satisfactory. There are a very small number of verbs in Chinese that simply do not behave like standard verbs according to these tests; nonetheless, they are clearly verbs. *Shi* 'make, cause' is such an example. It behaves like *ba* with respect to verbhood tests; yet no linguist has raised doubts as to the verbal status of *shi*:

(11) a. ta shi ni hen kuaile.
he make you very happy
'He made you happy.'
b. *ta shi-le ni hen kuaile.
he make-Le you very happy
c. *ta shi-mei/bu-shi ni hen kuaile.
he make-not-make you very happy
d. *(mei/bu-)shi.
(not-) make

What is clear, however, is that the NP following *ba* (referred to as the *ba* NP henceforth) can simply be the object of the following verb, as in (10a). When the *ba* NP is understood as the object of the following verb (V), the object position of the V must be empty. It cannot be occupied by a pronoun or a reflexive coreferential with the *ba* NP, as in (12a–c). These properties of *ba* and the *ba* NP are not true for any other verbs and their objects:

(12) a. *ta ba Zhangsan$_i$ hai-le ta$_i$.
he BA Zhangsan hurt-Le him
'He hurt Zhangsan.'
b. *ta ba Zhangsan$_i$ hai-le ziji/taziji$_i$.
he BA Zhangsan hurt-Le self/himself
'He hurt Zhangsan.'

(12b) should be contrasted with (12c), which allows *shi* 'make, cause' to be followed by a verb and a reflexive:

(12) c. ta shi Zhangsan$_i$ hai-le ziji/taziji$_i$.
he make you hurt-Le self/himself
'He made Zhangsan hurt himself.'

The contrast between (12a–b) and (12c) shows that *ba* in modern Chinese is different from lexical verbs.

2.2.2 *The analysis of* ba

Although *ba* has become 'grammaticalized' and hence does not behave like a lexical verb, questions arise as to what it means to be grammaticalized. What morphosyntactic properties does the 'grammaticalized' *ba* have? There have been so many proposals that the logical possibilities have almost been exhausted:

(13) a. as a lexical verb (Hashimoto 1971);
b. as a preposition (Li and Liu 1955; Chao 1968; Lü 1980; Travis 1984; Cheng 1986; Li 1990);
c. as a dummy Case assigner (Huang 1982a; Koopman 1984; Goodall 1987a);
d. as a dummy inserted to fill the head of a CAUSE phrase when verb raising does not take place (Sybesma 1999);[16]
e. as the head of a base-generated functional category (Zou 1995).

The lack of lexical verbal properties in modern Chinese makes the first option less attractive. (13b–c) on the one hand and (13d–e) on the other can be distinguished by one major difference: constituency. For a *ba* construction of the form [*ba* NP VP], the analyses in (13b–c) take *ba* and the *ba* NP as a constituent. For a preposition analysis (13b), *ba* should form a constituent with its object, the *ba* NP. As a dummy Case assigner (13c), *ba* should form a constituent with the *ba* NP. That

is, according to (13b) and (13c), the *ba* NP alone (without *ba*) and the VP should not form one constituent. In contrast, according to (13d–e), which view *ba* as the head of a CAUSE Phrase or some other functional projection, the *ba* NP should form one constituent with the VP, not with *ba*. The fact is that the *ba* NP and the VP can form one constituent, as illustrated by the coordination test (see Wu 1982):[17]

(14) ta ba [men xi-hao], [chuanghu ca-ganjing]-le.
he Ba door wash-finish window wipe-clean-Le
'He washed the door and wiped the windows clean.'

This suggests that (13d–e) are more adequate. However, there is a subset of *ba* sentences which indicates that *ba* can form a constituent with the *ba* NP, suggesting the inadequacy of solely relying on the (13d–e) analyses.[18] This subset of sentences is the type of sentence that Sybesma (1999: chapter 6) refers to as "canonical *ba* sentences" (in contrast to his 'causative *ba* sentences') – those sentences whose subject is an animate agent, not an inanimate causer,[19] such as (14). Let us use another simpler example, such as (15a). It allows *ba* and the *ba* NP to be preposed as a unit to the sentence-initial position (15b). That is, such 'canonical *ba* sentences' not only allow the *ba* NP to form a constituent with the following VP but also allow *ba* and the *ba* NP to form a constituent:[20]

(15) a. ni xian ba zhe-kuai rou qie-qie ba!
you first BA this-Cl meat cut-cut Par.
'Cut the meat first.'
b. ba zhe-kuai rou, ni xian qie-qie ba!
BA this-Cl meat you first cut-cut Par.
'Cut the meat first.'

cf.:

c. ni ba [zhe-kuai rou qie-qie], [na-xie cai xixi]-ba!
you Ba this-Cl meat cut-cut that-Cl vegetable wash-Par.
'You cut the meat and wash the vegetable.'

Sentences like (15a–b) show that it is not always sufficient to just take *ba* as the head of a CAUSE phrase or the head of some other functional projection not forming a constituent with the following NP. It is also doubtful that it is adequate to claim that *ba* is an inserted Case assigner. If it were, it is not clear why, for instance, (15b), with *ba*, and (15d), without *ba*, are both acceptable. A case marker should not be able to be inserted optionally:

(15) d. zhe-kuai rou, ni xian qie-qie ba!
this-Cl meat you first cut-cut Par.
'Cut the meat first.'

Summarizing, *ba* in modern Chinese does not behave like a lexical verb. The coordination test illustrated in (14) and (15c) shows that the structure [*ba* NP VP] can be analyzed as [*ba* [NP VP]]. In addition, when a *ba* sentence is of the 'canonical' type, the constituent structure seems to have the possibility of behaving like [[*ba* NP] VP], since *ba* and the *ba* NP can be preposed as a unit (15b). The former observation is in line with the approaches that treat *ba* as the head of a projection, taking [NP VP] as its complement, such as (13d–e). The latter observation goes along with a preposition analysis (13b).

2.3 The ba *NP*[21]

It has been widely noted in the literature that the *ba* NP is sensitive to a myriad of semantic and syntactic restrictions. In this subsection, we focus on the syntactic properties of the *ba* NP and discuss what a *ba* NP is syntactically.

2.3.1 V-object

First of all, it is quite common for a *ba* NP to correspond to the direct object of the verb in its non-*ba* counterpart. That is, a *ba* NP is simply the object of a verb, as illustrated in (2–3). In fact, the *ba* NP in the cases we have seen so far is mostly the (direct) object of the verb. However, it can also be an indirect object:

(16) a. wo ba ta wen-le yi-da-dui hen-nan-de wenti.
I Ba him ask-Le one-big-pile very-difficult-De question
'I asked him many difficult questions.'

cf.:

b. wo wen-le ta yi-da-dui hen-nan-de wenti.
I ask-Le him one-big-pile very-difficult-De question
'I asked him many difficult questions.'

(17) a. wo ba ta fa-le henduo qian.
I Ba him fine-Le much money
'I fined him a lot of money.'

cf.:

b. wo fa-le ta henduo qian.
I fine-Le him much money
'I fined him a lot of money.'

There are also cases which seem to take an instrument or locative NP as a *ba* NP, rather than taking an object. (18a–b) illustrate an instrument as a *ba* NP, and (18c–d) a locative NP:

(18) a. ta yong shou wu-zai erduo-shang.
he use hand cover-at ear-on
'He covered his ears with his hands.'
b. ta ba shou wu-zai erduo-shang.[22]
he Ba hand cover-at ear-on
'He covered his ears with his hands.'
c. ta zai lian-shang tu-(man-)le hui.
he at face-on cover-full-Le ash
'He covered his face with ash.'
d. ta ba lian(-shang)[23] tu-man-le hui.
he Ba face(-on) cover-full-Le ash
'He covered his face with ash.'

These cases, however, may actually be better regarded as a direct object, since an instrument and locative NP can clearly become the object of a verb:

(19) a. ta wu shou wu-zai erduo-shang.
he cover hand cover-at ear-on
'He covered his ears with his hands.'
b. ta tu hui tu-man-le lian.
he cover ash cover-full-Le face
'He covered his face with ash.'

The instrument NP 'hand' functions as the object of the verb 'cover' in (19a), and the locative NP 'face' in (19b) also functions as the object of the verb 'cover-full'. The occurrence of 'full' with 'cover' in (19b) when the locative NP functions as an object can be used as a test showing that the *ba* NP 'face' in (18d) originates as an object: *man* 'full' must occur with the verb in such a *ba* construction, in contrast to the non-*ba* sentence which does not need *man* 'full' (20):

(20) ta zai lian-shang tu-le hui.
he at face-on cover-Le ash
'He covered his face with ash.'

In brief, the *ba* NP can be a direct or indirect object of the verb. The cases that seemingly are non-V-objects such as instruments or locatives can actually be regarded as V-objects.

2.3.2 Non-V-objects

There are cases where the *ba* NP cannot be a direct or indirect object of the V. It can be a possessor of the object NP (21a–b) or in a part–whole relation with the object NP (21c–d):

(21) a. tufei sha-le tade fuqin.
bandit kill-Le his father
'The bandit killed his father.'

b. tufei ba ta sha-le fuqin.
bandit Ba him kill-Le father
'The bandit killed his father.'
c. shuiguo, ta chi-le yi-ban.
fruit he eat-Le one-half
'The fruit, he ate half.'
d. ta ba shuiguo chi-le yi-ban.
he Ba fruit eat-Le one-half
'He ate half of the fruit.'

It can also be the subject of a clause expressing the result of an action (22):

(22) a. ta ku-de women dou fan-si-le.
he cry-De we all annoy-dead-Le
'He cried so much that we were all extremely annoyed.'
b. ta ba women ku-de dou fan-si-le.
he Ba we cry-De all annoy-dead-Le
'He cried so much that we were all extremely annoyed.'

Indeed, Sybesma (1999: chapter 6) claims that a *ba* NP is always the subject of a result clause. He quotes Goodall's (1987a) study and claims that a *ba* NP is derived by NP movement. Because of the locality conditions on NP movement, a *ba* NP must always be the subject of the result clause, not the object (Specified Subject Condition; Chomsky 1977b, 1981). The following examples are from Goodall 1987a: 234 and Sybesma 1999: 157–158):

(23) a. na-ge nuhai ku-de Zhangsan nian-bu-xia na-ben shu.
hat-Cl girl cry-De Zhangsan read-not-on that-Cl book
'That girl cried so that Zhangsan could not continue reading that book.'
b. na-ge nuhai ba Zhangsan ku-de nian-bu-xia na-ben shu.
that-Cl girl Ba Zhangsan cry-De read-not-on that-Cl book
'That girl cried so that Zhangsan could not continue reading that book.'
c. *na-ge nuhai ba na-ben shu ku-de Zhangsan nian-bu-xia.
that-Cl girl Ba that-Cl book cry-De Zhangsan read-not-on
'That girl cried so that Zhangsan could not continue reading that book.'

According to Goodall (1987a: 234), agreed upon by Sybesma (1999: 158), these examples show that it is only possible to raise the subject out of the embedded clause to become the *ba* NP, and not the object, a pattern "typical of movement to an A-position."

We will return to the analysis by Sybesma in section 5.3. For present purposes, we would like to point out that it is not quite true that the *ba* NP cannot be the object of an embedded clause. The *ba* NP in the following instances must be interpreted as the object of the embedded clause:

(24) a. na-ge nuhai ba shoupa ku-de meiren gan mo.
that-Cl girl Ba handkerchief cry-De nobody dare touch
'That girl cried so that nobody dared to touch the handkerchief.'

This sentence is quite acceptable in the contexts where the girl kept crying and using the handkerchief to wipe off her tears. She cried so much that the handkerchief was completely wet and filthy. Even a sentence like (23c) can be made acceptable in appropriate contexts. For instance, the girl kept crying, with tears continuously falling on the pages of the book, to the extent that the pages become illegible. Under such circumstances, the following sentence is quite acceptable:

(24) b. na-ge nuhai ba na-ben shu ku-de meiren neng kan-de-qingchu.
that-Cl girl Ba that-Cl book cry-De nobody can read-able-clear
'That girl cried so that nobody could read that book clearly.'

What is important is that a relation is established between the *ba* NP and the following verb phrase. To put it more concretely, the *ba* NP is an 'outer object' or the object of V' in these cases, related to the subject or object of an embedded clause, as further elaborated on next.

2.3.3 Outer object/V'-object

The *ba* NP in (21–24) can be subsumed under the concept of the so-called V'-object, which is the object of a complex predicate consisting of a verb and its complement (Huang 1982a, 1987, 1988). Alternatively, in the terminology of Thompson (1973), the *ba* NP is an 'outer object' of the verb, in contrast to a V-object which is an 'inner object'.[24] That is, a *ba* NP can either be a V-object (inner object) as shown in section 2.3.1 or a V'-object (outer object) as shown in section 2.3.2.[25] An outer object (V'-object) receives an 'affected' theta-role (V' assigns an 'affected' theta-role to the V'-object, in Huang's terms). The affected object of 'father-killing' is 'him' in (21b); the affected object of 'eating a half' is 'the fruit' (21d); in (22b), 'we' were affected by the crying and got annoyed. Similarly, in (24a–b), the *ba* NP is affected by the crying to such an extent that it cannot be touched or read any more. Some other commonly used examples illustrating an outer object/V'-object are those in (25a–c) below. In (25a), *juzi* 'orange' is the outer object of *bo-pi* 'peel skin'. In (25b), 'the clothes' is the outer object of 'packing into a bundle'; in (25c), 'sadness' is the outer object of 'changing into power':

(25) a. ta ba juzi bo-le pi.
he Ba orange peel-Le skin
'He peeled the skin off the orange.'
b. wo ba yifu bao-le yige xiaobao.
I Ba clothes pack-Le one-Cl bundle
'I packed the clothes into a bundle.'
c. Lisi ba beitong hua-cheng liliang.
Lisi Ba sadness change-become power
'Lisi changed his sadness into power.'

An outer object (V′-object) can become an inner object (V-object) if the V and its complement can be combined (compounded) to become a V (V′ reanalyzed as V; see Huang 1983 for the distinction between phrasal and word categories; also see Larson 1988b for V′-reanalysis):

(26) a. Lisi ku-de shoupa hen shi.
Lisi cry-De handkerchief very wet
'Lisi cried and got the handkerchief wet.'
b. Lisi ba shoupa ku-de hen shi.
Lisi Ba handkerchief cry-De very wet
'Lisi cried and got the handkerchief wet.'
c. Lisi ba shoupa ku-shi-le. (compounding of V-V)
Lisi Ba handkerchief cry-wet-Le
'Lisi cried-wet the handkerchief.'
d. Lisi ku-shi-le shoupa. (compound V + object)
Lisi cry-wet-Le handkerchief
'Lisi cried-wet the handkerchief.'

(27) a. na-ping jiu zui-de Lisi dao-xiaqu-le.
that-bottle wine drunk-De Lisi fall-down-Le
'That bottle of wine made Lisi get drunk and fall.'
b. na-ping jiu ba Lisi zui-de dao-xiaqu-le.
that-bottle wine Ba Lisi drunk-De fall-down-Le
'That bottle of wine made Lisi get drunk and fall.'
c. na-ping jiu ba Lisi zui-dao-le. (compounding of V-V)
that-bottle wine Ba Lisi drunk-fall-Le
'That bottle of wine made Lisi get drunk and fall.'
d. na-ping jiu zui-dao-le Lisi. (compound V + object)
that-bottle wine drunk-fall-Le Lisi
'That bottle of wine made Lisi get drunk and fall.'

(28) a. zhejian shi ku-de Zhangsan lei-le.
this-Cl matter cry-De Zhangsan tired-Le
'This thing got Zhangsan tired from crying.'
b. zhejian shi ba Zhangsan ku-de lei-le.
this-Cl matter Ba Zhangsan cry-De tired-Le
'This thing got Zhangsan tired from crying.'
c. zhejian shi ba Zhangsan ku-lei-le. (compounding)
this-Cl matter Ba Zhangsan cry-tired-Le
'This thing got Zhangsan tired from crying.'
d. zhejian shi ku-lei-le Zhangsan. (compound V + object)
this-Cl case cry-tired-Le Zhangsan
'This thing got Zhangsan tired from crying.'

In brief, the following generalization can be put forward:

(29) A *ba* NP corresponds to a V-object (inner object) or a V'-object (outer object) in its non-*ba* counterpart.

A V-object can be a direct object, an indirect object, an instrument NP, or a locative NP, all occurring in the structure [V___]. A V'-object can be an NP holding a possession or part–whole relation with the V-object or an NP identified with the subject or object of an embedded result clause, which may well be a pro/PRO (see Huang 1982a for conflating pro and PRO in Chinese).[26] According to the works referred to earlier by Huang and Thompson, a V'-object is assigned an 'affected' theta-role by a V' consisting of a V and its complement.

A question arising out of (29) is how the *ba* NP is derived and specifically how and if the *ba* NP is derivationally related to its non-*ba* counterpart. It corresponds to a V-object or V'-object. However, it no longer is in the typical V-object position [V___], although it is likely that a *ba* NP is in the V'-object position (Huang 1982a). We will return to this issue in section 5. For the moment, we simply note that a *ba* NP can form an idiom with the verb, which suggests a movement relation between the non-*ba* V-object position and the *ba* NP position. For instance, the O part of some [V + O] idioms can occur as a *ba* NP: *zhan-pianyi* 'occupy-advantage = take advantage' in (30), *kai-dao* 'open-knife = operate, perform operation' in (31), and *kai-wanxiao* 'open-joke = joke' in (32):

(30) a. ta ba pianyi zhan-jin-le.
he Ba advantage take-exhaust-Le
'He took full advantage.'
b. ta zhan-jin-le pianyi
he take-exhaust-Le advantage
'He took full advantage.'

(31) a. ta ba dao kai-wan-le.
he Ba knife open-finish-Le
'He finished the operation.'
b. ta kai-wan dao-le.
he open-finish knife-Le
'He finished the operation.'

(32) a. ta ba wanxiao kai-de-guohuo-le.
he Ba joke open-De-excessive-Le
'He overdid the joking.'
b. ta kai wanxiao kai-de-guohuo-le.
he open joke open-De-excessive-Le
'He overdid the joking.'

If the components of an idiom ([V + O] in these cases) need to be generated together as a unit, these examples suggest that a *ba* NP can be derived by NP movement.

2.4 The X factor

The examples we have seen so far show the verb following the *ba* NP always occurs with some additional elements. As stated in (1a–b), there is always an X preceding or following the V in a *ba* sentence. A bare verb is not acceptable. The question is why the verb cannot be bare and what additional elements are required; i.e., what the X in (1a–b) is. This topic has been one of the main concerns throughout the literature on the *ba* construction. Various accounts have been provided. Descriptively, Lü's (1948, 1955, 1980) classification of the X into 13 patterns has been the foundation of most of the subsequent works. For instance, Sybesma (1999: 135–139) combined them into 10 classes. Liu (1997: 68–71) listed nine patterns on the basis of Lü's work. In the spirit of these classifications, we discuss in the following subsections important options for such an X.

2.4.1 Result expressions

A typical element for the X in (1) is a resultative complement following V, expressing the result of an activity. Other constructions such as motion-directional complements or certain dative/double object structures may also be regarded as result expressions, as described in the following subsections.

2.4.1.1 Resultative complements

Let us first consider a resultative complement, which may appear as a clause preceded by the marker *de* cliticized to a verb.[27] This is illustrated by the examples in (33a–b), with the resultative complement boldfaced. In these instances, *cai* 'vegetable' is interpreted as the object of the verb *chao* 'stir-fry' and the subject of the resultative clause *hen lan* 'very mushy', as supported by the acceptability of sentences like (33c). Such an NP is a very common type of *ba* NP:

(33) a. ta chao cai chao-**de-hen-lan**.
he stir-fry vegetable stir-fry-De-very-mushy
'He stir-fried the vegetable mushy.'
b. ta ba cai chao-**de-hen-lan**.
he Ba vegetable stir-fry-De-very-mushy
'He stir-fried the vegetable mushy.'
c. cai hen lan.
vegetable very mushy
'The vegetable is mushy.'

The main verb and the verb of the resultative clausal complement can generally be compounded into a single verb: [V + Result] (see (26–28) in the previous section).[28] After compounding, the *ba* NP generally keeps the interpretation of being object of the V and subject of the result V:

(34) a. ta ba cai chao-lan-le.
he Ba vegetable stir-fry-mushy-Le
'He stir-fried the vegetable mushy.'
b. ta bu-gan ba cai chao-lan.
he not-dare Ba vegetable stir-fry-mushy
'He dare not stir-fry the vegetable mushy.'

However, a *ba* NP need not always be an object of the main V (the first part of the compound [V + result] or [V + resultative clause]). The main V can be intransitive, as in (26–28). In these cases, the *ba* NP is a V'-object related to the complement resultative clause (or more precisely, related to the complex predicate consisting of a V and its resultative complement). A *ba* NP need not always be the subject of the resultative clause either. Indeed, although many of the so-called 'aspectual' or 'phrase' expressions attached to a verb (to form a complex verb) were originated as the predicate of the resultative clause and taking a *ba* NP as its subject, they no longer function like a predicate of the resultative clause in modern Mandarin Chinese. We briefly discuss the cases where a *ba* NP is not the subject of a resultative clause below.

The [V + result] compounding process is quite pervasive. Some compounded [V + Result] expressions have been so commonly used that the result part has become a very productive 'suffix-like' element forming a complex verb with a wide range of verbs. For instance, *wan* 'finish' can be combined with any activity verb to mean finish doing something, and a *ba* sentence with V-*wan* is generally acceptable:

(35) rang wo xian ba zhexie dongxi/shiqing zuo/kan/ting/da-**wan**.
let I first Ba these things do/watch/listen/hit-finish
'Let me first finish doing/watching/listening to/typing these things.'

The same is true with *guang* 'empty' used with many activity verbs:

(36) ta hui ba dongxi chi/he/yong/na-**guang**!
he will Ba thing eat/drink/use/take-empty
'He will eat up/drink up/use up/take up all the things.'

Wan 'finish' or *guang* 'empty' in the complex verb [V + *wan/guang*] does not necessarily retain its verbal status. That is, the result part of such [V + Result] compounds has become grammaticalized and reduced to a suffix. After grammaticalization, such a 'suffix-like' expression has become more like an aspect marker than a verb of result. That is, it is not always identical to the verb of a resultative complement clause in the sense that it can take the *ba* NP as its subject, as in (33c). For instance, in contrast to (33c), the sentence in (37) below containing *wan* 'finish' as the main verb is not acceptable (cf. the V-*wan* expressions in (35)). *Wan* in such instances has become more like an aspect marker indicating completion of an activity:

(37) *zhexie dongxi/shiqing wan-le.
these things finish-Le
'These things finished.'

Similarly, *guang* 'empty' in (38a) below expresses the completion of reading, and the corresponding sentence (38b) with *guang* as a main verb is not acceptable, showing that the *ba* NP cannot be the subject of a resultative clause with *guang* as its predicate (the importance of such a generalization will be revisited in section 5.3 concerning an event structural approach to *ba* constructions):

(38) a. ta hui yixiazi jiu ba suoyou-de shu kan-**guang**.
he will a while then Ba all-De book read-empty
'He will read all the books in a short while.'
b. *suoyou-de shu dou guang-le
all-De book all empty-Le
'All the books are empty.'

In such instances, it makes more sense to analyze the *ba* NP as the object of a single verb which is complex morphologically (containing two morphemes, a verb, and a suffix) than to analyze the *ba* NP as the object of the first morpheme and the subject of the second morpheme of a compound verb.

2.4.1.2 Directional complements

Another type of 'result' complement is a directional complement, indicated by the boldfaced expression in the following examples:[29]

(39) a. qing ni na shu **lai/qu**.
please you take book come/go
'Please bring/take the book.'
b. qing ni ba shu na-**lai/qu**.
please you Ba book take-come/go
'Please bring/take the book.'

(40) a. qing ni jiao ta **jin-lai/shang-lai/xia-qu**
please you ask him enter-come/up-come/down-go
'Please ask him to come in/come up/go down.'
b. qing ni ba ta jiao **jin-lai/shang-lai/xia-qu**
please you Ba him ask enter-come/up-come/down-go
'Please ask him to come in/come up/go down.'

Just like the compounding of [V + Result], a motion-directional complement can also be compounded with the V. (39b) and (40b) are examples. That the compounding has taken place can be shown by the fact that the verbal aspect *-le* follows the directional expression, not the V, as would be expected if the V and motion-directional complement were two distinct lexical items:

(41) a. wo ba shu na-**lai/qu**-*le* san-ci-le.
I Ba book take-come/go-Le three-times-Le
'I brought/took the books three times.'
a'. *wo ba shu na-*le*-**lai/qu** san-ci-le.
I Ba book take-Le-come/go three-times-Le
'I brought/took the book three times.'
b. ta yijing ba hua gua-**shang(qu)**/qu-**xia(lai)**-*le* hen-jiu-le.
he already Ba painting hang-up(go)/take-down(come)-Le very-long-Le
'He has already hung up/taken down the painting for a long time.'
b.' *ta yijing ba hua gua-*le*-**shang(qu)/**qu-*le*-**xia(lai)** hen-jiu-le.
he already Ba painting hang-up(go)/take-down(come)-Le very-long-Le
'He has already hung up/taken down the painting for a long time.'

The directional complement/compound has also been extended, has become grammaticalized, and can combine with other non-motion verbs, indicating the success or completion of an action or event, such as the verb *ji* 'memorize' in (42) and *ai* 'love' in (43):

(42) wo dei ba zhexie-shi **ji-xia(lai)**.
I need Ba these-matter memorize-down(come)
'I need to memorize these matters.'

(43) ni qianwan bie ba ta **ai-shang**, ni hui hen tongku-de.
you absolutely don't Ba him love-up you will very painful-De
'You absolutely cannot fall in love with him; you will be in great pain.'

We see then that directional complements can be subsumed under resultative complements, taking directional complements to express the result of a location change. They can also become grammaticalized and simply denote completion of an action or event.

2.4.1.3 Other 'result' expressions

There are other cases which may not have been classified as a resultative complement traditionally but behave like one with respect to interpretation and acceptability of a *ba* NP. These are cases involving verbs subcategorized for more than the direct object, such as dative/double object verbs or placement verbs (*put something somewhere*). One of the objects becomes a *ba* NP and the other stays in the postverbal position. The postverbal complement is very much like a resultative complement. For instance, (44a) below indicates that the book will be at the table upon successful completion of the event; (44b) expresses that the book is given to (*gei*) him:

(44) a. qing ni ba shu fang **zai zhuo-shang**.
please you Ba book put at table-on
'Please put the book on the table.'

b. qing ni ba shu song **(gei) ta**.
please you Ba book give to him
'Please give him the book.'

In addition to dative/double object or placement verbs, certain 'semi-double object structures' behave alike. Such structures refer to sentences like the following, where there seem to exist two object NPs but the verb cannot take both objects in postverbal position. One of the objects is preposed or is a *ba* NP:

(45) a. *ta bao yifu yi-ge xiao-bao.
he pack clothes one-Cl small-bundle
'He packed clothes into a small bundle.'
b. ta yifu bao **yi-ge xiao-bao**.
he clothes pack one-Cl small-bundle
'He packed clothes into a small bundle.'
c. ta ba yifu bao **yige xiao-bao**.
he Ba clothes pack one-Cl small-bundle
'He packed clothes into a small bundle.'

The postverbal complement in (45c), again, looks like a resultative complement: the clothes becomes a small bundle after the (clothes-)packing.

Purposive complements also behave like result expressions. They indicate the purpose of the action, which is similar to a result, and can occur in a *ba* pattern:[30]

(46) a. wo na shu (lai/qu) **gei ta kan**.
I take book come/go for him read
'I brought a book for him to read.'
b. wo ba shu na (lai/qu) **gei ta kan**.
I Ba book take come/go for him read
'I brought a book for him to read.'

(47) a. wo mai shu (lai/qu) **rang ta yong**.
I buy book come/go let him use
'I bought the book for him to use.'
b. wo ba shu mai lai/qu **rang ta yong**.
I Ba book buy come/go let him use
'I bought the book for him to use.'

The discussions so far show that the X in (1a) can be a result or result-like expression in most cases.

2.4.2 Duration/frequency phrases

Another expression that commonly serves as the X in (1a) is a postverbal duration or frequency phrase. (48a–b) are examples of duration phrases, and (48c–d) frequency phrases:

(48) a. ni ba ta da **yi-zheng-tian** ta ye bu-pa.
you Ba him hit one-whole-day he also not-afraid
'You hit him for a whole day and he still will not be intimidated.'
b. qing ni ba ta kan yi-xia.
please you Ba it watch a while
'Please watch it for a while.'
c. ni ba ta da **shi-ci**, ta ye bu-pa.
you Ba him hit ten-times he also not-afraid
'You hit him ten times and he still will not be intimidated.'
d. qing nimen ba zhe-pian kewen xie **san-bian**.
please you Ba this-Cl text write three-times
'Please write this lesson three times.'

2.4.3 V-(yi-)*V*

Quite similar to the cases with a duration phrase, especially the expression *yi-xia* 'a bit, a while' (cf. (48b)), some verbs, especially activity verbs, can occur in the form V-*yi*-V 'V-one-V (V a bit)', creating an acceptable *ba* sentence:[31]

(49) women dei xian ba zhe-wenti **xiang-yi-xiang/kan-yi-kan**.
we should first Ba this-question think-one-think/read-one-read
'We should first think about/read this question a bit.'

Alternatively, the verb can simply be reduplicated to render the 'a bit' reading; that is, *yi* 'one' in the above pattern need not occur:[32]

(50) women dei xian ba zhe-wenti **xiang-xiang/kan-kan**.
we should first Ba this-question think-think/read
'We should first think about/read this question a bit.'

2.4.4 Verbal measurement

Another similar pattern is the use of measure expressions indicating the extent of the action:

(51) a. ta hui ti ni **haoji-jiao**.
he will kick you many-foot
'He will give you many kicks.' (or kick you many times)
b. ta hui ba ni ti **haoji-jiao**.
he will Ba you kick many-foot
'He will kick you many kicks.' (see above)

(52) a. wo bu da ta **liang-quan** bu zou.
I not hit him two-fist not leave
'I won't leave without giving him two punches.'
b. wo bu ba ta da **liang-quan** bu zou.
I not Ba him hit two-fist not leave
'I won't leave without giving him two punches.'

2.4.5 V-object

The postverbal X elements discussed so far, which make an acceptable *ba* sentence, mostly are not subcategorized for by the verb. Instead, the *ba* NP is the subcategorized object of the verb in most cases. However, it is also possible to find a postverbal element X in a *ba* sentence which is simply the direct object of the verb. That is, the X in (1a) can simply be a direct object. As noted in section 2.3.2, a *ba* NP can be an 'outer object', the object of a complex verb consisting of a verb and its complement (inner object). In that section, the examples used all contain an aspect marker suffixed to the (compound) verb (see the next section on an aspect marker alone making a *ba* sentence acceptable; i.e., an aspect marker by itself can be the X in a *ba* pattern). Nonetheless, such an aspect marker is not necessary. A single inner object as the X is sufficient to make a good *ba* sentence:

(53) a. ta zhi ba shuiguo chi yi-ban.
he only Ba fruit eat one-half
'He only ate half of the fruit.'
b. jide ba juzi bo pi.
remember Ba orange peel skin
'Remember to peel the skin off the orange.'

The same generalization is true for double object structures such as those discussed in sections 2.3.2 and 2.4.1.3, where we saw that a direct object can be grouped with a result expression. There are also double object cases occurring in a *ba* pattern whose postverbal object, which cannot be grouped with postverbal result expressions, is simply the direct object of the verb. No aspect markers are necessary, either (see the next section on aspect markers). That is, similar to (16–17) in section 2.3.1, the following cases are acceptable:

(54) a. wo dasuan ba ta wen yi-da-dui hen-nan-de wenti.
I plan Ba him ask one-big-pile very-difficult-De question
'I plan to ask him many difficult questions.'
b. wo hui ba ta fa henduo qian.
I will Ba him fine much money
'I will fine him a lot of money.'

2.4.6 Aspect markers

The cases discussed so far are generally clearly grammatical to native speakers: they generally accept such *ba* sentences more readily. Next, let us consider the less clear cases, i.e., those *ba* sentences whose VPs only require an aspect marker after the verb.

2.4.6.1 *-Zhe*

Among the cases using an aspect marker to fill the role of X in (1a), the durative marker *-zhe* is a common one and quite easily accepted with certain verbs. Some examples are given below:

(55) qing ba ta bao/na/qian/fang/gua-**zhe**.
please Ba it(him) hold/take/hold-in-had/put/hang-Zhe
'Please hold (in hand)/put (it) down/hang it(him).'

(54) should be contrasted with (55), unacceptable as a *ba* sentence:

(56) *qing ba ta da/chang/he/ca/nian/gai-**zhe**.
please Ba it(him) hit/sing/drink/wipe/read/build-Zhe
'Please hit/sing/drink/wipe/read/build it(him).'

Why is there such a contrast? This has to do with the types of verbs used in these examples. The first type involves verbs which have the interpretation of an end-state realized. The clearest example is *gua* 'hang': hanging is hanging up something and then it is hung up there. There is an end-state as a result of the action. The other verbs in the first type have the same interpretation. The first action of *fang* 'put' is putting something at some place and then the result is that this something ends up being at some place. *Qian* 'hold in hand', *na* 'take', and *bao* 'hold' also have the initial action and a result end-state: the first activity is to get something/somebody to be held in the hand and then the something/somebody ends up being in the state of being held by hand. Adopting the insight of Chen (1978a, 1978b), we assume that these verbs contain the notion of 'transition' or 'path' of motion, resulting in an end-state. Let us call this interpretation a resultative interpretation. The 'durative' marker *-zhe* marks an end-state that continues. That is, there is an inception and an end-state that continues. Such a resultative interpretation, however, is not available to (56). The verbs *da/chang/he/ca/nian/gai-zhe* 'hit/sing/drink/wipe/read/build-Zhe' do not have the 'path–end-state' interpretation. They only have the progressive interpretation when suffixed with *-zhe*; *-zhe* in such cases is a progressive marker. The distinction between these two types of verbs can be further illustrated by the following contrasts. One contrast is that the first type of verb can be more easily compounded with a directional complement (the notion of path is relevant) than the second type (lack of path):

(57) a. bao-lai qian-lai fang-xia na-xia gua-shang
hold-come hold-come put-in take-down hang-up
b. *da-shang *he-lai *ca-qu *nian-xia *ting-xia *gai-shang
hit-up drink-come wipe-go read-down listen-down build-up

Another contrast is that the first type of verb, not the second type, can be combined with *zhu* 'stay' to mean that an end-state holds:

(58) a. bao-zhu na-zhu qian-zhu fang-zhu gua-zhu
hold-stay take-stay hold-stay put-stay hang-stay
b. *da-zhu *chang-zhu *he-zhu *ca-zhu *nian-zhu *gai-zhu
hit-stay sing-stay drink-stay wipe-stay read-stay build-stay

In brief, the durative marker *-zhe* generally can be suffixed to the 'path–end-state' type of verb to express that the end-state continues or holds and a *ba* pattern is available. On the other hand, verbs not expressing 'path–end-state' only express progressive actions when suffixed with *-zhe* and a *ba* pattern is not available.[33]

2.4.6.2 *Le*

In addition to *-zhe*, the completive aspect marker *-le* (the verbal *-le*) may also make a *ba* sentence acceptable.[34] The effect of *-le* on the availability of a *ba* pattern, however, is inconsistent. Some predicates are quite ready to occur with *-le* to make a *ba* sentence and others are not. For instance, the sentences in (59) are acceptable but those in (60) are much worse:

(59) a. ta ba Lisi pian-le.
he Ba Lisi cheat-Le
'He cheated Lisi.'
b. ta jingran ba wo da-le.
he unexpectedly Ba I hit-Le
'Unexpectedly, he hit me.'
c. wo ba shu mai-le.
I Ba book sell-Le
'I sold the book.'
d. wo yijing ba men guan-le.
I already Ba door close-Le
'I already closed the door.'

(60) a. *ta ba na-difang likai-le.
he Ba that-place leave-Le
'He left that place.'
b. *ta jingran ba qiu-sai canjia-le
he unexpectedly Ba ball-game participate-Le
'Unexpectedly, he played the ball game.'
c. *ta ba na-ge canting baifang-le.
he Ba that-Cl restaurant visit-Le
'He visited that restaurant.'
d. *ta ba wode mingling fucong-le.
he Ba my order obey
'He obeyed my order.'

Moreover, this seems to be an area where speakers disagree significantly on the judgment. Take the examples in (61–62), for example. Sentences like (61a) and (62a) are more or less acceptable for some speakers but sound terrible to others, who prefer to have the expressions discussed in sections 2.4.1–2.4.4. following the verb: [35]

(61) a. ??wo ba ge ting-le.
I Ba song listen-Le
'I listened to the song.'
b. wo ba ge ting-wan-le.
I Ba song listen-finish-Le
'I finished listening to the song.'

(62) a. ??wo ba ta kuajiang-le.
I Ba him praise
'I praised him.'
b. wo ba ta kuajiang-le ji-bai-bian-le.
I Ba him praise-Le several-hundred-times-Le
'I praised him several hundred times.'

2.4.7 Preverbal modifiers

In addition to the postverbal elements discussed so far, a *ba* sentence can also be made acceptable by the addition of certain preverbal adverbials (the X in (1b)):

(63) a. bie ba ta **luan**-reng.
don't Ba it disorderly-throw
'Don't throw it around.'
b. qing ba zhuozi **wang ta nabiar** tui.
please Ba table towards him there push
'Please push the table towards him.'
c. ba ta **haohaor-de** zhaogu, ta jiu hui zhang-de-hao.
Ba it good-De care it then will grow-De-well
'Take good care of it and it will grow well.'
d. ni bu ba wenti **zixi-de** yanjiu, zen hui zhao-chu daan?
you not Ba problem carefully study how will find-out answer
'If you don't study the problem carefully, how can you find an answer?'
e. ni bu ba zhe-wenzhang **zixi-de** nian, zenme keneng dong-ne?
you not Ba this article carefully read how can understand-Q
'If you don't read the article carefully, how can you understand (it)?'
f. ta ba jiu **bu-ting-de** he. (from Chao 1968: 348)
he Ba wine not-stop-De drink
'He drank without stop.'
g. wo ba ta **yi**-tui, ta jiu dao-le.
I Ba it one-push it then fall-Le
'It fell as soon as I pushed it.'

Note that some such adverbials may be related to the *ba* NP. For instance, *luan* 'disorderly' in (a) may describe the end-state of the stuff that is being thrown as disorderly. However, this is not the case with all such adverbials. For instance, *zixi-de* 'carefully' in (d) and (e) cannot describe the *ba* NP: the problem in (d)

cannot be careful, neither can the article in (e) be careful. It is the studying and the reading that are careful. We will return to such differences in section 5.

2.4.8 Summary

Summarizing the types of X in (1a–b), we note that a very common one is that the X is a result expression (64a). Other possibilities are listed in (64b–h):

(64) a. V + result
b. V + duration/frequency
c. V + (*yi* +) V
d. V + measure phrases
e. V + object
f. V + *le*
g. V + *zhe*
h. Adv + V

(64b–d) are similar because they all contain a number expression [number + classifier + noun]: duration/frequency phrases are expressed by a number expression; *yi* 'one' + V is also a number expression ('one' is a number, the V may be taken as a classifier-like element) and measure phrases are number expressions as well. (64a–h), therefore, may be restated as follows:

(65) a. V + result
b. V + quantified/number expression
c. V + object
d. V + *le*
e. V + *zhe*
f. Adv + V

(65a–e) include almost all types of elements that can occur postverbally in Chinese. The only one that can occur postverbally in this language but does not make a *ba* sentence acceptable is a descriptive complement (a postverbal manner expression modifying the V), illustrated below:

(66) a. ta jintian-de gongke xie-de hen kuai.
he today-De homework write-De very fast
'He wrote today's homework fast.'
b. *ta ba jintian-de gongke xie-de hen kuai.
he BA today homework write-De very fast
'He wrote today's homework fast.'

2.5 Verbs

We have so far discussed almost all the individual components of the *ba* construction listed in (1a–b) except the V. Because the V interacts closely with the

co-occurring preverbal or postverbal X, and because, when types of verbal properties are considered (such as the classification by Vendler 1967a; Dowty 1979; Smith 1991), it is the verb phrase rather than the verb itself that is significant, we therefore will not further elaborate on the properties of Vs alone, except by bringing up the issue of transitivity regarding the types of verbs. A common observation is that a resultative complement can make a *ba* sentence acceptable, regardless of the transitivity of Vs. That is, the V in a *ba* pattern as in (1) can be intransitive as noted in section 2.3.3, in which case the *ba* NP can be interpreted as the subject of a resultative complement. This is illustrated below:

(67) a. ta ku-de women dou bu-gan xiao-le.
he cry-De we all not-dare laugh-Le
'He cried so much that we did not dare to laugh.'
b. ta ba women ku-de dou bu-gan xiao-le.
he Ba we cry-De all not-dare laugh
'He cried so much that we did not dare to laugh.'

(68) a. ta zou-de tui hen suan.
he walk-De leg very sore
'He walked so much that his legs were sore.'
b. ta ba tui zou-de hen suan.
he Ba leg walk-De very sore
'He walked so much that his legs were sore.'

(69) a. tianqi re-de gou dou bu-jiao-le.
weather hot-De dog all not-bark-Le
'The weather is so hot that the dogs are not barking.'
b. tianqi ba gou re-de dou bu-jiao-le.
weather Ba dog hot-De all not-bark-Le
'The weather is so hot that the dogs are not barking.'

(70) a. tianqi leng-de wo zhi duosuo.
weather cold-De I continue shiver
'The weather is so cold that I keep shivering.'
b. tianqi ba wo leng-de zhi duosuo.
weather Ba I cold-De continue shiver
'The weather is so cold that I keep shivering.'

These sentences seem to be good examples demonstrating that an intransitive V with a resultative complement can make an acceptable *ba* sentence, with the *ba* NP interpreted as the subject of the resultative complement. Closer examination of a wider range of data, however, reveals that the generalization may not be quite true. There are many instances where a result expression does not make a *ba* sentence with an intransitive verb acceptable. For instance, the following

sentences contain a resultative complement after an intransitive verb;[36] yet a *ba* sentence is still not acceptable:[37]

(71) a. ta yansu-de women dou bu-gan xiao-le.
he serious-De we all not-dare laugh
'He was so serious that we did not dare to laugh.'
b. *ta ba women yansu-de dou bu-gan xiao-le.
he Ba we serious-De all not-dare laugh
'He was so serious that we did not dare to laugh.'

(72) a. ta-de shengyin xiao-de women dou ting-bu-jian.
he-De voice small-De we all listen-not-receive
'His voice was so soft that we could not hear him.'
b. *ta-de shengyin ba women xiao-de dou ting-bu-jian.
he-De voice Ba we small-De all listen-not-receive
'His voice was so soft that we could not hear him.'

Why does a resultative complement make a *ba* sentence acceptable in cases like (67–70) but fails to do so in cases like (71–72)? This contrast is especially puzzling in light of the fact that, with a lexical causative matrix verb, the two sets of sentences are equally acceptable:

(67) c. ta ku-de shi women dou bu-gan xiao-le.
he cry-De make we all not-dare laugh-Le
'He cried so much that we did not dare to laugh.'

(71) c. ta yansu-de shi women dou bu-gan xiao-le.
he serious-De make us all not-dare laugh-Le
'He was so serious that we did not dare to laugh.'

(72) c. ta-de shengyin xiao-de shi women dou ting-bu-jian.
he-De voice small-De make we all listen-not-receive
'His voice was so soft that we could not hear him.'

(67c), (71c), and (72c) are the lexical causative counterpart of (67b), (71b), and (72b) respectively. While the *ba* sentence in (67b) is acceptable, (71b) and (72b) are not, even though their lexical causative counterparts are equally acceptable. Such contrasts indicate that the unacceptability of (71b) and (72b) cannot be due to some reason of interpretation.[38] Why, then, are they unacceptable? We would like to suggest that a *ba* sentence does not allow a truly intransitive verb. A complement expressing a result is not sufficient to make an acceptable *ba* sentence. The verb of a *ba* sentence must at least be able to be linked to the *ba* NP in the sense that the verb takes the *ba* NP as its semantic object, though not necessarily in typical syntactic object positions. To clarify this point, let us first consider the following contrast and then return to clarify the above remarks:[39]

(73) a. ta ku-zai women shen-shang, rang women sui-xin.
he cry-at we body-on let us broken-heart
'He cried at us, making us broken-hearted.'
b. tianqi leng-zai women shen-shang, rang women zhi duosuo.
weather cold-De we body-on let us still shiver
'The (cold) weather made us cold, giving us continuous shivers.'
c. *ta yansu-zai women shen-shang.
he serious-at we body-on
d. *ta-de shengyin xiao-zai women shen-shang.
he-De voice small-at we body-on

Even though all the relevant verbs (including the adjectival ones) are intransitive, the contrast between (73a–b) and (73c–d) indicates that these verbs differ in the possibility of having a goal/recipient of the action/event. There is a recipient of the crying or the coldness of the weather, as indicated by the acceptability of (73a–b). On the other hand, the seriousness and a small voice do not have a recipient, as indicated by the unacceptability of (73c–d). What the contrast between (73a–b) and (73c–d) shows is that there are 'pseudo-intransitive' verbs, in contrast to 'real intransitive' verbs. (73c–d) contain real intransitive while (73a–b) involve pseudo-intransitive verbs. The latter can take an implicit object (goal/recipient), but not the former. That this distinction may be on the right track can be supported by a minimal contrast between the following sentences:

(74) a. xiaohai wan-de fumu kaixin/shangxin-si-le.
child play-De parents happy/sad-dead-Le
'The children played so much that the parents were extremely happy/sad.'
b. xiaohai bing-de fumu danxin-si-le.
child sick-De parents worried-dead-Le
'The children were so sick that the parents were extremely worried.'

The (b) sentence can have a goal/recipient but not the (a) sentence, as shown by their contrast in the acceptability of a co-occurring location/recipient phrase:

(74) a'. *xiaohai wan-zai fumu xin-shang.
child play-at parents heart-on
b'. xiaohai bing-zai fumu xin-shang.
child sick-at parents heart-on
'The children's sickness is in the parents' hearts.'

Not surprisingly, a contrast exists between these two cases in acceptability as a *ba* sentence, even though both allow a lexical causative:

(74) c. *xiaohai ba fumu wan-de kaixin/shangxin-si-le.[40]
child Ba parents play-De happy-dead-Le
'The children played so much that the parents were extremely happy.'

cf. lexical causative:

c′. xiaohai wan-de shi fumu kaixin/shangxin-si-le.
child play-De make parents happy/sad-dead-Le
'The children played so much that the parents were extremely happy.'
d. xiaohai ba fumu bing-de danxin-si-le.
child Ba parents sick-De worried-dead-Le
'The children were so sick that the parents were extremely worried.'

cf. lexical causative:

d′. xiaohai bing-de shi fumu danxin-si-le.
child sick-De make parents worried-dead-Le
'The children were so sick that the parents were extremely worried.'

In other words, contrary to the claim in the literature, truly intransitive verbs cannot occur in the *ba* pattern. The fact that *ku* 'cry', *leng* 'cold', *bing* 'sick', etc. can appear in the *ba* pattern is due to the fact that these verbs are only 'pseudo-intransitive' or 'quasi-transitive' in the sense that the existence of a goal or recipient argument is implied. The distinction is manifested in the (im)possibility of a postverbal *zai* locative phrase which expresses the goal/recipient of the action/event. We may therefore conclude that a postverbal result expression itself is not sufficient to license a *ba* pattern. The *ba* NP must be related to the verb. Because such a *ba* NP is not a true direct object of the V, it may be subsumed under the notion of an 'affected object' or 'outer object', 'V′-object', along the lines of the observation stated in (29) in section 2.3.3, repeated below, that a *ba* NP always thematically related to the verb:

(29) A *ba* NP corresponds to a V-object (inner object) or a V′-object (outer object) in its non-*ba* counterpart.

Viewing this along the lines of a V′-object, we may clarify the nature of a V′-object: it is not the case that any V′ can take an object. A thematic relation must still exist between such an object and the V. Such a thematic relation requirement distinguishes the acceptable and unacceptable *ba* sentences discussed above. More generally, it may also distinguish cases like the following, which differ only in the use of Vs:

(75) a. tufei ba ta sha-le fuqin.
bandit Ba him kill-Le father
'Bandits killed his father.'
a′. tufei sha-le ta fuqin.
bandit kill-Le he father
'Bandits killed his father.'
b. *tufei ba ta baifang-le fuqin.
bandit Ba him visit-Le father
'Bandits visited his father.'

b′. tufei baifang-le ta fuqin.
bandit visit-Le he father
'Bandits visited his father.'

An outer V′-object may bear a possession relation with an inner V-object, which is true with both (75a) and (75b). Despite the same thematic relation between the two objects, the former, with the verb *sha* 'kill', is acceptable as a *ba* sentence, but not the latter, with the verb *baifang* 'visit'. Were any V′ able to take an outer object, the contrast between (75a) and (75b) would not exist. The minimal difference between the two choices of verbs and the resulting contrast in acceptability as a *ba* sentence, again, points to the close relation between the outer object and the V.

This generalization has important implications for how a *ba* NP is derived. For instance, it has bearings on the debate between Goodall (1989) and Huang (1992a), which was revisited by Sybesma (1999), concerning whether a *ba* NP should be derived by movement or base generation. The crucial data used in these works are instances like (76) where the *ba* NP corresponds to the subject of a resultative complement. The works mentioned debated whether the *ba* sentence in (76a) is derived from (76b) and (76a′) from (76b′) by the raising of the subject of the resultative complement to become the *ba* NP (see Sybesma 1999: 158–159 for relevant examples, and section 2.2.2 for relevant discussions):

(76) a. ta ba tieshu ku-de kai-le hua.
he Ba iron-tree cry-De open-Le flower
'He cried such that the iron trees blossomed (something very unusual happened).'
a′. ta ba huli wen-de luchu-le yiba.
he Ba fox ask-De reveal-Le tail
'He interrogated such that the fox revealed its secrets.'
b. ta ku-de tieshu kai-le hua.
he cry-De iron-tree open-Le flower
'He cried such that the iron trees blossomed (something very unusual happened).'
b′. ta wen-de huli luchu-le yiba.
he ask-De fox reveal-Le tail
'He interrogated such that the fox revealed its secrets.'

The proponents of the raising analysis, such as Goodall and Sybesma, argue for raising on the basis of the fact that *tieshu kai hua* 'iron tree open flower' and *huli luchu yiba* 'fox reveal tail' are idiomatic expressions indicating that a highly unlikely event has happened and that the truth has come out respectively. In contrast, Huang argues that the relevant *ba* sentences involve a control structure and the seemingly idiomatic expressions actually just involve figurative speech, with 'iron tree' possibly referring to an 'iron-hearted father' and 'fox' referring to a sly person.

One needs to be cautious of what conclusion can be drawn from these data. Such data only bear on the issue of whether the *ba* NP can be raised from the subject of a complement clause, rather than a more general issue of whether the *ba* NP can be derived by a raising process. It is quite conceivable that a *ba* NP can be derived by movement, but the data in (76) do not provide any positive or negative evidence, because of the independent consideration of whether a *ba* NP can originate as the subject of a complement clause at all.

Our generalization in (29), in principle, prohibits the derivation of a *ba* NP raised from within a resultative complement, because a *ba* NP must be a V-object or a V'-object. (29), however, does not preclude the possibility of a *ba* NP being derived by a raising process. It is just that the raising must apply to a V-object or a V'-object and not the subject of a resultative complement; otherwise, sentences such as (71b), (72b), and (74c) would be acceptable. The analysis of (76a–b) should, then, not be the one proposed by Goodall, according to which the *ba* NP is raised from the subject of the complement clause. Instead, Huang's analysis is more adequate, according to which the idiom-like expressions are not true idioms but figurative expressions. That this conclusion is correct is supported by the fact that *tieshu* 'iron tree' and *huli* 'fox' can occur independent of their predicate (and retain the figurative interpretation), as in (76c–c'), unlike true idiomatic expressions whose components are not allowed to be generated independently without losing their idiomatic interpretation, such as (76d–d'):

(76) c. ta ba tieshu shuifu-le ma?
he Ba iron-tree persuade Question
'Did he persuade the iron tree (the iron-hearted one)?'

c'. ta ba huli wen-wan-le ma?
he Ba fox ask-finish-Le Question
'Has he finished interrogating the fox (the sly one)?'

cf.:

d. ta xihuan chi doufu.
he like eat tofu
'He likes to flirt.' (idiomatic reading: *chi-doufu* 'eat-tofu = flirt')
'He likes to eat tofu.' (non-idiomatic reading)

d'. ta xihuan doufu.
he like tofu
'He likes tofu.' (non-idiomatic reading only)

On the other hand, the fact that (76a, a') cannot be derived by directly raising the subject of the complement clause to the *ba* NP position does not argue against a general raising analysis, which raises a *ba* NP raised from a V-object or V'-object position. We will show in section 4 that our proposal for the structure of the *ba* construction forces us to allow such a raising process, which will be supported by facts involving true idiomatic expressions of the structure [V + O].

Having discussed the syntactic properties of each of the components of a *ba* construction as in (1a–b), we should be able to establish appropriate syntactic structures for the *ba* construction. Before we proceed, however, we would like to bring in one more set of data – comparisons with the Taiwanese counterpart, the *ka* pattern, which will help with the characterization of the relevant *ba* structure in Mandarin because of their close similarities and important differences.

3 Cross-dialectal comparison with Taiwanese *ka*

A Mandarin *ba* sentence has a counterpart in Taiwanese, with *ba* replaced by *ka*, illustrated by the Mandarin example in (77a) and its counterpart in Taiwanese in (77b):[41]

(77) a. ta ba wo ma san-ci le.
he Ba me scold three-times Le
'He scolded me three times.'

cf.:

b. i ka gua meN saN-pai a.
he Ka me scold three-times Particle
'He scolded me three times.'

The two constructions share the form [Subject + *ba/ka* + NP + VP] and most of the important constraints. A *ba* sentence in Mandarin can always be translated into a *ka* sentence in Taiwanese. However, the reverse is not true. A *ka* sentence is allowed in more contexts than a *ba* sentence.

There are three major differences between the Mandarin *ba* construction and the Taiwanese *ka* construction.[42] The first major difference is that, in contrast to the prohibition against a bare verb in Mandarin *ba* sentences (i.e., the X-factor, a postverbal or preverbal element required to accompany a bare verb, such as those listed in (64–65)), Taiwanese easily allows a bare verb to occur in the *ka* construction when the verb takes an affected object (see section 5.1). The following perfectly acceptable *ka* sentences, for instance, use only a bare verb after the *ka* NP:

(78) i ka gua pha/peN/meN.
I Ka me hit/cheat/scold
'He hit/cheated/scolded me.'

The second difference is that it is not always possible for a *ka* sentence in Taiwanese to have a non-*ka* counterpart, in contrast to Mandarin which always has a non-*ba* counterpart for a *ba* sentence. For instance, the following *ka* sentences do not have a non-*ka* counterpart:

(79) a. li m-hoN ka gua the-tsa ha-ban.
you don't Ka me earlier off work
'Don't get off work earlier (than you should) on me.'
b. li na kaN ka gua tsao, gua teo ho li ho-khuaN.
you if dare Ka me leave I then let you good-look
'If you dare to leave on me, I will show you the consequence.'

In these cases, *ka* is necessary to give an interpretation to the *ka* NP, which is not at all related to the thematic structure of the verb. In other words, one difference between *ka* and *ba* is that the former, but not the latter, can assign a thematic role to the *ka* NP independently.

Finally, in contrast to the possibility in Mandarin of preposing *ba* together with the *ba* NP in some cases, it is clearly unacceptable to prepose *ka* with the *ka* NP in any *ka* sentence in Taiwanese:

(80) *ka tsit-te ba, li siN tshe-tseh-le.
Ka this-Cl meat you first cut-cut-Particle
'Cut the meat first.'

In brief, although the Taiwanese *ka* construction and the Mandarin *ba* construction are quite similar, they do differ significantly in several respects:

(81)

	***ba* structures**	***ka* structures**
a.	Bare verbs are disallowed.	Bare verbs are allowed.
b.	A non-*ba* counterpart is always available.	A non-*ka* counterpart is sometimes unavailable.
c.	A *ba* NP is thematically related to the following V or V′ (a V-object or V′-object).	A *ka* NP need not be thematically related to the following V or V′. *Ka* is sufficient for a *ka* NP to be interpreted.
d.	*Ba* and the *ba* NP are preposable as a unit.	*Ka* and the *ka* NP are not preposable as a unit.

The comparisons between *ba* and *ka* constructions will help us determine appropriate syntactic (phrase) structures for these constructions.

4 Structures

The important syntactic facts that need to be captured by an adequate phrase structure for the *ba* construction are as follows:

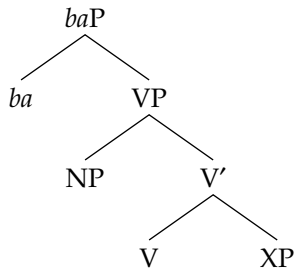
(82) a. A *ba* sentence has a non-*ba* counterpart.
b. *Ba* and the *ba* NP normally do not form a unit syntactically, but they do so in some cases.
c. No element can intervene between *ba* and the *ba* NP.

d. What follows *ba* is a VP that contains an X and a V.
e. A *ba* NP is a V-object or a V′-object.

4.1 A preliminary analysis

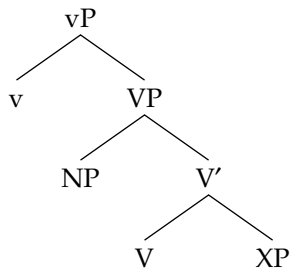
There is evidence that at least, in some cases, *ba* should head its own projection (see the discussions in section 2.2). When *ba* heads its own projection, its complement should be a maximal category (the bare phrase structures in the Minimalist Program; see Chomsky 1995c). (83) is therefore a potential partial structure for a *ba* sentence, where the NP in the Spec of VP is the *ba* NP. It is an object of V′. In the case where the *ba* NP is a V-object, it is raised to the Spec of VP position:

(83)



This structure resembles very much the vP structure discussed extensively in Chomsky (1995c) or the VP-shell structure proposed by Larson (1988b) for double object structures, if *ba* is the head of a higher vP or VP. Indeed, if the label *ba*P is replaced by vP or VP, the structure is a regular verb phrase like Chomsky's vP structures or Larson's VP-shell structures. For simplicity, let us just use Chomsky's vP structures in the representations (if Larson's VP-shell structures are adopted, all vPs will be replaced by VPs and vs by Vs):

(84)



When *ba* appears in the v position, the verb is in the V position and a *ba* sentence is derived:

(85) wo ba beizi na gei-ta.
I Ba cup take to-him
'I gave the cup to him.'

Alternatively, *ba* need not appear in the v position. In that case, the verb moves up to the v position, deriving a non-*ba* sentence:

(86) wo na beizi gei-ta.
I take cup to-him
'I gave the cup to him.'

In other words, *ba* may be taken as the spell-out of a small v in Chomsky's sense (or a higher V in Larsonian VP-shell structures). When v is spelled out as *ba*, V-to-v-raising does not apply, deriving [*ba* NP V XP]. When *ba* does not occur, V-to-v-raising takes place, deriving [V NP XP].

4.2 Revision

The structure in (83) seems to capture the properties in (82). We saw how the *ba* and non-*ba* counterpart are derived. *Ba* heads a projection and nothing can intervene between *ba* and the *ba* NP if *ba* assigns Case to the *ba* NP and Case assignment obeys an adjacency condition (Stowell 1981). However, this structure is not quite adequate. It is especially problematic with respect to the placement of adverbials. Take a manner adverb for illustration. In a *ba* sentence, a manner adverb can occur before or after *ba*:

(87) a. wo xiaoxin-de ba beizi na-gei-ta.
I carefully Ba cup take-to-him
'I gave the cup to him carefully.'
b. wo ba beizi xiaoxin-de na-gei-ta.
I Ba cup carefully take-to-him
'I gave the cup to him carefully.'

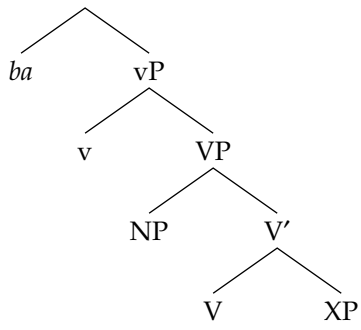
If (83)/(84) is the structure, it means that a manner adverb should be able to adjoin to either V' or some node higher than the *ba*P in (83) or vP in (84). Such adverb placement possibilities predict that the non-*ba* counterpart, after V raised to v, such as (88a–b) below, should be acceptable. However, (88b) is not acceptable.[43] An adverb must precede a verb:

(88) a. wo xiaoxin-de na beizi gei-ta.
I carefully take cup to-him
'I gave the cup to him carefully.'
b. *wo na beizi xiaoxin-de gei-ta.
I take cup carefully to-him
'I gave the cup to him carefully.'

The contrast between (87b) and (88b) casts doubt on the adequacy of a structure like (83)/(84), with v spelled out as *ba* or as the landing site of V-to-v raising.

The distribution of adverbs illustrated in (87) and (88) indicates that *ba* must be higher than the landing site of the raised main verb; i.e., higher than vP in (84):

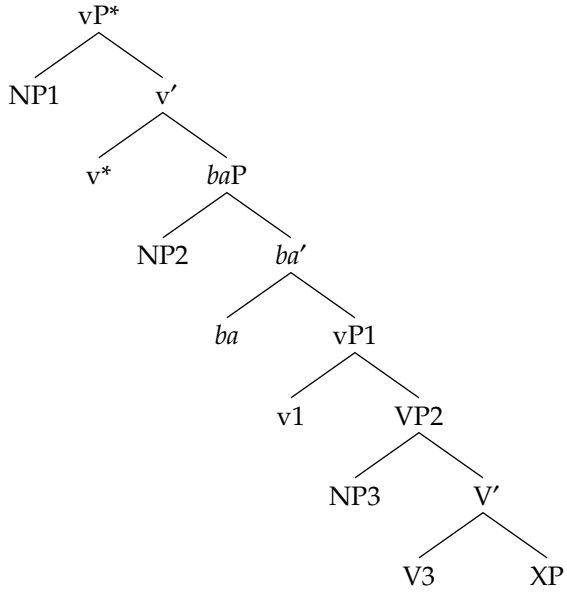
(89)



In such a structure, an adverb is adjoined to vP (or an intermediate projection v′, or some other node higher than vP). For a non-*ba* sentence, an adverb appears on the left of the main verb after the main verb is raised from V to v. For a *ba* sentence, an adverb may appear to the right of *ba* (as well as to the left if the adverb is adjoined to a node higher than the *ba* projection).

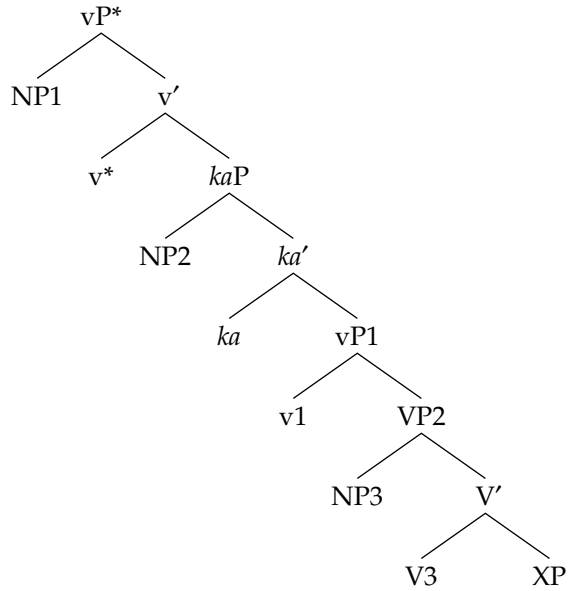
The structure in (89) solves the problem with adverb placement. However, it raises the question of where the *ba* NP must be positioned. It certainly cannot be the NP in (89). The *ba*-NP and *ba* can never be separated by any element. The structure in (89) would wrongly allow the main verb to occur between *ba* and the *ba* NP. There needs to be an NP position above the raised verb to host the *ba* NP. That is, there should be more structures above vP, such as the one below:[44]

(90)



In this structure, vP1 is the verb phrase that follows the *ba* NP; NP2 is the most likely candidate to host a *ba* NP and NP1, the external argument of the sentence. To derive the correct word order, *ba* is raised to v*, V3 is raised to v1. (A non-*ba* sentence only has the projection up to vP1.) This structure spells out the relation between a *ba* construction and its non-*ba* counterpart, their minimal difference being in the projection of a *ba*P shell for a *ba* construction, and accommodates the facts regarding the distribution of adverbials in a *ba* construction and a non-*ba* counterpart. This structure, however, seems to suggest that *ba* is very much like a verb in the sense that both are dominated by a v (v1 for V and v* for *ba* in (90)). On the other hand, we mentioned earlier in section 2.2 that *ba* is not a verb. Do these two facts contradict each other? They do not, when we consider the behavior of *ka* in a *ka* construction, the Taiwanese counterpart of the Mandarin *ba* construction. Recall that, in contrast to a *ba* sentence which always has a non-*ba* counterpart, a *ka* sentence need not have a non-*ka* counterpart. Correspondingly, *ka* can assign a thematic role to a *ka* NP, but a *ba* NP is always related to the following V or V′ thematically. The thematic assigning property of *ka* reflects the origin of the *ba* and *ka* constructions, which were serial verb constructions. The structure in (90) reflects such properties faithfully. (90), thus, should be adopted for the *ka* construction:

(91)



The question is whether this structure still describes the *ba* construction appropriately. Moreover, adopting the same structure for both *ka* and *ba* constructions fails to capture the differences between these two constructions, as listed in (81).

The facts that *ka* can assign an independent theta-role and that a *ka* sentence does not always have a non-*ka* counterpart indicate that *ka* in Taiwanese has a

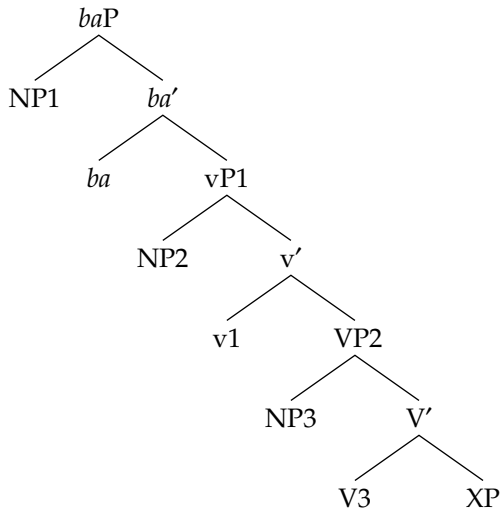
more independent status than *ba* in Mandarin. We suggest that the minimal difference between the two constructions is that *ka* is 'more lexical' than *ba*: *ka* can directly assign a thematic role (an affected theta-role) to the *ka* NP. *Ba*, on the other hand, does not assign a thematic role. A *ka* NP can be base generated but a *ba* NP always originates from within the verb phrase.[45] *Ba* in Mandarin is more 'empty' than *ka* in Taiwanese.

The independent theta-assigning capability of *ka* should predict that the prohibition against the V in a Mandarin *ba* sentence being a true intransitive should not apply to a Taiwanese *ka* sentence (cf. section 2.5). This is correct. The unacceptable cases with true intransitive verbs in the Mandarin *ba* sentences discussed in section 2.5 are acceptable as *ka* sentences, as illustrated below (cf. (71–72)):

(92) li-e syaNim na ka gua se-ka molang thiaN-u, gua e ka li
your voice if Ka me small-extent nobody hear-have I will Ka you
si taolo.
fire job
'If your voice is so small that nobody can hear you (at my cost), I will fire you.'

Such differences between *ka* and *ba* make it possible to surmise that *ba* has lost more lexical properties and is more grammaticalized than *ka*. Structurally, because of the grammaticalization process, v* disappears in (90) and the external argument NP1 occupies the Spec of *ba*P position, with the *ba* NP occupying the Spec of vP1:

(93)



Adverbials are placed at the v level (for instance, adjoined to v'). A *ba* NP (NP2) in this structure is not within the maximal projection of *ba*, and therefore not assigned a thematic role by *ba*. The relation between *ba* and the *ba* NP is not

thematic, but *ba* still assigns Case to the *ba* NP (exceptional Case marking; Chomsky 1981). It is also possible that the weakening of the lexical properties of *ba* (grammaticalization) makes it possible to cliticize *ba* to the *ba* NP, making the two behave as a unit (82b), which, if true, also accounts for why *ka* + NP do not behave as a single unit in Taiwanese (81d).

In brief, the *ba* construction in Mandarin can be viewed as a more grammaticalized version of the *ka* construction in Taiwanese. The two minimally differ in their thematic-assigning capability. This difference is reflected in the presence of a v projection for *ka*, but not for *ba*. The two structures, (91) for *ka* sentences and (93) for *ba* sentences, accommodate the generalizations in (81).

Note that the structure in (93) assumes that the *ba* NP, NP2 in Spec of vP1, can be raised from a lower position. Such a raising analysis is supported, as shown next.

4.3 The ba *NP*

As mentioned, a *ba* sentence always has a non-*ba* counterpart and a *ba* NP is an inner object (object of V) or an outer object (assigned a theta-role by V and its complement). In other words, the *ba* NP is generated in either NP3 (V'-object) or XP (V-object) position in (93). On the surface, a *ba* NP occurs in NP2 position in (93). This indicates that a *ba* NP must be derived by a raising process (see the discussion regarding (76) in section 2.5). The raising, however, can only originate from a V-object or V'-object position; it cannot originate from the subject position of a complement clause. Note that the *ba* NP, NP2, is still within the extended maximal projection of V (vP). That is, it is within the thematic domain of V/V'. Raising the subject of an embedded clause to the *ba* NP position would be like raising an embedded subject to the object position of a higher clause, a process generally possible only if the subject is raised to the Agreement of Object position, not the position within the extended maximal projection of V (see Hornstein 1994).[46]

A raising analysis to derive the *ba* NP is supported by the fact that an object NP of a verb + object [V + NP] idiomatic expression, as in (94a–d), can become a *ba* NP, as in (95a–d):

(94) a. ta zhan-qu-le pianyi.
he take-go-Le advantage
'He took advantage.'

b. ta kai-wan-le dao.
he open-finish-Le knife
'He finished the operation.'

c. bie you-huai-le mo.
don't hu-bad-Le -mor
'Don't humor badly (humorous in the wrong way).'

d. ni gankuai xiao-le bian-ba, buyao zai wan-le.
you hurry small-Le convenience-Par. don't again play-Le
'Hurry up peeing; don't fool around any more.'

(95) a. ta ba pianyi zhan-qu-le.
he Ba advantage take-go-Le
'He took advantage.'
b. ta ba dao kai-wan-le.
he Ba knife open-finish-Le
'He finished the operation.'
c. bie ba mo you-huai-le.
don't Ba -mor hu-bad-Le
'Don't humor badly (humorous in the wrong way).'
d. ni gankuai ba bian xiao-le-ba, buyao zai wan-le.
you hurry Ba convenience small-Le-Par. don't again play-Le
'Hurry up peeing; don't fool around any more.'

4.4 A bare verb?

The proposal discussed so far accounts for almost all the syntactic properties of the *ba* construction in Mandarin, in contrast to the *ka* construction in Taiwanese, as listed in (81). What is left is the contrast between the acceptability of a bare verb for a *ka* sentence and the unacceptability of such a form for a *ba* sentence. Why is it, then, that a *ba* sentence in Mandarin cannot allow a bare verb? It is possible to trace this constraint to a more general phenomenon: in Mandarin, when an object is preposed (i.e., not occurring in the postverbal position), it is generally unacceptable to have a bare verb, as illustrated by the contrast in the following pairs of sentences:

(96) a. *wo zuotian zhe-ge zhuozi ca.
I yesterday this-Cl table wipe
'I, this table, wiped yesterday.'

cf.:

b. wo zuotian zhe-ge zhuozi ca-le.
I yesterday this-Cl table wipe-Le
'I, this table, wiped yesterday.'
c. *zhe-ge zhuozi, wo zuotian ca.
this-Cl table I yesterday wipe
'This table, I wiped yesterday.'

cf.:

d. zhe-ge zhuozi, wo zuotian ca-le.
this-Cl table I yesterday wipe-Le
'This table, I wiped yesterday.'

Why is it, then, that the focus of the literature has been on the unacceptability of a bare verb in a *ba* sentence, and attention has not been paid to the parallelism

between the *ba* sentences and the object-preposing cases? This probably is due to the fact that we do see some object-preposing cases where bare verbs are allowed:

(97) a. wo zhe-ge zhuozi bu-ca.
I this-Cl table not-wipe
'I, this table, won't wipe.'
b. wo zhe-ge zhuozi hui-ca.
I this-Cl table will-wipe
'I, this table, will wipe.'

Crucially, however, the bare verb in these cases occurs with a negation or modal word. Phonologically, they form a unit. In a corresponding *ba* sentence, however, a modal or a negation must occur before *ba.* The inability of a negation or modal word to follow *ba* and directly precede the V makes it impossible to test if, indeed, a *ba* sentence has different constraints than a non-*ba* sentence concerning the acceptability of bare verbs. There is, however, a context where the sharpness of the contrast between a *ba* sentence and a non-*ba* sentence with respect to the acceptability of a bare verb is greatly reduced: the context of listing:

(98) a. ta yi-zheng-ge zaoshang zhe-ge zhuozi ca, na-ge yizi
I one-whole-Cl morning this-Cl table wipe that-Cl chair
mo-de, mang-si-le.
wipe-De busy-dead-Le
'He has been wiping this table, cleaning that chair and what not for the whole morning. He is very busy.'
b. ta yi-zheng-ge zaoshang ba zhe-ge zhuozi ca, (ba) na-ge yizi
I one-whole-Cl morning Ba this-Cl table wipe Ba that-Cl chair
mo-de, mang-si-le.
wipe-De busy-dead-Le
'He has been wiping this table, cleaning that chair and what not for the whole morning. He is very busy.'

Moreover, there are some two-morpheme verbs which are difficult to decompose into an [activity + result] compound but which can occur in a *ba* pattern without an X:

(98) c. ta keneng ba ta fang-qi ma?
he can Ba she abandon-abandon Question
'Was it possible that he abandoned her?'
d. ta shi hui ba taitai hu-lue de ren ma?
he is will Ba wife neglect-omit De person Question
'Is he a person that will neglect his wife?'
e. ta bu ba wo ying-bi cai kuai!
he not Ba me force-force then strange
'It would be strange if he doesn't force me!'

f. wo bu hui ba ta yi-wang de!
I not will Ba it miss-forget De
'I won't forget it!'

Typical [activity + result] compound verbs, including those with the result part grammaticalized to become an aspect-like suffix (cf. section 2.4.1.1), allow a positive potential infix *de* 'able' or a negative potential infix *bu* 'not' [activity + *de/bu* + result]. However, verbs such as *fang-qi* 'abandon-abandon', *hu-lue* 'neglect-omit', *ying-bi* 'force', and *yi-wang* 'forget' in (98c–f) do not allow such an infix. (98c–f) seem to demonstrate that bare verbs can occur in a *ba* pattern, just like (98b).

Despite these examples, it is in general still marginal for a bare verb to appear in a *ba* pattern. In addition, (98b) is not consistently accepted among native speakers, and the verbs in (98c–f) still consist of two morphemes. These considerations are in sharp contrast to Taiwanese, which readily allows a single-syllable bare verb in a *ka* construction. One may propose subsuming the strong tendency to avoid a bare verb in a *ba* pattern to some more general phenomenon, such as certain interactions between prosody and syntax as suggested by Feng (1995), which may be specific to Mandarin but not Taiwanese. We will not speculate further on a solution here for lack of a better understanding of the contrast, except by pointing out that such a contrast cannot be a difference of interpretation: both *ba* and *ka* sentences have an 'affectedness' interpretation (see further discussion in section 5.1).

4.5 Over-generation

The investigation of each of the components of a *ba* sentence (1a–b), coupled with the cross-dialectal comparison between a *ba* sentence in Mandarin and a *ka* sentence in Taiwanese, suggested the structure in (91) and (93). They capture the properties of *ba* sentences as in (82a–d) and the relation between a *ba* sentence and a *ka* sentence, in contrast to their non-*ba*/non-*ka* counterpart, when available, as in (81a–d).

Our proposal provides an answer to the question of what structure adequately represents the *ba* construction. However, it has not addressed the issue that has been the focus of attention of most linguists interested in this construction: the conditions on when a *ba* sentence can be used. Note that the structure proposed in (91) or (93) greatly over-generates. The following are just some of the many unacceptable *ba* sentences that can be generated by the structure proposed:

(99) a. *ta ba dong da-po-le.
he Ba hole hit-break-Le
'He broke the hole.'
b. *Lisi ba ta xihuan-de hen gaoxing.
Lisi Ba he like-De very happy
'Lisi likes him so much that he is very happy.'

c. *ta ba na-difang dao-le.
he Ba that-place arrive-Le
'He arrived at that place.'
d. *wo ba jiu he-zui-le
I Ba alcohol drink-drunk-Le
'I got drunk from drinking.'
e. *ta yijing ba mei-jian-shi dou zhidao-le
he already Ba every-Cl-matter all know-Le
'He already knows everything.'
f. *tufei ba ta baifang-le fuqin.
bandit Ba him visit-Le father
'The bandit visited his father.'

There have been many interesting accounts for the relevant constraints. Proposals have been made from the perspective of information structure (topic-comment, presupposition-focus; see, for instance, Mei 1978; Hsueh 1987; Tsao 1987), interpretation/pragmatics (transitivity, disposal, affectedness; see L. Wang 1945, 1947; H. Wang 1957; Chao 1968; Hashimoto 1971; Thompson 1973; Li 1974; Hopper and Thompson 1980; Li and Thompson 1981; etc.), aspectual structure (Szeto 1988; Yong 1993; Liu 1997), and event structure (Sybesma 1992, 1999). We will show in the next section that, although all these approaches accommodate the core cases of *ba* sentences fairly well, the structurally formulated solutions fail to adequately account for the range of data that contain minimal pairs with identical structures but different acceptability as a *ba* sentence.

5 Constraints

Among the approaches based on information structure, interpretation/pragmatics, and aspectual and event structures, we will concentrate on the last three and show how each of them accounts for the constraints on the core instances of *ba* sentences, but attempts at precise grammatical formulations inevitably fail.[47]

5.1 An interpretation/pragmatic account

5.1.1 The notion of 'affectedness/disposal'

The majority of the literature on the *ba* construction centers on the notion of 'disposal' or 'affectedness'. That is, a *ba* sentence is a construction denoting 'disposal' or 'affectedness'. This special meaning is related to the original lexical meaning of *ba*, 'handle, manipulate'. It is responsible for the many constraints on the choice of verbs, the choice of *ba* NPs, and the use of other postverbal or preverbal elements (the X in (1)) in a *ba* construction. For instance, even though in many cases the *ba* NP is the object of the main verb in preverbal position,[48] as illustrated in (100), the 'special meaning' of the *ba* construction prevents all transitive verbs from preposing their object as a *ba* NP, such as (101):

(100) a. wo ba juzi bo-le.
I Ba orange peel-Le
'I peeled the orange.'

cf.:

b. wo bo-le juzi.
I peel-Le orange
'I peeled the orange.'

(101) a. *wo ba ta xihuan-le.
I Ba him like
'I like him (now, became fond of him).'

cf.:

b. wo xihuan ta-le.
I like him-Le
'I like him (now, became fond of him).'

The intuition regarding the unacceptability of sentences like (101a) is that such sentences do not express the handling or manipulation of something (recall the original meaning of *ba*); 'he' is not manipulated or dealt with by 'my liking him'. The *ba* NP is not affected by 'my liking him'. This contrasts with (100a), which expresses the notion that the *ba* NP 'the orange' was manipulated: it was peeled.

Such an intuition is behind the terms for this construction that have been quite widely used in the literature: the 'disposal' or 'executive' construction (*chuzhi shi*; see Wang 1954). These terms are to capture the intuition that the *ba* construction, ideally, is to describe something being 'disposed of' or some action being taken on the *ba* NP. In Wang's words: "The disposal form states how a person is handled, manipulated, or dealt with; how something is disposed of; or how an affair is conducted" (translated in Li 1974: 200–201). According to Teng (1974b), this interpretation property accounts for why it is most common for the *ba* NP to be a Patient (affected) NP. Frei (1956/1957) and Teng (1974b) refer to this construction as the ergative or accusative construction, to highlight the fact that the 'object' of *ba* generally is a patient (affected). In a word, *ba* is a marker of the thematic role 'patient'. Alternatively, the *ba* construction can be viewed as a 'highly transitive' construction. The construction describes the particular action made upon its object or a high degree of affectedness of the verb exerted upon the object (see, for instance, L. Wang 1954; H. Wang 1957; Chao 1968; Hashimoto 1971; Thompson 1973; Li 1974; Li and Thompson 1981; Tiee 1990; M. Wang 1987; for a recent work, see Li 1995). The 'affectedness' interpretation can be better understood by the contrast between the following two sentences, which have similar argument NPs. Depending on which NP becomes the *ba* NP, the sentences are interpreted differently. They differ in expressing which NP is affected: (102a) expresses that the pot is affected, and (102b) the water:

(102) a. wo ba guozi zhuang-le shui.
I Ba pot fill-Le water
'I filled the pot with water.'
b. wo ba shui zhuang-zai guozi-li.
I Ba water fill-at pot-in
'I filled the water into the pot.'

5.1.2 Extension – non-physical affectedness

However, it is not always easy to understand a *ba* NP as some entity that is 'affected', 'manipulated', or 'dealt with'. Extensions have been made to accommodate more *ba* cases.

It has been suggested that 'affectedness' need not be physical. It can be psychological or even imaginary. For instance, Li and Thompson (1981: 469–470) explain that sentences such as (103–104), which contain emotive or psychological (stative) verbs normally not occurring in a *ba* pattern, are acceptable when the postverbal intensifier is added. The intensity of the emotion can imply disposal. In (103), the presence of the postverbal expression greatly exaggerates the degree of his missing you. "It is as if one cannot help thinking that you are affected in some way when he misses you to such an extent that he can't even eat" (1981: 469). The added expression *yao si* 'want to die' in (104) "hypothetically creates an image that such intense love must have some effect on the 'small cat'. Thus, the disposal idea . . . is implied by the verb together with the added expression. An implication of disposal is, therefore, sufficient to warrant the use of the *ba* construction" (1981: 469):

(103) ta ba ni xiang-de fan dou bu-ken chi.
he Ba him miss-De food even not-willing eat
'He misses you so much that he won't even eat his meals.'

(104) Lisi ba xiao-mao ai-de yao si.
Lisi Ba small cat love-De want die
'Lisi loves the kitten so much that he wants to die.'

Such an image must be in the speaker's mind only, because the *ba* NP, the one that is missed in (103), need not even know that he is missed. Thus, (103) can be followed by (105a). The subject, the one that misses the *ba* NP in (103), need not know the extent, either, as illustrated by the acceptability of (105b):

(105) a. ni keneng bu zhidao-ba!
you probably not know-Par
'Probably you don't know.'
b. ta keneng bu zhidao ta yijing ba ni xiang-de feng-le.
he probably not know-Par he already Ba you miss-De crazy-Le
'Probably he doesn't know that he already missed you so much that he went crazy.'

In brief, among all the different terms to label the *ba* construction, there seems to be an intuition expressed in the majority of works that this construction expresses some loose notion of 'affectedness' – the *ba* NP being affected in some way. The 'affectedness' need not be physical: it can be emotional or simply imaginary.

Such a special meaning is so typical of the *ba* construction that it can make a distinction in interpretation between a *ba* sentence and its non-*ba* counterpart. This can be illustrated by the behavior of idiomatic expressions. The following examples show that an object part of a [V + O] idiomatic expression can become a *ba* NP:

(106) a. ta ba pianyi zhan-qu-le.
he Ba advantage take-go-Le
'He took advantage.'
b. ta ba dao kai-wan-le.
he Ba knife open-finish-Le
'He finished the operation.'
c. bie ba mo you-huai-le.
don't Ba -mor hu-bad-Le
'Don't humor badly.'
d. ta ba wanxiao kai-de-guohuo-le.
he Ba joke open-De-excessive-Le
'He overdid the joking.'
e. ni gankuai ba bian xiao-le-ba, buyao zai wan-le.
you hurry Ba convenience small-Le-Par. don't again play-Le
'Hurry up peeing; don't fool around any more.'

The use of the *ba* construction in these sentences seems to favor an understanding that something is affected or disposed of (in a very loose sense). For instance, (106a) states that the advantage has been taken by him (abstractly). (106b) says that the operation has been performed. In a way, *dao* 'knife' is equated to 'operation' and *kai* 'open' to 'perform (operation)'. In (106c), even though *youmo* is a transliteration of the English word *humor*, it seems possible to understand the sentence as this: the humorous stuff that he will be telling/acting (i.e., the -mor that he hu-ed) goes bad. In (106d), the joke that he made has gone overboard. (106e) can be interpreted as the pee gets peed fast. All of them imply a very loose notion of 'affectedness/disposal'.

In addition to the effect on the general interpretation of this pattern, the notion of 'affectedness/disposal' provides some understanding of the constraints on the types of *ba* NPs and predicates, which include a V and an X in (1a–b).

5.1.3 Constraints on ba *NPs*

Because a *ba* NP is an affected one, it generally should exist before an event occurs in order to be affected (existence condition), it generally cannot be non-specific (specificity condition), and it generally must be something/someone that can be affected by the event (affectedness condition).

5.1.3.1 Existence

There is a strong tendency for the entity denoted by the *ba* NP to exist in the speaker's conceptual world before the activity/event takes place. If it does not exist, generally a *ba* NP is not acceptable. Let us clarify these remarks with the following pairs of examples:

(107) a. *ta ba zhuyi xiang-dao-le.
he Ba idea think-arrive-Le
'He thought of the idea.'
b. ta ba diannao mai-le.
he Ba computer sell-Le
'He sold the computer.'

The contrast between (107a) and (107b) can be accounted for in the following manner: an idea does not exist before it is thought of but a computer must exist before it is sold.

The existence can simply be a conceptual existence, rather than a physical one. For instance, the concept of what a hole should be can exist before the hole is dug and takes the desired shape. In contrast, if one breaks a hole, one normally does not have a preconception of the hole:

(108) a. ta ba dong wa-hao-le.
he Ba hole dig-complete-Le
'He completed digging the hole.'

cf.:

b. *ta ba dong da-po-le.
he Ba hole hit-break-Le
'He broke the hole.'

In the world we know, a hole comes into existence as a result of breaking, which is incompatible with the existence requirement of a *ba* NP. This is especially clear when words expressing the lack of intention, like 'unintentionally, carelessly', are added to (108b).

(108) c. *ta bu-xiaoxin ba dong da-po-le.
he not-careful Ba hole hit-break-Le
'He broke the hole carelessly (unintentionally).'

More generally, no creation verbs are quite compatible with a *ba* NP, unless the *ba* NP expresses a conceptual existence before the event/action takes place. This is why a *ba* sentence is not acceptable with verbs like *faxian* 'discover' or *faming* 'invent':

(109) a. *ta ba jinzi faxian-le.
he Ba gold discover-Le
'He discovered gold.'
b. *ta ba diandeng faming-le.
he Ba light-bulb invent-Le
'He invented light-bulbs.'

Similarly, the unacceptability of sentences like (110a–b) can be attributed to the existence requirement. Generally, the object of seeing or hearing comes into the existence only after the seeing or hearing. A *ba* sentence is not acceptable:

(110) a. *wo ba ta kan-dao-le.
I Ba he see-arrive-Le
'I saw him.'
b. *wo ba ta ting-dao-le.
I Ba he listen-arrive-Le
'I heard him.'

In contrast, if my intention is to touch him (as in a game), the following sentence can be acceptable because the existence of 'him' is in my mind before my touching him:

(110) c. wo ba ta mo-dao-le! wo ying-le!
I Ba he touch-arrive-Le I win-Le
'I touched him! I won!'

5.1.3.2 Specificity

A great majority of the literature on *ba* constructions claims that a *ba* NP must be specific or definite and that it has to do with the meaning of 'disposal' or 'affectedness' – the entity that is dealt with or affected needs to be specific (see the discussions in sections 5.2 and 5.4 on the revision of such a claim). Examples frequently quoted are those *ba* NPs (i) which are a bare NP and cannot be interpreted as indefinite, and (ii) which are a number + classifier expres- sion and cannot be interpreted as indefinite. Bare NPs and number + classifier expressions can be interpreted as indefinite in some other contexts, such as a postverbal object position:

(111) **Bare NP:**
a. qing ni ba bi gei wo.
please you Ba pen give me
'Please give me the pen.' (definite reading)
*'Please give me a pen.' (indefinite reading unavailable)

cf.:

b. qing ni gei wo bi.
please you give me pen
'Please give me the pen.' (definite reading)
'Please give me a pen.' (indefinite reading)

[Number + classifier + noun] expressions generally are interpreted as non-specific and therefore unacceptable as a *ba* NP:

(112) a. *qing ni ba san-zhi bi gei wo.
please you Ba three-Cl pen give me
'Please give me three pens.'

cf.:

b. qing ni gei wo san-zhi bi.
please you give me three-Cl pen
'Please give me three pens.'

(113) a. *ta ba shi-duo-ben shu mai-le.
he Ba ten-more-Cl book buy-Le
'He bought ten-plus books.'
b. ta mai-le shi-duo-ben shu.
he buy-Le ten-more-Cl book
'He bought ten-plus books.'

(112a) and (113a) are not acceptable because 'three pens' and 'ten-plus books' generally cannot be interpreted as specific.

When such expressions are interpreted as specific, as when the universal quantifier *dou* is added, they can serve as a *ba* NP:

(114) qing ni ba san-zhi bi dou gei wo.
please you Ba three-Cl pen all give me
'Please give me all three pens.'

Sybesma (1999: 142) notes that, in the terms of Barwise and Cooper (1981), the *ba*-NP must be strong.[49]

In these two subsections, we stated that 'existence' and 'specificity' are strong tendencies regarding a *ba* NP. They are not exceptionless, as we will see later in the chapter when discussing event and aspectual structural approaches to *ba* constructions. The exceptions may be vaguely related to how the notion of 'affectedness' is understood. We attempt to describe the general applications of 'affectedness' next.

5.1.3.3 Affectedness

The 'disposal' interpretation is also claimed to be responsible for the unacceptability of having a *ba* NP like (115a), in contrast to the one in (115b): a language is not manipulated or dealt with when one reads things in that language. A sentence can be tackled (figuratively) by reading it in its entirety:

(115) a. *wo ba Zhongwen nian-le san-xiaoshi-le.
I Ba Chinese read-Le three-hour-Le
'I read Chinese for three hours.'

cf.:

a'. wo nian Zhongwen nian-le san-xiaoshi-le.
I read Chinese read-Le three-hour-Le
'I read Chinese for three hours.'
b. wo ba zhe-juzi nian-le san-xiaoshi-le.
I Ba this-sentence read-Le three-hour-Le
'I read this sentence for three hours.'

Similarly, it may help capture the contrast between the acceptability of sentences like those in (116a–b) and the unacceptability of those in (116c–e): it is easier to think of 'a key' being affected, because of its displacement by being forgotten, dropped, or lost (116a), and a ball game being claimed by winning (116b). (116b) can be further contrasted with (116c), which it is harder to interpret as "affected" if one simply participates in a ball game. For (116d–e), it is harder to think of a place being affected when one arrives at or leaves the place:

(116) a. wo ba yaoshi wang/diu/yishi-le
I Ba key forget/drop/lose-Le
'I forgot/dropped/lost the key.'
b. wo yiding neng ba qiusai ying-le.
I certainly can Ba ball-game win-Le
'I certainly can win the ball game.'
c. *ta jingran ba qiu-sai canjia-le.
he unexpectedly Ba ball-game participate-Le
'Unexpectedly, he played the ball game.'
d. *ta ba na-difang dao-le.
he Ba that-place arrive-Le
'He arrived at that place.'
e. *ta ba na-difang likai-le henjiu-le.
he Ba that-place leave-Le long time-Le
'He left that place for a long time.'

The 'affectedness' interpretation also helps determine the syntactic position a *ba* NP originates in. It has been suggested that a *ba* NP is an outer object when it is

not an inner object of the verb, as discussed in section 2.3.2. The so-called outer object receives an 'affected' theta-role. The clearer the 'affected' interpretation, the easier it is to make an 'affected NP' and an acceptable *ba* sentence.

In (117a), killing a person's father naturally affects this person (particularly in a patriarchal culture), and therefore a *ba* sentence is quite acceptable. On the other hand, visiting someone's father normally does not affect that person, and a *ba* sentence is not acceptable (117b). (117c) and (117d) illustrate the same contrast in affectedness and acceptability:

(117) a. tufei ba ta sha-le fuqin.
bandit Ba him kill-Le father
'The bandit killed his father (and he was affected).'
b. *tufei ba ta baifang-le fuqin.
bandit Ba him visit-Le father
'The bandit visited his father.'
c. women ba ta guai-zou-le xiaohai.
we Ba him swindle-off-Le child
'We swindled his child (and he was affected).'
d. *women ba ta tanlun-le xiaohai.
we Ba him discuss-Le child
'We discussed his child.'

As mentioned earlier, the contrast between the pairs of sentences above is important in another sense: it shows that bearing some relation, such as a possession relation, to the object of the verb (the inner object) is not sufficient to create an outer object and a *ba* sentence. It must be that the combination of [V + inner object] can take an outer object which is interpreted as 'affected', along the lines of the discussion on the constraints of the thematic relation between a *ba* NP and the V/V' in section 2.5.

For double object structures, the choice of a direct object or an indirect object as the *ba* NP also is related to the notion of affectedness. As a rule of thumb, if a double object verb can be combined with *gei* 'give, to', the direct object can be a *ba* NP; if it cannot be combined with *gei*, the direct object cannot be a *ba* NP. The following minimal contrasts illustrate the relevance of *gei*:

(118) a. wo jiao ta Zhongwen.
I teach him Chinese
'I taught him Chinese.'
b. *wo ba Zhongwen jiao ta.
I Ba Chinese teach him
'I taught him Chinese.'
c. wo jiao-(gei) ta mijue.
I teach-to him secret (of success)
'I taught him the secret of success.'

d. wo ba mijue jiao-(gei) ta.
I Ba secret teach-to him
'I taught him the secret of success.'

Li (1990) argues that the use of *gei* expresses transaction. (118a) does not allow the occurrence of *gei* because a language cannot be transferred to someone. That is, a language cannot be given to someone. On the other hand, the secret of success can be given to someone. The possibility of transaction is expressed by the possibility of using *gei*. This is correlated with the use of *ba*: if something can be transferred, it can be affected in terms of its location being changed.

The same is true with indirect objects: the notion of 'affectedness' also helps determine the acceptability of a *ba* sentence. In the double object structure with *jiao*(*gei*) 'teach (to)', the *ba* NP cannot be the indirect object because it is the direct object that is transferred, not the indirect object, as illustrated by (118c–d). The cases where an indirect object of a double object structure can be a *ba* NP are verbs like *wen* 'ask', *fa* 'fine', *qiang* 'rob', *tou* 'steal', *hua* 'spend, cost'. These are verbs that do not occur with *gei* and the direct object cannot be a *ba* NP. The 'affected' interpretation seems to be the driving force for the use of the indirect object of such verbs as a *ba* NP. The indirect object of *fa*, *qiang*, *tou*, and *hua* expresses someone that is fined, robbed, or has something stolen, or whose money has been spent, all qualified as someone that is affected:[50]

(119) ta ba wo fa/qiang/tou/hua-le shi-kuai qian.
he Ba I fine/rob/steal/cost ten-dollar money
'He fined/robbed/stole/fined/cost me ten dollars/ten dollars from me.'

An indirect object of such double object structures without *gei* cannot always become a *ba* NP, however, if the 'affectedness' interpretation is not present. Take *wen* 'ask', for instance. A *ba* sentence is better only if the indirect object is somehow affected by the asking of questions. For instance, when the indirect object is asked about many difficult questions, as in (120), he may be affected emotionally by being asked so many difficult questions. An 'affectedness' interpretation obtains and a *ba* construction is available:

(120) ta ba wo wen-le yi-da-dui hen-nan-de wenti.
he Ba me ask-Le one-big-pile very-difficult-De question
'He asked me many difficult questions.'

In contrast, the following sentence is much less acceptable, because, generally, it is much less likely that asking for directions would affect the person being asked:

(121) ??ta ba wo wen-le fangxiang.
he Ba I ask-Le directions
'He asked me directions.'

Nonetheless, such a sentence can be made more acceptable if it is made clear that asking for directions affects the one being asked, such as being emotionally disturbed by such questions:

(122) ta mingming zhidao wo bu-qingchu fangxiang, que hai
you obviously know I not-clear direction but still
dang-zhong ba wo wen-le fangxiang rang wo chu-chou!
face-crowd Ba I ask-Le direction let me embarrass
'He obviously knows that I am not clear about the directions; yet he still asked me directions in public, making me embarrassed!'

(123) zhen lan!!! ta (jingran) ba wo wen-le fangxiang!!!
really lousy he surprisingly Ba I ask-Le directions
'A disaster! (How dare) he ask(ed) me directions.'

5.1.4 Constraints on predicates

According to Li and Thompson (1981: 489), the 'disposal' nature of the *ba* construction provides an understanding of

> why some grammarians and textbook writers have thought that the verb in a *ba* sentence cannot stand alone, but must be either preceded by some adverb or followed by some element, such as a perfective, directional, or resultative verb suffix or a complex stative clause. The reason that *ba* sentences always have verbs with those elements preceding or following them is that such sentences serve to elaborate the nature of disposal.

The function of X in (1), then, is to add to the verb the special 'disposal' meaning in order to make an appropriately interpreted *ba* sentence. Different verbs may themselves have different strengths of 'disposal'. It is easier for a verb like *sha* 'kill', *da* 'hit', *pian* 'cheat', etc. to have an interpretation according to which its object is affected by the killing, hitting, and cheating (stronger disposal interpretation). In contrast, for a verb like *xihuan* 'like', *liaojie* 'understand', *renshi* 'know', it is harder to have such an interpretation (much weaker disposal interpretation). The former, those verbs higher in transitivity and disposal interpretation, generally just need a perfective aspect marker *le* to indicate that the action is carried out and the effect is inflicted on its object. That is, these verbs can appear in a *ba* sentence with the simple addition of a perfective aspect marker *le*. The latter, those low in transitivity and weak in disposal interpretation, such as stative verbs, generally are more difficult to make into a *ba* sentence, even with the help of an X factor. For instance, the addition of a resultative complement, number phrases/aspect marker, Adv, etc. does not make a good *ba* sentence with such verbs in the following cases:

(124) **Resultative complement:**
a. *Lisi ba ta xihuan-de hen gaoxing.
Lisi Ba he like-De very happy
'Lisi likes him so much that he is very happy.'

cf.:

b. Lisi xihuan ta shi-de ta hen gaoxing.
Lisi like he made-De he very happy
'Lisi likes him so much that he is very happy.'

(125) **Number phrases/aspect marker:**
a. *ta yijing ba Lisi renshi-le sannian-le.
he already Ba Lisi know-Le three-year-Le.
'He's already known Lisi for three years.'

cf.:

b. Lisi, ta yijing renshi-le sannian-le.
like he already know-De three-year-Le.
'Lisi, he's already known for three years.'

(126) **Adv + V:**
a. *wo ba zhe-shi yi-liaojie, jiu lai-le
I Ba this-matter once-understand then come-Le
'I came as soon as I understood this matter.'

cf.:

b. wo yi-liaojie zhe-shi jiu lai-le
I once-understand this-matter then come-Le
'I came as soon as I understood this matter.'

However, it is not impossible to find instances with the low-transitivity stative verbs making a good *ba* sentence with the help of an appropriate X, such as (69–70) discussed in section 2.5 (the adjectival verbs *re* 'hot', *leng* 'cold', are stative verbs) and the following one from Li and Thompson (1981: 470, example (30)):

(127) ta ba zhe-shi liaojie-de hen touche.
he Ba this-matter understand-De very thorough
'He understands the matter thoroughly.'

The thoroughness of understanding the matter probably entails that the matter is in control, i.e., it fits in a non-physical, imaginary affectedness interpretation.

Such a 'disposal/affectedness' account probably can also accommodate the fact noted in section 2.4.8 that a descriptive phrase is the only type of element that can occur in a postverbal position but does not make a good *ba* sentence. The examples are (66a–b), repeated here:

(66) a. ta jintian-de gongke xie-de hen kuai.
he today-De homework write-De very fast
'He wrote today's homework fast.'

b. *ta ba jintian-de gongke xie-de hen kuai.
he BA today homework write-De very fast
'He wrote today's homework fast.'

The form [V + de + descriptive] is interpreted like a descriptive adjective (stative verb). There have been debates in the literature on whether the verb or the descriptive phrase (the postverbal adjective) is the main verb of the sentence structurally (see C.-T. Huang 1982a, 1988; C. R. Huang 1987; Li 1985, 1990; among others). What we claim here is that, semantically speaking, the adjective determines the situation type of the verb phrase. It makes the situation type like that of an adjectival predicate, rather than an activity denoted by the V. That is, the verb phrase [V + de + descriptive] behaves like a descriptive adjective with respect to situation types. For instance, just as an adjective cannot occur in a command, neither can [V + de + descriptive]:

(128) a. *ni hen kuai!
You very fast
'You be fast!'
b. *ni xie-de hen kuai!
You write-De very fast
'You write fast!'

They cannot occur in the progressive form either:

(129) a. *ta zheng-zai hen kuai.
he right-at very fast
'He is being fast.'
b. *ta zheng-zai xie-de hen kuai!
he right-at write-De very fast
'He is writing fast.'

The form [V + de + descriptive] is not an accomplishment or achievement verb phrase either, because it does not have an end-point and it does not occur in the pattern of completion in a certain amount of time:

(130) *ta zai yi-ge-xiaoshi-nei gongke xie-de hen kuai.
he at one-hour-in homework write-De very fast
'He wrote homework fast in an hour.'

Because [V + de + descriptive] is interpreted like a descriptive adjective (stative verb) with respect to situation types, this pattern tends not to accept a *ba* form, just like other adjectival predicates or stative verbs, as we saw earlier.

In brief, the addition of a postverbal or preverbal element makes the affectedness interpretation more salient and renders a *ba* sentence more acceptable. The

strength of the 'disposal/affectedness' interpretation of verbs interacts with the need of the X factor. For verbs with strong 'disposal/affectedness' interpretation, an aspect marker is sufficient. For verbs with weak or no 'disposal/affectedness' interpretation, an X may not be sufficient to draw out an affectedness interpretation, and a *ba* sentence is still unacceptable. Such a vague notion of 'disposal/affectedness' plays an important role in the acceptability of *ba* sentences. Indeed, the notion of 'disposal/affectedness' has dominated the approaches to the constraints on the *ba* construction. The vagueness of the notion also leads to the claim that the acceptability of a *ba* sentence sometimes is not absolute. It is only better or worse as a *ba* sentence. This conception can be best summarized by Li and Thompson's (1981: 487) conditions on the use of the *ba* construction as a continuum:

(131) *ba* *ba* *ba* *ba*
Impossible Likely Obligatory

Indefinite or non-referential object Definite and highly prominent object
No disposal Strong disposal

A definite and highly prominent object is an object that is "more obvious in the speech context and more immediate to our discussion" (1981: 484). Li and Thompson further provide support for their continuum in (131) on the basis of statistics: the more elements that are added to elaborate the nature of disposal, the more likely are the sentences to appear in the *ba* form. For instance, their data produced 83 *ba* sentences, none of which was a verb that was reduplicated or only followed by *-zhe* (which have little 'disposal' meaning added, according to Li and Thompson). Only 6 or 7 percent of the 83 sentences ended with just V-*le*. Li and Thompson also suggest that the continuum may capture the fact that speakers tend to disagree on the acceptability of certain *ba* sentences, especially those that are less clear on their disposal nature, i.e., those in the middle of the continuum.

In short, although it is doubtful that there are obligatory *ba* sentences (all *ba* sentences can have a non-*ba* counterpart), the continuum in (131) does express explicitly the complexity of *ba* sentences: whereas speakers can agree quite readily on the best examples and the least likely examples for this pattern (the two extremes), the judgment is not clear especially on those cases that fall between the two extremes.

5.1.5 Summary

A great majority of the literature on *ba* constructions focuses on the usage of *ba* sentences by expounding on the notion 'affectedness/disposal', which states that the *ba* NP is the NP that is disposed of, dealt with, manipulated, affected in some way (physical or non-physical imaginary). This notion is responsible for the requirements on the types of *ba* NPs and predicates required in this pattern. As described in this section, such a notion seems to capture the basic intuition about

this construction and the canonical interpretation of a *ba* sentence. In the clearest cases, like *wo ba cai chao-de hen lan* 'I stir-fried the vegetable very mushy', we know that the vegetable is affected by the cooking, the result being mushy. Something is manipulated in a certain way. In cases like *wo ba Li xing le* 'I take the surname Li (my surname is Li)', our intuition tells us that this is an unacceptable use because, in the common world, a surname cannot be affected or manipulated by someone's having that surname. However, when we go beyond the clear cases, the picture becomes fuzzy. As mentioned, the notion of 'affectedness' has to be relaxed to include non-physical or imaginary situations. This creates a great deal of uncertainty. The so-called explanation becomes less comprehensible. For instance, what is the difference between hating someone for life and fearing someone for life that makes one better than the other as a *ba* sentence (132)? What is the difference between missing someone extremely and resembling someone extremely that makes one more affected and acceptable as a *ba* sentence and the other less affected and unacceptable as a *ba* sentence (133)? In both situations, the *ba* NP, the one that is missed or taken after, does not even need to be aware that he or she is missed or taken after:

(132) a. wo hui ba ta hen yi-beizi.
I will Ba him hate one-life
'I will hate him for life.'
b. ??wo hui ba ta pa yi-beizi.
I will Ba him fear one-life
'I will fear him for life.'

(133) a. xiaohai ba ta xiang-de yao si.
child Ba him miss-De want die
'The child misses him extremely.'
b. *xiaohai ba ta xiang-de yao si.
child Ba him resemble-De want die
'The child resembles him extremely.'

cf.:

c. xiaohai xiang ta xiang-de yao si.
child resemble him resemble-De want die
'The child resembles him extremely.'

Of course, one can always create a story to accommodate the difference. For instance, if I am in fear of him (132b), he is always in control and he will not be the affected one even in a non-physical, imaginary sense. Such an 'explanation', however, will always be fuzzy, uncertain, unpredictable, and even circular in some cases. However, this does highlight the fuzziness and uncertainty of some uses of this construction. As mentioned, speakers often disagree on their judgments of *ba* sentences, especially those that fall in between the two extremes in

(131). Moreover, the same speaker may also make very different judgment in different contexts. For instance, although a sentence like (134a) below is judged not quite acceptable normally, it can become acceptable to the same speaker in a context where the *ba* NP 'I' was very much disgusted with 'his asking directions'. 'He' fully knows that 'I' don't know about directions and 'he' is trying to embarrass 'me'. Under such circumstances, (134b) can be uttered with total disgust and disbelief, as noted earlier:

(134) a. ??ta ba wo wen-le fangxiang.
he Ba I ask-Le directions
'He asked me directions.'
b. ta (jingran) ba wo wen-le fangxiang!!!
he surprisingly Ba I ask-Le directions
'(How dare he) He asked me directions.'

The vagueness and uncertainty, in a way, then, seem to be also an advantage: they reflect the uncertainty in speakers' judgments of many such sentences. It gives us a clue as to what the clearest acceptable and unacceptable *ba* cases are and to what would be more unsettling, allowing for more speaker variations and contextual variations. On the other hand, the weakness remains that it is extremely difficult to characterize the properties and claim in precise terms what may a priori be called an acceptable or unacceptable *ba* sentence.

It would therefore be very desirable to clarify and eliminate the fuzziness and uncertainty in characterizing this pattern, if possible. Indeed, there have been proposals claiming that the notion of 'affectedness/disposal' is unnecessary. Within such proposals, the *ba* construction is not unique. It can be subsumed under other, more common structures. Constraints on the *ba* construction can be derived from some better-defined structural or semantic properties. These alternative proposals offer insight into this construction from different perspectives and contribute to our understanding of the complex properties of this pattern. Unfortunately, it is the complexity of this pattern, reflected by the continuum in (131), that makes precise structural accounts for this pattern fall short empirically. Above all, there exist many minimal pairs with identical grammatical structures that exhibit different degrees of acceptability as a *ba* sentence because of the different contextual information involved. It is difficult to make such contextual information precise in grammatical terms. This casts doubt on the adequacy of capturing the usage of this pattern grammatically.

The most interesting attempts to provide a clearer, more precise grammatical account for the properties of the *ba* construction, in place of a vague notion of 'affectedness', are the aspectual approach represented by Liu (1997; also see Szeto 1988 and Yong 1993; cf. Zou 1995 for an aspect phrase selected by *ba*) and a structural approach that links the *ba* construction to accomplishment structures, proposed by Sybesma (1999). We examine these two approaches below, discuss their insights, and evaluate how effectively they tackle the complexity of the *ba* construction.

5.2 An aspectual approach

Assuming with Mei (1978) and Tenny (1987), among others, that affectedness is a property of the verb, Liu (1997: 93) notes that a *ba* sentence "may or may not have the property of affectedness." To support this claim, she gives the following sentence (her 1997: 94, (118)) to show that a *ba* sentence need not have an affectedness interpretation:

(135) ta ba yige dahao jihui cuoguo-le.
he Ba one-Cl big-good opportunity wrong-pass-Le
'He let a great opportunity pass.'

Liu argues, instead, that a *ba* construction is essentially a construction expressing a bounded event, and constraints on the *ba* construction are due to the aspectual properties of this pattern.

5.2.1 The analysis

Liu (1997) argues that a *ba* sentence requires its predicate to denote a bounded event or situation – 'bounded situations' are as defined in (136), which is a revised version of boundedness by Dahl (1981) in (137):

(136) Bounded situations do not have internal stages that are static or stages that can be viewed as such.

(137) **Dahl's definition of boundedness:**
A class of situations or a characterization of a situation (e.g., a sentence) is bounded if and only if it is an essential condition on the members of the class or an essential part of the characterization that a certain limit or end-state is attained.

The constraints on possible types of NPs and VPs of a *ba* sentence are manifestations of obligatorily expressing a bounded event/situation. Using the term 'event' to refer to denotations of predicates, presented in perfective or imperfective aspect, and 'situations' to refer to denotations of uninflected predicates, Liu argues that the notion of boundedness can be expressed in two ways: it can be bounded on the basis of the situation denoted by the uninflected predicate (situation type or situational aspect; see Vendler 1967a; Dowty 1979; Tai 1984; Teng 1986; Chen 1988; Smith 1991; Yong 1993), or it can be bounded when a situation of an appropriate type is presented in a certain aspect (viewpoint aspect). If the terminal point or resultative state is included in the meaning of the uninflected predicate, then the situation alone will guarantee boundedness. If, however, the terminal point or resultative state is included only when the situation is presented in an appropriate aspect, then a bounded event depends on both the situation and the aspect it is presented in. An appropriate aspect is a completive aspect *-le* or a durative aspect *-zhe* (see the discussions in section 2.4.6). According

to Liu, the notion of 'bounded situations/events' captures the fact that *ba* sentences generally take the following forms (Liu 1997: 62, (30a–i)):

(138) a. V + complement
b. V + *de*
c. V + retained object
d. V + perfective marker *le*
e. V + PP (dative or locative)
f. V + quantified phrase
g. V + *yi* + V
h. V + durative marker *zhe*
i. Adv + V

According to Liu, all patterns in (138) except those with aspect markers, i.e., (d) and (h), contain predicates which express bounded situations. Evidence for this claim comes from the fact that none of these patterns can occur with the durative marker *-zhe*, which is a marker that presents a continuous and stable situation without regard to end-points (Smith 1991). It basically marks a situation as stative or resultative (Liu 1997: 66). Some of her examples showing the incompatibility of the durative marker *-zhe* and the predicates in (138a–c, e–g, i) are repeated here (see Liu 1997: 68–69, (52a–g)):

(139) a. *wo ba wenti kan qingchu-zhe.
I Ba question see clear-Zhe
'I'm seeing the question clearly.'
b. *ta ba jia baochi-zhe-de hen ganjing.
he Ba home keep-ZHE-DE very clean
'He keeps his home very clean.'
c. *wo ba damen shang-zhe suo.
I Ba gate put-on-ZHE lock
'I'm locking the gate.'

That such predicates express a bounded situation can be understood along the lines presented in section 2: a result (including resultative complement, directional complement, and PP or object) or a number expression provides an end-point to the event. For instance, in a sentence like *wo bu-hui ba ta ti-tong* 'I will not kick him hurt', the result *tong* 'hurt' provides an end-point to the action of kicking. In *wo ba ta ti sanxia/sanjiao* 'I kicked him three times/three kicks', the number expression 'three times/three kicks' provides a terminal point for the action. An adverbial modifier can also provide an end-point (138i). Liu uses examples such as the following to illustrate this pattern (her 1997: 70–71, (59a–b)):

(140) a. ta zhengzai ba dongxi wang wuli ban.
he in-progress Ba things toward room-in move
'He is in the process of moving things into the room.'

b. ta ba tou yi tai.
he Ba head one raise
'He raised his head up.'

In (140a), the adverbial phrase 'into/toward the room' provides an end-point, and 'one' in (140b) serves the same function. Liu further argues that the constraints on possible *ba* NPs (specificity, existence; see section 5.1.3) can be derived from a dependency relation between the *ba* NP and the predicate:

> there is a dependency between the *ba* NP argument and the predicate, and boundedness and specificity are different manifestations of a property that holds of the dependency. The dependency can be characterized in terms of a very simple notion in semantics. The idea has been explored in Krifka (1989) and Dowty (1991), where the way the aspect of telic predicates depends on their NP arguments is captured in terms of a structure-preserving function – a homomorphism. (1997: 88–89)

Liu suggests taking

> the meaning of a *ba* predicate to be a homomorphism that maps the *ba* argument denotations into the domain of events, and the structure that is preserved in this case is the 'all of' relation. For example, *xiewan* 'write and finish' in *ba zhefengxin xiewan* 'write and finish the letter' maps *zhefengxin* 'this letter' to the event writing and finishing this letter. The 'all of' relation that is preserved in the mapping makes sure that all of the letter – the entire letter – is mapped to all of the event, i.e., finishing the letter. . . . When applied to the predicate, the 'all of' relation characterizes the event as bounded since only events that are bounded can enter into the 'all of' relation. Unbounded events like 'know Japanese' cannot be quantified because such events do not have boundaries – beginning point and terminal point – and it does not make sense to consider an 'entire' event of knowing Japanese. Only events with boundaries (both end points) provide a domain for universal quantification. Similarly, when it comes to NP denotation, the 'all of' relation makes sure that the individuals can be quantified by 'all of'. And only G(eneralized)-specific NPs denote individuals that can be quantified by 'all of'. (1997: 89–90)[51]

The notion of 'G-specific' Liu proposes differs from the notion of 'specific' used in other works. According to Liu (1990), G-specific NPs are the NPs that can be scope-independent in object positions. They can occur with the universal quantifier *dou* 'all' in Chinese. The forms they take are given in (141), in contrast to the non-G-specific NPs in (142) (Liu 1997: 86):

(141)	Definite NPs:	Demonstrative NPs, pronouns, names
	Universally quantified NPs:	*Suoyou de* N 'all of the N'
		Meige N 'every N'
	Most N:	*Daduoshu de* N 'most N'
		Dabufen de N 'most N'
	Some N:	*Mo xie* N 'certain N'
	Bare numeral Det: *two* N:	*Liangge* N 'two N'

(142) Decreasing NPs: *Shige yixia de* N 'fewer than ten N'
Modified numeral Det: *Shilaige* N 'about ten N'
San wu ge N 'three to five N'

According to Liu, the 'all of' relation dictates that only the type of NPs in (141) can be a *ba* NP.

Another important point of this analysis concerns the fact that a bare verb cannot occur in a *ba* sentence. According to Liu, even though 'read that book' and 'sell that car' should be considered a telic predicate (a definite object makes an activity verb telic), they do not denote a bounded situation because they cannot be modified by the duration phrase *zai X nei* 'in (amount of time)', with the interpretation 'complete/finish something in X' (1997: 72):

(143) a. *ni neng zai yige zhongtou-nei kan naben shu-ma?
you can at one-Cl hour-in read that-Cl book-Q
'Can you read that book in an hour?'
b. *wo xiwang zai yige xingqi-nei mai naliang che.
I hope at one-Cl week-in sell that-Cl car.
'I hope to sell that car in a week.'

Moreover, they are compatible with the durative marker *-zhe*. 'Read that book' thus contains internal stages that can be viewed as static and cannot denote a bounded event:

(144) wo zheng kan-zhe naben shu (ne).
I Prog read-Zhe that-Cl book Par.
'I am reading that book.'

Because such a telic predicate does not express a bounded situation, an aspect marker to express the notion of boundedness is necessary in a *ba* structure (to create a bounded event through the presentation of a situation from an approriate viewpoint). This captures the fact that the verb does not occur in the bare form:

(145) a. wo ba na-ben shu kan-*(le).
I Ba that-CL book read-Le
'I read that book.'
b. wo ba naliang che mai-*(le).
I Ba that-Cl car sell-Le
'I sold that car.'

Finally, Liu explains why the durative marker *-zhe*, such as the one in (146) below, can make a *ba* sentence:

(146) qing ni dai-zhe shoutao.
please you wear-Zhe gloves
'Please wear gloves.'

She suggests that this type of *ba*-sentences must be in the irrealis mode so that the sentence can express a bounded event: the inception of an action is included in the meaning of a sentence when it is in the irrealis mode. *-Zhe* provides the meaning of a resultative state: the resultative state holds. The inception and the resultative state combine to make a bounded event.

In brief, the requirement that a *ba* sentence must express a bounded event/situation is responsible for the constraints on possible types of NPs and VPs in the *ba* construction.

5.2.2 The issues

This analysis is very attractive, in that it captures the constraints on *ba* NPs and VPs in *ba* constructions through a simple requirement of 'boundedness'. The term is defined and does not suffer from the fuzziness of the 'affectedness' account.

Unfortunately, it is not clear that the argument given against an 'affectedness' account is convincing or whether such an aspectual account is adequate empirically. The main argument against an 'affectedness' account given by Liu is that a sentence like (135), repeated here, does not have an 'affectedness' interpretation:

(135) ta ba yige dahao jihui cuoguo-le.
he Ba one-Cl big-good opportunity wrong-pass-Le
'He let a great opportunity pass.'

However, given the loose notion of 'affectedness', it is very difficult to make a decisive claim that (135) does or does not have an 'affectedness' interpretation. Recall that a sentence such as *wo ba yaoshi wang le* 'I forgot the key' in (116a) in section 5.1.1.3, for instance, is an acceptable *ba* sentence that was subsumed under the notion of 'affectedness'. 'The key' in this sentence is no more or less 'affected' than 'a great opportunity' in (135). Indeed, Lü (1948: 128) assumes the following sentence, almost identical to (135), to be a disposal (affectedness) sentence as well:

(147) ba jihui cuo-guo-le.
Ba opportunity wrong-pass-Le
'(Subject) missed the opportunity.'

Nonetheless, if an aspectual approach can capture the constraints on *ba* constructions without resorting to the vague notion of 'affectedness', the analysis is much more desirable. We show below, however, that this attractive analysis falls short empirically and that the tests it relies on to determine boundedness are not adequate. We illustrate these problems in the following subsections.

5.2.2.1 Tests for predicates of bounded situations

Recall that in order to account for why an aspect marker *-le* is required in some cases, Liu claims that an activity verb plus a definite NP such as 'that book/car'

does not express a bounded situation in Chinese, even though the verb phrase is telic. The tests used were the (un)acceptability of a co-occurring time expression 'in an X-amount of time' and the compatibility with the durative marker *-zhe* (cf. (143–145)).

Consider the test using the time expression 'in an X-amount of time'. Such a test would lead us to expect that, if the object NP is replaced by some other types of NPs which allow the co-occurrence of 'in an X-amount of time', a *ba* sentence should be acceptable without *le*. However, this is not the case. For instance, (143) can be made acceptable by replacing the definite NP with a quantified or a number phrase:

(148) a. ni neng zai yige zhongtou-nei xiugai quanbu-de wenzhang-ma?
you can at one-Cl hour-in correct all-De article-Q
'Can you correct all the papers in an hour?'
b. wo xiwang zai yi-fengzhong-nei mai yiliang che.
I hope at one-minute-in sell one-Cl car.
'I hope to sell a car in a minute.'

Nevertheless, these expressions still cannot occur in a *ba* sentence with a bare verb. The aspect marker *-le* is still required:

(149) a. *wo ba quanbu-de wenzhang (dou) xiugai.
I Ba all-De article all correct
'I correct all the papers in an hour.'
b. wo ba quanbu-de wenzhang (dou) xiugai-le.
I Ba all-De article all correct-Le
'I correct all the papers in an hour.'

(150) a. *wo ba yiliang che mai.
I Ba one-Cl car sell
'I sold a car.'
b. wo ba yiliang che mai-le.
I Ba one-Cl car sell-Le
'I sold a car.'

One may argue that Liu probably is wrong in stating the requirement of *-le* for instances like (144) (see section 2.5 regarding the occurrence of *-le*) and such instances probably should simply express bounded situations after all, just like their English counterparts. However, this raises the question of what is a valid test to determine if a predicate expresses a bounded situation. Specifically, it is not clear why the contrast between (143) and (148) should exist, if the time phrase 'in an X-amount of time' is taken as a test for bounded situations.

Another test Liu uses to determine if a predicate expresses a bounded situation is compatibility with the durative marker *-zhe*. Specifically, the predicates in (138a–c, d–g, i) cannot occur with *-zhe*; therefore, they express a bounded situation.

Were this test to apply consistently, this approach would be quite precise and clearly defined. However, such a test is not always reliable: incompatibility with *-zhe* does not guarantee a *ba* sentence, and compatibility with *-zhe* does not necessarily brand a *ba* sentence for rejection, either. Liu (1997: 67) quotes Yeh's (1993) observation that *-zhe* marks a contingent state, not an absolute state. In other words, *-zhe* does not occur with individual-level predicates but only with stage-level predicates. It therefore does not occur with verbs like *zhidao* 'know' or *xing* 'be surnamed as'. Although *-zhe* does not occur with an individual-level predicate, such a predicate does not normally occur in a *ba* pattern:

(151) a. *ta xihuan-zhe wo.
he like-ZHE me
'He is liking me.'
b. *ta ba wo xihuan(-zhe).
he Ba me like-ZHE
'He likes/is liking me.'

Note that one cannot simply say that such verbs express an 'absolute state', not a 'contingent state', and this is why *-zhe* cannot occur with them and they are not acceptable in a *ba* sentence independently. To see why, recall the discussion in section 5.1 regarding 'imaginary' or 'emotional' affectedness. For instance, a stative verb like *hen* 'hate' does not occur with *-zhe* and, generally, does not occur in a *ba* sentence. However, strong modification makes a *ba* sentence acceptable:

(152) a. *ta hen-zhe wo.
he hate-ZHE me
'He is hating me.'
b. *ta ba wo hen(-zhe).
he Ba me hate-ZHE
'He hates/is hating me.'

cf.:

c. ta ba wo hen-de ya yang-yang-de.
he Ba me like-De tooth itchy-itchy-De
'He hated me so much that his teeth became itchy.'

Moreover, as noted in section 2.4.8, when a *de* complement (138b) is a descriptive complement, it cannot occur in a *ba* sentence, as illustrated in (66). Such predicates cannot occur with *-zhe* either:

(153) *ta jintian-de gongke xie-zhe-de hen kuai.
he today-De homework write-Zhe-De very fast
'He was writing today's homework fast.'

Finally, it is not quite clear that *-zhe* can make a good *ba* sentence because it is in an irrealis mode. The following examples show that such *ba* sentences can be a complement to *kan* 'see', which does not necessarily include the inception of an action:

(154) wo qu ta-jia shi, kan ta ba haizi bao-zhe, hai ba lanzi
I go he-home when see he Ba child hold-Zhe and Ba basket
na-zhe, haoxiang yao chu-qu-de yangzi.
take-Zhe like will out-go-De appearance
'When I went to his home, I saw him holding the child, holding the basket, as if he was going out.'

In brief, the two tests Liu uses to determine if a predicate expresses a bounded situation, namely incompatibility with *-zhe* and compatibility with the time expression 'in an X-amount of time', do not work adequately. This account, consequently, loses an important foundation: the ability to determine whether a predicate expresses a bounded situation so that the acceptability of a *ba* construction can be determined.

Regardless of the validity of the tests to determine boundedness of a predicate, empirical problems exist.

5.2.2.2 Bounded events/situations not acceptable as *ba* sentences

Liu's main claim is that a *ba* sentence always expresses a bounded event/situation. If a predicate expresses a bounded situation or is presented in the appropriate aspect to express a bounded event, it should be acceptable as a *ba* sentence. However, many instances exist where bounded events/situations are expressed, but they do not make acceptable *ba* sentences.

First, there are predicates that express bounded situations but fail to make an acceptable *ba* sentence. For instance, the most typical bounded predicates (accomplishment verb phrases) are [V + result] expressions (138a); yet they do not always make an acceptable *ba* sentence:

(155) a. ta zhexie wenzhang dou kan-de hen shengqi.
he these article all read-De very angry
'He got angry from reading all these articles.'
b. *ta ba zhexie wenzhang dou kan-de hen shengqi.
he Ba these article all read-De very angry
'He got angry from reading all these articles.'

(156) a. wo zhe-ping-jiu he-zui-le.
I this-Cl-wine drink-drunk-Le
'I have drunk the wine drunk.'
b. *wo ba zhe-ping-jiu he-zui-le.
I Ba this-Cl-wine drink-drunk-Le
'I have drunk the wine drunk.'

Indeed, it seems possible to find counter-examples for all the patterns in (138). We have already discussed cases which illustrate the unacceptability of [V-*de*] (138b) in a *ba* sentence (section 2.8). Let us demonstrate the same point with a few more examples. The pattern (138c), V+ retained object, for instance, is illustrated in (157a–b), which are unacceptable as a *ba* sentence:

(157) a. *tufei ba ta baifang-le fuqin.
bandit Ba him visit-Le father
'The bandit visited his father.'
b. *women ba ta tanlun-le xiaohai.
we Ba him discuss-Le child
'We discussed his child.'

Take (138f) as another instance. For Liu (1997: 56), when a verb occurs with a quantified phrase (number phrase), it expresses a bounded event. A quantified phrase can be a duration or a frequency phrase. That is, if a verb is followed by a duration or frequency phrase, the predicate expresses a bounded situation and is predicted to occur in the *ba* form. However, counter-examples, again, are not difficult to find:

(158) a. wo renshi ta san-nian-le.
I know him three-year-Le
'I have known him for three years.'
b. *wo ba ta renshi san-nian-le.
I Ba him know three-year-Le
'I have known him for three years.'

cf.:

(159) wo ba ta qipian/nuedai san-nian-le.
I Ba him cheat/maltreat three-year-Le
'I have cheated/maltreated him for three years.'

Finally, although *-le* can be used with a predicate which does not express a bounded situation in the appropriate (perfective) aspect in order to establish a bounded event, there are many instances which show that the addition of *-le* still fails to make an acceptable *ba* sentence:

(160) a. *ta ba na-difang likai-le.
he Ba that-place leave-Le
'He left that place.'
b. *ta ba qiu-sai canjia-le.
he Ba ball-game participate-Le
'He participated in the ball game.'

c. *ta ba na-ge canting baifang-le.
he Ba that-Cl restaurant visit-Le
'He visited that restaurant.'
d. *ta ba wode mingling fucong-le.
he Ba my order obey
'He obeyed my order.'
e. *ta yijing ba mei-jian-shi dou zhidao-le.
he already Ba every-Cl-matter all know-Le
'He has already known everything.'
f. *ta ba zhe-zhi-mao zhaogu-le.
he Ba this-Cl-cat care-Le
'He cared for this cat.'

In brief, many instances exist which are not acceptable in the *ba* form, although they conform to the patterns listed in (138) and do express a bounded situation/event.

5.2.2.3 Non-bounded events/situations acceptable as *ba* sentences

On the other hand, there are cases which do not express bounded events/situations, yet are acceptable as a *ba* sentence. This is especially true with the pattern in (137i) [Adv + V]. Recall that a preverbal adverbial may contribute to make a *ba* sentence acceptable. The examples given by Liu are (140a–b). The addition of an appropriate adverbial makes a predicate denote a bounded situation. However, closer examination of the relevant examples shows that such adverbials do not make the predicate a bounded one. Take Liu's example (140a), repeated below, for instance:

(140) a. ta zhengzai ba dongxi wang wuli ban.
he in-progress Ba things toward room-in move
'He is in the process of moving things into the room.'

Although Liu translated the predicate as 'moving things into the room', a more appropriate translation would be 'moving things toward the room'. *Wang* 'toward' simply expresses direction, rather than reaching a destination 'into'. Such a predicate is not compatible with the time expression 'in an X-amount of time' (the test used by Liu to determine if a predicate expresses a bounded situation):

(140') *ta zai yige-zhongtou-nei ba dongxi wang wuli ban.
he at one-hour-in Ba things toward room-in move
'He moved things toward the room in an hour.'

In other words, the adverbial phrase does not make the predicate express a bounded situation. Yet this predicate is acceptable in a *ba* sentence.

There are other adverbial phrases which behave in the same way. Take preverbal manner adverbs, for instance. Such adverbs can help to make a good *ba* sentence but do not make the predicate express a bounded situation. 'Carefully',

for example, can occur preverbally without making the predicate bounded, as illustrated by the acceptability of a progressive marking:

(161) ta zheng-zai zixi-de nian-zhe na-pian wenzhang.
he right-at carefully read-Asp that-Cl article
'He was carefully reading that article.'

It can also occur in a command, in contrast to a postverbal descriptive phrase (see (128a–b) in section 5.1):

(162) zixi-de nian!
carefully read
'Read carefully!'

The time expression 'in an X-amount of time' is incompatible:

(163) *ni zai yige zhongtou-nei zixi-de nian naben shu-ma?
you at one-Cl hour-in carefully read that-Cl book-Q
'Did you read that book carefully in an hour?'

The unacceptability of (163) indicates that *zixi-de nian* 'read carefully' is not an accomplishment predicate. The possibility of a progressive in (161) and the acceptability of a command in (162) indicate that *zixi-de kan* remains an activity verb phrase. However, such an unbounded predicate can occur in the *ba* form:

(164) ni bu ba zhe-wenzhang zixi-de nian, zen hui zhao-chu wenti?
you not Ba this article carefully read how will find-out question
'If you don't read the article carefully, how can you find problems?'

Recall also that the sentence given by Chao (1968: 348) quoted as (63f) also does not contain a bounded predicate:

(63) f. ta ba jiu bu-ting-de he.
he Ba wine not-stop-De drink
'He drank without stop.'

It is even possible for the durative marker *-zhe* to occur with the verb (this example is not in the irrealis mode either):

(165) ta ba jiu bu-ting-de he-zhe.
he Ba wine not-stop-De drink-Zhe
'He was drinking without stop.'

Furthermore, for Liu, the example in (154) discussed earlier, regarding the use of *-zhe* as a durative marker in the past time rather than in the irrealis mode, also presents a problem for the notion of bounded situations/events. This example is repeated below:

(154) wo qu ta-jia shi, kan ta ba haizi bao-zhe, hai ba lanzi
I go he-home when see he Ba child hold-Zhe and Ba basket
na-zhe, haoxiang yao chu-qu-de yangzi.
take-Zhe like will out-go-De appearance
'When I went to his home, I saw him holding the child, holding the basket, as if he was going out.'

Such examples illustrate the empirical problem that expressions which do not express bounded situations/events can still be acceptable as a *ba* construction.

In short, to claim that a bounded event or situation makes an acceptable *ba* sentence is both too weak and too strong empirically. There are cases of bounded events/situations unacceptable as a *ba* sentence and cases of non-bounded events/situations acceptable as a *ba* sentence.

5.2.2.4 The *ba* NP

Recall that Liu further derives the specificity (G-specificity) constraint on *ba* NPs by resorting to an 'all of' homomorphism relation between a bounded predicate and a *ba* NP. She claims that a *ba* NP must participate in all the event from the beginning to the end-point. That is, a *ba* NP must be able to quantified by 'all of'. An important test used is the occurrence of *dou* 'all': only an NP that can occur with *dou* can be a *ba* NP (cf. (141–142). For instance, the *ba* NP in the following sentence is interpreted as specific and is a participant of the event from the beginning to the end. It can co-occur with *dou*:

(166) wo hui ba san-ben shu dou fang-zai zhuo-shang.
I will Ba three-Cl book all put-at table-on
'I will put all three books on the table.'

This captures many interesting constraints, such as the difficulty of a non-G-specific NP serving as a *ba* NP and the difficulty of a *ba* NP occurring with verbs of creation (*manufacture*) or perception verbs (*see*, *hear*). Indeed, this accommodates the generalizations concerning the *ba* NP discussed in section 5.1.

The problem, however, is that the constraints on *ba* NPs are not as rigid as we would wish for. There are many examples which do not fall within the account. For instance, the example (63f) by Chao just quoted above does not seem to require the wine to be presented in an 'all of' relation. Moreover, it is not clear what it means that the *ba* NP must be able to be quantified by 'all of'. When a *ba* NP is a singular NP, is it also quantified by 'all of'? Note that the addition of the universal quantifier *dou* 'all' is not possible when the individual to be quantified over is singular. Independently, a singular NP just cannot be quantified by *dou*:

(167) a. wo ba ta xiang-de yao-si.
I Ba him miss-De want-die
'I missed him so much (that I want to die).'

b. *wo ba ta dou xiang-de yao-si.
I Ba him all miss-De want-die
c. ta (*dou) xiang-de yao-si.
he all miss-De want-die
'He missed so much (that he wants to die).'

(168) a. wo ba zhe-pi-ma qi-le yici.
I Ba this-Cl-horse ride-Le once
'I rode the horse three times.'
b. *wo ba zhe-pi-ma dou qi-le yici.
I Ba this-Cl-horse all ride-Le once
c. zhe-pi-ma (*dou) qi-le yici.
this-Cl-horse all ride-Le once
'This horse was ridden once.'

There are also instances which are clearly listed in Liu's category of non-G-specific NPs (142), not allowing the occurrence of *dou*, but do appear in a *ba* construction. Expressions such as *budao aifen-zhi-yi* 'less than 1 percent' and *san dao wu ge* 'three to five' in the following sentences are such examples:

(169) a. anzhao guiding ni zhi neng ba budao baifenzhiyi-de yingyu
according rule you only can Ba less-than 1 percent-De profit
na-lai gei yuangong feng hong.
take-come to employee distribute bonus
'According to the rules, you can only take less than 1 percent of the profit to distribute to the employees as bonus.'
b. *budao baifenzhiyi-de yingyu dou gei yuangong feng hong-le.
less-than 1 percent-De profit all to employee distribute bonus-Le
'Less than 1 percent of the profit was all distributed as bonus to the employees.'

(170) a. wo zuiduo zhi neng ba san-dao-wu-pian xiugai-hao-de wenzhang
I most only can Ba three-to-five-Cl corrected-De article
na-chulai gei ni kan.
take-out for you read
'I can only bring at most three to five corrected articles for you to read.'
b. *san-dap-wu-pian xiugai-hao-de wenzhang dou gei ni kan.
three-to-five-Cl corrected-De article all for you read
'Three to five corrected articles are for you to read.'

On the other hand, there are also instances allowing the occurrence of *dou* which are not acceptable as a *ba* form. The examples in (155a–b) we saw earlier, for instance, demonstrate the acceptability of *dou* with an NP which cannot be a *ba* NP:

(155) a. ta zhexie wenzhang dou kan-de hen shengqi.
he these article all read-De very angry
'He got angry from reading all these articles.'
b. *ta ba zhexie wenzhang dou kan-de hen shengqi.
he Ba these article all read-De very angry
'He got angry from reading all these articles.'

Summarizing, although Liu's account based on the notion of 'boundedness' is quite attractive, it falls short empirically. It does not account for why some *ba* sentences are acceptable with an unbounded predicate and some other *ba* sentences are unacceptable with a bounded predicate. The derivation of the properties of *ba* NPs from a homomorphism relation with a bounded predicate may capture the core cases (cf. the continuum in (131)); however, the facts are not as clean and clear as the analysis predicts.

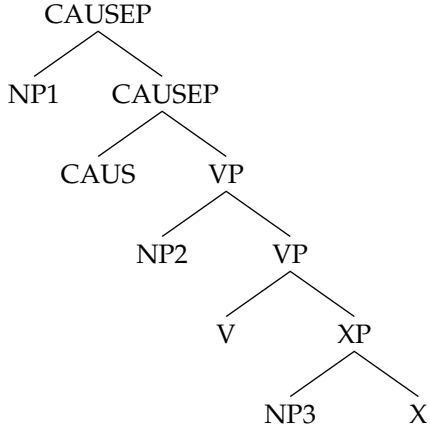
5.3 An event-structural account

Sybesma (1999), revised from his 1992 dissertation, is a very interesting work that incorporates the interpretation of and the semantic (pragmatic) constraints on the *ba* construction into the syntactic structure. This represents the best syntactic structural effort to account for the properties of the *ba* construction. Unfortunately, the complexity of the *ba* construction still evades an adequate structural description.

5.3.1 The analysis

Sybesma proposes that *ba*-sentences are always CAUS-sentences in some abstract sense. The VP (comprising the V after the *ba* NP and the embedded XP) does not have an external argument. The subject of the sentence (NP1 in (171) below) bears the role of the causer; in other words, it bears a semantic relation to the head CAUS (not to the VP):

(171)



In this structure, NP1 is the subject of the sentence. NP2 and NP3 are related by NP-movement, NP3 being the trace. The head of the CAUSP (for CAUS Phrase) is phonologically filled either by way of insertion of *ba* or by movement of the head of VP (Sybesma 1999: 170). The latter derives a non-*ba* sentence with an accomplishment VP. The former derives a *ba* sentence. Because *ba* is only a phonological filler, interpretations are the same for structures derived by verb-raising or *ba*-insertion. That is, a *ba* sentence does not carry a special meaning. It is just like a non-*ba* sentence with an accomplishment predicate. Both express a result or an end-point: the VPs embedded under CAUS must be unaccusatives, which are "characterized by the fact that they involve an end point" (1999: 178). The *ba* NP is the subject of the underlying result small clause (the end-point) and is the theme that undergoes a change of state or location.

This structure, according to Sybesma, can be paraphrased as "the subject causes the *ba*-NP to undergo the event denoted by the VP." Revised slightly to be distinct from the lexical causative cases, such as those with causative verbs *shi* 'make' or *rang* 'let', the structure is interpreted as follows: "the subject of the sentence (the causer) brings about a new state of affairs which results from the event denoted by V" (1999: 178). Importantly, the *ba* NP is not independently mentioned and is only semantically dependent on the embedded predicate. It is part of the resulting state. This is a departure from the 'affected/disposal' tradition: a *ba* sentence is no longer viewed as primarily aimed at disposing of the *ba* NP. The paraphrase applies to all causatives and accomplishments, or simply, all are accomplishments. That is, the structure in (171) is the structure for both *ba* and accomplishment sentences. When verb-raising takes place, it is an accomplishment sentence; when *ba* is inserted, it is a *ba* sentence.

This structure derives the constraints on the *ba* construction, according to Sybesma. The apparent specificity requirement on the *ba* NP (the *ba* NP must be specific) and the 'affectedness' of the *ba* NP follow from the fact that the structure expresses a bounded event. "An event is bounded if it contains an object which is affected and quantificationally closed" (1999: 173). The relevant factor for the 'affectedness' of the *ba* NP is the "change of state" (1999: 175).

Sybesma's contribution is to approach the *ba* construction with its specific interpretation and constraints from a structural perspective. The notion of 'structural dynamism' is central to the analysis: the structure determines the meaning, rather than the theta-theory or thematic structures of individual lexical items. Structures are generated (Generate a) and lexical items are interpreted accordingly. The *ba* construction is simply realization of a CAUS head in the CAUSP of an event structure. The event structure has a CAUS head subcategorized for a VP that is an unaccusative (without a subject, necessarily involving an end-point). When the unaccusative verb is not raised to the CAUS head, it is spelled out as *ba*. The *ba* construction is not unique at all. It is just a variation of a construction with an accomplishment verb phrase, and the verb-raising process is replaced by *ba* insertion. The constraints on possible types of NPs and VPs in a *ba* sentence follow from the event structure (bounded event; cf. Liu's analysis in the previous section).

5.3.2 The issues

Despite its attractiveness in eliminating the vague notion of disposal/affectedness and providing a more concrete structural analysis for the *ba* construction, this analysis still encounters difficulties in face of the complexities of *ba* constructions.

5.3.2.1 A *ba* sentence and the non-*ba* counterpart

The main claim of this approach is that a *ba* sentence and a non-*ba* accomplishment have identical structures, which only differ in whether verb-raising takes place or a dummy *ba* is inserted. It is not clear that *ba* sentences and non-*ba* accomplishments are indeed identical. Liu (1997: 60), while reviewing Sybesma (1992), observes that "this hypothesis runs into difficulty both ways: there are *ba* sentences with non-accomplishments and sentences of accomplishments which nonetheless cannot occur with *ba*, as seen in [172] [173] respectively:"

(172) women dou ba Laowang dangzuo laoshi.
we all Ba Laowang take-as teacher
'We all consider Laoang as our teacher.'

(173) *wo dasuan mingtian ba nei-ben-shu kan.
I plan tomorrow Ba that-Cl-book read
'I plan to read that book tomorrow.'

According to Liu, in (172), *dangzuo laoshi* 'take as teacher' is not an accomplishment but an achievement; on the other hand, in (173), *kan nei-ben-shu* 'read that book' is a typical case of accomplishment, and yet it does not license *ba*. These cases, therefore, suggest that the *ba* predicate cannot be equated with accomplishments.

Liu's reservations concerning equating a *ba* predicate with an accomplishment are legitimate. However, these two cases may not be really serious problems, because Sybesma can try to expand his system to include the achievements that can appear in a *ba* pattern (after all, (172) does involve a result clause *zuo laoshi* 'as a teacher') and because the unacceptability of (173) need not be specific to the *ba* pattern (cf. the discussion in section 3 on the *ka* counterpart in Taiwanese). Nonetheless, these considerations do point out the importance of not equating a *ba* predicate with an accomplishment. These two do not always have the same structures or the same requirements. Otherwise, all *ba* predicates would be accomplishments and all accomplishments would have a *ba* counterpart. The former hypothesis would exclude cases like (172). With respect to the latter, there are many accomplishments that do not allow a *ba* counterpart. Some of such examples are those discussed in the previous section (155–160). In these cases, we see that *kan-de hen shengqi* 'read and get angry' and *he-zui* 'drink-drunk' (accomplishment) can occur in a non-*ba* sentence but not in a *ba* sentence. This contrast is not expected if *ba* and accomplishment sentences have identical structures and interpretations, and *ba* is simply a dummy inserted to the CAUS head position when verb raising does not take place. In other words, if indeed (156a–b), for instance, are derived by the raising of the compound verb *he-zui* 'drink-drunk' and, when this compound verb is not raised, *ba* is inserted, (156b) should be as

acceptable or as unacceptable as (156a). Of course, Sybesma can distinguish non-*ba* accomplishments from *ba* cases by specifying that a *ba* NP is always "the subject of the small clause complement of the verb" (1999: 179). Taking this step, however, would require making a special statement for the *ba* construction, rather than making it a more general claim that the *ba* construction is just an accomplishment and all accomplishments, even all transitives, have the same structure and interpretation (Sybesma 1999: chapter 7).

5.3.2.2 The *ba* NP as subject of the result phrase

Considering the *ba* construction alone, then, one may argue that Sybesma's analysis can be adopted as long as we specify that a *ba* NP must be the subject of the result clause. However, this still faces challenges. There are cases of *ba* sentences that are quite acceptable but where *ba* is not interpreted as the subject of the result clause. In the earlier examples (103–104), quoted from Li and Thompson (1981: 469), for instance, the result clause 'he won't even eat his meals'/'wants to die' does not take the *ba* NP as its subject. Instead, it is interpreted as referring to the subject of the matrix clause:

(103) ta ba ni xiang-de fan dou bu-ken chi.
he Ba him miss-De food even not-willing eat
'He misses you so much that he won't even eat his meals.'

(104) Lisi ba xiao-mao ai-de yao si.
Lisi Ba small cat love-De want die
'Lisi loves the kitten so much that he wants to die.'

Such examples are not isolated ones. They are quite common. (152c), discussed earlier, is another example, where the subject of the result clause is the matrix subject:

(152) c. ta ba wo hen-de ya yang-yang-de.
he Ba me like-De tooth itchy-itchy-Par
'He hated me so much that his teeth became itchy.'

More such examples are illustrated below. In (174a), the result clause has a lexical subject that is the same as the matrix subject. The result expression *hui* in (174b) is interpreted as taking the matrix subject as its subject: *wo hui youyong* 'I am capable of swimming'. In (174c), the result expression *dong* should take the matrix subject as its subject, rather than the *ba* NP; the *ba* NP is the object of the result expression: *ta dong-le wenzhang-le* 'He understood the article'. The result expression *tou* 'thorough' in (174d) is more like a degree modifier of the verb, the hatred being thorough, rather than being a predicate of the *ba* NP. Similarly, the "result" expression *hen zixi* 'very careful' in (174e) modifies the verb, rather than functioning as the predicate of the *ba* NP. If *hen zixi* can have a subject at all, it is the action, not the *ba* NP, that functions as the subject: *ta de kaolu hen zixi* 'his thinking is careful'; cf. **zhe shi hen zixi* 'this thing is careful':

(174) a. wo ba ta ma-de wo-ziji dou shou-bu-liao!
he Ba him scold-De myself all put-not-up
'I scolded him so much that I could not stand it myself.'
b. deng wo xian ba youyong zhende xue-hui yihou zai
wait I first Ba swimming really study-capable after then
gen ni bi.
with you race
'Let me first really learn to swim and then I will race against you.'
c. xian rang ta ba wenzhang nian-dong yihou zai wen
first let him Ba article read-understand after then ask
ta wenti ba!
him question Par.
'Let him first understand the article and then ask him questions.'
d. ta yiding hui ba ni hen-tou-de.
he definitely will Ba you hate-thorough-particle
'He will definitely hate you thoroughly.'
e. wo ba zhe-shi kaolu-de hen zixi.
I Ba this matter think-De very carefully
'I thought about the matter carefully.'

To be noted, however, is that the *ba* NP is still the object of the verb in these cases. All these examples show that it is acceptable for a *ba* NP to be simply the object of the verb without being the subject of the result clause (cf. the generalization in (29) that a *ba* NP is a V-object or a V'-object).

5.3.2.3 Absence of a result clause

The above section shows that, although a *ba* sentence may contain a result/extent expression, such an expression need not interpret the *ba* NP as its subject. This casts doubt on the appropriateness of Sybesma's analysis, outlined in (171). A further problem is that a result expression need not even exist. As shown earlier, there are cases expressing an unbounded event – without an end-point – such as the examples discussed earlier in section 5.2.2.2 concerning unbounded events, as in (164–165) (repeated below) and (63f):

(164) ni bu ba zhe-wenzhang zixi-de nian, zen hui zhao-chu wenti?
you not Ba this article carefully read how will find-out question
'If you don't read the article carefully, how can you find problems?'

(165) ta ba jiu bu-ting-de he-zhe.
he Ba wine not-stop-De drink-Zhe
'He was drinking without stop.'

Other examples, such as (140a) discussed earlier, also denote an unbounded situation/event and do not have a result complement. (Recall that the translation should be 'toward the room' in contrast to Liu's 'into the room'.)

(139) a. ta zhengzai ba dongxi wang wuli ban.
he in-progress Ba things toward room-in move
'He is in the process of moving things [toward] the room.'

5.3.2.4 Placement of adverbials

The fact that a *ba* sentence and its non-*ba* counterpart only differ in whether V is raised to CAUS or whether *ba* spells out CAUS in the structure (171) also faces problems with the placement of adverbials. As mentioned, some adverbials can occur before or after the *ba* NP. However, such adverbials do not occur postverbally (see the discussions in sections 4.1–4.2). If *ba* is only a filler inserted when verb-raising does not take place, it is not clear why the relevant adverbial cannot occur postverbally, when it can occur after *ba*.

5.3.3 Summary

In brief, it is doubtful that a *ba* construction is the same as sentences with accomplishment predicates in sharing the structure in (171), with their only difference being in whether CAUS is filled by a raised V or by an inserted *ba*. There are many accomplishments that do not have a *ba* counterpart, and a *ba* sentence need not be an accomplishment. The two patterns are not always identical in acceptability and interpretation. A *ba* sentence, therefore, needs to be distinguished from simply accomplishments. Moreover, it is not true that a *ba* NP is always the subject of an unaccusative predicate (the result). There are cases where the result clause takes the matrix subject as its subject, and instances which denote unbounded events; i.e., a result clause is not a constituent within the *ba* sentence. Finally, the distribution of adverbials in a *ba* sentence and its non-*ba* counterpart fails to be accounted for.

5.4 Affectedness revisited

We discussed in section 4 the structural properties of the *ba* construction. Structurally, a *ba* NP must be a V-object (inner object) or a V'-object (outer object, assigned an 'affected' theta-role by a complex predicate that consists of V and its object). This over-generates greatly, however. Not all objects can be a *ba* NP. Constraints also exist on the types of Vs or VPs allowed in a *ba* sentence. The issue is how these constraints can be captured. We discussed in sections 5.1–5.3 approaches from different perspectives: (i) an interpretation/pragmatics approach that relies on a vague notion of 'affectedness'; (ii) an aspectual approach that requires a *ba* sentence to express a bounded situation or event; and (iii) an event structure approach that subsumes *ba* sentences under those with accomplishment predicates. All three approaches are completely satisfactory when only the canonical cases of the *ba* construction are considered, i.e., those containing a result expression with a *ba* NP as the subject: *wo ba cai chao-de hen lan* 'I stir-fried the vegetable quite mushy'. These are also the kind of *ba* sentences most frequently used and most readily accepted by speakers. The problem, however, is that the 'non-canonical' cases, those not having the pattern [V + result], are also

widely used. The acceptability of some such sentences is also more heavily subject to individual variations or uncertainty.

The aspectual approach and the event structure approach are both too weak and too strong. Both approaches have the problem of over-generation. They cannot predict why many accomplishments or many sentences of bounded situations/events cannot be acceptable *ba* sentences. At the same time, both approaches fail to generate those *ba* sentences that express unbounded situations/events and those cases where the *ba* NP is not the subject of the result expression. The 'affectedness' approach is harder to evaluate because the notion of 'affectedness' is so vague, especially when imaginary effects are included. This approach, however, does differ from the other two in this respect: while the latter express the constraints on the *ba* pattern in terms of event structures or aspectual structures (explicit linguistic representations), the former expresses the constraints without explicit linguistic representations. They are within the realm of world knowledge, speaker intention, hearer perception, etc. Recall Li and Thompson's explanation of why sentences like (103) and (104), repeated here, are acceptable:

(103) ta ba ni xiang-de fan dou bu-ken chi.
he Ba him miss-De food even not-willing eat
'He misses you so much that he won't even eat his meals.'

(104) Lisi ba xiao-mao ai-de yao si.
Lisi Ba small cat love-De want die
'Lisi loves the kitten so much that he wants to die.'

They stated that the use of the postverbal expression in (103) greatly exaggerates the degree of his missing you. "It is as if one cannot help thinking that you are affected in some way when he misses you to such an extent that he can't even eat" (Li and Thompson 1981: 469). The added expression *yao si* '(he) wants to die' in (104) hypothetically creates an image that such intense love must have some effect on the 'small cat'. Accordingly, the disposal idea is implied by the verb together with the added expression.

Although such explanations are vague and depend greatly on speakers' interpretations, they seem to be the nature of the constraints on the use of *ba* sentences. Again, take variations of (104), for instance. We find the following contrast:

(175) a. Lisi ba xiao-mao ai-de feng-le.
Lisi Ba small cat love-De crazy-Le
'Lisi loves the kitten so much that he is going crazy.'
b. Lisi ai xiao-mao ai-de feng-le.
Lisi love small cat love-De crazy-Le
'Lisi loves the kitten so much that he is going crazy.'

(176) a. *Lisi ba xiao-mao pa-de feng-le.
Lisi Ba small cat fear-De crazy-Le
'Lisi fears the kitten so much that he is getting crazy.'

b. Lisi pa xiao-mao pa-de feng-le.
Lisi fear small cat fear-De crazy-Le
'Lisi fears the kitten so much that he is getting crazy.'

(175a) is much better than (176a) as a *ba* sentence. The two sentences, however, are identical with respect to aspectual structures or event structures. Further note that their non-*ba* counterparts are equally acceptable.

Such instances abound: many sentences are identical with respect to representable linguistic structures and they are equally acceptable as a non-*ba* sentence; yet they, again, differ greatly in acceptability as a *ba* sentence:

(177) a. wo ba ta da-le yixia.
I Ba him hit-Le a bit
'I hit him a bit.'
b. wo da ta da-le yixia.
I hit him hit-Le a bit
'I hit him a bit.'

(178) a. ??wo ba ta zhaogu-le yixia.
I Ba him care-Le a bit
'I took care of him a bit.'
b. wo zhaogu ta zhaogu-le yixia.
I care him care-Le a bit
'I took care of him a bit.'

(179) a. women ba ta shuo-le yici.
we Ba him say-Le once
'We said to him (mildly scolded him) once.'
b. women shuo ta shuo-le yici.
we say him say-Le once
'We said to him (mildly scolded him) once.'

(180) a. *women ba ta taolun-le yici.
we Ba him discuss-Le once
'We discussed him once.'
b. women taolun ta taolun-le yici.
we discuss him discuss-Le once
'We discussed him once.'

The contrast between the pairs of sentences, (177) and (178), (179) and (180), is a puzzle under any structural account, either an aspectual structure or an event structure account. On the other hand, an advocate of the 'affectedness' approach may claim that it is easier to interpret the one being hit in (177) as the one affected than the one being taken care of (178), and that it is easier to interpret the one being (mildly) scolded (179) as the one affected than the one being discussed

(180). Although it is impossible to verify such an account, it, nonetheless, points to the inadequacy of a clearly defined structural account.

More examples illustrate the futility of a clearly defined structural account. The following two sets of sentences only differ in the noun used as a *ba* NP: *zhe-dun-fan* 'this-Cl-meal' vs. *zhe-pan-cai* 'this-Cl-dish':

(181) deng wo ba zhe-dun-fan chi-bao yihou zai chu-qu.
wait I Ba this-Cl-meal eat-full after then out-go
'Wait till I eat-full this meal (I get full from eating this meal), I will go out.'

(182) *deng wo ba zhe-pan-cai chi-bao yihou zai chu-qu.
wait I Ba this-Cl-dish eat-full after then out-go
'Wait till I eat-full this dish (I get full from eating this dish), I will go out.'

The acceptability of (181) is especially surprising. Normally, *ba fan chi bao* 'Ba meal eat-full', along with *ba jiu he zui* 'Ba wine drink-drunk', has been marked unacceptable as a *ba* predicate and has been used as a typical example to support the claim that a *ba* NP must be the subject of a result clause. Indeed, *ba zhe-dun-fan chi-bao* 'Ba this meal eat-full' is not acceptable in all contexts. There seems to be a contrast between the following two sentences:

(183) a. wo hai mei ba zhe-dun-fan chi-bao-ne!
I still not Ba this-Cl-meal eat-full-Par.
'I haven't finished the meal yet!'
b. *wo ba zhe-dun-fan chi-bao-le.
I Ba this-Cl-meal eat-full-Le
'I finished the meal.'

However, it is not clear how these sentences can be distinguished structurally. Equally challenging to a structural account is the fact that (181'), which has the identical pattern to (181) and contains the other famous predicate *ba jiu he zui* 'Ba wine drink-drunk', is still not acceptable as a *ba* sentence:[52]

(181') *deng wo ba zhe-ping-jiu he-zui yihou zai chu-qu.
wait I Ba this-Cl-wine drink-drunk after then out-go
'Wait till I eat-full this meal (I get full from eating this meal), I will go out.'

Structurally, these cases are identical; it is simply not clear how a structural account can accommodate such different acceptability of *ba* sentences.

We also saw earlier, in section 3, examples like the following, which only differ in the *ba* NP used, and were subsumed under the notion of 'affectedness':

(120) ta ba wo wen-le yi-da-dui hen-nan-de wenti.
he Ba me ask-Le one-big-pile very-difficult-De question
'He asked me many difficult questions.'

(121) ??ta ba wo wen-le fangxiang.
he Ba me ask-Le directions
'He asked me directions.'

The following two sentences only differ in the use of the adverb:

(184) ni ruguo bu ba shu zixi-de nian, zenme neng dong-ne?
you if not Ba book carefully read how can understand-Q
'If you don't study the book carefully, how can you understand?'

(185) ??ni ruguo bu ba shu anjing-de nian, zenme neng dong-ne?
you if not Ba book quietly read how can understand-Q
'If you don't study the book quietly, how can you understand?'

It may be easier to understand that, if one reads a book carefully, it is more likely that every word in the book will be read; but this is less likely to be the case when one reads a book quietly. There is more connection with ('effect' on) the book by careful reading than quiet reading. Of course, such 'explanations' cannot be verified. Nonetheless, they also defy the structural accounts proposed.

The following sentences only differ in the duration phrases used: one expresses a stronger degree of hatred (hatred for life) than the other (just temporary hatred):

(186) ta ba wo hen-le yi-beizi.
he Ba me hate-Le one-life
'He hated me for a whole life.'

(187) ??ta ba wo hen-le yi-xiazi.
he Ba me hate-Le one-while
'He hated me for a while.'

The following sentences show the same 'inner object/outer object' structures that differ in acceptability only because different verbs are used:

(188) ta ba wo sha-le fuqin.
he Ba me kill-Le father
'He killed my father.'

(189) *ta ba wo yao-le fuqin.
he Ba me invite-Le father
'He invited my father.'

Many such examples exist, like those discussed in section 5.1, which all point to the same generalization: the constraints on possible *ba* NPs and predicates cannot be easily characterized in clearly defined structural terms.

6 Conclusion

The *ba* construction has been one of the most challenging topics in the literature on Chinese grammar. We have shown that, to understand the difficulties of this construction, we need to separate its form from its usage. Formally, it is clearer what structure a *ba* sentence should take. It has the structure represented in (93) in section 4.2, which places all the constituents of a *ba* construction in appropriate positions and can correspond to a non-*ba* sentence without structural problems. A *ba* NP is always related to the V or V'. When it is a V'-object (outer object, object of a complex predicate), the theta-role it receives is an affected theta-role. The definition of an 'affected' theta-role, however, was not made clear in the literature and was not further elaborated in this chapter either. This is related to the difficult part of this construction: the appropriate usage of a *ba* sentence, which has been most controversial. The usage part has essentially been defined by the constraints on possible *ba* NPs and VPs: what NPs are allowed as a *ba* NP and what components are acceptable or necessary to make a VP in a *ba* sentence. The discussions in section 5.2 and 5.3 show that accounts for such constraints based on bounded events/situations or event structures fail empirically, even though they provide very attractive options.

If the comparison between the Taiwanese *ka* construction and the Mandarin *ba* construction is any indication, it shows that a *ba* sentence carries a special meaning, even though *ba*, unlike *ka*, no longer assigns an 'affected' theta-role independently. Although such a special meaning is clear in the canonical cases ('he stir-fried the vegetable mushy'), it becomes less and less clear as the speakers expand and deviate from the core cases.[53] This probably is what contributes to the uncertainty and variation in speakers' judgment with the more deviant cases, which is also the spirit of the continuum discussed by Li and Thompson, illustrated in (131) in section 5.1. We take this to be an indication that the construction is strongly influenced by discourse, pragmatic, and idiolectal factors and the notion of affectedness is a fuzzy and loose notion which may be interpreted differently by different speakers. Further evidence for the non-grammatical nature of the constraints on the usage of *ba* sentences was supported by minimal pairs like those discussed in section 5.4, where all pairs of sentences share the same grammatical structure, including the same aspectual structure or event structure, and all have equally acceptable non-*ba* counterparts. If we want to capture the fact that all *ba* sentences have a non-*ba* counterpart and that sentences with identical structure can have different acceptability as a *ba* form, we are forced to recognize the effect of world knowledge, speaker intention, etc. on the use of this construction. In other words, we should recognize the existence of different contributing factors characterizing this construction and separate form from usage, distinguish basic structures from the constraints on when the structure is used.

NOTES

1 'Mandarin Chinese', the official Chinese language, will simply be referred to as 'Chinese' in this chapter, unless when contrasted with Taiwanese, a Southern Min dialect of Chinese spoken in Taiwan.

2 The version of Mandarin spoken in Taiwan has been significantly influenced by Taiwanese phonologically and even syntactically to some extent.

3 The distinction between NPs and DPs does not concern us in this chapter and nominal expressions are consistently labeled as NPs (see Abney 1987 for the proposal of DP structures and Li 1998, 1999, for arguments for the existence of DPs in Chinese).

4 In the following discussions, we concentrate on the constituents necessary for a *ba* sentence and disregard the elements that are allowed in a *ba* sentence but are not obligatory, such as sentential adverbials or other modifiers.

5 The usage of 'counterpart' here does not necessarily mean that one is transformationally derived from the other. It only means that for a *ba* sentence, it is always possible to find a non-*ba* sentence which only differs from the one with *ba* in the occurrence of this key word and the corresponding difference in word order.

Also note that there are some isolated *ba* sentences from Mandarin varieties spoken in Northern China that lack non-*ba* counterpart, such as (i):

(i) ba-ge Feng yatou bing-le.
BA-Cl. Feng maid sick-Le
'(Something) got the maid Feng sick.'

(i) might be related to the earlier verbal usage of *ba*. We will disregard such cases as they are not productive patterns in modern Mandarin and they are impossible in Taiwanese (section 3).

6 The morpheme *-le* can be suffixed to a verb (verbal *-le*) or occur at the end of a clause (clause-final *-le*, allowing only a root clause-final particle to follow it). The verbal *-le* has generally been taken as an aspect marker, indicating completion. The clause-final *-le* has generally been analyzed as a 'change of state' marker. A verbal *-le* and a clause-final *-le* can co-occur in a clause. When a clause ends with V-*le*, it is possible that this *-le* is a combination of the verbal *-le* and the clause-final *-le*. There is an immense literature on whether the two *-le*s should be analyzed as one or two different morphemes (see, for instance, Wang 1965; Chao 1968; Rohsenow 1978; Li and Thompson 1981; Mei 1981; Huang and Davis 1989; Lu 1991; Li 1992; Soh 1998; Sybesma 1999; among many others). Because the exact analysis of the two *-le*s is not our concern, we will gloss all occurrences of *-le* simply as 'Le'.

7 Many verbs in Chinese can be used as both an unaccusative and a causative verb without any morphological changes. *Zui-dao* in the following example is unaccusative:

(i) ta zui-dao-le.
he drunk-fall-Le
'He got very drunk.'

8 Some patterns allow more than one constituent in postverbal position, such as double object structures, control structures, and purposive clauses. See Li (1990).

9 It has been suggested that the complexity of postverbal elements and the prohibition against more than one postverbal constituents contribute to the proliferation of *ba* sentences (see, for instance, Hu and Wen 1956: 129).

10 A 'serial verb construction' is not a unified structural notion. It refers to all constructions with the surface form of more than one verb phrase occurring consecutively. Structurally, the series of VPs can be analyzed as different types of coordination or subordination structures. See Li and Thompson (1981: chapter 2), for instance.

11 In modern Shanghai and Wuhan dialects, it is possible in some cases to use *ba* in the pattern [*ba* NP1 V NP2] with NP2 being a pronoun coreferential with NP1 (Bingfu Lu, Yuzhi Shi, p.c.).

12 *Ta* in Chinese is a human and non-human third person pronoun. For simplicity, we will just use one of the many possible translations for each case.

13 Several West African languages, such as Twi and Fong, have similar constructions that involve the grammaticalization of a morpheme like *ba*; see Zou (1995) for some discussions on cross-linguistic comparisons of such structures and the grammaticalization process.

14 There have also been proposals claiming that *ba* is a 'coverb' (see, among others, Wang 1947, 1954; Lü 1948; Li and Thompson 1974, 1981: chapters 9, 15). A coverb is a special category created in Chinese grammatical studies to represent the group of words which were verbs but have gradually lost their verbal properties. They are so labeled because they are no longer verbs and yet they have not become true prepositions, either: they don't fully behave like lexical verbs or typical prepositions.

15 There are speakers who find *ba* in the V-not-V question form acceptable (see, for instance, Wu 1982). Using the V-not-V form as a test for verbhood does not seem to be quite deterministic, even though it is frequently applied in the literature. For some speakers, certain prepositions, adjectives, and adverbs may also occur in the 'V-not-V' form, which should be more correctly labeled as a general A-not-A question form, not just V-not-V.

16 Sybesma (1999) is an extensive revision of Sybesma (1992) and includes many of his other works. We will mainly quote from Sybesma (1999). See Sybesma (1999: 220–221) for many other related references.

17 It is acceptable if *ba* also occurs in the second conjunct, i.e., *ba*, the *ba* NP and the following VP can form one constituent.

18 The preposing is not possible when it is a 'causative' sentence (i.e., the type of sentences whose subject bears a causer thematic role):

(i) a. zhe-ping jiu ba ta zui-dao-le.
this-bottle wine BA him drunk-fall-Le
'This bottle of wine made him very drunk.'
b. *ba ta, zhe-ping jiu zui-dao-le
BA him this-bottle wine drunk-fall-Le

19 Wang (1954) suggests the terms 'disposal' and 'causative', which are Sybesma's 'canonical' and 'causative' respectively.

20 It was observed by Zou (1995), for instance, that *ba* and the *ba* NP cannot form a constituent and be preposed. However, Yafei Li (p.c.) notes that it is not that difficult to prepose the *ba* phrase in some instances. We agree with his judgment, though this pattern occurs only in casual informal speech. It seems that preposing of the *ba* phrase is the best in the contexts where the interpretation of doing something to the *ba* NP

is clearest. A command sentence is a very good example. However, it does not have to be a command:

(i) ba na-dui wenzhang, wo zao jiu gai-hao-le.
BA that-pile article I early then correct-finish-Le
'I corrected that pile of articles long ago.'

21 It should be pointed out that the element following *ba* is not necessarily an NP. A clause is also possible:

(i) wo ba [ta bu-lai] dang-zuo shi hen yanzhong-de shi.
I BA him not-come take-as be very serious-De matter
'I take it as a very serious matter that he does not come.'

This is not common, however. A noun typically co-occurs:

(ii) ta bu-gan ba [ni shengbing]-de shi gaosu dajia.
he not-dare BA you sick-De matter tell everyone
'He dare not tell everyone the matter that you are sick.'

(iii) *ta bu-gan ba [ni shengbing] gaosu dajia.
he not-dare BA you sick tell everyone
'He dare not tell everyone that you are sick.'

22 See Lu and Ma (1985: 200–201) for the instrument and locative examples in (18b) and (18d).

23 When the location marker *zai* is used as in (18c), a localizer such as *shang* 'top' must be used. With *ba*, such a localizer is optional.

24 In light of recent developments in the structure of VPs (Larson's (1988b) VP-shell, for instance) and the almost non-existent status of an intermediate category X' in the Minimalist Program (Chomsky 1991, 1993, 1995c), it is not clear if the term V'-object is appropriate. It nonetheless suffices to express the sister relation between an outer object and a complex predicate consisting of a verb and its complement. We will continue using the term 'V'-object', alongside the term 'outer object', for convenience.

25 More radically, it is possible to suggest that every instance of the *ba* NP is a V'-object (Huang 1982a, 1987, 1988). When it looks like an inner object (V-object), it actually is an outer object identifying an empty category in the V-object position.

26 A pro generally is identified by the first c-commanding NP (Huang 1982a). This means that a pro in an object position generally cannot be identified with an NP outside the clause, due to the intervening subject of the clause. However, it can be topicalized to the peripheral position of the clause first, and then be identified by an NP outside the clause. This is the analysis proposed by Huang (1982a) for cases like (i):

(i) Zhangsan$_i$ [T_i [e_j renshi pro$_i$ de] ren$_j$ hen duo.
Zhangsan know De person very many
'Zhangsan, the people who knew (him) are numerous.'

The pro in the object position of the relative clauses moves to T first in order to be co-indexed with *Zhangsan*.

27 The morpheme *-de* must occur between V and the result expression if the two are not compounded. It was suggested that this morpheme was reduced from the verb *dao* 'arrive' (Chao 1968: 353). This morpheme is to be distinguished from the potential morpheme *-de*, or the manner *-de*, which cannot occur in the *ba* construction:

(i) *ta ba youyong xue-de-hui.
he BA swimming study-De-able
'He can learn swimming.'

(ii) *ta ba gongke xue-de-kuai.
he BA homework write-De-fast
'He wrote the homework fast.'

In some southern dialects of Chinese, such as Taiwanese, the three *de*s are pronounced differently. The resultative *-de* is pronounced like the morpheme for *dao* 'arrive', the potential *-de* is pronounced like the morpheme 'can, able', and the manner *de* is like *zhao* 'hold'.

28 Compounding is subject to syllable structure constraints. See Feng (1995) for a phonological account.

29 The directional expressions *lai* 'come' and *qu* 'go' do not necessarily indicate the action of coming and going. They can simply be the indicators of the direction of motion (to or away from the speaker): *qing ni ba ta na-lai* 'please bring it over'; *qing ni ba ta na-qu* 'please take it'.

30 When the direct object becomes a *ba* NP, the main verb must be able to be compounded with the verb of the purposive clause; otherwise, *qu* 'go' or *lai* 'come' must occur between the two verbs. Thus, (46b) is acceptable with or without *lai/qu* because *na* and *gei* can be compounded. In contrast, (47b) cannot delete *lai/qu*, as indicated by the unacceptability of (i), because *mai* and *rang* cannot be compounded:

(i) *wo ba shu mai rang ta yong.
I BA book buy let him use
'I bought the book for him to use.'

It seems that the following generalization exists in Chinese: when two bare Vs occur next to each other, they must be compounded. If the two cannot be compounded, the sentence becomes unacceptable.

31 Verb reduplication can take the form of V-V or V-*yi*-V 'V-one-V' for those verbs with one syllable. For verbs with two syllables AB, an activity verb is reduplicated as ABaB and a stative verb as AABB (such as *piao-liang* 'pretty'/*piao-piao-liang-liang*, *gan-jing* 'clean'/*gan-gan-jing-jing*). A stative verb generally does not occur in a *ba* sentence; the reduplicated stative verb AABB does not occur in a *ba* sentence either.

32 Verbs that have more than one syllable can only occur in the pattern V-V as in (i), not V-*yi*-V as in (ii):

(i) women dei xian ba zhe-wenti kaolü-kaolü/taolun-taolun.
we should first BA this-question consider-consider/discuss-discuss
'We should first consider/discuss this question a bit.'

(ii) women dei xian ba zhe-wenti kaolü-yi-kaolü/taolun-yi-taolun.
we should first BA this-question consider-one-consider/discuss-one-discuss
'We should first consider/discuss this question a bit.'

33 The non-occurrence of *-zhe* in a *ba* sentence is only true when the verb is bare and *-zhe* plays the role of the X in (1). If there is an additional X, *-zhe* need not play the role of the X and a *ba* sentence is available: We will discuss such examples later in the chapter.

34 The literature generally focuses on the verbal aspect marker *-le* and does not discuss the sentence-final *-le* with respect to the acceptability of a *ba* sentence. It seems that in most cases, a sentence-final *-le* does not make a *ba* sentence available.

A sentence-final *-le* is typically used in the following cases, which express that a new state of affair has just been realized:

(i) wo bu-xihuan ta-le.
I not-like him-Le
'I do not like him (now; it used to be the case that I liked him).'

(ii) ta hui shuo-hua-le.
he can speak-word-Le
'He can speak now (it used to be the case that he could not speak).'

(iii) ta bu-ting zhe-ge-le.
he not-listen this-song-Le
'He does not listen to this song any more (he used to).'

The *ba* counterpart of these sentences seems to be generally less acceptable than those with a verbal *-le*:

(iv) a. ni ba zhe-che xi-le (jici?) (verbal *-le*)
you BA this-car wash-Le how many times
'How many times did you wash the car?'
b. wo bu xi zhe-che-le. (sentence-final *-le*)
I not wash this-car-Le
'I don't wash this car any more.'
c. *wo zai ye bu-ba zhe-che xi-le. (sentence-final *-le*)
I again also not-BA this-car wash-Le
'I will no longer wash this car.'

(v) a. wo ba ta pian-le. (yici). (verbal *-le*)
I BA him cheat-Le one time
'I cheated him (once).'
b. wo zai ye bu-pian ta-le. (sentence-final *-le*)
I again also not-cheat him-Le
'I will no longer cheat him.'
c. ?wo zai ye bu-ba ta pian-le. (sentence-final *-le*)
I again also not-cheat him cheat-Le
'I will no longer cheat him.'

35 The other aspect marker, the experiential marker *-guo*, has not received much attention in the literature regarding its role in a *ba* sentence (cf. Lu and Ma 1985). It seems that it is less acceptable than the verbal *-le* in allowing a *ba* sentence, though it is still quite acceptable in some cases, such as (id). This may be due to the pragmatic factors to be discussed in section 3:

(i) a. ʔta ba na-pi-ma qi-guo-ma?
he BA that-Cl-horse ride-Guo-Q
'Did he ride that horse before?'
b. ʔta ba zhexie-haizi ma-guo.
he BA these-boys scold-Guo
'He has scolded these boys before.'
c. ʔta ba yaoshi wang-guo.
he BA key forget-Guo
'He has forgotten the key before.'
d. ni you-mei-you ba zhongyao-de shiqing wang-guo?
you have-not-have ba important-De thing forget-Guo
'Have you forgotten important matters (before)?'

36 Adjectives in the traditional literature have been grouped with verbs (stative verbs) especially when they occur as the predicate of a clause. We continue to use the term 'verb' to include predicative adjectives.

37 It could be that the result clause is an 'extent' clause in such cases: the extent of seriousness, the extent of smallness, etc. If an extent clause is different from a result clause, we might conclude that a *ba* sentence is acceptable only with a result clause. However, it is not easy to distinguish 'extent' from 'result'. Note that being serious and being small both can yield a result, as illustrated by the acceptability of a lexical causative in (71c) and (72c). Even in the Taiwanese dialect which uses different pronunciations for the various *de*s in different constructions, the same pronunciation is found with both the extent and result *de*. Also see Sybesma (1999), which assumes 'extent' and 'result' to be the same.

38 Sybesma (1999: 178), for instance, argues that both the *ba* construction and the lexical causative construction have the same CAUSE morpheme and only differ in categorial selection: a CAUSE in the *ba* construction selects a VP as its complement, and a CAUSE spelled out as a lexical verb (lexical causative) selects a CP/TP as its complement.

39 *Re* 'hot' in (69) is just like *leng* 'cold' and can occur in the pattern in (73). *Zou* 'walk' seems to be less acceptable in this pattern:

(i) *ta zou-zai tui-shang.
he walk-at leg-on

(ii) a. ni yinggai zou-zou ni-de tui.
you should walk-walk you-De leg
'You should walk your legs (let your legs walk).'
b. ni-de tui neng zou-ma?
you-De leg can walk-Q
'Can your legs walk?'

40 This sentence can be acceptable with the interpretation that the parents are the toys for the children to play with. Both *kaixin* 'happy' and *shangxin* 'sad' are used in this example to show that even an unfortunate event cannot be acceptable as a *ba* sentence here. See Lü (1980) and Wu (1987) for discussions on the *ba* construction expressing unfortunate events.

41 The sound symbol *N* in the Taiwanese examples represents nasalization of the preceding vowel.

42 In addition, *ka* in Taiwanese can be a beneficiary marker, which is not available for *ba*.

43 One may argue that the distribution of adverbs can be captured by an analysis that assumes adverbs must be licensed by a head that is lexically filled. When *ba* occurs, an adverb can be licensed by the main verb occurring in the lower V position or by *ba* in the higher v position. When V-to-v-raising takes place, the lower V is an empty category and cannot license an adverb within the lower VP. Such an approach would require cross-linguistic parameterization, because V-raising does not prevent an adverb from occurring in the lower position, as shown in the study of French by Pollock (1989). Moreover, if the analysis by Huang (1992b), Soh (1998), and Tang (1998) concerning V-raising is correct, an empty verb in Chinese can license a duration/frequency phrase.

44 This is the structure adopted in work in progress by James Huang, Yen-Hui Audrey Li, and Yafei Li.

45 This does not mean that Taiwanese does not have the movement option. A *ba* sentence can always be translated into a *ka* sentence but not vice versa. It is therefore possible to claim that Taiwanese *ka* can allow either a base-generated *ka* NP or a raised *ka* NP, and that Mandarin only allows a raised *ba* NP.

46 Such a prohibition can be phrased as follows: an NP within the thematic domain of a head cannot be raised to a position within the thematic domain of another head.

47 We will not discuss the approach based on information structures because it is hard to find convincing accounts of this type in the literature based on a clearly defined theory of information structures. Moreover, as shown in the text, the choice of the *ba* NP, the choice of verbs, and the type of X in (1a–b) affect the acceptability of a *ba* sentence. It is difficult to see how this can be captured by an account based on notions of topic-comment or presupposition-focus.

48 Chao (1968: 343) sometimes refers to the *ba* sentence as a "Pretransitive" construction. This construction is "a special form of the V-V series [which] has a first verb, the pretransitive, and an object, which ordinarily would be the object of the V-V series. For this reason, this object of the pretransitive is often regarded as a form of the inverted object." This definition of the *ba* construction is closest to the structural description given in (93) and the generalization in (29) (a *ba* NP must be a V or V'-object).

49 Chao (1968: 344) notes that even an indefinite-looking *ba* NP should still not be interpreted as indefinite: "Attention should, however, be drawn to a class of apparent cases of indefinite reference consisting of a pretransitive with *ig* or *g* before the object; here something quite definite is referred to. Thus: *ta ba ge pibao diu le* 'She lost a purse', *ta ba ge zhangfu si le, keshi bujiu you jia le ge zhangfu* 'She lost a husband but she soon re-married' . . . The advanced position of the object, brought about by the pretransitive, has a stronger effect than the presence of the word *g* or *ig* in deciding the definiteness of reference. As Leu Shwushiang (LWjuo. 129–130) [Lü 1948] has noted, there is no reason why forms like *g* or *ig* in Chinese should be limited to indefinite reference because *a* or its equivalent in other Indo-European languages is the indefinite article."

50 Syntactic constraints, however, also play a role in determining which NP can become a *ba* NP. The following sentence, for instance, shows that what is stolen can also be a *ba* NP:

(i) ta jingran ye ba wode pibao tou-le.
he unexpected also Ba my purse steal-Le
'Unexpectedly, he also stole my purse.'

When an indirect NP of the verb *tou* occurs as in (119), however, only the indirect NP can be the *ba* NP, not the direct NP:

(ii) *ta jingran ye ba pibao tou-le wo.
he unexpected also Ba purse steal-Le me

See Li (1990) for the extractability of direct and indirect objects in double object constructions.

51 See Zhang (2000) for a similar observation of the 'all of' interpretation of a *ba* NP.

52 It is possible to speculate that the contrast between (181) and (181') is due to different degrees of lexicalization: *chi-bao* 'eat-full' is more lexicalized and takes *fan* as its object, in contrast to *he-zui* 'drink-drunk', which only originates as a bi-clausal structure. Some analysis along the lines of the generalization in (29) can be explored. However, this still does not explain why *chi-bao* in a *ba* construction is quite limited, as illustrated by the contrast between (183a) and (183b).

53 This is in the spirit of a prototype approach to this construction. See, for instance, Bybee and Moder (1983) and Rosch (1978).

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13 Clitic Climbing

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1 The paradigm

1.1 Introduction

Consider the following Spanish sentence:[1,2]

(1) Juana quiere ver**lo**.
Juana want-pres-3sg see+it
'Juana wants (to) see it.'

Here the matrix verb *querer* 'want' is followed by an infinitival complement containing a direct object expressed by the clitic *lo*. Spanish has an alternative for (1), which is presented in (2):

(2) Juana **lo** quiere. ver.
Juana it want-pres-3sg see
'Juana wants (to) see it.'

The sentences in (1) and (2) have the same interpretation, but in (2) the clitic appears attached to the matrix verb.[3] Though this is not a logical necessity, many

linguists assume that (1) and (2) are derivationally related, in the sense that both involve the same D-structure. We will follow this assumption here (but see section 3.2). In the case of the in situ variant (1) the clitic stays in the complement, but in the clitic climbing variant (2) the clitic moves or 'climbs' out of the latter and attaches to a higher host. Clitic climbing (Cl Cl) is known to occur in various languages, such as Spanish, Italian, and Portuguese, Dutch and German, Serbo-Croatian, and the West African Kru languages.[4] Cl Cl constructions are in some sense anomalous: their anomalous nature consists in the fact that the clitics appear in the matrix domain rather than in the complement domain in which they are generated, without there being an obvious trigger that causes them to move to the former. As such, theorizing about these constructions involves an attempt at a deeper and more subtle understanding of the means Universal Grammar has available for the expression of clausal complement relations.

In the discussion that follows we will restrict ourselves to Cl Cl in Romance, about which there exists a considerable amount of literature.[5] In section 1.2 we will present an overview of the main properties of the construction, which we summarize in subsection 1.2.6. This overview will be followed – in section 1.3 – by a sketch of the central issue involved in the research on the Cl Cl construction.

1.2 Properties of the Cl Cl construction

1.2.1 Cl Cl verbs

Cl Cl occurs with a restricted set of matrix verbs and as such constitutes an exception, rather than a rule. The verbs that allow it are mainly modal, aspectual, and movement verbs.[6] Thus, for instance, the modal verb *querer* in the examples in (1) and (2) contrasts with the verb *odiar* in (3), which cannot act as a host for Cl Cl:

(3) a. Juana odia ver**lo**.
Juana hate-pres-3sg see+it
'Juan hates (to) see it.'
b. *Juana **lo** odia ver.

Both *querer* and *odiar* are subject control verbs, selecting a CP (S') complement. Cl Cl also occurs with raising verbs, which select IP (S) complements. An example is *soler* in (4):

(4) a. Juana suele leer**lo** por la mañana.
Juana tend-pres-3sg read+it for the morning
'Juana tends to read it in the morning.'
b. Juana **lo** suele leer por la mañana.

A raising verb that doesn't allow for Cl Cl is the verb *parecer*, as in (5):[7]

(5) a. Juana parece saber**lo**.
Juana seem-pres-3sg know+it
'Juana seems (to) know it.'
b. *Juana **lo** parece saber.

1.2.2 Optionality and clustering

As one can deduce from the examples in (1), (2), and (4), Cl Cl is optional. In other words, there is always a choice between an in situ variant and a Cl Cl variant.[8] However, if the complement contains more than one clitic, as in (6) – where the clitics are *me* and *lo* – and the climbing option is chosen, it must involve all the clitics, as in (7a). Thus, neither (7b), with *me* in situ and *lo* attached to *quiere*, nor (7c), with these options reversed, is grammatical:[9]

(6) Juana no quiere entregár**melo**.
Juana not want-pres-3sg give+me+it
'Juana doesn't want to give it to me.'

(7) a. Juana no **me lo** quiere entregar.
b. *Juana no **me** quiere entregar**lo**.
c. *Juana no **lo** quiere entregar**me**.

1.2.3 Structural relation between host and clitic

A further property of Cl Cl is that it is strongly restricted by structural conditions: the only configuration in which it can apply is the one in (8), where V1 is the semantic head of CP/IP and the clitic is contained in the same minimal CP/IP as V1:

(8) $[_{V'}$ V2 $[_{CP/IP}$ V1 Cl]]

Given this configuration, V1 will normally act as the host in the in situ variant and V2 as the host after Cl Cl. The situation is somewhat more complex when auxiliaries are involved, but here we abstract from those.

As can be deduced from (8), Cl Cl is impossible when the clitic originates in a clause that is not governed by the verbal host, i.e., that is not a complement of this host.[10] As such, Cl Cl respects the general condition which prohibits extraction from subjects and adjuncts, i.e., the Condition on Extraction Domains of Huang (1982a), which shows that it is a normal syntactic process. The pairs of examples in (9) and (10) are meant as an illustration of this point. In both cases the main verb is a Cl Cl verb. The in situ version in (9a) involves a clitic contained in a subject (*leerlo bien*). (9b) is its Cl Cl variant, which is ungrammatical. In (10a) *a comprarlo* is an adjunct phrase; the Cl Cl counterpart (10b) is again ungrammatical:

(9) a. [Leer**lo** bien] debe requerir mucha paciencia.
read+it well must-pres-3sg require much patience
'To read it well must require much patience.'
b. *[Leer bien] **lo** debe requerir mucha paciencia.

(10) a. A qué tienda vas [a comprar**lo**]?
To which shop go-pres-2sg to buy+it
'To which shop do you go in order to buy it?'
b. *A qué tienda **lo** vas [a comprar]?

Another consequence of the fact that the clitic must originate in the clause that is governed by the host is that Cl Cl is locally bounded. Thus, for instance, in (11) where the clause the clitic *lo* belongs to is governed by (non-Cl Cl) *odiar*, but not by the Cl Cl verb *suele*, climbing of *lo* onto this latter verb is excluded (11b):

(11) a. Juana suele [odiar [hacer**lo**]].
Juana tend-pres-3sg hate do+it
'Juana tends (to) hate (to) do it.'
b. *Juana **lo** suele odiar hacer.

There is one apparent exception to this local boundedness: intervening verbs that themselves belong to the Cl Cl class do not prevent climbing onto a higher host. We exemplify this in (12):

(12) a. Juana quisiera poder hacer**lo**.
Juana want-cond-past-3sg can do+it
'Juana would want to be able to do it.'
b. Juana **lo** quisiera poder hacer.

Here the intervening head *poder*, a Cl Cl verb, does not prevent climbing of the clitic *lo* onto the higher verb *quisiera*. We may, however, assume that Cl Cl proceeds recursively, that is, that the in situ variant of (12b) is in fact (13):

(13) Juana quisiera poder**lo** hacer

If, on the other hand, we assume that the clitic climbs directly onto the host *quisiera* we must allow for the semantic head of IP/CP in (8) not only being the in situ host of the clitic, but any potential host.

1.2.4 Two further restrictions

There are two cases in which, even if the structural conditions discussed in the preceding subsection are met and the matrix verb is a Cl Cl verb, Cl Cl is impossible. The first involves finite complements. Such complements, of which *que lo ves* in (14a) is an example, never allow Cl Cl (cf. 14b):

(14) a. Juana quiere que **lo** ves.
Juana want-pres-3sg that it see-pres-2sg
'Juana wants you to see it.'
b. *Juana **lo** quiere que ves.

The second case is that in which the complement contains a negation particle. As illustrated in (15), Cl Cl is blocked by the presence of such a particle:[11]

(15) a. Juana quiere no ver**lo**.
'Juana wants not (to) see it.'
b. *Juana **lo** quiere no ver.

1.2.5 Movement of V and complement

In the examples we have presented so far the the complement is right-adjacent to the matrix verb. At least for Italian, this adjacency is not a necessary requirement, however. In the first place, this language permits VP adverbs to occur between the two constituents, and in the second place, it permits the complement to appear in a left-peripheral position. Below we consider in turn each of these two cases, which, as we will show, occur as the result of movement.

The example in (16), from Cinque (2004), illustrates that the intervention of a VP adverb like *subito* between the matrix verb and the complement is compatible both with clitics in situ and with climbed clitics:

(16) a. Verrò subito a scriver**lo**.
Come-fut-1sg at-once to write+it
'I'll come at once to write it.'
b. **Lo** verrò subito a scrivere.

VP adverbs occur to the left of the VP and serve as a standard diagnostic for verb movement to I, which is a general process in the Romance Cl Cl languages. Example (16b) shows that V-to-I movement is not blocked by Cl Cl in Italian.[12]

In the examples in (17) the complement occurs in the left periphery of the matrix clause:

(17) a. [Legger**lo** a tutti] non potevo.
read+it to all not can-past-1sg
'Read it to everybody, I couldn't.'
b. [Leggere a tutti] non **lo** potevo.

The complement in these cases functions as a topic. Left-peripheral topics are assumed to be preposed by Topicalization. From the grammaticality of the example in (17b) we can conclude that Topicalization of the complement is compatible with Cl Cl.[13]

The above shows that both (Italian) matrix verbs and their complement can be moved from their base position in Cl Cl constructions. However, there is at least

one case in which movement of the complement is incompatible with Cl Cl. This is the one involving clausal pied-piping (chapter 50) in Italian, discussed in Rizzi (1978).[14] Consider (18a), which represents the relevant aspects of the D-structure of a noun phrase containing a non-restrictive relative clause (the part between the outer square brackets). As the verb *posso*, or rather *potere*, 'to be able', is a Cl Cl verb, one expects the clitic *ti* to be able to climb out of its complement (indicated by the inner square brackets), with as a result the structure in (18b):

(18) a. Il Direttore [, per il momento, proprio non posso
the Director for the moment really not can-pres-1sg
[presentar**ti** al quale]].
introduce+you to whom
b. Il Direttore [, per il momento, proprio non **ti** posso [presentare al quale]].

To derive the complete S-structure, the relative constituent *al quale* must be preposed by *wh*-movement to the beginning of the relative clause. Italian can pied-pipe an infinitival clause in this kind of relative; that is, *al quale* when being preposed may take with it the whole complement of *posso* that contains it. For the in situ variant (18a) this gives the result in (19):

(19) Il Direttore, presentarti al quale, per il momento, proprio
the director, introduce+you to whom, for the
non posso.
moment, really not can-pres-1sg
'The Director, to introduce you to whom, for the time being I really cannot.'

The relevant case, however, is the Cl Cl variant (20): preposing the complement here apparently destroys the relation between the Cl Cl host and its complement and leads to an ungrammatical result:

(20) *Il Direttore, presentare al quale, per il momento, propio non **ti** posso.

This concludes our discussion of the main properties of Cl Cl, which we summarize in subsection 1.2.6.

1.2.6 Summary

As shown in subsections 1.2.1–1.2.5, Cl Cl has the following characteristics:

- Cl Cl only applies with a small class of matrix verbs.
- Cl Cl is optional, but doesn't allow for split clitics.
- Cl Cl may only apply out of non-finite complements governed by a Cl Cl verb.
- Cl Cl is incompatible with the presence of a negative particle in the complement.

- Cl Cl hosts may be separated from their complement by V-to-I movement (at least in Italian).
- Cl Cl constructions show restrictions with respect to fronting of the complement.

It is obvious that the theory of grammar must aim at explaining these distinct properties. It is also obvious that the core of this explanation will involve the special nature of Cl Cl verbs. In the following section we will present a first approximation to the line of research required to unveil their exceptional character.

1.3 Clitic Placement and the Clause Mate Condition

The fundamental question about Cl Cl verbs is what exactly allows these verbs to 'attract' clitics from their complement clause, thereby relaxing the usual locality conditions on clitic attachment. This immediately raises an underlying question, which is: what exactly are these conditions? Though there are some specific proposals on this point, we will not discuss these as yet. What we will do here is indicate the direction in which these must be sought.

There is some discussion in the literature as to whether the morphological units formed by clitics and verbs are base-generated or produced derivationally. As virtually all the work on Cl Cl assumes the latter option, we will do the same here.[15] Under this assumption, clitics are generated in XP positions in the base and are attached to the verb by means of a rule of Clitic Placement (Cl Pl).[16] Thus, Cl Pl transforms, for instance, the D-structure in (21a) into the structure in (21b):

(21) a. Juana ve [DP **lo**].
Juana see-pres-3sg it
'Juana sees it.'
b. Juana **lo**+ve **t**.

Even in simplex clauses, however, the host of a clitic is not always the verb responsible for its semantic role. We refer to clauses containing, in addition to the main verb, one or more auxiliaries.[17] Auxiliaries in Romance are perfective, passive, or aspectual. Perfective and passive auxiliaries select VPs headed by past participles and aspectual auxiliaries VPs headed by gerunds.[18] In the case of past participles, clitics always attach to the auxiliary. We exemplify this for a perfective auxiliary (22), a passive auxiliary (23), and a combination of both (24):

(22) a. *Juana ha visto**lo**.
Juana have-pres-3sg seen+it
'Juana has seen it.'
b. Juana **lo** ha visto.

(23) a. *El libro fue entregádo**me**.
The book be-pres-3sg given+me
'The book was given to me.'
b. El libro **me** fue entregado.

(24) a. *El libro ha sido entregádo**me**.
The book have-pres-3g been given+me
'The book has been given to me.'
b. El libro **me** ha sido entregado.

In the case of gerunds, on the other hand, there are two options: the clitic appears either on the gerund or on the auxiliary:

(25) a. Juana estaba cantándo**lo**.
Juana was-past-3sg singing+it
'Juana was singing it.'
b. Juana **lo** estaba cantando.

Thus, in clauses with auxiliaries, Cl Pl obviously must or can target the (highest) auxiliary, instead of the main verb. Notice that this instance of Cl Pl is remarkably similar to Cl Cl: we can say that the clitic 'climbs' out of the VP in order to attach to the auxiliary. In the same vein, but from a different perspective, it is generally assumed that Cl Cl is in fact a case of Cl Pl, comparable to Cl Pl with auxiliaries in the sense that in both cases the host is higher than the verb the clitic 'belongs' to.[19]

Apart from the obligatoriness of 'climbing' in cases such as those in (22–24), there is one other crucial difference between regular Cl Cl verbs and auxiliaries: while the former are exceptions among the class of verbs selecting clausal complements, the latter *all* require or allow climbing. We may deduce from this that Auxiliary Cl Cl (Cl Pl targeting auxiliaries) is unconstrained. Apparently, thus, the constraint that prevents Cl Cl with normal raising or control verbs must be sought in the difference between their type of complement and the complement type of auxiliaries. Consider in this respect the relevant aspects of an auxiliary and a raising construction in, respectively, (26a) and (26b):

(26) a. V $[_{VP}$ V]
b. V $[_{IP}$ subject $[_{I'}$ I $[_{VP}$ V]]]

The raising construction (26b) differs from the auxiliary construction (26a) in that, in addition to the VP, it contains an IP boundary, a subject, an I' projection, and an I-head. It follows that the constraint under consideration must be due to the presence of at least one of these elements. Until section 6 we will not be concerned with a specific proposal. We only establish that for some reason clitics normally cannot cross sentential boundaries (as opposed to VP boundaries). This is sometimes referred to as the Clause Mate Condition, which here is meant to

indicate that a clitic and its trace must occur in the same clause.[20] We will also employ this term, but it must be kept in mind that it is merely descriptive. As the structure of control complements (27) forms an extension of that involving raising complements, we can simply assume that the constraining factor that holds for the latter is present here as well. Of course the term 'Clause Mate Condition' is also applicable in this case:

(27) V $[_{CP}$ $[_{IP}$ $[_{VP}$ V cl]]]

One possible hypothesis about Cl Cl verbs might be that they are 'stronger' than other verbs, in the sense that they have some kind of 'magnetic force' by which they so strongly attract clitics that the constraining factor can simply be ignored. However, there exists clear evidence that matters are more complex. This evidence, which consists of a set of data involving exceptional (applications of) rules in the same circumstances as those holding for Cl Cl, will be discussed in the next section.

2 Corollaries of Cl Cl

2.1 Introduction

In this section we will show that certain locality restrictions on both DP-movement (section 2.2) and *wh*-movement (section 2.3) are relaxed in the case of infinitival complements of Cl Cl verbs. In section 2.4 we will, furthermore, consider an exceptional property of perfect participles of a subset of Cl Cl verbs in Italian, which consists in the fact that the choice of their auxiliary can be determined by the complement verb. For each of the phenomena we discuss we will consider how far it correlates with the Cl Cl variant and/or the in situ variant. In section 2.5 we present a summary.

2.2 Long DP-Movement

Normally DP-Movement involves movement from a position governed by a verb to the subject position of the clause of which the verb is the semantic head. In control Cl Cl constructions, however, a DP governed by the complement verb may move to the subject position of the matrix clause, across the embedded PRO subject. This can only happen, of course, if the matrix subject position – which normally contains the controller – is empty. The situation in which this is so is in passives. Most Cl Cl verbs reject passivization, for independent reasons. However, Italian (control) *cominciare* 'begin' and *continuare* 'continue' form an exception and the phenomenon of Long DP-Movement can be demonstrated for their passive forms, as in the example in (28a), from Burzio (1986). We add the relevant details of the analysis in (28b):

(28) a. Il palazzo fu cominciato a costruire sotto Carlo V.
the palace be-past-3sg begun to build under Charles V
'They began to build the palace under Charles V.'
b. Il palazzo$_i$ fu cominciato [$_{CP}$ a PRO costruire t$_i$].

Apart from the standard passive, Romance has a construction known as 'Reflexive Passive' or 'Middle' which crucially involves the presence of the reflexive clitic *se* (Spanish, Portuguese), *si* (Italian), instead of passive morphology.[21] A simplex case is that in (29):

(29) Las casas$_i$ se vendieron t$_i$.
the houses SE sell-pres-3pl
'The houses were sold.'
'They sold the houses.'

The Reflexive Passive occurs freely with control Cl Cl verbs and, as shown in the following example from Aissen and Perlmutter (1976), involves Long DP-Movement:[22]

(30) a. Estas secciones de la ciudad se quieren eliminar sin
these sections of the city SE want-pres-3pl eliminate without
que nadie lo sepa.
that no one it knows
'They want to eliminate these sections of the city without anyone knowing it.'
b. Estas secciones de la ciudad$_i$ se quieren [$_{CP}$ PRO eliminar t$_i$] . . .

There is a strong correlation between Long DP-Movement and Cl Cl: sentences with Long DP-Movement and complement clitics are grammatical when the latter climb, but not when they remain in situ: see (31), an example from Zubizarreta (1980). In this sense Long DP-Movement can be classified as a true corollary of Cl Cl:[23]

(31) a. *Estas casas se quieren vender**le** a alto precio.
these houses SE want-pres-3pl sell+him for high price
'They want to sell him these houses for a high price.'
b. Estas casas se **le** quieren vender a alto precio.

2.3 Long Null Operator Movement

Long *wh*-movement is quite general in Romance, and hence it cannot tell us anything specific about Cl Cl constructions. There is, however, one process that is standardly assumed to be of the *wh*-type, which in the languages under consideration appears to obey the Clause Mate Condition. We refer to the process

known as Null Operator Movement.[24] It applies in the infinitival complement of certain adjectives (*tough/hard*, *easy*, *impossible*) and, in Italian, in infinitival relatives. As we will see, the Clause Mate Condition on Null Operator Movement can be violated in the case of Cl Cl verbs.

(32a) contains an example of simplex complement governed by the adjective *difícil* 'hard/tough'. (32b) gives the relevant aspects of its S-structure, which has been obtained by moving an empty element (the null operator) from the object position to Comp, where it is in the correct position to be interpreted as coreferent with the matrix subject:

(32) a. Estas radios serán difíciles de componer.
these radios be-fut-3pl hard-pl to fix
'These radios will be hard to fix.'
b. Estas radios$_i$ serán difíciles [OP$_i$ de PRO componer t$_i$]

In (33) we present an analogous Italian pair involving an infinitival relative, where the coreference is with the antecedent:

(33) a. È una persona da ammirare.
be-pres-1sg a person to admire
'He is someone to admire.'
b. È una persona$_i$ [OP$_i$ da PRO ammirare t$_i$].

In the ungrammatical examples in (34) the clauses containing the base position of the empty operator are governed not by the adjective or antecedent, but by, respectively, the verbs *insistir* and *rimpiangere*. Obviously, in such cases the operator cannot reach the higher Comp position in which it must be linked to the adjective (34a) or antecedent (34b). These examples show that Null Operator Movement is subject to the Clause Mate Condition:

(34) a. *Tales cosas son difíciles de insistir en hacer.
such things be-pres-3sg hard-pl to insist on do
'Such things are hard to insist on doing.'
b. *È una persona da rimpiangere di aver ammirato Italian
be-pres-3sg a person to regret to have admired
'He is a person to regret to have admired.'

Consider now the sentences in (35), which structurally have the same properties as those in (34), but differ from them by the fact that the verb governing the complement with the empty object is a Cl Cl verb (*dejar*, *continuare*). Their grammaticality shows that movement of the *wh*-phrase to the front of the clause governed by the adjective or antecedent – i.e., Long Null Operator Movement – is available here. The Clause Mate Condition can apparently be violated in this case:

(35) a. Estas galletas son casi imposibles de dejar de comer.
These cookies be-pres-3pl almost impossible-pl to stop to eat
'These cookies are almost impossible to stop eating.'
b. È un argomento da continuare a studiare. Italian
be-pres-3sg an argument to continue to study
'It is an argument to continue to study.'

The pair of examples in (36) indicates that Long Null Operator Movement and Cl Cl must go together:[25]

(36) a. *Cerco una cartolina da potere spedir**gli**. Italian
look for-pres-1sg a postcard to can send+him
b. Cerco una cartolina da poter**gli** spedire
look for-pres-1sg a postcard to can+him send
'I'm looking for a postcard I can send him.'

2.4 Avere → Essere *Shift*

Unlike Spanish and Portuguese, Italian has two perfective auxiliaries. The first, *avere* 'have', occurs with unergative and transitive participles and the second, *essere* 'be', with unaccusative participles. A specific property of Italian Cl Cl constructions is that when the Cl Cl verb is a participle that normally requires *avere*, it can appear with *essere* if the complement verb is an *essere* verb.[26] Consider the examples in (37). In (37a) the participle of the Cl Cl verb *volere* 'want' combines with its normal auxiliary *avere.* As the complement verb *tornare* 'return' is an unaccusative verb, however, the auxiliary may also take the form *è* (from *essere*), as in (37b):

(37) a. Mario ha voluto tornare a casa.
Mario have-pres-3sg wanted return to house
'Mario has wanted to come back home.'
b. Mario è voluto tornare a casa.

Notice that the shift of auxiliary only involves *avere*-type participles. Cl Cl participles that occur with *essere* continue to require this auxiliary when the complement verb is an *avere* verb, as is *fare* in the following example:[27]

(38) a. Sono stato per fare una sciocchezza.
be-pres-1sg been for to do a foolish thing
'I've been on the point of doing something foolish.'
b. *Ho stato per fare una sciocchezza.
have-pres-1sg been for do a foolish thing

As illustrated by the example in (37) above, the *Avere* → *Essere* Shift is optional. Rather than being a true corollary of Cl Cl it appears to be a condition for it.[28]

That is, Cl Cl requires the shift (in the relevant context) (39a, b, c), but the latter may also apply with clitics in situ (39d):

(39) a. Mario avrebbe proprio voluto andar**ci**.
Mario have-cond-3sg really wanted go there
'Mario would have really wanted to go there.'
b. *Mario **ci** avrebbe proprio voluto andare.
c. Mario **ci** sarebbe proprio voluto andare.
Mario there be-cond-3sg really wanted go
d. Mario sarebbe proprio voluto andar**ci**.

2.5 Summary

The properties of Cl Cl verbs discussed in this section are the following:[29]

- Cl Cl verbs permit Long DP-Movement over a PRO subject.
- Cl Cl verbs allow for Long Null Operator Movement out of their complements.
- Cl Cl participles can undergo *Avere* → *Essere* Shift (in Italian).

In (40) we summarize how the processes under consideration correlate with Cl Cl:

(40)

	Cl Cl	Cl in situ
Long DP-Movement	Yes	No
Long Null Operator Movement	Yes	No
Avere → *Essere* Shift	Yes	Yes
No *Avere* → *Essere* Shift	No	Yes

As we stated earlier, the fact that these phenomena typically occur with Cl Cl verbs indicates that Cl Cl cannot be studied separately from them. We could say that Cl Cl is simply the most salient epiphenomenon demonstrating the special character of the verbs that allow for it.[30] In the next sections we will consider distinct hypotheses that ultimately strive at unveiling this special character.

3 Cl Cl verbs as auxiliaries

3.1 Introduction

The proposal about Cl Cl verbs that circumvents the Clause Mate Condition in the most radical way is the Dual Subcategorization Hypothesis. According to this hypothesis, the verbs are listed in the lexicon as optionally selecting either a CP/IP complement or a VP complement headed by an infinitival.[31] This entails that, contrary to what we have been assuming so far, they would appear in two different D-structures, (41a/b) or (41c):

(41) Dual Subcategorization Hypothesis:
a. V [$_{IP}$] or: c. V [$_{VP}$]
b. V [$_{CP}$]

The IP/CP option implies a structure identical to that of standard raising/control verbs, for which the Clause Mate Condition prevents the application of Cl Cl, so that this option is only compatible with the in situ variant. Likewise, Long DP and Long Null Operator Movement do not occur under this option, nor does *Avere* → *Essere* Shift.

In the case of the VP option, the relevant aspects of the D-structure of, e.g., *Juana lo quiere ver* will be as in (42):

(42) [$_{CP}$ [$_{IP}$ Juana I quiere [$_{VP}$ ver lo]]]

3.2 *Apparent advantages of the Dual Subcategorization Hypothesis*

Within the VP option, Cl Cl verbs actually have the same status as auxiliaries, so that the Clause Mate Condition is irrelevant and clitics can freely climb. What we have been calling Long Movement reduces to normal movement, targeting the only subject or Comp position that is available. The 'complement' verb is the main verb of the clause, so that it doesn't come as a surprise that when in Italian this verb is of the *essere* class it determines the choice of the auxiliary (but notice that we expect the same thing to happen for *avere* verbs, contrary to fact).

Under the VP option, Cl Cl is assumed to be obligatory, just like Cl Cl with perfective and passive auxiliaries. This means that the issue of clitic splitting does not arise.

Implicit in this approach is that infinitivals – like participials and gerunds – do not necessarily require a clausal projection, contrary to what happens with finite verbs. With the latter the VP option is unavailable and Cl Cl will be subject to the Clause Mate Condition.

The fact that Cl Cl is incompatible with the presence of a negative particle in the complement follows from the sentential status of this particle: it occurs in a clausal position (i.e., higher than VP) and such a position is absent by definition in VP complements.

In section 1.2.5 we saw that (Italian) Cl Cl verbs could be separated from their complement by V-to-I movement: as this is the normal situation for auxiliaries, this is what we expect.[32] The Italian example in (43), which is analogous to example (20), with which we illustrated that Cl Cl constructions show restrictions with respect to fronting of the complement, is intended to show that such restrictions also hold for standard VP complements. This entails that the hypothesis under consideration needs no independent explanation for the ungrammaticality of the Cl Cl case:

(43) *Il Direttore, presentato mi figlio al quale, non ho mai.
the director, introduced my son to whom, not have-pres-1sg never

We see, thus, that the Dual Subcategorization Hypothesis, which is attractive in its simplicity, accounts for most of the facts involving the Cl Cl construction. There are, however, a considerable number of facts that seem to indicate that it is on the wrong track. We discuss those in a separate subsection.

3.3 Problems for the Dual Subcategorization Hypothesis

3.3.1 Cl Cl verbs and auxiliaries

Under the VP option of the Dual Subcategorization Hypothesis, Cl Cl verbs are auxiliaries. As we have already mentioned above, this accounts well for the Italian *Avere* → *Essere* Shift, but not for the fact that *essere* Cl Cl participles continue to take this auxiliary when the complement verb is of the *avere* type (as in (38) above). Moreover, the fact that the *Avere* → *Essere* Shift doesn't necessarily imply Cl Cl remains to be explained.

Another unexpected property of Cl Cl verbs as auxiliaries is that in Italian the latter sometimes can be passivized (and then occur with Long DP-Movement, cf. (28)). Passivization, of course, is a property of main verbs and not of auxiliaries.

A third difference between Cl Cl verbs and auxiliaries, mentioned in Goodall (1987b), also concerns Italian. In this language auxiliaries undergo a preposing rule known as Aux-to-C, as in (44a, b), but this doesn't hold true for Cl Cl verbs (44c):

(44) a. Essendo state le mele mangiate . . .
being been the apples eaten
'The apples having been eaten . . .'
b. Essendosi le mele mangiate . . .
being+SI the apples eaten
'The apples having been eaten . . .'
c. *Essendosi potute le mele mangiate . . .
being+SI can.part the apples eaten
'The apples having been able to be eaten . . .'

3.3.2 The structure of Cl Cl complements

Another serious problem for the Dual Subcategorization Hypothesis involves the fact that there are clear indications that Cl Cl complements have more structure than VPs. In the first place, as observed in Rooryck (1994a), the complement verb appears to the left of VP adverbs, which under standard assumptions indicates that it undergoes V-to-I movement, so that I must be present. We reproduce the Italian example Rooryck uses to illustrate this:

(45) Piero ti verrà a (*spesso) parlare (spesso) di parapsicologia.
Piero you come-fut-3sg to (often) speak (often) of parapsychology
'Piero will come to speak to you often about parapsychology.'

Further indication for more structure is presented by the so-called infinitival particles.[33] A number of Cl Cl verbs appear together with particles. Some Spanish

examples are *empezar a* 'start to', *tener que* 'must' (lit.: 'have that'), *acabar de* 'just finish to' (lit.: 'finish of'), and *estar por* 'be about to' (lit.: 'be for'). The particles are typically linked to the presence of an infinitival complement: they are absent with other uses of the same verbs, as illustrated for *empezar a* in (46):

(46) a. Juana empieza a cantarlo.
Juana start-pres-3sg to sing+it
'Juana starts to sing it.'
b. Empezamos la comida con una ensalada.
start-pres-1pl the meal with a salad
'We start the meal with a salad.'

The position in which the particles occur in negative complements indicates that their position is above VP. This is so because they precede the negative particle, which itself occurs higher than VP; cf. (47):

(47) A los dos años los niños empiezan a no querer obedecer a
at the two years the children start-pres-3pl to not want obey to
los padres.
their parents
'At the age of two children start to refuse to obey their parents.'

Now, if the Cl Cl versions of Cl Cl verbs requiring infinitival particles involve VP complements, one expects the particles to be absent in these versions. As can be deduced from the examples in (48) this is not the case, however:[34]

(48) a. Juana **lo** empieza a cantar **t**.
Juana it start-pres-3sg to sing
'Juana starts to sing it.'
b. Juana **lo** tendrá que hacer **t**.
Juana it have-fut-3sg that do
'Juana has to do it.'

A final indication that Cl Cl complements have more structure than VPs comes from sentences containing Italian interrogative *sapere* 'know'. As discussed in Rizzi (1978), this verb marginally admits Cl Cl when its complement contains a fronted *wh*-word, which under standard assumptions must be in spec, CP:[35]

(49) Su questo punto, non **ti** saprei che dire **t**.
On this point, not you know-cond-1sg what tell
'On this point, I wouldn't know what to tell you.'

3.3.3 Control Cl Cl verbs

If Cl Cl verbs are treated as auxiliaries they must necessarily be assumed not to have a subject of their own. However, a subjectless analysis for control verbs

allowing Cl Cl is problematic in light of the fact that, under standard assumptions, these verbs assign a theta-role to the DP in their subject position and exercise selectional restrictions on it, unlike raising verbs. These properties explain, for instance, the grammaticality contrast in (50), where *este hombre* 'this man' can bear the theta-role assigned by *querer* 'want', but *este tipo de película* 'this kind of movie' is incompatible with this role:

(50) a. Este hombre **me** quiere dar escalofríos **t**.
This man me want-pres-3sg give shivers
'This man wants to make me shiver.'
b. Este tipo de película **me** quiere dar escalofríos **t**.
this kind of movie me want-pres-3sg give shivers
'This kind of movie tends to make me shiver.'

The assumption that Cl Cl control verbs assign a theta-role to their subject also explains why, unlike their raising counterparts, these verbs cannot occur with expletive subjects (which are non-overt in the languages under consideration). The Italian examples in (51), from Burzio (1986: 362), are intended to illustrate the raising (51a) vs. control (51b) contrast in Cl Cl constructions:[36]

(51) a. pro **ci** dovrebbe essere **t** molta gente a la festa.
there CI have-cond-3sg be many people at the party
'There would have to be many people at the party.'
b. *pro **ci** vorrebbe essere **t** molta gente a la festa.
there CI want-cond-3sg be many people at the party
'There would want to be many people at the party.'

Facts like those in (50) and (51) indicate in particular that control verbs in Cl Cl constructions cannot be assumed to have lost the property of necessarily co-occurring with a subject of their own.[37]

This is also corroborated by the fact that there is no essential semantic distinction between Cl Cl variants and in situ variants for these verbs.

3.4 Summary

Below we summarize the problems for the VP option of the Dual Subcategorization Hypothesis:

- Some (Italian) Cl Cl participles always determine the form of the perfective auxiliary (*essere*).
- (Italian) Cl Cl verbs do not undergo Aux-to-C.
- Some (Italian) Cl Cl verbs may undergo passive formation.
- Cl Cl complements manifest V-to-I.
- Cl Cl complements may contain infinitival particles, which occur higher than VP.

- Cl Cl complements may marginally contain a fronted *wh*-word.
- Some Cl Cl verbs assign a theta-role to their subject.

4 Restructuring

4.1 Introduction

Cl Cl verbs are sometimes called 'restructuring verbs'. The term 'restructuring' comes from an extremely influential article by Luigi Rizzi on Cl Cl in Italian (Rizzi 1978). The generalization it covers is that the verb of an infinitival complement can lose its independent status during the derivation, with the result that the phrases it semantically heads (VP, IP, CP) become inoperative (that is they can be considered to be absent). Restructuring would be (optionally) triggered by Cl Cl verbs, but not by other infinitival selecting verbs. The process, which we represent schematically in (52), entails a fusion of the complement clause and the matrix clause into one clausal structure:[38]

(52) **Restructuring (optional):**

$[_{VP}\ V\ [_{IP}\ [_{VP}\ V]]]$ → $[_{VP}\ V{+}V]$

$[_{VP}\ V\ [_{CP}\ [_{IP}\ [_{VP}\ V]]]]$ → $[_{VP}\ V{+}V]$

4.2 The verbal complex

As stated above, Restructuring is brought about because the complement verb loses its independent status. How does this happen? The answer is that the matrix verb and the complement verb come to form one 'verbal complex', which as such then functions as the head of the whole clause. Before discussing the status of this complex in the languages we are considering, it is worth noticing that other language groups present more clear-cut evidence for the presence of such a complex in constructions comparable to the Romance Cl Cl ones. Examples are the Dutch and German Verb-Raising constructions (see chapter 75), which arguably involve adjunction of the complement verb to the matrix verb and Verb Incorporation constructions, such as those ocurring in, for instance, the Inuit languages, in which the complement verb is incorporated into the matrix verb. Verb Raising and Verb Incorporation are triggered by roughly the same class of verbs as our Cl Cl verbs, and involve analogous violations of the Clause Mate Condition.

Now, one possible hypothesis about the verbal complex in Romance Cl Cl constructions is that it has essentially the same features as Verb Raising and/or Verb Incorporation complexes. The latter two differ from each other in that verbs triggering Verb Raising are morphologically independent, whereas Incorporation Verbs are affixes, whose morphological requirements are satisfied by the incorporated verb. The morphological independence of Verb Raising verbs manifests itself by the fact that they move out of the verbal complex when further verb

movement is required in the matrix domain. Romance Cl Cl verbs are clearly not affixes and, as we discussed in section 1.2.5, (at least in Italian) they can be separated from the complement verb by adverbials when they undergo V-to-I movement. This means that if the Romance verbal complex is to be equated with the verbal complexes of either Dutch/German or Inuit, it patterns with the former. (53) presents an example of the relevant aspects of a Dutch sentence, before (53a) and after Verb Raising (53b):[39]

(53) a. . . . dat Juana [PRO het lied zingen] wil
. . . that Juana the song sing want-pres-3sg
'. . . that Juana wants to sing the song'
b. . . . dat Juana [PRO het lied] wil+zingen

(54) contains the analogous pair for Spanish, under the same analysis:

(54) a. . . . que Juana quiere [PRO cantar la canción]
. . . that Juana want-pres-3sg sing the song
'. . . that Juana wants (to) sing the song'
b. . . . que Juana quiere+cantar [PRO la canción]

Observe that in the SOV language Dutch the order between the embedded and the matrix verb is inverted, a fact that provides clear evidence for the existence of the creation of the verbal complex.[40] This type of evidence is unavailable in the Romance Cl Cl languages. One might assume that this follows from the SVO nature of these languages and the fact that for some reason the complement verb always surfaces as the right-hand member of the complex (as we have assumed for (54b)). But notice that we know that at least in Italian the matrix verb can undergo V-to-I movement alone, thereby disrupting the putative complex. It might well be the case that this lonesome V-to-I movement is the general picture in Romance Cl Cl languages (recall that in these languages verbs always move to I). If this is so, the (putative) complex will never surface as such and might well have been created by attachment to the left.

Thus, the existence of a complex of the Dutch/German kind is difficult, if not impossible, to provide independent evidence for in Romance. Let us assume, nevertheless, that it is created at some stage. We have to consider, then, what is the right configuration for this to happen. We follow here the current standard assumptions about the formation of head complexes, which is that such complexes are created by adjunction of the lower head to the higher head, as an instance of head movement. A well-known property of head movement is that the target head must govern the maximal projection of the source head, which entails that intervening heads may not be skipped. For IP complements this means that the complement verb first has to move to I – to which it adjoins under standard assumptions – and then adjoins, together with I, to the matrix verb. CP complements require an additional step: V+I has to pass through C. In (55) we

exemplify with the derivation for *Juana quiere cantar la canción* ('Juana wants to sing the song'). For the sake of concreteness we go on assuming that the adjunction to the matrix verb is to the right, but nothing hinges on this:

(55) a. Juana quiere [$_{CP}$ C [$_{IP}$ PRO I [$_{VP}$ cantar la canción]]] →
b. Juana quiere+[cantar+I] [$_{CP}$ t [$_{IP}$ PRO t [$_{VP}$ t la canción]]]

The assumption that Cl Cl necessarily involves the creation of a verbal complex by means of head-movement accounts well for a number of properties of the Cl Cl construction:

(i) In the first place, the complement must be governed by the matrix verb, because otherwise adjunction of the complement verb to the latter is excluded.
(ii) Furthermore, any intervening head that blocks V→I(→C)→V movement will prevent formation of the complex and hence Cl Cl. This holds true, for instance, for the lexical C of finite sentences and also for the negative particle, at least under the assumption that in the relevant languages this particle is a head occurring above I (cf. Zanuttini 1991).[41] Thus the non-applicability of Cl Cl out of finite complements and complements with a negative particle follows automatically.
(iii) Likewise, the impossibility of having an intervening lexical head – as distinct from a Cl Cl verb – insures the local character of Cl Cl. When such a head is a Cl Cl verb complex, verb formation may be assumed to proceed stepwise.
(iv) Another property of Cl Cl complements, discussed in section 1.2.5, was that they show restrictions with respect to fronting of the complement. Such restrictions also seem to follow. Moving the CP/IP prior to complex verb formation will destroy the required government relation between the matrix verb and the complement. After creation of the complex, the embedded verb and the complement are different constituents, so that one doesn't expect them to move together. Notice that cases in which the complement does seem to move (section 1.2.5) might be instances of Remnant VP Movement, applying after Restructuring, movement of the matrix V to I and Cl Cl.

Before going on to the next subsection, in which we will discuss the effects of Restructuring for Cl Cl and its corollaries, we must pay attention to two points that may be problematic for Romance complex verb formation. The first concerns the presence of infinitival particles (cf. (48) above). These particles, which occur between the two verbs, have to be assumed to form part of the verbal complex. The details of this remain to be worked out. The second point concerns the (marginal) possibility of Cl Cl out of complements with *wh*-phrases preceding the complement verb (cf. (49)): this seems to be unaccountable under the hypothesis that Cl Cl always involves the complex under consideration.

In what follows we'll go on assuming that the verbal complex is formed by concrete adjunction, ignoring the problems discussed above. It should be mentioned, however, that these problems have not gone unnoticed, and various alternatives to verbal complex formation in Romance have been proposed in order to deal with them. According to Rizzi (1978), in fact, the verbal complex is formed as a consequence of reanalysis of linearly adjacent lexical elements in the terminal string. More specifically, given the string *V (C) Subj V*, where C is empty/absent and Subj is PRO or trace, the latter are ignored and the two verbs come to form one complex, by rebracketing: $[_{VComplex}$ *V (C) Subj V]*. Rizzi explicitly allows infinitival particles and *wh*-elements to form part of the complex, and also adverbials (the fact that the order V–Adv–V was produced by V-movement to I was not known at the time). More recent proposals involve, for instance, *reindexing* (Zubizarreta 1980) or *covert incorporation* (Baker 1988a). Roberts (1997b) develops the interesting hypothesis that the effect of adjunction is invisible because the adjoined verb is spelled out in the position of its trace.

4.3 Restructuring and (the corollaries of) Cl Cl

Let us now consider how the Restructuring Hypothesis accounts for Cl Cl and its corollaries.

As mentioned earlier, the effect of complex verb formation is that the complement and matrix clause restructure to one simplex clause. The semantic head of this clause is the verbal complex. The matrix subject now acts as the structural subject of this complex, and the same holds true, mutatis mutandis, of the objects and adjuncts of the (original) complement verb. This, obviously, raises questions about the semantic relations in the restructured clause as well as about the status of the original complement subject. We will return to those in section 3.3.2. The structures in (56) illustrate the effect of Restructuring for a Raising (56a) and Control (56b) verb with a transitive complement. In the restructured versions we put the complement subject between brackets, in line with Rizzi's assumption that it is irrelevant for the other structural relations in the clause:

(56) a. $[_{CP}\ [_{IP}$ DP $[_{VP}$V $[_{IP}$ t $[_{VP}$ V DP]]]]] → $[_{CP}\ [_{IP}$ DP $[_{VP}$V+V (t) DP]]]
b. $[_{CP}\ [_{IP}$ DP $[_{VP}$V $[_{CP}\ [_{IP}$ PRO$[_{VP}$ V DP]]]]]] → $[_{CP}\ [_{IP}$ DP $[_{VP}$V+V (PRO) DP]]]

Let us suppose (as did Rizzi at the time) that the factors that constrain Cl Pl, DP-Movement, and Null Operator Movement, and account for the lack of Cl Cl, Long DP-Movement, and Long Null Operator Movement with standard verbs, are constraints on the application of rules. If this is so, the assumption that the rules under consideration – when targeting a position in the (original) matrix clause – apply after Restructuring leads to the required results: as the rules apply freely within simplex clauses and as the effect of Restructuring is precisely that of producing a simplex clause, the constraints must have been neutralized at that point.

An alternative view, which produces the same result, is that the relevant constraints are conditions on S-structures. In this view, the moment of application of Restructuring is irrelevant. Cl Pl, DP-Movement, and Null Operator Movement can apply in such a way that they target the matrix clause, without Restructuring having yet taken place. The result, of course, will only be grammatical at S-structure if Restructuring does subsequently occur.

Under Restructuring the Italian *Avere* → *Essere* Shift can be equated to Auxiliary Choice in simplex clauses, along the lines presented in Burzio (1986). According to Burzio, the choice of *avere* vs. *essere* is not directly dependent on the type of the main verb, but on the structural relations within the clause. In particular, *essere* is required in the 'ergative' S-structure configuration in (57), where the subject binds its trace in direct object position, and *avere* otherwise:

(57) $[DP_i$ Aux $[_{VP}$ Part $t_i]]$

Consider now the derivation of (37b), repeated here as (58a), which constitutes the prototypical example of *Avere* → *Essere* Shift. From its D-structure in (58b) we derive the structure in (58c), by moving the complement direct object (PRO) to the subject position of the complement. As the structure is one of subject control, the index of the chain PRO–trace is the same as that of the matrix subject. Restructuring now produces the simplex (58d), in which the relation between the subject DP *Mario* and the trace is structurally identical to the relation between the subject and its trace in (57). Given this, the required auxiliary is *essere*:[42]

(58) a. Mario è voluto tornare a casa.
Mario be-pres-3sg wanted come back to house
'Mario has wanted to come back home.'

b. [Mario Aux $[_{VP}$ voluto $[_{CP}$ $[_{IP}$ ec $[_{VP}$ tornare PRO a casa]]]]]

c. $[Mario_i$ Aux $[_{VP}$ voluto $[_{CP}$ $[_{IP}$ PRO_i $[_{VP}$ tornare t_i a casa]]]]]

d. $[Mario_i$ Aux $[_{VP}$ voluto+tornare (PRO_i) t_i a casa]]

Two questions that remain to be considered here are:

- Can the Restructuring Hypothesis account for the fact that Cl Cl doesn't permit clitic splitting (cf. section 1.2.2)?
- Can this hypothesis account for the (lack of) correlation between Cl Cl and its 'corollaries', as summarized in section 2.5?

As we will see below, these questions, which are closely related, have as yet not been answered in a satisfactory way.

One possible view on Cl Pl is that it necessarily applies after Restructuring (or that it targets the highest possible position allowed by S-structure constraints). In cases with more than one clitic in the complement, this would automatically involve climbing of all clitics, so that clitic splitting would not occur. It would

also explain why there is a correlation between Long DP-Movement and Long Operator Movement (which are dependent on Restructuring) and Cl Cl.

Paradoxically, however, the fact that a 'Restructuring phenomenon' such as the *Avere* → *Essere* Shift co-occurs with clitics in situ suggests that restructuring does not automatically imply Cl Cl, that is, that Cl Pl in Restructuring constructions has the choice of targeting either the complement verb or the matrix verb. If this is so, there must be independent explanations for the correlations mentioned in the preceding paragraph. We are forced to conclude that further research is required on this point.

4.4 Restructuring and the T-model of grammar

The Restructuring Hypothesis accounts for many of the characteristics of Cl Cl constructions. The problems it meets with respect to infinitival particles are presumably not unsolvable, and the same holds true for the (lack of) correlation with other Restructuring phenomena and the prohibition against split clitics. The construction with fronted *wh*-phrases occurring between the verbs involved seems to remain a problem, but its marginality may indicate that it does not pertain to the core case of Cl Cl and that perhaps there is another explanation for it (in which case, of course, it also would no longer constitute a counter-example to the Dual Subcategorization Hypothesis). There remains, however, a serious conceptual problem, which we'll now proceed to discuss.

The problem under consideration arose as a consequence of a shift in ideas about the organization of grammar that occurred after Rizzi wrote his article. The current model of that time was the so-called Extended Standard Theory, in which, crucially, D-structure formed the input to semantic interpretation. Within this model, Restructuring affects the syntactic structure, but doesn't have any semantic consequences. Later developments led to the 'T-model' of grammar, in which semantics was considered to be dependent on S-structure. It is easy to see that Restructuring, as proposed by Rizzi, is problematic within this model.

Consider once more the Restucturing derivations in (56), repeated here as (59):

(59) a. $[_{CP}\ [_{IP}$ DP $[_{VP}$V $[_{IP}$ t $[_{VP}$ V DP]]]]] → $[_{CP}\ [_{IP}$ DP $[_{VP}$V+V (t) DP]]]
b. $[_{CP}\ [_{IP}$ DP $[_{VP}$V $[_{CP}\ [_{IP}$ PRO$[_{VP}$ V DP]]]]]] → $[_{CP}\ [_{IP}$ DP $[_{VP}$V+V (PRO) DP]]]

In the T-model the derived structures at the right-hand side form the input to the semantic component. However, we know that Restructuring is optional and that non-restructured clauses have the same interpretation as their restructured counterparts. This entails that semantically the derived structures must be interpreted as identical to their basic structures at the left-hand side. But how can that be achieved? For instance, the IP/CP complement, categorially and semantically required by the matrix verb, has disappeared altogether (observe that this also raises the question as to what happens with the functional heads (I,C) of the complement). Moreover, the structural relations between the two verbs and their

arguments are not the ones from which one normally deduces the type of thematic relations they hold. Thus, the DP object isn't contained in the VP uniquely headed by the V of which it is the internal argument and, similarly, the subject DP bearing the external argument of the (original) matrix verb (in the control construction) isn't governed by the VP of which this verb is the sole head. Another point concerns the status of the complement subjects. We have seen that the latter play no active syntactic role in the restructured clause, which might indicate that they are actually absent. But if this is so, how can the presence of the thematic roles they transmit (59a) or bear (59b) be accounted for? If they are present, on the other hand, their interpretation poses problems analogous to that of the other DPs.

We cannot but conclude that, given the T-model (or any model in which interpretation is dependent on the output of transformations), Restructuring, as proposed by Rizzi, too strongly affects the structure of complex clauses.

5 Less radical forms of Dual Subcategorization and Restructuring

5.1 Introduction

We know at this point that the VP option of the Dual Subcategorization Hypothesis is empirically problematic and that Restructuring in the sense proposed by Rizzi is too strong in the light of later developments of the theory of grammar. This seems to indicate that the attempts to reduce Cl Cl constructions to one single clause don't lead to the required result. On the other hand, it would be implausible to assume that the intuitions behind this line of research – which was extremely strong from the middle of the 1970s to the beginning of the 1980s – are totally unfounded. What seems to be the case is that the implementation of these intuitions has led to results that involve the absence or elimination of too much structure. An obvious step then is to investigate whether more subtle approaches, which still maintain the hypothesis that Cl Cl and its corollaries follow from the fact that the complement lacks certain clausal properties at the relevant level of representation, fare better. Actually, since the early 1980s, various linguists have developed hypotheses along these lines, thereby often using far more intricate theoretical tools than were available earlier on, but clearly not neglecting the considerable number of insights that were attained before. Below we briefly present some main aspects of these later developments.

5.2 Weak variants of the Dual Subcategorization Hypothesis

According to the canonical version of the Dual Subcategorization Hypothesis, Cl Cl verbs select two types of complements: normal CP/IP complements and 'poorer' VP complements. The optionality of Cl Cl follows from the fact that only

in the latter case do clitics attach to the higher verb. The two hypotheses to be discussed below are also based on the idea that besides normal complements – which don't allow for Cl Cl – Cl Cl verbs may take impoverished (infinitival) complements – which require Cl Cl.

5.2.1 Cl Cl complements without theta-roles

The idea that is pursued in Roberts (1997b) is that complements of Cl Cl verbs are always structurally complete, but may be semantically defective. He claims, more specifically, that such verbs can behave 'auxiliary-like' in the sense that they may fail to assign a theta-role to their infinitival complement. The lack of this role has as a consequence that syntactic rules don't interpret this complement as a clause.[43] In other words, processes relating positions in the complement to positions in the matrix clause will not violate the Clause Mate Condition. In (60) we present a schematic representation of this approach: (60a) is the normal case for infinitival complements, including the non-Cl Cl variant of Cl Cl verbs, while (60b) is the option that allows for Cl Cl and its corollaries:

(60) a. [V [$_{CP/IP}$]]

theta
domain of Clause
Mate Condition

b. [$V_{aux\text{-}like}$ [$_{CP/IP}$]]

domain of Clause Mate Condition

Notice that this analysis eliminates all the problems resulting from the lack of clausal structure under the VP option of the Dual Subcategorization Hypothesis (sections 3.3.2, 3.3.3). However, the assumption that Cl Cl verbs may behave 'auxiliary-like' seems to be somewhat stipulative, in particular in light of the fact that (non-raising) Cl Cl verbs remain able to theta-mark their own subject, or, in the case of unaccusatives (cf. note 10), object.

5.2.2 Cl Cl complements with impoverished I

Another alternative to the canonical Dual Subcategorization Hypothesis is one in which Cl Cl climbing complements optionally lack some structure, but not as much as is assumed under the VP option. This possibility is opened up by certain new insights into the structure of the clause in general.

We have hitherto been assuming that, in addition to V, clauses contain at most two other heads, I and C. The latter are called functional heads. Since the early 1990s there has been a strongly growing insight that I and C are not sufficient to account for the empirical complexity of clauses. As a consequence, I is now assumed to split up in several distinct functional heads (with their concomitant projections). This assumption is known as the Split Infl Hypothesis. We must mention that there is as yet no clear agreement as to the number of these heads,

or as to their precise status, This is the reason why in (61), which represents a normal clause, we simply reproduce them as I_1, I_2 . . . I_n:

(61) $[_{CP}\ C\ [_{IP1}\ I_1\ [_{IP2}\ I_2 \ldots [_{IPn}\ I_n\ [_{VP}\ V]]]]]$

It may be the case now that, in addition to a complete CP/IP_1 complement, Cl Cl verbs may select an infinitival complement in which some (or only one) of the I_x heads and their projections are absent and that this is precisely what allows for Cl Cl. This idea, to which we'll briefly return in section 6.3.2, is explored in Martins (2000).

5.3 Intermezzo: Cl Cl verbs as functional categories

The introduction of the Split Infl Hypothesis mentioned above has opened the possibility that Cl Cl verbs themselves function as functional heads; that is, that they are lexicalizations of notions (such as aspect and modality) that belong to the functional domain (i.e., the domain above VP in (61) of the clause). This position is defended extensively in Cinque (2000b). It should be mentioned here that Emonds (1999) also classifies Cl Cl verbs as functional categories. In his approach, this term stands for closed classes of categories that lack purely semantic features and behave or may behave distinctly from their lexical counterparts (i.e., from non-Cl Cl verbs in the case under consideration). Both in Cinque's and in Emond's proposal, Cl Cl constructions are simplex clauses and as such pose at least a number of the problems summarized in section 3.4. Especially in Cinque (2000b), some of these are adressed explicitly.

5.4 Weak Restructuring

One effect of canonical Restructuring is that it crucially alters the relations between constituents in the clause. Various researchers have claimed that such an alteration can be obtained without the elimination of structure assumed by Rizzi (1978).[44] Most of them do assume some form of complex verb formation. Perhaps the most articulate proposal along these lines is the one formulated in Baker (1988a: 64), under the name of the Government Transparency Corollary.[45] In (62) we reproduce this principle:

(62) **The Government Transparency Corollary (GTC):**
A lexical category which has an item incorporated into it governs everything which the incorporated item governed in its original structural position.

Baker's original proposal was formulated for incorporating languages, in which verbal complexes are headed by affixes. However, there is no bar to extending it to verbal complexes in other languages, as Baker himself does for Romance. For this purpose "incorporated (into)" can be interpreted as 'adjoined (to)'. In order

to discuss the effect of the GTC, we'll consider the example in (63), which was presented above as (55b):

(63) Juana quiere+ [cantar+I] [$_{CP}$ t [$_{IP}$ PRO t [$_{VP}$ t la canción]]].
Juana want-pres-3sg sing the song
'Juana wants to sing the song.'

As the reader may recall, this example represents the hypothesis that the complement verb of Cl Cl verbs adjoins to the matrix verb, after having passed through I and (in control cases) C of the complement. The result is a complex verb. Given the GTC, now, the matrix verb *quiere* in (63) governs not only the complement CP itself, but also the object of the adjoined verb (*cantar*), i.e., *la canción*. The latter government relation thus abstracts from the presence of the intervening CP, IP, and VP nodes. These nodes, however, remain present, as do the PRO subject and the traces of the complement verb.

In (64) we present the main aspects of this analysis, using boldface to indicate the 'restructured' government relation between the matrix verb and the embedded object. We also add the matrix VP node, which is the minimal domain in which this relation is established:

(64) . . . **[$_{VP}$ V**+[V+I] [$_{CP}$ t [$_{IP}$ PRO t [$_{VP}$ t **DP]]]]**

Normally VP constituents are free to move out of the minimal VP in which they are governed. The assumption is that this is also the case in structures like (64). It follows that if the object of the complement is a clitic, there is no bar to moving it out of the matrix VP (where it adjoins to the verb, which has moved to matrix I). Similarly, there are no obstructions to Long DP-Movement and Long Operator Movement.

One final remark here is that the proposal hinges crucially on the original government relation between the complement verb and the DP. Extension to other clitics requires proof that the latter are likewise governed by this verb in their base position.

6 The constraining factor for Cl Cl in non-Cl Cl contexts

6.1 Introduction

Until this point we have been employing the term 'Clause Mate Condition' to express the idea that the rules involved in Cl Cl and its corollaries (Cl Pl, DP-movement, Null Operator Movement, and *Avere* → *Essere* Shift) must normally apply within a minimal CP or IP. As indicated in section 1.3, this term is merely descriptive. As such, it abstracts away from the specific factors that are responsible for the fact that 'long' applications of these rules are only allowed in the

case of Cl Cl complements. In the present section we'll discuss a number of hypotheses as to what the Clause Mate Condition really stands for. As we have been doing all along, we will concentrate primarily on Cl Cl. In this case, that means that our central question will be: what is the factor that constrains Long Cl Pl (Cl Cl) in normal cases and how come this factor is inoperative in Cl Cl contexts? As for the corollaries of Cl Cl, we'll only consider what the possible answers to this question imply for them.

As discussed in section 1.3, the minimal domain in which the constraint on Cl Cl must be sought is the domain above the VP in the complement of non-Cl Cl raising verbs. The elements that make up this domain are the IP boundary, the I' projection, the head I, and the DP subject. This means that the constraint must involve at least one of these elements, i.e., that at least one of the situations in (65) holds true for normal Cl Pl (the exclamation mark indicates the factor involved in the constraint):

(65) 1a. $[_{IP}!$ $[_{VP}$ **Cl**]]

1b. $[_{IP}$ $[_{I'}!$ $[_{VP}$ **Cl**]]]

2. $[_{IP}$ I! $[_{VP}$ **Cl**]]

3. $[_{IP}$ DP! $[_{VP}$ **Cl**]]

Below we consider each of these hypotheses in turn. When relevant, we will also examine how the constraint under consideration can be obviated in Cl Cl cases. In doing so, we will no longer take into consideration the standard Dual Subcategorization and Restructuring Hypotheses, which we have rejected as too strong. (Notice, incidentally, that according to these hypotheses all factors in (65) are absent or inoperative; the same holds true for Cinque's and Emonds's approaches, mentioned in section 5.3, which we will also disregard below.)[46]

6.2 Hypothesis 1: IP, I'

It is not very plausible that IP or I' functions as a constraining factor, at least not on its own. Raising constructions such as the one in (66a) (with the non-Cl Cl clitic verb *parecer* 'seem') show that I' and IP don't block DP-movement. Likewise, they don't block *wh*-movement (cf. (66b)), or V-movement into C. The latter is attested, for instance, in the Italian Aux-to-C construction in (66c):

(66) a. Juan$_i$ $[_{I'}$ parece $[_{IP}$ t_i haber trabajado mucho]]].
Juan seem-pres-3sg have worked a lot
'Juan seems to have worked a lot.'

b. No sé $[_{CP}$ a quién$_i$ $[_{IP}$ $[_{I'}$ contestar primero t_i]]].
not know-pres-1sg to whom answer first
'I don't know whom to answer first.'

c. [$_{CP}$ Essendosi$_i$ [$_{IP}$ le mele [$_{I'}$ t$_i$ mangiate]]]
being+SI the apples eaten
'The apples having been eaten . . .'

If the IP (alone) or I' (alone) were to block Cl Cl, the latter process would be very exceptional. Moreover, it would be difficult to explain why blocking of Cl Cl goes together with blocking of Long DP-Movement and Long Null Operator Movement, which are, respectively, DP-movement and movement to the same position as *wh*-phrases. We therefore reject the hypothesis that either I' or IP is the sole constraining factor.[47]

6.3 Hypothesis 2: I

The choice between I and the subject as the constraining factor for Cl Cl depends crucially on the exact details of Cl Pl in simplex clauses. As we'll see, the standard assumption about this process favors the assumption that this factor is I, but requires the additional assumption that Cl Cl constructions involve some form of complex verb formation. We will discuss this option first.

6.3.1 I and Weak Restructuring

The standard assumption about Cl Pl is the one in (67):

(67) **Cl Pl (standard):**
Clitics attach directly to the first available (non-participial) verbal host, after V-movement.

Notice that the alternative, in which the clitic attaches to V before V-movement and V+cl undergo V-movement together, runs into problems in Cl Cl contexts: it predicts that the complement V and its clitics will always surface together, i.e., it only permits an in situ analysis. In short, the existence of Cl Cl forces Cl Pl to be postcyclic, at least under the standard assumption that clitics attach directly to the first available host.[48]

Given (67), I functions as the 'constraining factor' for Cl Cl out of normal infinitivals. This is so because in the languages under consideration infinitival verbs move to I. This is illustrated in (68a), where the fact that V-to-I movement has applied is corroborated by the presence of the adverb *inmediatamente* 'immediately' between the verb and the object. Given (67), Cl Pl will attach the clitic *le* to V in I. The result is represented in (68b):

(68) a. Juan promete dar**le** inmediatamente el libro.
Juan promise-pres-3sg give him immediately the book
'Juan promises to give him the book immediately.'
b. Juan promete [$_{CP}$ [$_{IP}$ PRO dar+I+**le** inmediatamente [$_{VP}$ t el libro **t**]]]

As (68) implies that the 'first available host', i.e., V+I, may not be skipped, clitics cannot end up in a position higher than I.

As for Cl Cl contexts, one must assume here that the complement verb is not an 'available host'. The hypothesis that Cl Cl constructions involve verbal complex formation (sections 4.2, 5.4) in fact predicts this. This is so because, under standard assumptions, the head of such a complex is the matrix verb. As only heads of complex lexical units are visible for outside rules (cf. Williams 1981b), the complement verb becomes 'invisible' and hence unavailable as a host for Cl Pl. It follows that Cl Pl must look higher for the first available host, which is the matrix verb.

Let us illustrate the foregoing with the Cl Cl example in (69a). In (69b) we present its D-structure. (69c) is the structure after V-movement (we assume that the matrix verb moves to matrix I) but before Cl Pl:

(69) a. Juana **lo** quiere ver.
Juana it want-pres-3sg see
'Juana wants to see it.'
b. Juana I [$_{VP}$ quiere [$_{CP}$ [$_{IP}$ PRO I [$_{VP}$ ver **lo**]]]]
c. Juana quiere$_i$+I [$_{VP}$ t$_i$+ver$_j$+I [$_{CP}$ t$_j$ [$_{IP}$ PRO t$_j$ [$_{VP}$ t$_j$ **lo**]]]]

(67) now forces the clitic *lo* to look for the first available verbal host. Given the fact that *ver* is a non-head in the complex *t+ver+I*, it is unavailable. Thus, the clitic attaches to the higher *quiere+I*.

Under the assumption that verbal complex formation triggers some form of (weak) Restructuring (section 5.4), the violation of the Clause Mate Condition for the corollaries of Cl Cl involves the same considerations as those discussed before in sections 4.3 and 5.4.

6.3.2 I and the target of V-movement

An influential alternative to the standard view on Cl Pl, first proposed in Kayne (1989b), makes a crucial distinction between preverbal clitics (proclisis) and postverbal clitics (enclisis):

(70) **Cl Pl (alternative 1):**
proclisis: Clitics attach to the first available verbal host.
enclisis: Clitics attach to the first designated inflectional head.

One important extra element of this proposal is that in the case of enclisis the target of verb movement is not the head to which the clitic attaches, but the position to the immediate left of this head.

In Romance Cl Cl languages, where infinitivals require enclisis, infinitival I functions as a designated host for Cl Pl. This entails that clitics move to I and that the verb surfaces to the immediate left of I (it adjoins to I' in Kayne's proposal). This gives the following analysis for, e.g., (68):

(71) Juan promete [$_{CP}$ [$_{IP}$ PRO dar [$_{I}$ **le**+I inmediatamente [$_{VP}$ t el libro **t**]]]]

Under this analysis, infinitival I acts as the constraining factor for Cl Cl out of normal infinitival complements because it is the first designated host for Cl Pl and as such may not be skipped.

Notice that, given the fact that the verb and the clitic form separate constituents in this proposal, it becomes possible that the clitic (+I) moves to a higher position on its own. This is precisely what happens in Cl Cl cases, according to Kayne. In his view, Cl Cl verbs are special in that they allow for the I head of their complement to be extracted. When this head contains one or more clitics, extraction will automatically lead to Cl Cl. In (72) we reproduce the result of this analysis for *Juana lo quiere ver* (= 69a). We assume, with Kayne, that *lo+I* moves through C and adjoins to the I of the matrix clause, after movement of the finite matrix verb to this position:

(72) Juana [**lo**+I]$_j$+[quiere$_i$+I] [$_{VP}$ t_i [$_{CP}$ t_j [$_{IP}$ PRO ver [$_{I'}$ t_j VP]]]]

Though Kayne doesn't discuss this, it is possible that the extraction of the I head leads to some form of restructuring, which in turn may provide an explanation for the corollaries of Cl Cl.

Variants based on Kayne's analysis of Cl Pl in infinitivals involve elimination or absence of the constraining inflectional head in Cl Cl complements. For instance, Bok-Bennema and Kampers-Manhe (1994) argue that I adjoins alone to the matrix verb, before Cl Pl. Another example is Martins (2000), who, as mentioned in section 5.2.2, makes use of the Split Infl Hypothesis. As discussed, she proposes that certain of the 'atoms' of I (I_x heads) are absent in Cl Cl cases. These include the one that is the designated target of Cl Pl in normal infinitivals.

6.3.3 Summary

The two versions of Cl Pl discussed above are the following:

(73) **Cl Pl (standard):**
Clitics attach directly to the first available (non-participial) verbal host, after V-movement.

Cl Pl (alternative 1):
proclisis: Clitics attach to the first available verbal host.
enclisis (the relevant case for infinitivals in Cl Cl languages): Clitics attach to the first designated inflectional head. V-movement is to the immediate left of this head.

Each of these entails that I normally functions as the 'constraining factor' on Cl Cl, but in different ways. Obviation of the factor in Cl Cl contexts also proceeds differently. In both cases the obviation might trigger Weak Restructuring, which in turn may provide an explanation for the occurrence of the corollaries of Cl Cl.[49] (74) presents a summary of the differences and similarities of the two approaches:

(74) **Cl Pl (standard):**

Constraining factor (CF) Cl Cl:	$[_{IP}$ I! $[_{VP}$ V **Cl**]]
Reason CF:	V → I before Cl → V+I
Obviation CF in Cl Cl complements:	V +I → (C) → V_{matrix}
Obviation CF corollaries:	Weak Restructuring (?)

Cl Pl (alternative 1):

Constraining factor (CF) Cl Cl:	$[_{IP}$ I! $[_{VP}$ V **Cl**]
Reason CF:	Cl → I
Obviation CF in Cl Cl complements:	Cl+I → (C) → I_{matrix} (for variants see end of section 6.3.2)
Obviation CF corollaries:	Weak Restructuring?

6.4 Hypothesis 3: the subject

6.4.1 Introduction

Over the years the idea that the presence of the subject of infinitival complements normally prevents clitics leaving these complements has been extremely pervasive. Indeed, most of the proponents of the standard Dual Subcategorization and Restructuring Hypotheses have followed it. Of interest here, in addition, is one analysis we have not discussed so far, which is the one presented in Burzio (1986), as a version of restructuring (cf. note 44). Burzio boldly extracts the VP of the complement over the subject, thereby placing it outside the domain of the latter and obviating the constraint imposed by it, so that any Cl within this VP is free to move to a higher position. In (75) we present a schematic representation of Burzio's VP-Preposing Rule (notice that at that time Romance IPs were assumed to consist solely of a subject and an IP):

(75) **Burzio's VP-Preposing Rule:**

The reason for the idea that the presence of the subject blocks Cl Cl is to a great extent historical: at the time these hypotheses were developed, extraction from non-finite clauses was generally be assumed to be constrained by the Specified Subject Condition (SSC) of Chomsky (1973), which prohibited relating positions within a clause to positions outside it over a subject DP. Cl Cl, thus, was seen as unexceptional, that is, as obeying the general constraint on extraction rules.

Within the Government and Binding approach (Chomsky 1981), the SSC was replaced by Binding Condition A, which as far as extractions are concerned is only relevant for extractions of DPs. This aspect of Binding Condition A was later subsumed under Rizzi's (1990b) Relativized Minimality requirement, which

prohibits (among other things) A-movement from crossing intervening XPs in A-positions, such as subject DPs.

Given these developments, the idea that Cl Cl with non-Cl Cl verbs is constrained by the presence of the complement's subject only seems to be feasible if Cl Cl involves A-movement. That this may be possible is discussed below.

6.4.2 Cl Cl and A-movement

At least for direct object clitics, there is empirical evidence that Cl Pl requires intermediate A-movement (this was first observed in Kayne 1989a). Consider in this respect first the Italian example in (76):

(76) Gianni **li** ha mangiati **t**. Italian
Gianni them-masc have-pres-3sg eaten-masc-pl
'Gianni has eaten them.'

Crucial here is the agreement between the clitic and the past participle (see chapter 48). Under the standard assumptions that agreement relations are instances of Specifier–Head agreement, we also have to assume that the participle has a specifier (an A-position) and that before cliticizing the clitic passes through its specifier position. In other words, the clitic first undergoes A-movement, or more precisely DP-movement, and is only subsequently cliticized. Thus, instead of (76) we have in fact (77), with two traces:

(77) Gianni **li** ha [**t** mangiati **t**].

If we now look at cases with Cl Cl of an object and a participle in the matrix clause, we see that they also manifest agreement (78a). This entails that we have to assume that the clitic passes through the specifier of the matrix participle (cf. (78b)), and that at least in this case we have a specific instance of Long DP-Movement, which apparently ignores the presence of the subject of the complement:

(78) a. Gianni **li** ha voluti mangiare.
Gianni them-masc have-pres-3sg wanted-masc-pl eat
'Gianni has wanted to eat them.'
b. Gianni **li** ha [**t** voluti [PRO mangiare **t**]].

An obvious extension of this analysis entails the assumption the relevant specifier position doesn't only occur with agreeing participles, but that all direct object clitics pass through it. Cliticization of such clitics can then be considered to be cliticization from this specifier onto V in I, with as a consequence that Cl Cl of direct object clitics always involves Long DP-Movement.

Notice that in order to extend this analysis to other clitics, it has to be assumed Cl Pl always entails intermediate A-movement to a specifier position; that is, that Cl Pl should be formulated as follows:[50]

(79) **Cl Pl (alternative 2):**[51]
step 1: Clitics move to a designated specifier position. (XP-movement)
step 2: Clitics attach to the first available verbal host. (proper Cl Pl)

Given (79) all Cl Cl entails 'long A-movement', or, as we will call it, Long XP-Movement.

6.4.3 Circumventing the complement's subject

Suppose that Cl Cl indeed involves Long XP-Movement. As discussed in section 6.3.1, this type of movement is normally excluded because it crosses the clausal subject and as such gives rise to a violation of Relativized Minimality. Then we need an account of why this violation doesn't occur in Cl Cl constructions. There are two possibilities: either the subject of Cl Cl complements doesn't count for Relativized Minimality, or there is some way in which XP-movement can circumvent the presence of the subject in such complements. We will consider each of these in turn.

First, it is possible that Relativized Minimality is not exceptionless. In fact, it cannot be so under the assumption that Cl Pl involves intermediate XP-movement. Consider, in this respect, the example in (80a). Here the movement of the indirect object clitic *le* to the intermediate XP must have crossed the direct object DP (cf. (80b)). As the latter occurs in an A-position, a strict application of Relativized Minimality predicts that the sentence will be ungrammatical, contrary to fact:

(80) a. Juana **le** da el libro.
Juana him give-pres-3sg the book
'Juana gives him the book.'
Juana **le t** [$_{VP}$ da el libro **t**].

On the basis of similar considerations, Roberts (1997b) claims that Relativized Minimality doesn't hold for A-movement (= XP-movement) in simplex clauses. This means that he in fact reduces Relativized Minimality to the Clause Mate Condition (for A-movement). If we assume that this is correct, any of the analyses of Cl Cl that allow for the apparent violation of the Clause Mate Condition will account for the fact that intermediate XP-movement of clitics can cross the DP-subject of these complements. One such analysis is that in which the complement is semantically defective, under the version proposed by Roberts himself (section 5.2.1). Another one is Baker's version of Weak Restructuring discussed in section 5.4.

The alternative way to circumvent the role of the subject in Cl Cl complements has already been mentioned in section 6.4.1. We refer to Burzio's VP-Preposing Rule. Notice, however, that given later insights, it cannot be solely the VP that preposes. This is so because the complement's V undergoes V-movement to I (section 3.3.2), and preposing the VP before this movement takes place would make it impossible for this rule to apply. Preposing it after V-movement, on the

other hand, makes wrong predictions with respect to word order: DP complements of the verb would surface to its left, contrary to fact; cf. (81):

(81) a. *Juana **te** quiere el libro mostrar.
Juana you want-pres-3sg the book (to) show
b. Juana te quiere t_i [$_{VP}$ t_j el libro t_i]$_k$ [PRO mostrar$_j$+I t_k].

An adaptation of Burzio's rule to a more actual framework is presented in Haverkort (1993), who makes use of the Split Infl Hypothesis (section 5.2.2) and places the first IP_x which follows the subject out of the domain of the latter. For Haverkort, who claims that all infinitivals have a complementizer, the target position of IP_x is the specifier of C. In (82) we present the essential aspects of Haverkort's rule, before (82a) and after (82b) preposing of the post-subject constituent (IP_2), to the specifier position of I_1. (We abstract from the V-movement within IP_2.)[52]

(82) a. . . . [$_{CP}$ C [$_{IP1}$ subject I_1 [$_{IP2}$ I_2 [$_{VP}$ V XP]]]]
b. . . . [$_{CP}$ [$_{IP2}$ I_2 [$_{VP}$ V XP]]$_i$ C [$_{IP1}$ subject I_1 t_i]]

The effect of preposing IP_2 is in essence the same as that of Burzio's VP preposing. In (82a) the presence of the subject blocks XP-movement out of the complement. In (82b) this is no longer the case and Long XP-Movement may freely apply. Within this analysis, Cl Cl verbs are special in that they allow for preposing of the constituent which follows the subject (IP_2) to the first position of their complement. It should be observed that the analysis can of course only be valid if the preposing rule itself is not sensitive to the presence of the subject.

One remaining question is whether these types of accounts may also hold for the corolloraries of Cl Cl. For Long DP-Movement this goes without saying, simply because it is an instance of Long XP-Movement. As for Long Null Operator Movement and *Avere* → *Essere* Shift, we must consider to what extent it is plausible that they are normally prohibited because of the fact that the presence of the subject of the complement induces a Relativized Minimality Violation. As for Long Null Operator Movement, it is possible that this rule, which always consists of movement of an object DP, involves the same intermediate XP-movement we are assuming for Cl Pl. If this is so, it will indeed be subject to the same constraint. As for the *Avere* → *Essere* Shift, recall that it requires the subject of the matrix clause to be related to the trace of PRO in the object position of the complement clause (section 4.3). Though this remains to be worked out, it isn't impossible that it is indeed Relativized Minimality that normally prevents this relation from being established over the (PRO) subject of the complement.

6.4.4 Summary

In (83) we repeat the version of Cl Cl presented in (79):

(83) **Cl Pl (alternative 2):**
step 1: Clitics move a designated specifier position. (XP-movement)
step 2: Clitics attach to the first available verbal host. (proper Cl Pl)

This version entails that the subject functions as the 'constraining factor' for Cl Cl in normal cases. There are at least three kinds of possible explanation for the fact that this factor is obviated (or is inoperative) in Cl Cl complements. It is possible that these account at the same time for the occurrence of the corollaries of Cl Cl. Below we summarize our findings:

(84) **Cl Pl (alternative 2):**

Constraining factor (CF) Cl Cl:	$[_{IP}$ DP! $[_{VP}$ V **Cl**]]
Reason CF:	Relativized Minimality
Obviation CF in Cl Cl complements:	a. defectiveness IP (CP)
	b. Weak Restructuring
	c. I_xP preposing
Obviation CF corollaries:	same as for Cl Cl (??)

6.5 Conclusion

The central question we have been considering in this section is: what is the factor that constrains Long Cl Pl (Cl Cl) in normal cases and how come this factor is inoperative in Cl Cl contexts? As possible factors we have considered the complement's IP, I', I, and the complement's subject. We have seen that the first two are not plausible candidates (section 6.2). The choice between the remaining two is to be strictly linked to the question of what is the exact nature of Cl Pl. Under the hypothesis that the factor is I, this question also plays a crucial role in the determination of what causes its inoperativeness in Cl Cl contexts. Answers to this latter question, however, provide no direct explanation for the corollaries of Cl Cl. Under the hypothesis that the factor is the subject, on the other hand, its inoperativeness (possibly) does entail such an explanation. The explanation of inoperativeness itself, however, is independent from the nature of Cl Pl and must be sought in a different direction. Albeit in updated versions, the hypotheses formulated in the earlier years of Generative Grammar remain relevant for this search. They also continue to play a role under the hypothesis that the factor is I, in particular in the investigation of the reason of the existence of the corollaries of Cl Cl.

Appendix 1 Italian examples

Standard example of in situ–Cl Cl alternation:

(1) a. Mario vuole leggerlo.
Mario want-pres-3sg read+it
'Mario wants (to) read it.'
b. Mario **lo** vuole leggere.

Cl Cl with raising verb:

(2) a. Giovanni dovrebbe prender**lo**.
Giovanni must-cond-3sg fetch+it
'Giovanni would-have to fetch it.'
b. Giovanni **lo** dovrebbe prendere.

Ungrammaticality Cl Cl with regular subject control verb:

(3) a. Mario odia legger**lo**.
Mario hate-pres-3sg read+it
'Mario hates to read it.'
b. *Mario **lo** odia leggere.

Ungrammaticality Cl Cl with regular subject-raising verb:

(4) a. Angela pareva aver**lo** accompagnato a casa.
Angela seem-past-3sg have+him taken to house
'Angela seemed to have taken him home.'
b. *Angela **lo** pareva avere accompagnato a casa.

((4b) is marginally accepted by some speakers.)

Impossibility of 'clitic splitting':

(5) a. Gianni **vi** **li** vuole mostrare.
Gianni you-pl them want-pres-3sg show
'Gianni wants to show them to you.'
b. *Gianni **vi** vuole mostrar**li**.
c. *Gianni **li** vuole mostrar**vi**.

Cl Cl over sequence of Cl Cl verbs:

(6) a. Maria vuole andare a prender**li** lei stessa.
Maria want-pres-3sg go to fetch+them her self
'Maria wants go to fetch them herself.'
b. Maria **li** vuole andare a prendere lei stessa.

Impossibility of Cl Cl out of finite complement:

(7) a. Gianni vuole che Maria **li** veda.
Gianni want-pres-3sg that Maria them see-subj-pres-3sg
'Gianni wants for Maria to see them.'
b. *Gianni **li** vuole che Maria veda.

Ungrammaticality of Cl Cl out of complement with negative particle:

(8) a. A Mario, potete non parlar**gli**, se preferite.
To Mario, can-pres-2pl not speak+him-dat if prefer-pres2pl
'To Mario you (pl) don't have to speak, if you prefer to.'
b. *A Mario, **gli** potete non parlare, se preferite.

(The example above is from Fresina 1982.)

Appendix 2 Portuguese examples

The examples in this appendix are from Martins (2000), and concern European Portuguese (EP). Notice that in EP clitics are always enclitic on infinitivals and normally enclitic on finite verbs.

Cl Cl with subject control verb:

(1) a. Quero fazê-**lo**.
want-pres-1sg do-it
'I want to do it.'
b. Quero-**o** fazer.

Cl Cl with subject raising verb:

(2) O polícia pode-**me** multar por excesso de velocidade.
the cop can-pres-3sg-me fine for excess of velocity
'The cop can fine me for breaking the speed limit.'

(Martins classifies this case as subject control.)

Ungrammaticality Cl Cl with regular subject control verb:

(3) a. O Pedro crê tê-**los** convencido.
the Peter believe-pres-3sg have-them convinced
'Peter believes to have convinced them.'
b. *O Pedro crê-**os** ter convencido.

Ungrammaticality Cl Cl with regular subject raising verb:

(4) *Ele parece-**o** odiar.
He seem-pres-3sg-him hate
'He seems to hate him.'

Appendix 3 List of Spanish Cl Cl verbs

This appendix contains an overview of the Cl Cl verbs in Spanish. It should be borne in mind, however, that there is considerable variation and hesitancy among speakers as to which verbs belong to this class.

Modals:

deber	'can' 'be able' 'may'
poder	'must' 'should'
querer	'want'
saber	'can' 'be able to' 'know how'
tener que	'have to'

Aspectuals (motion):
The verbs presented here are basically movement verbs. When they occur with non-finite complements their meaning becomes aspectual, though their basic meaning usually still transpires.

ir a	'go to' 'will'
llegar a	'arrive at'
venir a	'come to'
volver a	'come back to' 'begin anew'

Aspectuals (others):

acabar de	'just finish'
continuar a	'keep on'
dejar de	'refrain from'
empezar a	'begin'
estar por	'be about to'
soler	'normally do'
terminar de	'finish'

Indirect object control:
The class of indirect object control verbs is exceptional in that it permits Cl Cl, but only for clitics that refer to non-humans. The list – taken from Luján (1980) – is not exhaustive. Cl Cl with indirect object control verbs is not discussed in the text. We refer the reader to Luján (1980) and Bok-Bennema (1981) for further details and references.

aconsejar	'allow'
indicar	'indicate'
mandar	'order'
ordenar	'order'
permitir	'allow'
prohibir	'prohibit'
recordar	'remind'

Others:
The following verbs are sometimes mentioned as Cl Cl verbs. According to Zubizaretta (1982a) they only classify as such "by analogy." Observe that they are all subject control verbs.

aprender a	'learn to'
desear	'desire'
pensar	'think' 'plan'
preferir	'prefer'
tratar de	'try'

Non Cl Cl verbs:
We add a list containing some of the verbs that take infinitival complements, but normally reject Cl Cl.

afirmar	'affirm'
convenir	'be convenient'
creer	'believe'
decidirse a	'decide to'
decir	'say'
descubrir	'discover'
dudar	'doubt'
evitar	'avoid'
haber que	'be necessary'
insistir en	'insist'
invitar a	'invite to'
lamentar	'regret'
morir por	'be dying to'
negar	'deny'
odiar	'hate'
prometer	'promise'
renunciar a	'give up trying'
sentir	'be sorry'
soñar con	'dream about'
sugerir	'suggest'

Appendix 4 List of Italian Cl Cl verbs

This appendix contains an overview of the core class of Cl Cl verbs in Italian. It should be borne in mind, however, that even for this core class there are speakers who do not accept Cl Cl with all of them (cf. Rizzi 1982a: 41, fn. 6). For more extensive sets of verbs that (sometimes) allow Cl Cl, see Napoli (1981) and Fresina (1982).

Modals:

dovere	'have to'
potere	'be able'
sapere	'can' 'know how'
sembrare	'seem'
volere	'want'

Motion verbs:

andare a	'go to'
tornare a	'come back to'
venire a	'come to'

Aspectuals:

cominciare a	'begin to'
continuare a	'continue to'
finire di	'finish to'
stare per	'be about to'

Non-Cl Cl verbs:

Here we present a small set of examples of verbs that take infinitival complements, but generally reject Cl Cl.

affermare	'state'
bisognare	'be necessary'
credere	'believe'
odiare	'hate'
parere	'seem'
scendere a	'go down to'
sembrare di	'seem that'

NOTES

1 Unless indicated otherwise, the examples will be presented in Spanish. However, there are two appendices at the end of this chapter containing examples equivalent to those in section 1 from Italian and, as far as they are available, Portuguese.

2 In Spanish clitics are enclitic (i.e., follow the verb) when they combine with non-finite verb forms and proclitic (i.e., precede the verb) with finite forms. The same situation holds in Italian. (European) Portuguese has enclisis on non-finite verbs, and – under normal circumstances – also on finite verbs. Proclisis on finite verbs occurs in the presence of certain operators (e.g., negation). Orthographically, proclitics are reproduced as separate units and enclitics as part of the verb.

3 Napoli (1981), Rochette (1988), and Rosen (1990) claim that variants like those in (2) differ from those exemplified in (1) in that they represent a single temporal/event structure. For criticism on this claim, see Wurmbrand (2001: 146–156).

4 Modern French also has Cl Cl, but only in the so-called Causative Construction (chapter 6), whose properties differ from the construction type we will be considering here. For clitic climbing in Old French see Roberts (1997b) and the references given there.

5 See chapter 75 for Cl Cl in Dutch and German, Browne (1966) and Ross (1986) for Cl Cl in Serbo-Croatian, and Koopman (1984), Sportiche (1983), and Haverkort (1993: 96ff.) for Cl Cl in Kru.

6 At the end of this chapter the reader can find two appendices listing Cl Cl verbs in Spanish and Italian. The Spanish data come from Aissen and Perlmutter (1976), Luján (1980), and Zubizarreta (1982a). The Italian are from Rizzi (1982a) and Burzio (1986).

7 In fact the set of Cl Cl verbs subsumes most of the raising verbs. However, the Romance counterpart of the prototypical raising verb 'seem' – *parecer* (Spanish/Portuguese), *parere* (Italian) – is standardly not considered a Cl Cl verb (though we must mention that there are some speakers that accept it as such). Italian in addition can translate 'seem' as *sembrare.* According to Napoli (1981) speakers strongly disagree as to whether this verb should be classified as belonging to the Cl Cl class or not.

8 Martins (2000) discusses the fact that in older versions of Romance Cl Cl was obligatory. According to Roberts (1997b) this still holds true in Sardinian for certain Cl Cl verbs. In addition, Fresina (1982) mentions that in Italian *avere da* 'have to' forms an exception in that it requires obligatory climbing.

9 Kayne (1989b: 248) mentions that there are certain dialects that allow for "clitic splitting." According to him, these are dialects that have procliticization on infinitivals, instead of encliticization.

10 As first observed in Burzio (1986: 324ff.), Cl Cl verbs such as Italian *andare* 'go' and *venire* 'come' are unaccusative. This entails that apart from an infinitival complement, they have a DP complement, which moves to subject position for reasons of Case. For such verbs the configuration in (8) in the text is present if one adopts the ideas about double object constructions presented in Larson (1988b) (and see chapter 21). The relevant analysis of the whole VP then is the one in (i), where the configuration under consideration is reproduced in bold and where V3 indicates an empty verb position to which V2 will move:

(i) $[_{VP}\ [_{V'}\ V3\ [_{VP}\ DP\ \mathbf{[}_{V'}\ \mathbf{V2}\ \mathbf{[}_{CP/IP}\ \mathbf{V1\ Cl]]]]]}$

11 It should be observed here that Napoli (1981) presents a number of Italian Cl Cl cases with negative particles in the complement, of which she mentions that her informants find them perfectly acceptable. Cinque (2004) presents a similar claim: according to him, a restricted set of Italian Cl Cl verbs allows Cl Cl over a negative particle in the complement. We reproduce one of Napoli's examples in (i):

(i) L**o** continua a non capire.
it continue-pres-3sg to not understand
'He continues to not understand it.'

12 Data pertaining to matrix V-to-I movement in Spanish and Portuguese Cl Cl constructions remain to be investigated systematically. For Spanish some data are available. Most authors mention that the Cl Cl verb and the complement (or the complement verb) have to be adjacent. The examples they present to illustrate this, however, do not involve VP adverbs. An exception is Lois (1989), according to whom Spanish Cl Cl cases in which the matrix and complement verb are separated by an adverb ending in *-mente* are degraded, while separation by the adverb *apenas* 'hardly' is fully grammatical: cf. (i):

(i) a. ??**Me lo** querían inmediatamente/rápidamente enviar.
me it want-past-3sg immediately/quickly send
'They wanted to send it to me immediately/quickly.'
b. (El problema) **se lo** quería apenas mencionar.
the problem to+him it want-past-3sg hardly mention
'(The problem,) he hardly wanted to mention it to him.'

Another exception is Zagona (1988b), but this work only considers gerundial complements of auxiliary verbs. As shown in the example in (ii), in such cases disruption by V-to-I over adverbs is incompatible with Cl Cl:

(ii) **Lo** eslá (*todavía) legendo
it be-pres-3sg still reading
'She is (still) reading it.'

An interesting example is the Mexican Spanish one in (iii), from LaPolla (1988: 220), where the matrix subject occurs between the Cl Cl verb and the complement. If the subject is assumed to be generated inside VP and to remain there, this constitutes another case of V-to-I movement with Cl Cl:

(iii) **Lo** quiere Maria tomar **t**.
it want-pres-3sg Maria take-inf
'Maria wants to take it.'

13 The example in (16b) is from Cinque (2004). Cinque shows that Cl Cl is also compatible with Focus-fronting.

14 In addition to clausal pied-piping, Rizzi (1978) discusses complements that are Clefted (chapter 25), Right Node Raised, and Complex NP Shifted. None of these cases allows Cl Cl. Given current knowledge it is not sure that they all involve *movement*. It should be mentioned here that Zubizarreta (1980: 150) states that Cl Cl out of Right Node Raised complements is acceptable in Spanish. She observes that Right Node Raising might be a discourse rule and as such not relevant to syntax.

15 Cl Cl approaches based on the idea that clitics – or feature bundles spelled out as clitics – are base-generated in clitic positions are, e.g., Strozer (1976), LaPolla (1988), and, more recently, Miller and Sag (1997) and Emonds (1999). One specific view on the base generation of clitics is the one presented in Sportiche (1996b): see note 51.

16 Notice that this implies that when we speak of clitics in situ – as opposed to climbed clitics – we do not refer to their base position, but to the position they move to within their own (minimal) clause.

17 It should be mentioned here that there are in fact more cases in which the verbal host is not responsible for the semantic role expressed by the clitic: as discussed extensively in Emonds (1999), Romance clitics can also be semantically dependent on adjectival predicates, quantifiers or nouns, as in (i–iii), respectively:

(i) Eso **me** resulta difícil.
this me result-pres-3sg difficult
'This is difficult for me.'

(ii) **Ne** arrivano molti. Italian
of-them arrive-past-3pl many
'Many of them arrived.'

(iii) **Ne** conosco l'autore. Italian
of-it know-pres-1sg the author
'I know the author of that.'

The point made below in the text, which is that Clitic Placement is normally restricted to clauses (CP/IP), also holds in these cases.

18 For aspectual auxiliaries we take over the analysis presented in Zagona (1988b).

19 Though some authors assume that Cl Cl takes place after intraclausal Cl Pl. Examples are Kayne (1989b) and Rooryck (1994a). See also section 6.3.2.

20 The term "Clause Mate Condition" is originally due to Ross (1986).

21 For details see Cinque (1988). See also chapter 42.

22 Raising Cl Cl verbs allow similar reflexive passives, as, e.g., in (i):

(i) Los plátanos **se** suelen comer con las manos.
The bananas SE tend-pres-3pl eat with the hands
'Bananas are usually eaten with your hands.'

In this case, however, we have to do with passivization in the complement clause and subsequent raising of the complement subject DP, as well as Cl Cl of *se*.

23 However, Rooryck (1994a) mentions that with the Italian verbs *cercare di* 'try to' and *provare a* 'try to', which allow Cl Cl for some speakers, Long DP-Movement is excluded. Moreover, there are Spanish speakers who exclude it with *querer* 'want'. For a possible explanation of this latter fact see Bok-Bennema and Kampers-Manhe (1994).

24 Null Operator Movement in Romance is much more restricted than, e.g., in English. In fact it only involves direct objects. Kayne (1989b) suggests that the Romance null operator undergoes Cl Pl (prior to movement to C). This might be interpreted as meaning that this operator is a covert accusative [+wh] clitic.

25 According to Zubizarretta (1980), in certain Spanish and Italian dialects sentences such as the one in (i), with clitics in situ, are grammatical. If this is so, the correlation between Cl Cl and Long Null Operator Movement is not absolute for all speakers:

(i) Esta mesa será difícil de poder vender**te**.
this table be-fut-3sg hard to can sell+you
'This table will be hard to be able to sell you.'

26 As raising verbs are *essere* verbs, the relevant Cl Cl verbs here are the control verbs, with the exception of *andare* and *venire*, which – in addition to being control verbs – are unaccusative and hence require *essere*.

27 For further details, see Burzio (1986: 364ff.).

28 Burzio (1986: 381) mentions one clear exception: Cl Cl verbs which require the infinitival particle *di*, such as *finire di* 'finish to', systematically exclude the *Avere* → *Essere* Shift. Boysen (1977) states that the shift for *sapere* (a Cl Cl verb) was not found in a large corpus of written Italian prose. Cf. also Kayne (1989b: 253).

29 Another Italian corollary of Cl Cl, presented in Rizzi (1978), is Long Dative *'Loro'* Placement. Apart from the discussion in Rizzi (1978), it is usually not considered in studies on Cl Cl, due to the fact that – as Rizzi puts it – dative *loro* belongs to "rather stiff style . . . on which many speakers of Italian do not have intuitions at all" (Rizzi 1978: fn. 29).

30 This is disputed by Kayne (1989b) and by Rooryck (1994a), on the basis of facts such as those mentioned in notes 23, 25, and 28.

31 The claim that the Cl Cl variant of Cl Cl verbs selects a VP complement is defended in Strozer (1976), Napoli (1981), Fresina (1982), Picallo (1985, 1990), Di Sciullo and Williams (1987), Rochette (1988), and Rosen (1990), among others.

32 Rizzi (1978) was the first to observe the parallelism between Aux–Adv–V sequences and Cl Cl verb–Adv–V sequences.

33 For details on these particles see Rizzi (1982a: chapter 3), Kayne (1984a: chapter 5), Haverkort (1993) and the references cited there.

34 The Italian examples in (i), from Fresina (1982), illustrate the order infinitival particle–negative particle for this language. The examples in (ii) are added to illustrate the Cl Cl nature of the verbs (+particles) involved:

(i) a. Sono riuscito a non leggerlo, quel romanzo pornografico.
be-pres-3pl succeeded to not read+it, that novel pornographic
'They succeeded in not reading it, that pornographic novel.'
b. La verità, Gianni stava per non dirla, allorché . . .
the truth, Gianni be-past-3sg for not to tell it, then . . .
'The truth, Gianni was in favor of not telling it, then . . .'

(ii) a. **Le** sono riuscito a parlare **t**.
him be-pres-3pl succeeded to speak
'They succeeded in speaking to him.'
b. La verità, Gianni **la** stava per tacere **t**, allorché . . .
the truth, Gianni it be-past-3sg for conceal, then . . .
'The truth, Gianni was in favor of concealing it, then . . .'

35 As discussed in Rooryck (1994a), similar examples with *wh*-words other than *che* are excluded by Italian informants (though they marginally allow these when the climbed clitic refers to a left-dislocated phrase). According to Rooryck the relevant distinction between *che* and other *wh*-words, such as *a chi* 'to whom' or *come* 'how', is that the former is clitical in nature. It should be mentioned here also that according to LaPolla (1988) examples analogous to (49) in the text are perfect in Mexican Spanish. LaPolla only considers cases with *qué* (=*che*).

36 For arguments that *ci* undergoes Cl Cl and doesn't itself function as the expletive, but is linked to it, see Burzio (1986: 126ff.).

37 As discussed in Burzio (1986: 389, fn. 36), the grammaticality of (i) is surprising, in particular when compared to (51b) in the text. *Molti* must be assumed to occupy the embedded object position, because *ne* can only originate from within objects. Nevertheless *molti-ne* 'many of them' is interpreted as also bearing the subject role assigned by *vorrebbero*. For possible solutions see the aforementioned footnote in Burzio (1986) as well as Zubizarreta (1982a) and Cinque (2004):

(i) **Ne** vorrebbero venire molti **t**.
of+them want-cond-3pl come many
'Many of them would want to come.'

38 Restructuring is also known as 'pruning' or 'clause union'. These terms are due to, respectively, Ross (1986) and Aissen and Perlmutter (1976).

39 Dutch main clauses require V-movement to second position. To abstract from this movement we follow the standard convention by presenting these type of examples in the form of a subordinate clause.

40 The SOV character of Dutch is not undisputed. Zwart (1993) was the first to propose that Dutch is in fact an SVO language.

41 While *non sapere* (Italian) marginally permits Cl Cl over *che* in the specifier of C (49), Cl Cl over the interrogative complementizer *se* is excluded. Cf. Kayne (1989b), Rooryck (1994a). This of course is also explained here.

42 This analysis correctly excludes *Essere* → *Avere* Shift with *andare* and *venire*. As discussed in note 10, the subject of these verbs originates as an object DP in the matrix clause. Restructuring will not affect the trace of this DP. As for the exclusion of this shift in the case of raising verbs, it must be assumed that the trace of the raised subject remains visible for auxiliary selection. See Burzio (1986: chapter 5) for further details.

43 Roberts doesn't use the notion 'clause'. Instead he makes use of the concept of 'Extended Projection', introduced by Grimshaw (1991).

44 Among these are Manzini (1983b) and Goodall (1987b), who claim that both the simplex and the complex structure are present at the same time (Coanalysis). Another example is Zubizarreta (1980), who argues for 'Thematic Restructuring'; that is, Restructuring at the level of LF. Burzio (1986) presents a special form of Restructuring, in which the VP of the complement is attached under the matrix VP, by means of a rule of VP preposing. We will return to this rule in section 6.4.3.

45 A precursor of the Government Transparency Corollary is the Head Condition, introduced by Zwarts (1975) to account for the transparency of Dutch Verb-Raising complements. Bok-Bennema (1981) applies this condition to Spanish Cl Cl complements.

46 In order to concentrate on the main points, we won't evaluate the specific analyses presented below (in sections 6.3, 6.4) with respect to all characteristics of Cl Cl listed in section 1.2.6. We leave such an evaluation to the reader.

47 There are at least two analyses that claim that IP normally functions as a barrier to Cl Cl. However, these analyses assume that the IP under consideration is the complement of an empty C. The most radical of them is Haverkort (1993), in which all infinitival complements (including raising ones) are CPs. In Haverkort's analysis the barrierhood of IP may be obviated by movement of the I_x projection (cf. section 5.2.2) – which includes the clitic and the verb, but not the subject – into the specifier of C. The central characteristic of Cl Cl verbs is that the C of their complements allows this movement. Ouhalla (1989) claims that Cl Cl is made possible by V-movement to C, which obviates the barrierhood of IP. He only considers control complements. It should be mentioned, in addition, that Kayne (1989b) proposes that Cl Cl has to proceed through C if the latter is present. Here again the reason is obviation of the barrierhood of IP.

48 The postcyclicity of Cl Pl is extensively defended in Kayne (1975). Notice, however, that it is incompatible with the idea, mentioned briefly in section 4.2, that cases such as (17b), repeated here as (i), involve remnant VP-movement: to account for the position of the clitic *lo*, the latter has to be attached to the verb *potevo* in I before movement of the remnant:

(i) [Leggere a tutti] non **lo** potevo.
read to all not it can-past-1sg
'Read it to everybody, I couldn't.'

Alternatives that don't require postcyclic Cl Pl will be discussed in sections 6.3.2 and 6.4.2.

49 In fact, Kayne disputes the fact that what we are calling corollaries do have this status: see note 30. Bok-Bennema and Kampers-Manhe (1994) (see below in the text), on the other hand, claim that the corollaries do indeed follow from Weak Restructuring. They argue that this process also applies in French.

50 This is compatible with the idea defended in Koopman and Szabolcsi (2000) that all XP constituents originated in the VP must move to higher Checking Positions.

51 One interesting alternative dispenses with Cl Pl altogether and equates Cl Cl with Long XP-Movement. This is proposed in Sportiche (1996b) and followed up in Roberts (1997b). Under this view, clitics are base-generated in their surface position, as heads with an empty specifier position (Voice heads). The thematic or adjunct position to which the clitic is related contains an empty XP, which must move to the specifier position of the clitic, which in Cl Cl cases is of course a matrix clause position.

52 For more specific details of Haverkort's analysis, see note 47.

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14 Clitic Doubling

ELENA ANAGNOSTOPOULOU

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1 Introduction

1.1 The phenomenon

Clitic doubling is a construction in which a clitic co-occurs with a full DP in argument position forming a discontinuous constituent with it, as is illustrated in (1) with an example from Spanish (Jaeggli 1986b: 32):

(1) Lo vimos a Juan. Rioplatense Spanish
Him we-saw *a* Juan
'We saw Juan.'

Clitic doubling has been claimed to exist in Romance, Semitic, Slavic, Albanian, and Greek (see, among others, Strozer 1976; Rivas 1977; Aoun 1981, 1999; Jaeggli 1982, 1986b; Drachman 1983; Borer 1984a; Suñer 1988; Philippaki-Warburton 1987; Fykias 1988; Dobrovie-Sorin 1990; Sportiche 1996b, 1998; Massey 1992; Anagnostopoulou 1994, 2003; Uriagereka 1988, 1995a; Torrego 1998; Bleam 1999; Petkova Schick 2000; Kallulli 1999). Doubling has also been claimed to exist in Pirahã, a member of the Mura language family spoken in the Maici river in Amazonas, Brazil (Everett 1987).

Clitic doubling displays intriguing cross-linguistic variation which has been widely discussed in the literature. In particular, while some languages (e.g., Spanish and Romanian) have clitic doubling of objects, others (e.g., French and Italian) lack this type of construction (data from Jaeggli 1982: 12–13; see later sections for discussion of further cross-linguistic differences). This difference is illustrated in (2) with an indirect object clitic doubling example from Spanish and in (3) with its ungrammatical counterpart from French:

(2) Miguelito (le) regaló un caramelo a Mafalda. All dialects of Spanish
Miguelito Cl-dat gave a candy a Mafalda
'Miguelito gave Mafalda a piece of candy.'

(3) Jean (*lui) a donné des bonbons à Marie. French
John Cl-dat has given the candies to Mary
'John gave candies to Mary.'

The study of clitic doubling has always enjoyed a privileged position among investigations of cliticization, which center on the question of whether clitics move

to their surface position from an argument position or whether they are base-generated in their surface position, functioning as agreement markers of sorts. The movement view of cliticization is pursued in a number of analyses which belong to a tradition initiated by Kayne's (1975) seminal work on French, which lacks clitic doubling of objects. A major argument for the base-generation alternative analysis is the existence of clitic doubling phenomena, which were first observed and discussed in Strozer (1976) and Rivas (1977) for Spanish.

1.2 Overview of the history

The history of the study of clitic doubling can be divided into the following periods, which coincide with different stages of the Principles and Parameters theory:

(i) Early Government and Binding (GB) studies (e.g., Jaeggli 1982, 1986b; Borer 1984a) take clitic doubling as an argument for a base-generation analysis of clitics and the movement-properties of cliticization as properties of Chains rather than actual Movement. In their attempt to isolate the factor underlying the Clitic Doubling Parameter, i.e., the property that permits formation of clitic–argument pairs in some languages (Spanish, Romanian) but not in others (French, Italian), these accounts capitalize on Romance and Semitic clitic doubling, which is limited to DPs that are preceded by special prepositions (*a* in Spanish, *pe* in Romanian, *šel* in Hebrew). Example (4) attests to the availability of clitic doubling with direct objects preceded by *a* in Rioplatense Spanish.

(4) La oían a la niña. Rioplatense Spanish
ACC listened-3pl a the girl-ACC
'They listened to the girl.'

The fact that doubling clitics co-occur with arguments preceded by special prepositions is known in the literature as Kayne's Generalization (attributed to Kayne in Jaeggli 1982: 20). Within the literature of this period, Kayne's Generalization is assumed by most researchers to provide the key to the Clitic Doubling Parameter. The parameter regulating the cross-linguistic distribution of clitic doubling is claimed to be Case-theoretic. Specifically it is proposed that clitics absorb Case and, accordingly, clitic doubling is only possible in languages with special prepositions which can license Case on the doubled object.

(ii) Late GB studies maintain the base-generation syntax of clitics and concentrate on certain interpretive effects associated with direct object clitic doubling, which will be referred to by the term 'specificity' (see Enç 1991 and Diesing 1992b for discussion and references). This change of perspective is initiated by Suñer (1988), who argues on the basis of data from Argentinean Spanish that direct object clitic doubling does not rely on the presence of special prepositions, contrary to what had been previously thought. Suñer argues that special prepositions are markers for animacy, while clitic doubling is related to partitiveness

and specificity, in the sense of being licensed only when the doubled argument is partitive or discourse-specific. A similar point is made by Dobrovie-Sorin (1990) on the basis of Romanian direct object doubling. The shift of focus from the phrase structure of doubling clitics to their interpretational effects sheds new light on potential factors underlying the Clitic Doubling Parameter. Clitic doubling is linked to a number of constructions where different semantico-pragmatic properties of direct objects are systematically encoded through morphosyntactic differences, such as scrambling in Dutch and German (De Hoop 1992; Diesing 1992b), participle agreement in French (Adger 1993; Obenauer 1994) and Hindi (Mahajan 1990) and morphological accusative case in Turkish (Enç 1991). The view that doubling and scrambling have the same underlying syntax is first suggested in Sportiche (1996b, original manuscript 1993; see below) and is further defended in Anagnostopoulou (1994), on the basis of interpretational similarities between the two constructions, and in Alexiadou and Anagnostopoulou (1997b), on the basis of evidence from binding (Weak Crossover and Principle C).

(iii) In the early 1990s, new analytic options arise for cliticization and clitic doubling due to a number of major developments in the syntactic formalism. Among them, I note the following: (a) the proliferation of functional projections (Ouhalla 1988; Pollock 1989); (b) the investigation of the conditions on Head Movement (see, e.g., Koopman 1984; Travis 1984; Baker 1988a); (c) the typology of A- and A'-positions, which became particularly important to the understanding of the various types of scrambling (short-distance, medium-distance, and long-distance; see, among others, Déprez 1989; Webelhuth 1989, 1992; Mahajan 1990; Saito 1992) and the locality conditions on Chains (Rizzi 1990b; Cinque 1990c); (d) the extensive postulation of covert movement operations to the functional domain (see, e.g., Chomsky 1991 for head movement and Chomsky 1993 for argument movement); (e) the view that movement is triggered by morphosyntactic features filtering out improper representations where a functional head and an XP do not enter spec–head agreement (Rizzi 1991b for *wh*-movement and all Minimalism, up to Chomsky 2000). These developments lead to a reconciliation of the base-generation and movement approaches to cliticization. It becomes possible to maintain that there is both a movement and a base-generation component in the syntax of cliticization and clitic doubling. Two influential proposals which combine movement with base generation in different ways are developed in an unpublished 1993 paper by Sportiche (versions of this paper were later published as Sportiche 1996b, 1998) and in Uriagereka (1988, 1995a), who bases himself on unpublished work by Torrego (1988). Sportiche (1996b) argues that clitics are heads in the extended projection of V, i.e., they are parts of the V-inflectional system. On the other hand, Uriagereka (1988, 1995a) treats clitics as determiners, i.e., as heads in the extended projection of N. Sportiche proposes that the doubled DP is generated in an argument VP-internal position and undergoes movement to or through the clitic position at some stage in the derivation (overtly or covertly). The availability of clitic doubling depends on whether a clitic can co-occur with an overt DP. A filter similar to the Doubly Filled Comp filter determines whether doubling is possible in a designated language.

Uriagereka suggests that the doubled DP is in the Spec,DP position of a complex DP headed by the doubling clitic which undergoes movement to its surface site. Drawing on evidence from Romance, Uriagereka argues that in some languages, determiners are strong enough to head such complex DPs and in others not: this determines availability of clitic doubling.

(iv) The research summarized so far is placed within an influential tradition that treats clitic constructions as being uniform. In such a conception, variation in the types of clitic chains encountered cross-linguistically is traceable to a single difference between, e.g., Spanish and French – what has been referred to as the 'Clitic Doubling Parameter'. Against this tradition, there is a current trend for fragmentation: clitics are argued to have a different syntax across languages and constructions. One such proposal is developed by Bleam (1999), who argues that accusative clitics are determiners and dative clitics are inflections. Another proposal that takes the uniformity of clitics to be epiphenomenal is put forth in Anagnostopoulou (2003). Dative clitics relating to the double object construction are argued to have a different syntax in Greek and, e.g., the Bantu language Sesotho. Note, finally, that there is a change at the data level. The GB view that clitic doubling is absolutely impossible in certain clitic languages like Italian and French is no longer valid. Kayne (2000) argues that clitic doubling of strong pronouns is possible – in fact, obligatory – in French.

1.3 Organization of the discussion

Having outlined the main theoretical issues arising in connection with clitic doubling, I now turn to a more detailed presentation of the issues surrounding this phenomenon. The discussion is organized as follows. In section 2, I discuss two related clitic constructions, namely Clitic Left Dislocation (CLLD) and right dislocation, addressing the question of how these relate to clitic doubling. In section 3, I present the history of the research on clitic doubling within the tradition that treats clitic constructions as being uniform. A central question within this line of approach has to do with the nature of the Clitic Doubling Parameter. In section 4, a number of proposals are presented that take the syntax of clitics as differing across languages and constructions.

2 Clitic doubling and related constructions

Clitic doubling should be, at least descriptively, distinguished from two constructions that look very similar to it, namely Clitic Left Dislocation (CLLD) and right dislocation.

2.1 Clitic doubling vs. CLLD

CLLD is a construction in which a clitic co-occurs with an XP to its left. An example of CLLD is provided in (5) from Italian (Cinque 1990c: 71):

(5) Gianni, lo vedrò domani. Italian
Gianni him will-see-I tomorrow
'I will see Gianni tomorrow.'

CLLD is an unbounded dependency that is selectively sensitive to islands and shows connectedness effects (see Cinque 1990c; Iatridou 1994; Anagnostopoulou 1994; and the various contributions to Anagnostopoulou et al. 1997).

Given the similarity between CLLD of objects in (5) and clitic doubling, a natural question that arises is whether CLLD results from fronting of a clitic doubled DP to a position in the left periphery of the clause. Agouraki (1993), Kayne (1994), Sportiche (1996b), and Grohmann (2003), among others, argue in favor of analyses along these lines, which straightforwardly explain the connectedness properties of CLLD. On the other hand, Cinque (1990c), Iatridou (1994), and Anagnostopoulou (1994) point out that the two constructions show a number of systematic differences, which are summarized below (see Anagnostopoulou 1994: 151–158 for an overview):

(i) There are languages that have CLLD but not clitic doubling. Italian presents such a case. While CLLD is grammatical in Italian, as shown in (5), doubling is not, as shown in (6):

(6) *Lo vedrò domani Gianni. Italian
Him will-see-I tomorrow Gianni

(ii) There are languages in which doubling is subject to Kayne's Generalization while CLLD is not. Rioplatense Spanish presents such a case:

(7) a. Lo vimos a Juan. Rioplatense Spanish
Him saw-we a Juan
'We saw Juan.'
b. *Lo compramos el/al libro.
It bought-we the book
'We bought the book.'

(8) a. A Juan, lo vimos ayer.
A Juan him saw-we yesterday
'We saw Juan yesterday.'
b. El libro, lo compramos ayer.
The book it bought-we yesterday
'We bought the book yesterday.'

(iii) While the cases of doubling reported in the literature are limited to (doubling of) DPs, the dislocated constituent in CLLD can be any maximal phrase. The Italian data in (9) (Cinque 1990c: 58) exemplify CLLD of PPs and APs:

(9) a. A casa, non ci sono stato ancora. Italian
To home, not there am been yet
'I haven't been home yet.'
b. Di questa faccenda, non ne voglio più parlare.
Of this matter, not of-it want anymore talk
'I don't want to talk about this matter anymore.'
c. Bella, pare che non lo sia mai stata.
Beautiful, seems that not it is ever been
'It doesn't seem that she has ever been beautiful.'

(iv) There are semantic classes of noun phrases that can undergo CLLD but resist clitic doubling, as illustrated in (10) with examples from Greek:

(10) a. Tria provlimata mono o Kostas ta elise. Greek
Three problems only the Kostas them solved
'Only Kostas solved three problems.'
b. ?*Mono o Kostas ta elise tria provlimata.
only the Kostas them solved three problem

These differences are unexpected if CLLD is the movement counterpart of doubling, arguing against the reduction of CLLD to an underlying clitic doubling source. For this reason, Cinque (1990c), Iatridou (1994), and Anagnostopoulou (1994) propose that in CLLD the left-dislocated phrase is base-generated in a left-peripheral adjunct position. The main problem for base-generation analyses of CLLD is that they have to appeal to special mechanisms in order to derive the connectivity property of CLLD (on selective island sensitivity, see Iatridou 1994 and Demirdache 1991).

2.2 *Clitic doubling vs. right dislocation*

Right dislocation is a construction in which a clitic co-occurs with a phrase to its right as illustrated in (11) with an example from French (from Jaeggli 1986b: 33):

(11) Je l' ai vu, l' assassin. French
I him have seen, the murderer
'I saw him, the murderer.'

Right dislocation of subjects and objects has been discussed by, among others, Antinucci and Cinque (1977), Jaeggli (1986b), Calabrese (1992b), Vallduví (1992), Bonet (1991), and Zubizarreta (1994, 1998). Given the similarity between right dislocation of objects and clitic doubling, the question once again arises whether the two constructions have the same or a different structural analysis. In the literature, both positions have been entertained. According to one view (Aoun 1981; Hurtado 1984; Philippaki-Warburton 1987; and much later literature), there

is no formal difference between clitic doubling and right dislocation. In both constructions, the phrase associated with the clitic is an adjunct. According to another view (Strozer 1976; Rivas 1997; Jaeggli 1982, 1986b; Borer 1984a), the object is generated as a complement of the verb in clitic doubling constructions, while it is an adjunct (to VP or IP) in right dislocations. In the present discussion, the latter approach will be adopted because, as will be demonstrated in this section, there are strong arguments against unifying them structurally.

Jaeggli (1986b: 32–35) argues against the adjunct analysis of clitic doubling on the basis of the following systematic differences between right dislocation and clitic doubling:

(i) In right dislocation, the dislocated phrase is set off from the rest of the sentence with a sharp intonational break, as illustrated in (12), while no such break is required before the object in clitic doubling, as illustrated in (13):

(12) Parece que tuvieron que llevarla de urgencia a los Estados Unidos la hija de Coronel Martínez. Rioplatense Spanish
'It seems that they had to take her urgently to the United States the daughter of Coronel Martinez.'

(13) Parece que tuvieron que llevarla a la hija de Coronel Martinez de urgencia a los Estados Unidos.
'It seems that they had to take her the daughter of Coronel Martinez urgently to the United States.'

The difference in intonation between (12) and (13) correlates with a difference in word order. In (12) the direct object occurs at the very end of the sentence, following all other phrases. On the other hand, in (13) the direct object is followed by the string *de urgencia a los Estados Unidos.* According to Jaeggli, these two differences would be mysterious if clitic doubling and right dislocation have the same structural analysis, while they naturally follow from the proposal that doubling is a chain consisting of a clitic and an argument while, in right dislocation, the right-dislocated phrase occurs in a peripheral right-adjoined position.

(ii) Right dislocation is not subject to Kayne's Generalization, as illustrated in (12), while clitic doubling requires the presence of the preposition *a* preceding the doubled phrase, as illustrated in (13).

(iii) There are languages that have right dislocation but disallow clitic doubling. French presents such a case. This language freely allows right dislocation, as was illustrated in (11), while lacking clitic doubling, as was shown in (3).[1]

In later literature, the properties of right dislocation have been investigated in more detail. More specifically, Vallduví (1992) and Zubizarreta (1994, 1998) focus on an intonational property of right dislocation not discussed in Jaeggli (1986b). While for Jaeggli (1986b) the salient property of right dislocation is a pause separating it from the rest of the clause, for Vallduví (1992) and Zubizarreta (1994, 1998) the crucial

property is that the intonation peak of the sentence falls on some element preceding the right-dislocated phrase. Right dislocation is found in all clitic languages and can be easily mistaken for doubling because it is productive and the presence of a pause is not its most prominent feature. In fact, as will be pointed out below, a pause doesn't have to be present at all. It is therefore necessary to present here a more complete picture of right dislocation, as opposed to clitic doubling.

According to Vallduví, the main informational task of right dislocation is to focus V^0 or a projection of V^0. The intonation peak of the sentence falls on V^0 to which the clitic (and the negation, if present) attaches. The example in (14) is an instance of this construction in Catalan (from Vallduví 1992: 102):

(14) La vaig VEURE la baralla. Catalan
It 1-sg-past-see the fight
'I SAW the fight (I did see the fight).'

Evidence from word order supports the view that in right dislocation the DP "doubled" by the clitic is an adjunct. In Catalan locative constructions, the order of the verbal complements is fixed. The direct object must precede the locative phrase carrying the main stress of the sentence, as illustrated in (15a). A stressed object is not allowed to follow the locative phrase, as illustrated in (15b) (from Vallduví 1992: 96, 98):

(15) a. Fiquem el ganivet al calaix. Catalan
Put-we the knife in-the drawer
'We put the knife in the drawer.'
b. *Fiquem al calaix el ganivet.
Put-we in-the drawer the knife
'We put the knife in the drawer.'

When a clitic is present, signaling right dislocation, word order and intonation must be as in (16b), i.e., the direct object must follow the locative phrase, which carries the main sentence stress. As (16a) shows, the right-dislocated object is not allowed to precede the locative phrase:

(16) a. *El fiquem el ganivet al calaix. Catalan
it put-we the knife in-the drawer
'We put the knife in the drawer.'
b. El fiquem AL CALAIX el ganivet.
it put-we in-the drawer the knife
'We put the knife in the drawer.'

Vallduví's discussion of right-dislocated objects in Catalan creates the impression that their crucial property is that they be de-accented while the intonation peak of the sentence falls on some preceding material, the V-cluster in (14) and the locative phrase in (16b). However, even this picture is not refined enough.

In her discussion of right dislocation of objects in Standard Spanish, Zubizarreta (1998: 151–158) draws a further distinction between right-dislocated objects and de-accented in situ objects. The former co-occur with a clitic and follow a subject bearing Nuclear Stress, as illustrated in (17). The latter do not co-occur with a clitic and follow a subject bearing Contrastive Stress, as illustrated in (18):

(17) La lavó mamá, la mamadera. Standard Spanish
Cl-Acc washed Mother the milk bottle
'Mother washed the milk-bottle.'

(18) Lavó mamÁ, la mamadera.
washed mother the milk bottle
'Mother washed the milk bottle.'

Zubizarreta points out that there is no prosodic boundary between in situ de-accented objects and the nuclear pitch-accented words preceding them in examples like (18). On the other hand, the prosodic status of right-dislocated objects in (17) is comparable to some extent to that of English tags. Like tags, right-dislocated objects constitute a distinct prosodic phrase from the preceding material and they bear their own nuclear pitch accent. Similarly to tags, right-dislocated objects are perceived as less prominent than the preceding nuclear pitch-accented word. Unlike tags, however, right-dislocated phrases may be preceded by a salient pause. Thus, a pause may be present in right dislocation, as observed by Jaeggli (1986b), but doesn't have to be present, contrary to what Jaeggli (1986b) thought. Concerning the phrase structure asymmetries between right-dislocated constituents and in situ de-accented constituents, Zubizarreta points out that there are two systematic differences between them. First, as seen in (17) and (18), in situ de-accented objects do not co-exist with clitics, while with right-dislocated objects the presence of a clitic is obligatory. Second, in locative structures the order among dislocated constituents is free, as illustrated in (19) (the hash mark indicates the prosodic boundary preceding a right dislocated phrase), while the order among in situ de-accented objects is fixed, as shown in (20):

(19) a. Escondió el libro #el niño #debajo de la cama. Standard Spanish
Hid the book #the boy #under the bed
b. Escondió el libro #debajo de la cama #el niño.
'The boy hid the book under the bed.'

(20) a. Escondió el niño el libro debajo de la cama.
Hid the boy the book under the bed
b. *Escondió el niño debajo de la cama el libro.
'The boy hid the book under the bed.'

The structural properties Zubizarreta (1998) isolates as being typical of right dislocation coincide with those identified by Vallduví (1992): (i) obligatory presence of a clitic and (ii) freedom of word order in locative constructions where order is otherwise rigid.

Even though a clitic co-occurs with an object to its right in both clitic doubling and right dislocation, the two constructions can be easily distinguished in Spanish and Catalan. Clitic doubling is subject to Kayne's Generalization (i.e., it takes place with pronouns or DPs preceded by the preposition *a* associated with animacy), while right dislocation takes place with DP objects of any kind, as illustrated in, e.g., (14), (16b), and (17), where a clitic co-occurs with an inanimate object not preceded by *a*. This difference in form correlates with the intonational and positional differences discussed above. Objects undergoing clitic doubling can be accented and precede elements with nuclear stress, unlike right-dislocated objects. Thus, in Standard Spanish, where indirect objects and direct object pronouns are allowed to (or must; see section 3.1 below) undergo clitic doubling, a doubled indirect object may carry nuclear stress, as shown in (21a) (from Zubizarreta 1998: 198, (iv)), and a doubled direct object pronoun may precede a non-right-dislocated focused subject receiving nuclear stress, as shown in (21b) (from Zubizarreta 1998: 186, (vi)):

(21) a. Se lo envió a <u>mamá</u> #María #el regalo. Standard Spanish
Cl-Dat Cl-Acc sent to mother #Mary #the present
'Mary sent the present to Mother.'

b. Esta mañana lo castigó a él [$_{F}$la madre de <u>Juan</u>].
This morning Cl-Acc punished him the mother of Juan
'This morning, Juan's mother punished him.'

Thus, doubled objects have the intonation and distribution of arguments, while right-dislocated objects have the intonation and distribution of peripheral elements. These differences can be straightforwardly expressed in an analysis according to which the former occupy argument slots and the latter are right-adjoined elements, as proposed by Jaeggli (1986b) and Vallduví (1992).

The analysis of right dislocation in terms of right-adjunction must be reformulated in antisymmetry proposals, which reject right-adjunction. To this end, both Kayne (1994) and Zubizarreta (1998) relate right dislocation to CLLD. Kayne (1994: 82–83) proposes that in both clitic doubling and right dislocation, the DP doubled by the clitic is base generated in an argument position, thus unifying structurally clitic doubling with right dislocation. To express the intonational and interpretational differences between right dislocation and doubling, Kayne suggests that the former construction is an instance of CLLD at LF, i.e., the right-dislocated phrase undergoes LF-movement of the CLLD type. Covert CLLD is triggered by a feature having the effect of a particular intonation contour at PF. No such feature is present in clitic doubling. Alternatively, Zubizarreta (1998: 198, fn. 57) suggests that right dislocation involves clitic left dislocation followed by leftward movement of the TP across the left-dislocated constituent. Given the

distributional differences between right dislocation and clitic doubling mentioned above, the latter approach is descriptively more adequate, as it captures the fact that right-dislocated elements occupy a peripheral position in the sentence, unlike doubled elements. In Kayne's proposal, this difference is not explained.

3 Unification views: a historical perspective

Having clarified the relations between CLLD, right dislocation, and clitic doubling, I am now in a position to turn to the core issues arising in connection with clitic doubling, defined as a construction in which a clitic forms a chain with a phrase in argument position. This definition puts me in agreement with certain theoretical proposals and not with others. In particular, I will not discuss here the theories developed in Aoun (1981), Hurtado (1984), Philippaki-Warburton (1987), and others, which take the doubled DP to be an adjunct.

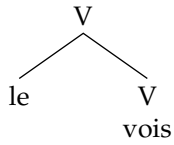
3.1 Early GB approaches: a parameter relating to Kayne's Generalization

3.1.1 Movement vs. base generation

Consider the French examples in (22):

(22) a. Je le vois. French
I him see
'I see him.'
b. *Je le vois Jean.
I him see John
'I see John.'

In (22a), *le* appears as a morpheme bound to the verb on the basis of a number of tests. For example, it cannot appear in isolation, it cannot be stressed or coordinated, nothing can interrupt the cl–V sequence etc. (see, among others, Kayne 1975: 82–87). This leads to a representation as in (23), where the clitic and the inflected verb form a morphological unit:

(23)


A central issue in the study of clitics is whether the complex [le–vois] in (22a) is directly inserted from the lexicon (the base-generation/lexicalist approach) or the clitic moves to its host from the postverbal complement position of the verb (the movement/syntactic approach).

In Kayne (1975) it is argued that the movement analysis correctly accounts for the fact that clitics and full DP objects are in complementary distribution, as is evidenced by the ungrammaticality of (22b) in French. It is furthermore pointed out that in causative constructions, a dative clitic cannot appear in the main clause in the presence of a subject in the embedded clause, a Specified Subject Condition (SSC) effect providing corroborating evidence for a syntactic approach to clitic placement:

(24) a. Jean a laissé Pierre parler à Marie. French
John has let Peter speak to Mary
'John has let Peter speak to Mary.'
b. Jean l' a laissé parler à Marie.
John him has let speak to Mary
'John has let him speak to Mary.'
c. *Jean lui a laissé Pierre parler.
John to her has let Peter speak
'John has let Peter to speak to her.'

(25) $X_{lui} \ldots {}_S[\ldots Z_{Piene} \ldots W\ Y_{source\ of\ lui} \ldots]$

(25) is the representation of (24c), where X is the surface position of *lui*, Z is the position of the embedded subject Pierre, and Y is the source position of *lui*. This configuration violates the SSC, as stated in (26), which Chomsky (1973) views as a condition on transformations:

(26) No rule can involve X, Y in the structure . . . X . . . $_s$[. . . Z . . . -WYV . . .] where Z is the subject of WYV.

The postulation of a Clitic-Placement transformation (as opposed to inserting clitics in the clitic position via Phrase Structure Rules) correctly predicts the fact that it is subject to the SSC. The movement view was adopted by Quicoli (1980) and others.

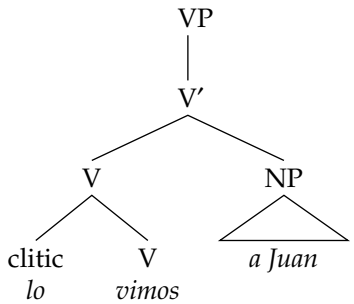
Kayne's major argument for a movement approach to cliticization, namely the complementarity between clitics and full NPs, has been challenged on the basis of clitic doubling in a number of languages with pronominal clitics, such as Spanish, Romanian, and Hebrew, which are exemplified in (27) (see Jaeggli 1982: 15–19 for critical discussion; in Aoun 1981 and Hurtado 1984 the movement view is maintained by analyzing doubled DPs as adjuncts):

(27) a. Lo vimos a Juan. Rioplatense Spanish
him saw-we a John
'We saw John.'
b. L-am văzut pe Popescu. Romanian
him-have-I seen pe Popescu
'I have seen Popescu.'

c. Beit-o šel ha-more 'omed 'al ha-giv'a. Modern Hebrew
house-his šel the-teacher stands on the-hill
'The teacher's house stands on the hill.'

These examples show that there are languages in which clitics and argument NPs are not in complementary distribution. For, e.g., (27a) a representation along the lines of (28) is needed (Borer 1984a and Jaeggli 1986b argue that clitics are parts of the head, as opposed to the earlier proposal in Rivas 1977 and Jaeggli 1982: 98, fn. 10, that they are sisters of V immediately dominated by V'):

(28)



Since the complement position of the verb is occupied by *a Juan*, it is hard to maintain a movement analysis for clitic doubling, as there is no source position available for the clitic. This leads to the view that *lo* in (28) is directly inserted under V. Ethical datives constitute a further argument for base generation. In Spanish, ethical datives are obligatorily realized as clitics, a fact suggesting that the thematic role assigned to the dative clitic is never assigned to an NP in argument position (data first discussed in Perlmutter 1971):

(29) a. Me le arruinaron la vida a mi hijo. All dialects of Spanish
Cl-Dat cl-Dat destroyed the life to my son
b. *Le arruinaron la vida a mi hijo a mí.
Cl-Dat destroyed the life to my son to me
'They ruined my son's life.'

In Jaeggli (1982: 18–19) it is argued that ethical dative clitics are base generated in the clitic position since they do not alternate with phrases in the canonical argument position.

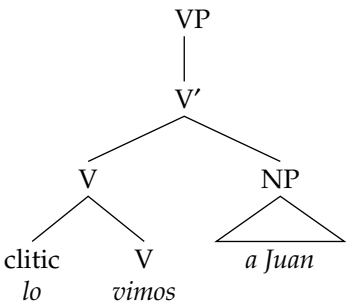
The view that (i) clitics are inserted from the lexicon in clitic doubling and ethical dative constructions and (ii) all clitics share the same syntax leads to a base-generation analysis of non-doubling clitic constructions, such as the Spanish example (30) and its French counterpart *je le vois* (see (22a)):

(30) Lo veo. Standard Spanish
Cl-ACC see-I
'I see him/it.'

Under the 'uniformity' view, clitics are base generated in their surface position even in languages like French where clitic doubling is disallowed.

Base-generation analyses of clitics are developed in Bouchard (1984), Jaeggli (1982, 1986b), Borer (1984a), and Burzio (1986), among many others. According to these proposals, the only difference between (30) and (27) is that in (30) the clitic is associated with an empty category in complement position, as illustrated in (31):

(31)



In a base-generation analysis, SSC effects of the type illustrated in (24) do not constrain movement per se, but rather the relationship between the clitic and the base-generated empty category in the complement position of V:

(32) $X_{\text{lui}} \ldots {}_{S}[\ldots Z_{\text{Pierre}} \ldots W\ Y_{\text{source of lui}} \ldots]$

This is compatible with Chomsky's (1981) position that the SSC is part of the Binding Theory, which applies equally to Movement Chains and Base-Generated Chains (see Sportiche 1996b, 1998 and Van Riemsdijk 1999 for an overview). See Borer (1984a) for extensive argumentation that the clitic in (28) and (31) governs and c-commands the co-indexed NP position (see also Jaeggli 1986b). As stressed by Borer (1984a: 35), an analysis along these lines treats clitic constructions without doubling as being formally similar to the output of movement rules. Since the base-generated clitic is co-indexed with the empty category it c-commands, base-generated constructions of this type are identical in representational terms to movement dependencies.

Base-generated chains consisting of a clitic and an (overt or covert) NP pose a number of questions, widely discussed in the early GB literature (see Jaeggli 1986b for an overview).

(i) What is the role (argument–non-argument) and position (A, A') of the clitic?
(ii) What is the relation between the verb and the clitic, on the one hand, and the verb and the NP, on the other, in terms of thematic roles and Case?
(iii) What is the relation between the clitic and the NP (what type of Chain do they form)?

(iv) How does the base-generated empty category in (31) fit Chomsky's (1981, 1982) typology of empty categories (is it PRO, pro, or a different type of category)?
(v) What explains the difference between languages like French, where the complement position of the verb is obligatorily empty in the presence of the clitic, and languages like Spanish, where the two are allowed to co-occur?

Due to space limitations, it is impossible to present an exhaustive list of all answers to these questions suggested in the early GB literature. I focus here on the fifth question, namely the Clitic Doubling Parameter, which, as will become evident, presupposes a particular view on clitic chains, highlighting some of the positions taken by individual researchers with respect to the other questions. In the next subsection, I present two representative proposals on the Clitic Doubling Parameter developed in the framework of Chomsky (1981), namely Jaeggli (1982) and Borer (1984a). The facts they discuss compose an intriguing picture of variation within and across languages. Before proceeding, I would like to point out that these researchers (as well as Steriade 1980; Dobrovie-Sorin 1990; Suñer 1991) extensively discuss the behavior of clitic doubling in *wh*-constructions. This issue is disregarded here.

3.1.2 Kayne's Generalization and the Clitic Doubling Parameter

The main insight expressed in Jaeggli's (1982) theory of cliticization is that clitic doubling is a marked phenomenon (see Jaeggli 1982: 20 for theoretical discussion): within Romance, clitic doubling is found to varying extents in Spanish and Romanian, while it is totally absent in French and Italian (as already mentioned, later research has shown that clitic doubling is not totally absent from French and Italian; see, e.g., Kayne 2000 on French). It is pointed out that within Romance, the property that appears to regulate the cross-linguistic distribution of doubling is Kayne's Generalization: an object NP may be doubled only if it is preceded by a special preposition. It is therefore concluded that the theory of cliticization must be flexible enough to allow for the clitic doubling option but restrictive enough to treat doubling as a specific option limited to Kayne's Generalization environments. To this end, it is proposed that clitics are generated in the clitic position and they absorb government of the verb (a special kind of government called 'subcategorization government'), due to a uniqueness condition on government. (Recall that Jaeggli did not assume that the clitic is part of V but rather analyzed it as a sister of V dominated by V'.) As a result of government-absorption, the empty NP in complement position in (31) is PRO, which is ungoverned. (The view that clitics absorb government and that the complement position of the verb is ungoverned was argued against in Borer 1984a and was also dropped in Jaeggli 1986b. According to Borer 1984a, the empty position is undefined in terms of Chomsky's system; according to Jaeggli 1986b, it is pro.) When an overt NP occurs in object position, it cannot receive Case, which must be assigned under government. Therefore, clitic doubling is ruled out as a Case Filter violation (Vergnaud cited in Chomsky 1981), unless a special preposition is present, which can assign Case to the NP. Kayne's Generalization is thus linked to Case theory.

In Jaeggli's (1982) theory, the cross-linguistic differences in the distribution of clitic doubling in Romance are accounted for as follows (see Jaeggli 1982 for details and Jaeggli 1986b for some revisions):

(i) **Direct Object Doubling: presence vs. absence of *a*; *a* is not always a Case-assigner.**
Direct Object Doubling is allowed in Rioplatense Spanish with animate, specific objects, which are introduced by the special preposition *a* (33a). It is disallowed in Rioplatense Spanish when the object is inanimate and a preposition in front of it is impossible (33b). Doubling is ruled out in French and Italian, where the option of inserting *a* is unavailable, as illustrated in (34) for French. Finally, in Standard Spanish direct object doubling is ruled out, even though animate, specific objects are introduced by *a* (35):

(33) a. Lo vimos a Guille. — Rioplatense Spanish
Cl-acc saw-we a Guille
'We saw Guille.'
b. *La vimos la casa de Mafalda.
Cl-acc saw-we the house of Mafalda
'We saw the house of Mafalda.'

(34) a. *Je le vois Jean. — French
I him see John
'I am seeing John.'
b. Je vois Jean.
I see John
c. *Je vois à John

(35) a. *Lo vimos a Guille. — Standard Spanish
Cl-acc saw-we a Guille
'We saw Guille.'
b. Vimos a Guille.
Saw-we a Guille

The contrasts between (33a) and (33b) in Rioplatense Spanish, on the one hand, and (33a) in Rioplatense Spanish and (34a) in French (and Italian), on the other, are linked to the presence vs. absence of *a*. When *a* is present, as in (33a), Case can be assigned to the NP complement of V. In the absence of *a*, the NP cannot be assigned Case, violating the Case Filter. In order to account for the contrast between Rioplatense Spanish (33a) and Standard Spanish (35a), it is stipulated that *a* cannot assign Case to direct objects in Standard Spanish.

(ii) **Indirect Object Doubling: *a* is a preposition or a Case marker.**
Indirect object doubling is permitted in all dialects of Spanish and is disallowed in French and Italian. The relevant examples are repeated from above, for Spanish and French respectively:

(2) Miguelito (le) regaló un caramelo a Mafalda. All dialects of Spanish
Miguelito Cl-dat gave a candy a Mafalda
'Miguelito gave Mafalda a piece of candy.'

(3) Jean (*lui) a donné des bonbons à Marie. French
John Cl-dat has given the candies to Mary.
'John gave candies to Mary.'

The problem posed by this contrast is that in both Spanish and French/Italian, indirect objects must be preceded by *a*, and yet doubling is ruled out in the latter group of languages, as illustrated in (3). To account for this, Jaeggli suggested that *à* is a Case marker in French, i.e., it realizes dative Case rather than assigning it. He presents two pieces of evidence that *à* is not a preposition in French, which are based on coordination (Vergnaud 1974). First, contrary to coordinated PPs in (36a), coordinated indirect objects introduced by *à* in French can serve as antecedents of a relative clause (37a), behaving like NPs. Moreover, while the complement of a preposition can be a conjunction of noun phrases as in (36b), this is not allowed with the complement of *à*, as shown in (37b). Instead, two *à*-phrases must be coordinated, as shown in (37c):

(36) a. *Il a compté sur l'homme et sur la femme qui French
He has counted on the man and on the woman who
se sont recontrés hier.
refl are met yesterday
'He counted on the man and the woman who met yesterday.'
b. Ils se sont assis sur la table et les chaises.
They refl are sat on the table and the chairs
'They sat on the table and the chairs.'

(37) a. Il a parlé à l'homme et à la femme qui se sont
He has spoke to the man and to the woman who refl are
recontrés hier.
met yesterday
'He spoke to the man and the woman who met yesterday.'
b. *Ils ont parlé à Marie et le directeur.
'They talked to Mary and the director.'
c. Ils ont parlé à Marie et au directeur.
'They talked to Mary and to the director.'

The differences in (36) and (37) present evidence that *à* is not a preposition. It is proposed that, not being a preposition, *à* cannot assign Case, and doubling violates the Case Filter. By contrast, Spanish *a* qualifies as a preposition on the basis of Vergnaud's second test (Jaeggli 1982: 32):

(38) a. Les compraron una casa a Maria — All dialects of Spanish
They bought. a house for Maria
y el director.
and the director
'They bought a house for Maria and the director.'
b. Les mandaron cartas a los padres y los abuelos del interesado.
'They sent letters to the parents and the grandparents of the interested party.'

Being a preposition, *a* assigns Case to the object when a clitic is present, and, therefore, clitic doubling is permitted in Spanish.

(iii) **Whenever clitics are obligatory in Spanish, cliticization is obligatory in French.**

In Jaeggli (1982) a number of environments are discussed where clitic doubling or simple cliticization is obligatory in Spanish. It is furthermore pointed out that in all cases where the presence of a clitic is obligatory in Spanish, cliticization is obligatory in French as well. The environments in question are inalienable possession constructions and constructions with strong object pronouns:

(a) **Inalienable possession constructions:**

(39) a. Le lavaron los manos a Luis. — All dialects of Spanish
Cl-dat washed the hands a Luis
'They washed Luis's hands.'
b. Le lavaron los manos.
c. *Lavaron los manos a Luis.

(40) a. *Elle lui cassera Jean le gueule. — French
She Cl-dat will break John the face
'She will break John's face.'
b. Elle lui cassera la gueule.
she Cl-dat will break the face
'She will break his face.'
c. *Elle cassera Jean le gueule.

(b) **Pronouns:**

(41) a. *Vimos a él. — All dialects of Spanish
Saw-we a him
'We saw him.'
b. Lo vimos.
Cl-acc saw-we
c. Lo vimos a él.
Cl-acc saw-we a him
'We saw him.'

(42) a. *Jean voit moi/toi/lui/elle/nous . . . French
b. Jean me/te/le/la/nous . . . voit.

The obligatoriness of clitics in inalienable possession is accounted for in terms of theta-theory. It is hypothesized that certain theta-roles, such as inalienable possessor, are obligatorily assigned to clitics and are transmitted to argument NP positions. The obligatoriness of clitic doubling with strong pronouns is accounted for in terms of a version of the Avoid Pronoun Principle. The difference between Spanish and French illustrated in (39–42), namely that clitic doubling is ruled out in French but not in Spanish, falls out from the fact that French lacks clitic doubling altogether and, therefore, only the simple cliticization option is available. In Spanish, doubling and simple cliticization are equally possible (though see Kayne 2000 for an argument that strong pronouns can be doubled in French).

Having summarized Jaeggli's (1982) theory and the main facts derived by it, I now turn to Borer (1984a), who builds on the view that clitic doubling is tightly linked to Kayne's Generalization and widens the empirical coverage of the Case-theoretic interpretation of Kayne's Generalization by extending it to the domain of nouns and prepositions. Similarly to Jaeggli (1982), who explained cross-linguistic differences in terms of variation in the properties of *a* (see above), Borer (1984a) accounts for parametric differences between Hebrew and Romanian in terms of the specific properties of *šel* and *pe*. At a theoretical level, Borer (1984a) clarifies a number of issues pertaining to the nature of clitics and the formal relations displayed in clitic doubling chains. The latter topic has already been mentioned in section 3.1.1. Concerning the nature of clitics, Borer proposes that they are parts of the heads to which they attach; in particular, they are inflectional elements spelling out (and absorbing) the Case features of the heads. In this sense, Borer is the first to suggest that clitics are (special kinds of) agreement markers. Her treatment of clitics is embedded within a theory of inflection according to which inflectional rules can apply at any level and are allowed to change relational configurations, provided that the lexical specifications remain unchanged. According to Borer, clitics are affixes which are

> the output of an inflectional rule which inserts number, gender and person features and associates them with an already existing Case feature on a lexical head. Clitics are a spell-out of Case features in the sense that once the Case feature is associated with the inserted number, gender and person features, it is given an independent phonological representation and can no longer be transferred to a complement of the head. (Borer 1984a: 41)

Borer's inflectional rule of clitic spell-out is given in (43):

(43) **Clitic Spell-Out (Borer 1984a: 37):**
$[_X$ X, α Case$] \rightarrow [_X$ X [α Case, β gender, γ number, δ person]
X = [+V] in Romance
X = V, P, N in Semitic

Borer's (1984a) analysis is embedded within a discussion of the structure and the Case properties of Hebrew nominals and, in particular, the Construct State construction. On the basis of the Construct State, she argues that noun heads assign structural Case in Hebrew under certain conditions, and establishes that *šel* is present whenever the noun is not in the right configuration to assign structural Case. She furthermore points out that *šel* is obligatory in clitic doubling (Borer 1984a: 49) in nominals, leading to the conclusion that doubling is another configuration in which the Case-assigning capacity of nouns is suppressed. Consider the contrast in (44):

(44) a. beit-a šel ha-mora — Modern Hebrew
house-her of the teacher
'the teacher's house'
b. *beit-a ha-mora
house-her the-teacher

Thus, doubling in Hebrew nominals takes place under exactly the same conditions as doubling in Rioplatense Spanish. It is permitted only in the presence of a special preposition assigning Case to the complement of the noun, in accordance with Jaeggli's (1982) interpretation of Kayne's Generalization.

Nevertheless, a property of *šel* is noted that appears to differentiate it from Spanish *a*. The NP *šel* introduces can serve as an antecedent for a lexical anaphor, as illustrated in (45a), contrary to real prepositions, which block binding, as shown in (45b) (Borer 1984a: 56):

(45) a. re'iyat 'acma šel ha mora — Modern Hebrew
view herself of the teacher
'the teacher's view of herself'
b. *xaśîvat 'acma 'al ha mora
thinking herself about the teacher

On the basis of (45), Borer concludes that *šel*-phrases are not PPs but rather NPs. In view of Jaeggli's discussion of Spanish *a* as opposed to French *à* discussed above, this appears to create an analytic problem. Recall that in order to account for the difference between Spanish, which allows clitic doubling of indirect objects, and French and Italian, which do not, it was crucial for Jaeggli (1982) to argue that French (and Italian) *à* is not a preposition, contrary to Spanish *a*. Now we see that clitic doubling in Hebrew relies on *šel* and falls under Kayne's Generalization. Everything else being equal, *šel* is expected to qualify as a preposition. And yet, there is evidence that it is not.

Even though Borer (1984a) does not explicitly address this problem, she makes a proposal that resolves it, which is motivated by independent considerations.[2] In particular, she draws a distinction between *šel,* which is a contentless, dummy element, and *pe* and *a* in Romanian and Spanish respectively, which are contentful prepositions. Borer (1984a) points out that the range of environments where

šel is found in Hebrew coincide exactly with those in which structural Case cannot be assigned, doubling being one of them. By contrast, *pe* in Romanian is found quite independently of the unavailability of Case assignment. In particular, *pe* is found in the presence of the lexico-semantic features [+human], [+pronominal], while doubling is found only when the object is, in addition, [+specific], i.e., it is limited to a subset of the environments in which *pe* is available (similar considerations apply to *a* in Spanish, according to Jaeggli's 1982 description; see also Borer 1984a). The complex distribution of *pe* and clitic doubling in Romanian is illustrated below (Borer 1984a: 128 drawing on Steriade 1980; see also Dobrovie-Sorin 1990 for discussion of the semantic properties of direct object doubling in Romanian):

(i) ***Pe* obligatory, doubling obligatory**

(46) [+specific, +definite, +human, +pronominal]
   a. Am văzut-o pe ea. Romanian
      have-I seen-Cl pe her
      'I have seen her.'
   b. *am văzut-o ea
   c. *am văzut pe ea

(47) [+specific, +definite, +human, –pronominal]
   a. L-am văzut pe Popescu.
      Cl-have-I seen pe Popescu
      'I have seen Popescu.'
   b. *L-am văzut Popescu.
   c. *Am văzut pe Popescu.

(48) [+specific, –definite, +human, –pronominal]
   a. o caut pe o fată de la noi din sat.
      Cl- I-am looking for pe a girl from the our village
   b. *o caut o fată de la noi din sat
   c. *caut pe o fată de la noi din sat
      (on the specific interpretation)

(ii) ***Pe* obligatory, doubling impossible**

(49) [–specific, –definite, +human, +pronominal]
   a. Am văzut pe altcineva.
      have-I seen pe somebody else
      'I have seen somebody else.'
   b. *am văzut altcineva
      have-I seen somebody else
   c. *l-am văzut pe altcineva

(iii) ***Pe* impossible, doubling impossible**

(50) [−specific, −definite, +human, −pronominal]
a. Am văzut un bucătar.
have-I seen a cook
'I have seen a cook.'
b. *am văzut pe un bucătar
c. *l-am văzut pe un bucătar

(51) [+specific, +definite, −human, −pronominal]
a. Am văzut cînele lui Popescu.
have-I seen the-dog of Popescu
'I have seen the dog of Popescu.'
b. *am văzut pe cînele lui Popescu
c. *l-am văzut pe cînele lui Popescu

(52) [−specific, −definite, −human, +pronominal]
a. Am văzut altceva.
have-I seen something else
'I have seen something else.'
b. *am văzut pe altceva
have-I seen pe something else
c. *l-am văzut pe altceva

On the basis of the fact that there are environments in Romanian where *pe* is obligatory and doubling is ruled out, Borer argues that the presence of *pe* is required by lexico-semantic factors, and therefore, it must be present at D-structure. Its presence facilitates doubling in the sense that *pe* assigns Case to the direct object. But the purpose of inserting *pe* is not simply to rescue the structure. On the other hand, the sole purpose of inserting *šel* is to assign genitive Case in contexts where the noun cannot do so. Borer proposes that the rule of *šel*-insertion is an inflectional rule operating in the phonological component (she argues that the environment of insertion is dependent upon string adjacency). In this analysis, *šel* is not present at S-structure where Binding Conditions apply, explaining the status of examples like (45a) where the presence of *šel* does not affect binding.

I conclude this part of the discussion by summarizing how inter- and intra-linguistic variation is accounted for in the two works presented so far which capitalize on Kayne's Generalization to account for the Clitic Doubling Parameter:

(i) **Kayne's Generalization: A preposition-like element must be present. Case-interpretation: To assign the Case absorbed by the Clitic.** This explains Spanish and Romanian direct object clitic doubling as opposed to French and Italian. It also explains Hebrew doubling in nominals.

(ii) **Auxiliary assumption 1: When a preposition-like element is a preposition, doubling is possible, otherwise not.** This explains why indirect object doubling is well-formed in Spanish but not in French and Italian.

(iii) **Auxiliary assumption 2: When a preposition-like element is a preposition that can assign Case, doubling is possible, otherwise not.** This explains why direct object doubling is well-formed in Rioplatense Spanish but not in Standard Spanish.

(iv) **Auxiliary assumption 3: When a preposition-like element rescues a clitic doubling construction without providing evidence that it is a preposition, then it is inserted at PF.** This explains differences in extraction from doubling in Hebrew and Romanian. The claimed difference between D-structure insertion and PF insertion correlates with the fact that prepositions belonging to the first group are contentful and prepositions belonging to the second group are dummy elements.

3.2 Late GB: specificity, animacy, and rejection of Case-theoretic approaches

Suñer (1988) builds on Borer's (1984a) insight that clitics are similar to agreement markers and focuses on the fact that direct object doubling in Spanish is limited to specific NPs. In addition, she argues against an important assumption made in early approaches toward clitic doubling, namely that clitics absorb Case. By doing so, she initiates an altogether different way of thinking about clitic doubling constructions and the Clitic Doubling Parameter. Finally, she points out that direct object doubling and indirect object doubling differ with respect to specificity.

More specifically: first, she points out that while specific animate DPs can be doubled by accusative clitics (53a, b), non-specific animate DPs cannot undergo clitic doubling (53c, d) (Suñer 1988: 396):

(53) a. [+anim, +spec, +def] (Rioplatense Spanish)
La oían a Paca/ à la niña/ à la gata.
her listened-3pl to Paca/ to the girl/ to the cat
'They listened to Paca/the girl/the cat.'

b. [+anim, +spec, –def]
Diariamente, la escuchaba a una mujer que cantaba tangos.
daily, her listened-3sg to a woman who sang tangos
'He listened daily to a woman who sang tangos.'

c. [+anim, –spec, +def]
*Lo alabarán al niño que termine primero.
him will praise-3pl the boy who finishes first
'They will praise the boy who finishes first.

d. [+anim, –spec, –def]
*No lo oyeron a ningún ladrón.
not him heard-3pl to any thief
'They didn't hear any thieves.'

This is similar to the point Borer (1984a) made for Romanian (see above; see also Dobrovie-Sorin 1990 for Romanian), i.e., that doubling takes place only with a subset of direct objects introduced by a special preposition.

Second, Suñer argues against the view that in Spanish, the preposition *a* is a Case marker licensing clitic doubling. She provides data from Porteño/Rioplatense Spanish, where direct object clitic doubling is possible in the absence of *a* (Suñer 1988: 399–400):

(54) a. Yo la tenía prevista esta muerte. Rioplatense Spanish
I had foreseen (it) this death

b. ¿Así que el tarambana de Octavio la liquidó su fortuna?
Isn't it true that the empty-headed Octavio squandered (it) his fortune? (Kany 1969: 149)

c. Lo último que escuché, claro que la encontré pesada la audición, fue el reportaje.
'The last thing I listened to, of course I found (it) boring the radio-program, was the interview.' (Barrenechea and Orecchia 1979)

d. Ahora tiene que seguir usándolo el apellido. (Barrenechea and Orecchia 1979)
'Now s/he has to go on using (it) the surname.'

e. Yo lo voy a comprar el diario justo antes de subir
I it am going to buy the newspaper just before coming up

Suñer argues that these examples are not right dislocations because they are uttered with the same unbroken intonation curve they would have without the clitic, and they occur in embedded or parenthetical clauses as in (54c), as well as in non-peripheral positions as in (54e). She concludes that *a* is not a Case marker but rather a marker of animacy or 'distinctiveness' (Ramsey 1956), and that the presence of *a* is not a necessary condition for clitic doubling in Argentinean Spanish, contrary to what is widely assumed in the literature. According to Suñer, the existence of examples like (54) show that although direct object clitic doubling of inanimates in Spanish is less general than doubling of animates, neither animacy nor the presence of *a* is required for clitic doubling.

Note, as an aside, that there is minimal variation in the 'distinctiveness' features associated with *pe* and *a* in Romanian and Spanish respectively. The presence of *pe* in Romanian is sensitive to the feature [+human], as was evidenced by the ungrammaticality of (51b) presented in the preceding subsection, while *a* in Spanish is sensitive to the feature [+animate], as shown in (53a) where *la gata* is preceded by *a.* Minimal variation of this kind is expected by 'markedness theories' of the type postulated in the typological literature (see Silverstein 1976 and Dixon 1994 among others; see Anagnostopoulou 1994 for an informal proposal to link phenomena of the Spanish and Romanian type to 'markedness' theories of this kind, and Alexiadou and Anagnostopoulou 2000 for a proposal). Assume, in the spirit of such theories, that *a* and *pe* are ways to mark by special morphology objects that are less likely to be in the O/P (object of transitive clause)

function according to the Nominal hierarchy in (55). In such a view, object marking with *a* and *pe* is the counterpart of subject marking of NPs that are less likely to occur in the A (subject of transitive clause) function with ergative case morphology (as opposed to unmarked nominative) in languages with ergative splits conditioned by the semantic properties of NPs (see Dixon 1994 for details):

(55)

				Common nouns		
1st person pronouns	2nd person pronouns	3rd person pronouns, demonstratives	Proper names	Human	Animate	Inanimate

more likely to be in A than O function

Like ergative languages that sometimes group together 1st and 2nd person, treating both as unmarked, and sometimes treat 1st person as being less marked than 2nd, languages with a special preposition for direct objects sometimes treat as unmarked non-human animates along with inanimates (Romanian), and sometimes treat non-human animates as being more marked than inanimates (Spanish).

Returning now to Suñer's (1988) third point: she notes that indirect object/dative clitic doubling differs from direct object/accusative clitic doubling in not being subject to specificity (Suñer 1988: 394–395). The data in (56) show that any indirect object can undergo doubling in Spanish, unlike direct objects, which must be specific, as was demonstrated in (53):

(56) a. [+human, +spec, ±def]
Le ofrecí ayuda à la niña/a una estudiante. Rioplatense
her offered-1sg to help to the girl/ to a student Spanish
'I offered help to the girl/to a student.'

b. [+human, –spec, –def]
Les ofrecieron queso y leche a familias de pocos medios.
them offered-3pl cheese and milk to families of little means
'They offered cheese and milk to low-income families.'

c. [+human, –spec, +def]
Les dejarı todo mi dinero a los pobres.
them will leave-1sg all my money to the poor
'I will leave all my money to the poor.'

To account for the facts presented above, Suñer (1988) proposes that clitics are inflections, generated as part of the V. They are listed in the lexicon, which permits their features to be specified there. Indirect object clitics and direct object clitics are defined by assigning values to the features [specific], [animate], [gender], [number], and [person], the crucial difference between the two being that direct object clitics are inherently [+specific]. Being agreement affixes, clitics must agree in features with the constituent they form a chain with (Matching Principle). This explains the specificity requirement on direct object clitic doubling. A chain

is well-formed only when there is no clash of features, and a non-specific NP cannot form a chain with a [+specific] clitic, because this would lead to such a clash.

Suñer's (1988) contribution to the study of clitic doubling can be summarized as follows:

(i) She is the first one to systematically discuss the interpretive effects of direct object clitics. After the relevance of these effects was discovered, most accounts of direct object clitic doubling focused on them.

(ii) It has always been known that the conditions under which indirect object clitic doubling takes place are different from the conditions of direct object doubling (see, e.g., Jaeggli's 1982 discussion presented above, as well as Jaeggli 1986b, which proposed that indirect object clitics are optional Case absorbers, unlike direct object clitics, which absorb Case obligatorily). Suñer (1988) points out an additional major difference between the two instances of doubling, namely specificity.

(iii) The fact that Kayne's Generalization has counter-examples was known in the 1980s. Greek was mentioned as being one such language. Spanish, however, was considered to be 'well-behaved' in this respect. Suñer (1988) argues that this is not the case. If doubling clitics do not absorb Case, then they behave similarly to agreement markers, which are usually not assumed to absorb Case (though see Baker 1996 for a generalized view of agreement markers as 'Case absorbers' leading to non-configurationality in polysynthetic languages; his proposal is inspired by clitic doubling and the Case-theoretic interpretation of Kayne's Generalization in the early GB literature).

As already mentioned, Dobrovie-Sorin (1990) reports similar findings for Romanian. Unlike Suñer, Dobrovie-Sorin does not challenge the view that the presence of a special preposition (*pe* for direct objects, the dative morphology for indirect objects in Romanian) is a prerequisite for object clitic doubling. She argues, though, that (i) in Romanian there are many restrictions on direct object clitic doubling which have to do with the interpretation of NPs, and (ii) indirect object clitic doubling differs from direct object clitic doubling with respect to sensitivity to the semantics of NPs.

Having discussed Spanish as being a potential counter-example to Kayne's Generalization, it is time to turn to languages that present straightforward counter-examples to Kayne's Generalization. All Balkan languages that have been claimed to have clitic doubling (e.g., Bulgarian, Albanian, and Greek) fall into this group. Greek will be discussed here in some detail.

In Greek, indirect objects bearing genitive case and direct objects bearing accusative can be doubled:

(57) (Tu) (to) edhosa tu Jani to vivlio. Greek
Cl-gen Cl-acc gave-1sg the John-gen the book-acc
'I gave John the book.'

Greek instantiates a third pattern, apart from that of Spanish and Romanian, which possess clitic doubling and (by and large) observe Kayne's Generalization, and that of Italian and French, which lack clitic doubling. As shown in (57), clitic doubling does not take place in the presence of a preposition. In fact, clitic doubling in Greek is blocked when the indirect object is a PP (see Dimitriadis 1999 for discussion):

(58) a. *Tu edhosa to vivlio s-ton Jani. Greek
Cl-gen gave-1sg the book-acc to-the John
'I gave the book to John.'
b. *Tu pira to vivlio apo ton Jani.
Cl-gen took-1sg the book-acc from the John
'I took the book from John.'

As shown by the contrast between (57) and (58), Greek looks like the reverse of Spanish and Romanian: doubling is actually not allowed in the presence of a preposition. This cross-linguistic difference between Romance and Greek raises the question of whether Greek indeed possesses genuine clitic doubling of DPs. Alternatively, one might argue that what superficially resembles clitic doubling in fact manifests a case of right dislocation, which is found in all clitic languages, regardless of whether they have doubling, and which is not subject to Kayne's Generalization (see section 2.2 above). Greek definitely has right dislocation, i.e., a natural way of uttering (57) is with the intonation peak falling on the verb cluster, resulting in an emphatic interpretation of the verb, as illustrated in (57'):

(57') Tu to edhosa #tu Jani #to vivlio. Greek
Cl-gen Cl-acc gave-1sg the John-gen the book-acc
'I GAVE John the book (I did give John the book).'

If (56') is compared to the Catalan example of right dislocation (14) in section 2.2, discussed in Vallduví (1992), it becomes evident that the two constructions have exactly the same intonation and interpretation.

In previous work (Anagnostopoulou 1994, 1999a, 2003), I have extensively argued that Greek productively employs clitic doubling. Here I limit myself to presenting one set of data in support of this claim, which relates to the evidence from intonation and word order presented in section 2.2 (see Anagnostopoulou 2003). In Greek, objects can be doubled in environments in which the object precedes the subject, as in (59b) and (60b):

(59) a. Pjos tin efage tin turta? Greek
Who Cl-acc ate-3sg the cake-acc?
'Who ate the cake?'
b. Tin efage tin turta o Janis.
Cl-acc ate-3sg the cake-acc the John-nom
'John ate the cake.'

(60) a. O Petros agorase ena vivlio.
The Petros-nom bought-3sg a book-acc.
'Peter bought a book.'
b. Ke tin ali mera, to katestrepse to vivlio enas
And the other day Cl-acc destroyed the book-acc a
mathitis tu.
student-nom his
'And the next day, a student of his destroyed this book.'

In both cases, the object is de-accented and the subject bears main sentence stress. The context furthermore ensures that the subjects are not presupposed. Moreover, it can be shown that subjects in strings with the order Cl–VOS reside in situ. From this it follows that the object associated with the clitic cannot be right dislocated. Hence, it can be concluded that Greek possesses genuine clitic doubling.

Evidence for the assumption that the subjects in (59b) and (60b) remain in situ comes from the observation, made by Zubizarreta (1994) for Romance and by Alexiadou (1999a) for Greek, that in VOS strings, the subject necessarily bears main sentence accent. Following Cinque (1993), Zubizarreta and Alexiadou take this to indicate that the subject is the most deeply embedded argument, which remains in its VP-internal base position. Furthermore, they point out that objects may bind subjects to their right, as schematized in (61a) and illustrated in (61c):

(61) a. $[OBJ_i \ldots [[_{SUB}\, pron_i\,] [t_i \ldots]]$ Greek
b. Pjos sinodhepse to kathe pedhi?
Who-nom accompanied the every child?
'Who accompanied every child?'
c. Sinodhepse to kathe $pedhi_i$ i mitera tu_i.
Accompanied the every child the mother his
'His mother accompanied every child.'

Thus, the object in (61) must have reached its surface location by overt leftward A-movement to a position above the subject. Versions of this analysis for VOS orders are widely adopted in the literature (see Zubizarreta 1994, 1998, for Spanish; Ordóñez 1994, 1997, for Spanish and Catalan; Cardinaletti 1997 for Italian; Alexiadou 1999a for Greek). Crucially for present purposes, the subject also bears main stress when the object is doubled as in (59b), (60b). This entails that objects in Cl–VOS configurations are not right dislocated. But from this it also follows that Greek qualifies as a genuine clitic doubling language.

Cross-linguistic evidence that the facts in (59) and (60) indeed constitute an argument that Greek has clitic doubling comes from languages that have limited clitic doubling of direct objects, such as Standard Spanish and Catalan. In Standard Spanish and Catalan, doubling of objects preceding postverbal subjects carrying main sentence stress is permitted with indirect objects (Ordóñez 1997), and with pronominal direct objects (Zubizarreta 1998: 185, fn. 16: see (21b) above), as illustrated in (62) (see also the discussion in section 2.2):

(62) a. Se lo dio a Juan Maria, el libro. Standard Spanish
Cl-dat Cl-acc gave to John Mary-nom, the book
'Mary gave to John the book.'
b. Lo castigó a él la madre de Juan.
Cl-acc punished a him the mother of John
'John's mother punished him.'

In these languages, clitic doubling of direct object DPs is ruled out. Accordingly, doubling of *a la professora* in a position preceding the subject is ruled out in (63) (Josep Quer, p.c.):

(63) *La saludó a la profesora Juan. Standard Spanish
Cl-acc greeted a the professor John-nom
'John greeted the professor.'

Note that in (62) the direct object *el libro* is 'doubled' by a clitic but, crucially, it occurs in a position after the subject, i.e., in a right-dislocated position.

To sum up, VOS configurations in which the subject bears main stress provide diagnostic environments for clitic doubling as opposed to right dislocation. On the basis of this test, it can be concluded that Greek has clitic doubling.

Similarly to Romanian and Spanish, clitic doubling in Greek has interpretive effects as well (see Anagnostopoulou 1994). In Greek, clitic doubling is mainly found with definites, which cannot be understood as novel in the presence of doubling. Consider the following examples (constructed on the basis of Heim's 1982 discussion of pronouns):

(64) O Jannis diavase [ena vivlio jia ton Arthur Miller$_i$]$_j$, enthusiastike, ke thelise na gnorisi ton sigrafea$_k$ apo konta.
John read [a book about Arthur Miller$_i$]$_j$, he got very enthusiastic, and he wanted to get to know the author$_k$.
the author: (i) Arthur Miller himself (k = i) or (ii) the author of the book (k related to j by 'accommodation').

(65) O Jannis diavase [ena vivlio jia ton Arthur Miller$_i$]$_j$, enthusiastike, ke thelise na ton$_i$ gnorisi ton sigrafea$_i$ apo konta.
John read [a book about Arthur Miller$_i$]$_j$, he got enthusiastic, and he wanted to get to know the author$_i$.
the author: necessarily the already established member of discourse (i.e., the doubled DP cannot be 'novel').

In (64), the undoubled definite *ton sigrafea* (the author) is ambiguous: under a familiar reading, its referent is already present in the context of discourse (k = i); under an 'associative anaphoric use' (Heim 1982 building on Hawkins 1978), it introduces a novel referent, namely *the author of the book about Arthur Miller that John read* (*k* is linked by cross-references to the already present discourse referent *j*).

The presence of the doubling clitic in (65) suppresses the second option: the doubled DP is necessarily linked to the previously mentioned proper name, thus being strictly construed as anaphoric.

3.3 *Inflections vs. determiners*

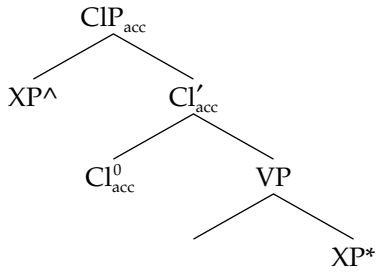
In the preceding subsection, two significant developments in the research on clitic doubling have been noted: (i) emphasis on the sensitivity of direct object doubling to the semantico-pragmatic properties of DPs (specificity, prominence, etc.) along with the fact that (ii) the validity of Kayne's Generalization has been questioned. A third significant development that will be presented in this subsection concerns the movement vs. base generation debate. Due to the expansion of the analytic tools of the theory, it becomes possible to combine movement with base generation.

3.3.1 *Clitics as inflections*

An influential theory reconciling movement with base generation is advanced in Sportiche (1996b, 1998). According to Sportiche, clitics are functional heads heading their own projections in the domain of Infl. These are referred to by the term 'Clitic Voices' and it is suggested that they license a particular property on an agreeing argument: the doubled DP in clitic doubling, an object pro in simple cliticization.

Sportiche argues that clitic constructions show properties of XP-movement (see section 3.3.2) and claims that it would be the null hypothesis to postulate that clitic constructions are identical to all other types of movement configurations, which, in Checking theory (Chomsky 1993, 1995c), involve movement demanded by specifier–head licensing. The structure Sportiche proposes for accusative clitics is illustrated in (66):

(66)



In (66), the (overt or covert) XP* related to the clitic moves to the XP^ position at some point in the derivation (overt syntax or LF).[3] In this way, agreement between Cl and XP* is sanctioned. The agreement relation between the clitic and the XP* is derived as a spec–head relation, and the locality between the clitic and the corresponding XP* follows from the movement relationship between the XP* and the XP^. Clitic doubling minimally differs from non-doubling in that the

XP* is overt in the former and covert in the latter. This way, the syntax of clitics is fully assimilated to that of other functional heads.

The obvious question to ask is the trigger of movement of the double. Sportiche answers this question by pushing the parallelism between the syntax of clitics and that of other kinds of movement. Under the assumption that *wh*-movement is motivated by the *Wh*-Criterion (Rizzi 1991b), he attributes the XP*-to-XP^ movement to the Clitic Criterion in (67), which, in turn, is subsumed under the Generalized Licensing Criterion in (68):

(67) **Clitic Criterion:**
At LF:
a. A clitic must be in a spec–head relationship with a [+F] XP.
b. A [+F] XP must be in a spec–head relationship with a clitic.

(68) **Generalized Licensing Criterion (Sportiche 1996b: 68):**
At LF:
a. A [+F] head must be in a spec–head relationship with a [+F] XP.
b. A [+F] XP must be in a spec–head relationship with a [+F] head.

In (68), [+F] stands for a set of properties such as Wh, Neg, Focus, etc. which trigger movement. For direct object clitic constructions, it is proposed that the clitic licenses Specificity on its associate. Indirect object clitic heads are treated as indirect object agreement markers since they do not yield specificity effects (cf. Suñer's 1988 discussion presented above). The general schema in (66) makes a number of further options available:

(69) **Clitic Constructions Parameters (Sportiche 1996b: 32):**
Movement of XP* to XP^ occurs overtly or covertly.
Head is overt or covert.
XP* is overt or covert.

By (69) the following cases are predicted:

(i) Undoubled clitic constructions as in French and Italian arise when a covert XP* moves overtly or covertly to XP^ with H overt.
(ii) Clitic doubling constructions as in Spanish and Romanian arise when an overt XP* moves covertly with H overt.
(iii) Scrambling constructions as in Dutch and German arise when an overt XP* moves overtly with H covert.

Note that Sportiche unifies the syntax of cliticization/clitic doubling with the syntax of scrambling, which has also been claimed to display interpretational effects (see the references to Diesing 1992b and De Hoop 1992 above). This idea is further explored in Anagnostopoulou (1994) and Alexiadou and Anagnostopoulou (1997b).

Finally, Sportiche proposes that the Clitic Doubling Parameter should be attributed to a filter similar to the doubly filled COMP filter (see Cheng 1997 for cross-linguistic discussion):

(70) **Doubly Filled Voice Filter (Sportiche 1996b: 28):**
*[$_{HP}$ XP [H . . .]]
where H is a functional head licensing some property P
and both XP and H overtly encode P.

Assuming (70) to hold universally, Sportiche speculates that clitic doubling arises in a language precisely when XP* movement may be delayed until LF, since this is the only way of preventing a violation of (70) with an overt XP* in the presence of an overt clitic.

Sportiche's intuition concerning the nature of clitics is similar to the one expressed in Suñer (1988). Both researchers view clitics as agreements and assume that the syntax of indirect object and direct object clitics minimally differ in that the former are pure agreement markers while the latter encode specificity. While for Suñer, direct object clitics are lexically specified as [+specific] and, therefore, can only form a chain with a DP that has compatible feature specification, Sportiche assimilates accusative clitics to heads encoding features like [+Wh], [+Neg], etc.

3.3.2 Clitic constructions in a movement typology: XP-movement vs. head-movement

Sportiche's theory predicts that clitic constructions will show properties of XP-movement because the element undergoing movement is the overt or covert DP-associate of the clitic. On the other hand, for theories of cliticization like the one put forth in Kayne (1989b, 1991) and related work, clitic constructions should display X^0-movement properties, since clitics are analyzed as heads undergoing X^0 movement. As a matter of fact, clitic constructions support both claims, i.e., they present evidence for both XP-movement and head-movement. In what follows, I will briefly summarize some of the evidence presented in the literature.

3.3.2.1 Arguments that clitic dependencies display XP-movement properties

SSC effects of the type illustrated in (24c), repeated here, constitute an argument that clitic constructions involve phrasal movement if the SSC is assumed to fall under Relativized Minimality (Rizzi 1990b). The ungrammaticality of (24c) shows that cliticization is sensitive to the presence of an intervening DP, namely the embedded subject *Pierre*:

(24) a. Jean a laissé Pierre parler à Marie. French
John has let Peter speak to Mary
'John has let Peter speak to Mary.'

b. Jean l' a laissé parler à Marie.
John him has let speak to Mary
'John has let him speak to Mary.'
c. *Jean lui a laissé Pierre parler.
John to her has let Peter speak
'John has let Peter to speak to her.'

If clitic constructions displayed head-movement, then X^0 elements would count as interveners (Head Movement Constraint) and XP elements would not.

Participle agreement (Kayne 1989a) in French and Italian presents further evidence that clitics move as XPs. As shown in (71c), participles may agree with clitics, similarly to elements undergoing *wh*-movement (71b) and unlike in situ objects (71a):

(71) a. Jean a peint(*e) la porte French
John has painted(*fem) the door
'John painted the door.'
b. la porte$_i$ que Jean a peint(e) t$_i$
The door that John has painted(fem)
'the door that John painted.'
c. Jean l' a peint(e).
John Cl has painted(fem)
'John painted it.'

If, as suggested in Kayne (1989a), agreement on the participle is a reflex of a spec–head relation between the participle-head and the object XP undergoing overt movement through its specifier, then the clitic in (71c) – or its covert associate – undergoes phrasal movement.

3.3.2.2 An argument for X^0 movement that has been reanalyzed as an argument for XP-movement

In Kayne (1989b), it is argued that clitic climbing in restructuring contexts provides evidence that clitic placement is X^0 movement, because it is not sensitive to the presence of an intervening *wh*-phrase while it is sensitive to the presence of an intervening *wh*-complementizer, as illustrated in (72):

(72) a. ?Mario, non lo$_i$ saprei [a chi affidare t$_i$]. Italian
Mario, not Cl-acc I-would-know to whom entrust
'Mario, I wouldn't know to whom to entrust him.'
b. *Su questo problema, non lo$_i$ saprei [se consigliare t$_i$].
On this problem, not him I-would-know whether advise
'On this problem I wouldn't know whether to advise him.'

The *wh*-phrase *a chi* does not interfere with clitic climbing while the *wh*-complementizer *se* does. Kayne argues that this contrast is expected if clitic climbing

is head-movement, which is sensitive to intervening heads like the C^0 element *se* and insensitive to intervening phrases like the *wh*-phrase *a chi* in Spec,CP.

Sportiche (1996b), however, points out that Long Object Preposing, which also takes place in restructuring contexts (Burzio 1986), patterns with clitic climbing in being permitted in the presence of a *wh*-phrase but not in the presence of a complementizer (Rizzi 1982a):

(73) a. ?Certe riposte non si sanno mai come dare. Italian
Certain answers not si know never how give
'One never knows how to give certain answers.'
b. *Certe riposte non si sanno mai se dare.
Certain answers not si know never whether give
'One never knows whether to give certain answers.'

Since long object preposing is phrasal movement, the contrast in (73) cannot be explained as a locality effect. In a locality account, the presence of an intervening complementizer is not expected to block phrasal movement and the presence of an intervening phrase is expected to do so, contrary to facts. To account for (73), Sportiche (1996b) suggests, alternatively, that the presence of an intervening complementizer in (73b) blocks incorporation of a head from the lower clause (V or Infl) into a head of the higher clause (V or Infl) leading to restructuring. Thus, long object preposing, which is contingent on restructuring, fails to apply in (73b). Since there is no intervening head blocking restructuring in (73a), long object preposing may apply. This explanation is further extended to (72). The complementizer in (72b) does not directly affect movement of the clitic to the higher clause but rather blocks incorporation/restructuring, which determines the availability of clitic climbing. Sportiche points out that clitics trigger participle agreement on the higher clause in environments like (72a), providing evidence that they undergo phrasal movement at least as high as the specifier position of the participle in the higher clause, as illustrated in (74):

(74) Non li_i avrei $[e_i]_{XP^*}$?saputi /*saputo a chi dare $[e_i]_{XP^*}$ Italian
Not them I-would-have known-pl /*known-sg to whom give
'I would not have known to whom to give them.'

3.3.2.3 Arguments that clitic dependencies display X^0 properties

The most interesting arguments for X^0 movement come from accounts of clitic placement in proposals according to which clitics left-adjoin to T or one or more inflectional heads in the domain of INFL. The left-adjunction to a functional head line of analysis, which presupposes that clitics move as heads since their landing site is a head position, syntactically accounts for the position and order of clitics, the environments in which proclisis and enclisis occur, as well as the complex interaction between the syntax of clitics, the syntax of heads in the I and C domains, such as negation, mood, complementizers, and the placement of finite verb forms as opposed to infinitives, gerunds, and imperatives (see Kayne 1991,

1994; Zanuttini 1991, 1997; Rivero 1994; Rivero and Terzi 1995; among many others).

To briefly illustrate, consider clitic placement in Greek.[4] In Standard Greek, clitics precede the finite verb forms but are enclitics on (non-finite) gerunds and imperatives (similarly to Spanish, Italian, French, and Catalan):

(75) a. To vlepo. Greek
it see-1sg
'I see it.'
b. Dhjavase to.
read-2sg it
'Read it!'
c. dhjavazondas to
reading cl-acc

The relative order of the preverbal clitics is strictly indirect object > direct object, while there is no strict order among enclitics:

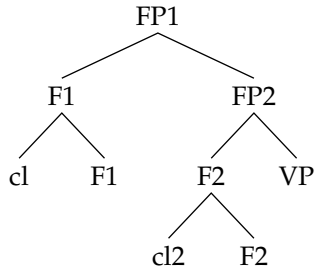
(76) a. Mu to edhose. Greek
Cl-gen Cl-acc gave-3sg
'He/she gave it to me.'
b. dhose mu to
give-2sg Cl-gen Cl-acc
c. dhose to mu
give-2sg Cl-acc Cl-gen

Terzi (1992) and Rivero (1994) argue that in finite clauses clitics left-adjoin to the inflectional head to which the verb raises, in finite environments T or AgrS (Kayne 1989b, 1991). Rivero (1994) develops an interesting analysis for the distribution of clitics in Imperatives, which is based on the view that the verb undergoes head movement to C of the A' type which is triggered by illocutionary features in C (see also Rivero and Terzi 1995). It is proposed that this movement is blocked by Negation, which is assumed to be an operator head under a version of Relativized Minimality (Rizzi 1990b) on head movement which is relativized to the A- vs. A'-status of intervening heads. This analysis captures the correlation between enclisis and absence of negation in imperatives. For gerunds, Rivero (1994) argues that they move to Mood, which is higher than T, in order to pick up the gerundive affix resulting in enclisis, but they can co-occur with negation, which is higher than Mood.

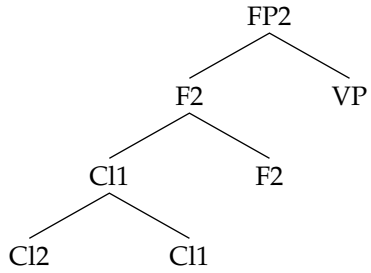
Terzi (1996b) investigates the properties of the functional head to which clitics adjoin from the point of view of Kayne's (1994) antisymmetry framework: she argues that clitics adjoin to T and/or a functional head F, which is a featureless functional head in finite clauses while it is T in gerunds and imperatives. Terzi (1999) explores a Linear Correspondence Axiom line of analysis to account for the puzzle concerning the rigid vs. free ordering of clitics in proclisis and enclisis respectively. She points out that the LCA makes two options available for the

manner in which more than one clitic adjoins in the clausal structure: either (i) each clitic adjoins to a different functional head (77), or (ii) one clitic adjoins to the other (78):

(77)



(78)



In (77) FP1 is an empty functional head, a place holder for clitics, while FP2 is T. In (78), on the other hand, FP2 is T. Terzi proposes that Greek double object clitics instantiate both the first and the second options, while in Romance only the second option is possible, i.e., clitics cluster under the same head T. In contexts of enclisis, the accusative > dative order results from a derivation in which the verb incorporates the accusative clitic in (77), and the two move as a complex higher up, while the dative > accusative order results from a configuration in which Cl1 adjoins to F2 in (77) and the whole complex moves higher up. Assuming that in Romance only option (78) is available for clitic clusters, the order of clitics is not altered in contexts of enclisis.

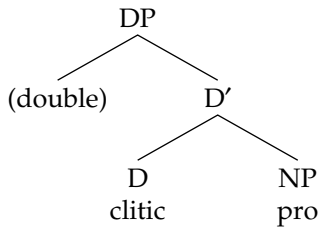
Note, as an aside, that the proposal that clitics adjoin to one another in Romance could, perhaps, be linked to the fact that in the morphological component, Romance clitics are arranged in a template according to person features overriding syntactic ordering (Bonet 1991). One could suggest, for example, that when clitic clusters have the representation (78) forming a syntactic unit, they are spelled out according to their feature specifications and not in a way that reflects hierarchical relations among the corresponding argument positions.

3.3.3 Clitics as determiners

Uriagereka (1988, 1995a) develops an analysis that reconciles the view that clitics move with the view that doubled DPs are in argument position. Following Postal

(1969) and Torrego (1988), Uriagereka argues that third person clitics are determiners, and analyzes them as in (79):

(79)



This proposal makes three claims: (i) D^0s may select for null NP-complements; (ii) doubled DPs are specifiers in complex DPs consisting of D and a null complement; and (iii) clitics are determiners (with null NP-complements). In what follows, I will present the motivation/evidence Uriagereka presents for these claims.

Concerning claim (i), Uriagereka (1988: 402, 1995a: 37) points out that determiners take null pro complements in strings corresponding to the English sequences *the one he came*, *the one from France.* More specifically, in a subset of Romance languages, these have the form illustrated by the Spanish examples in (80). The determiner licenses a pro-NP modified by the relative clause or the PP instead of the pro-form 'one':

(80) a. el/la que vino — Spanish
the who came
'the one who came'
b. el/la de Francia
the from France
'the one from France'

Languages permitting the strings in (80) provide straightforward evidence for the structure in (79). Uriagereka proposes that the only difference between (80) and constructions with cliticization is that the determiner remains in situ in the former while it undergoes movement to the functional domain in the latter.

Concerning claim (ii), Uriagereka argues that doubling is systematically attested in languages allowing for determiners in situ to select zero complements. He points out that in Romance, clitic doubling correlates with both the availability of the structures in (80) and the unavailability of ne-/en-cliticization. Those of the Romance languages that have (80) possess clitic doubling and lack ne-/en-cliticization. Those that do not have (80) lack doubling and show ne-/en-cliticization. On the basis of this correlation, Uriagareka suggests that the Clitic Doubling Parameter in Romance depends on the strength of determiners. He proposes that the Romance languages permitting the structures in (80) have 'strong' determiners, while the ones that resist them have 'weak' determiners.

In languages with strong determiners, a double can be licensed inside the complex DP of the form (79), leading to clitic doubling. In languages with weak determiners, a double cannot be licensed in (79), and clitic doubling is ruled out.

Concerning claim (iii), namely that third person clitics are determiners, Uriagereka (1988, 1995a) provides a number of arguments in support of it. First, he points out that third person clitics and determiners in Romance diachronically derive from the same source, namely Latin demonstratives, i.e., *illum*, *illam*, etc. (Wanner 1987). Second, from a synchronic point of view, clitics have a similar or identical form to determiners. In Galician, for example, the forms are identical, as illustrated in (81):[5]

(81) Galician

	Clitic		Determiner	
	Singular	Plural	Singular	Plural
Masculine	(l)o	(l)os	(l)o	(l)os
Feminine	(l)a	(l)as	(l)a	(l)as

The morphological identity of the forms in (81) can be straightforwardly accounted for if clitics and determiners instantiate one and the same lexical item projecting onto two different syntactic structures. Bleam (1999: 18–20) extends this argument to Spanish, where masculine clitic forms (82a) are not identical to masculine determiner forms (82b). She points out that masculine clitic forms are used as determiners in the absence of an NP-complement (82c):

(82) Spanish

a. Lo/*el vi.
Cl-masc I-saw
'I saw him.'

b. Vi el/*lo libro.
Saw-I the-masc book
'I saw the book.'

c. Vi lo que hiciste.
Saw-I the that you-did
'I saw what you did.'

The third argument comes from the phenomenon of determiner cliticization in Galician. Uriagereka (1988) argues that in Galician, determiners introducing an overt NP undergo optional syntactic cliticization onto the verb, as illustrated in (83):

(83) Galician

a. Comemos o caldo.
Ate-we the soup
'We ate the soup.'

b. Comemo-lo caldo.
Ate-we-the soup
'We ate the soup.'

(83b) provides evidence that determiners may undergo movement out of the DP onto the verb, similarly to clitics.

In an analysis that treats clitics as determiners, the movement properties of clitic constructions are derived from the assumption that clitics uniformly vacate their VP-internal position and undergo movement to the functional domain. Uriagereka (1995a) argues that cliticization is a complex phenomenon which does not obey a single principle and must be parametrized in order to derive placement possibilities arising in various languages. Accusative clitics in all languages undergo movement to the functional domain and are necessarily specific. These properties are derived from the assumption that clitics are referential elements which must move to a VP-external site in order to identify pro. Being VP-external at LF, clitics fall under the Mapping Hypothesis, according to which all specific elements must be assigned VP-external scope at LF. Clitic placement possibilities depend on the site to which clitics move and the mode of movement and attachment to a functional head. It is proposed that in languages like Galician, clitics move to F, a site where point of view is encoded, to license their associated pro. Languages like French, on the other hand, do not have an active F, and pro is licensed through affixation of the clitic to AgrO. In the preceding subsection we saw that clitic placement can be given a description without resorting to language-specific rules in systems that assume that cliticization involves head-movement and head-adjunction. It is therefore not surprising that Uriagereka (1995a), who is mainly concerned with clitic placement, capitalizes on head-movement to account for cross-linguistic variation. We also saw, though, that cliticization provides strong evidence for phrasal movement. As Uriagereka himself points out, it is necessary to incorporate an XP-movement-step into a movement analysis of clitics in order to derive properties of phrasal movement. Thus, in an analysis where clitics are determiners, head-movement must be local, following a phrasal-movement step of the DP containing the clitic, which must be assumed to move overtly at least as high as the site hosting agreeing participles.

4 Fragmentation views

In the course of the discussion, it has become evident that indirect object and direct object clitic doubling are subject to different restrictions across and within languages. So far, the two types of doubling have been shown to differ in two respects. First, there are dialects/languages (e.g., Standard Spanish, Catalan) in which direct object doubling of DPs is ruled out while indirect object doubling is permitted (see the discussion in section 3.1). Second, while direct object doubling is limited to specific DPs, doubling of non-specific indirect objects is licit (see the discussion in section 3.2). We have seen that the differences between the two types of doubling have led to a relaxation of the view that clitic constructions are uniform. For example, Sportiche (1996b) proposes to analyze direct object clitics as markers for specificity, while he treats indirect object clitics as agreement

markers. In this section, I will concentrate on indirect object doubling and its relation to the double object construction. The link between indirect object doubling and the double object construction will lead to a new typology of clitic doubling.

4.1 Indirect object doubling is a double object construction in Spanish

Demonte (1995) investigates Spanish ditransitives and argues that the alternation between the construction exhibiting dative doubling and its counterpart without doubling shows systematic syntactic and semantic properties very similar to those exhibited by the members of the English dative alternation (see also Stowell 1981). The two construction types are illustrated in (84) and (85) (see also Strozer 1976: 557, examples 7a, b):

(84) a. Le entregué las llaves al conserje. Standard Spanish
Cl-dat gave-I the keys to-the janitor
'I gave the keys to the janitor.'
b. Le cociné el pollo a Mario.
Cl-dat cooked-I the chicken to Mario
'I cooked the chicken for Mario.'

(85) a. Entregué las llaves al conserje. Standard Spanish
Gave-I the keys to-the janitor
'I gave the keys to the janitor.'
b. Cociné el pollo para Mario.
Cooked-I the chicken to Mario
'I cooked the chicken for Mario.'

Demonte (1995) argues that the ditransitives in (84) where the goal and benefactive arguments undergo clitic doubling share relevant syntactic and semantic properties with the double object construction in English. The sentences in (85) without clitic doubling show properties of prepositional ditransitives. Some of the evidence for these points is summarized below (Demonte 1995: 9–13).

4.1.1 C-command

In the absence of a dative clitic, a direct object can bind a reflexive indirect object, while the reverse is not possible, as shown in (86). As indicated by the translations, the same contrast is found in the prepositional dative construction in English:

(86) a. El tratamiento psicoanalítico reintegró a María a sí misma.
the therapy psychoanalytic gave-back to Mary-DO to herself-IO
'The psychoanalytic therapy gave back Mary to herself.'

b. *El tratamiento psicoanalítico reintegró/devolvió (a) sí misma
The therapy psychoanalytic gave-back (to) herself-DO
a Maria.
to Mary-IO
'*The psychoanalytic therapy gave back herself to Mary.'

When a dative clitic is present, the indirect object can bind into the direct object, while the reverse is impossible, as shown in (87). This is reminiscent of c-command asymmetries found in the double object construction in English (Barss and Lasnik 1986; Larson 1988b):

(87) a. *El tratamiento psichoanalítico le devolvió a María a la
the therapy psychoanalytic Cl-dat gave-back to Mary-DO to the
estima de sí misma.
esteem of herself-IO
'The psychoanalytic therapy gave back her self-esteem to Mary.'
b. El tratamiento psichoanalítico le devolvió la estima de
the therapy psychoanalytic Cl-dat gave-back the esteem of
sí misma a María.
herself-DO to Mary-IO
'The psychoanalytic therapy gave back Mary her self-esteem.'

In Spanish, the doubled indirect object counts as being higher even though it linearly follows the direct object. In this respect, Spanish differs from English, where, as is well known, precedence and c-command match (see Alexiadou and Anagnostopoulou 1997b, 1999, for discussion of related binding facts with clitic doubled direct objects which can bind into the subject even though they follow the subject).

4.1.2 Passivization

Passivization of the theme in the presence of a clitic doubled benefactor is ill-formed in Spanish, as shown by (88), similarly to English (89), where theme-passivization in the presence of a dative shifted benefactor is ruled out:

(88) *La case le fue pintada a Juan ayer. Standard Spanish
The house Cl-dat was painted to Juan yesterday
'The house was painted for Juan yesterday.'

(89) *The sandwich was fixed Mary English

4.1.3 Possession/theme part of goal

The clitic can double a dative only when the dative is construed as a 'possessor' of the theme. In (90a) *el mantel* can be construed as a part of *a la mesa*, and doubling is licit, while in (90b) *los platos* cannot be construed as a part of *a la mesa*, and doubling is ruled out:

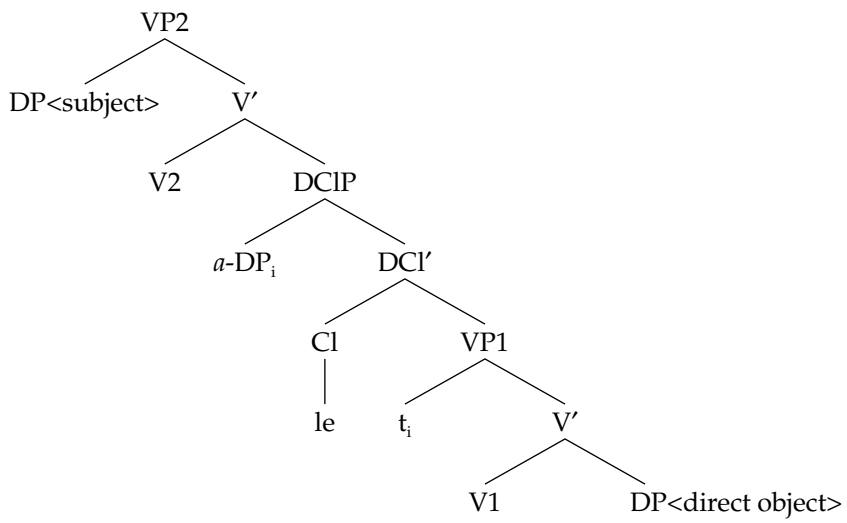
(90) a. Le puse el mantel a la mesa. Standard Spanish
Cl-dat put-I the tablecloth to the table
'I put the tablecloth on the table.'
b. *Le puse los platos a la mesa.
Cl-dat put-I the dishes to the table
'I put the dishes on the table.'

Demonte (1995) argues that this restriction is similar to the one found in English where the double object construction is licensed only when the indirect object can be understood as a possessor of the direct object (Oehrle 1976; den Dikken 1995c; Pesetsky 1995; and others):

(91) a. *Mary sent France a parcel.
b. The revolution gave France democracy.

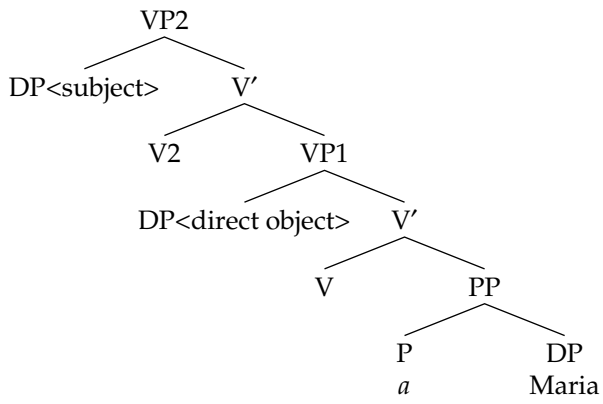
To account for the differences between the constructions with dative doubling and the ones without, Demonte (1995: 17) proposes that the former are double object constructions, represented as in (92):

(92)



The clitic is the head of a dative Clitic Phrase (corresponding to Marantz's 1993 VP headed by an applicative V head; see Demonte 1995: 7, fn. 6), to the specifier of which the indirect object raises from a base position higher than the theme in the lowest VP-shell (or in a DP containing the indirect object and the theme; see Demonte 1995: 25–28; in the latter alternative the indirect object undergoes possessor-raising). On the other hand, the construction without doubling has the Larsonian representation in (93), i.e., the *a*-phrase is a PP, the counterpart of to-PPs in English (Larson 1988b):

(93)



Demonte's (1995) analysis of dative clitics in Spanish as heads of a Dative Clitic Phrase is similar to Sportiche's (1996b) treatment of the dative Clitic Voice as a dative-agreement head (as opposed to the accusative Clitic Voice, which is a specificity head). In addition, Demonte reduces the presence of a dative clitic to the syntax of the double object construction and assimilates the clitic to the overt or covert applicative head present in applicative and double object constructions (Baker 1988a; Marantz 1993). By doing so, Demonte draws an even sharper distinction between the syntax of dative doubling and the syntax of accusative doubling. Since direct objects do not undergo alternations comparable to the dative-shift alternation, the syntax of dative doubling proposed by Demonte is difficult to extend to the syntax of accusative doubling.

4.2 Dative clitics as inflections and accusative clitics as determiners

An explicit proposal according to which dative and accusative clitics have different analyses is developed in Bleam (1999; she builds on Uriagereka 1988), who investigates micro-variation among dialects of Spanish. Bleam argues that dative clitics are agreement markers *a la* Sportiche (1996b) and Demonte (1995), while accusative clitics are determiners, as proposed by Torrego (1988) and Uriagereka (1988, 1995a).

Bleam focuses on Leísta Spanish, a dialect spoken in the north of Spain, which she compares to varieties of Argentinean Spanish, such as Rioplatense Spanish, and Cordoba Spanish, and to Standard Spanish. These dialects show variation with respect to three factors: (i) the form of direct object clitics; (ii) the availability of direct object doubling; and (iii) animacy restrictions on direct object doubling. In what follows, I summarize some of the facts Bleam discusses.

4.2.1 The form of direct object clitics

In Leísta Spanish the dative clitic form *le* is used as a direct object clitic, when the referent is animate (and in many subdialects, masculine), as illustrated in (94) (Bleam 1999: 1):

(94) Le vi. Leísta Spanish
Cl-dat saw-I
'I saw him/her.'

This contrasts with Standard and Argentinean Spanish, where the accusative forms *lo* and *la* are employed for direct objects, as illustrated by (95), and *le* is limited to indirect objects, as exemplified by (96) (similarly to Standard and Argentinean Spanish, *le* is used for indirect objects in Leísta Spanish):

(95) Lo vi. Standard/Argentinean Spanish
Cl-acc-masc saw-I
'I saw him.'

(96) Le di el libro. All dialects of Spanish
Cl-dat gave-I the book
'I gave him/her the book.'

4.2.2 Availability of direct object doubling

As has been shown in section 3, clitic doubling of direct object pronouns is obligatory in all dialects of Spanish. Clitic doubling of direct object DPs, however, is more limited. In Standard Spanish, it is ungrammatical, while in Rioplatense Spanish, it is grammatical in Kayne's Generalization environments mainly. Bleam points out that direct object doubling is found in two more varieties of Spanish, namely some subdialects of Leísta, as illustrated in (97) (Bleam 1999: 2), and Cordoba Spanish, as shown in (98) (Bleam 1999: 135). The latter dialect is spoken in central Argentina (see Schmitt 1996):

(97) Le vi a Juan. Doubling dialects of Leísta
Cl-dat saw-I a Juan
'I saw Juan.'

(98) La toqué a la sonata. Cordoba Spanish
Cl-acc played-I a the sonata
'I played the sonata.'

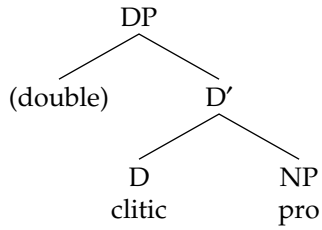
As shown in (97), direct object doubling clitics in Leísta Spanish have a dative form. This property is due to the fact that in these dialects doubling is limited to animate DPs: recall that animate direct object clitics are dative in Leísta.

4.2.3 Doubling of inanimate direct objects

While direct object clitic doubling in most varieties of Spanish is limited to animate DPs, in Cordoba Spanish it is also found with inanimates, as illustrated in (98).

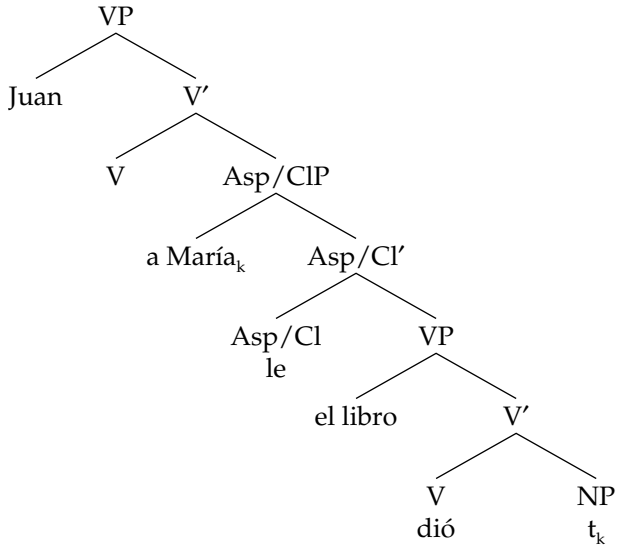
For accusative clitics Bleam adopts Uriagereka's (1988, 1995a) syntax, presented in section 3. They are determiners heading a complex DP as illustrated in (79), repeated here:

(79)



Bleam (1999: 35) points out that dative clitics in Spanish, unlike accusative clitics, do not resemble determiners morphologically. She views the lack of resemblance as evidence that dative clitics do not have the same syntax as accusative clitics. Building on Uriagereka (1988, 1995a), who attributes the specificity effects of accusative clitics to their status as determiners, Bleam furthermore argues that the lack of specificity effects of dative clitics in ditransitives (cf. Suñer's discussion in section 3.2 above) is due to the fact that they are not determiners but rather agreement markers of the kind suggested in Sportiche (1996b). Following Demonte (1995) and Ormazabal and Romero (1999), Bleam (1999) maintains that dative doubling in Spanish is an instance of dative shift. Following Baker (1996), she assumes that in the double object construction, the goal moves past the theme to the specifier of an internal aspect projection (Travis 1991) which dominates the inner VP shell (Larson 1988b). She furthermore proposes that in Spanish the clitic *le* is generated in this Asp head and the indirect object moves to its specifier, as illustrated in (99) (Bleam 1999: 40):

(99)

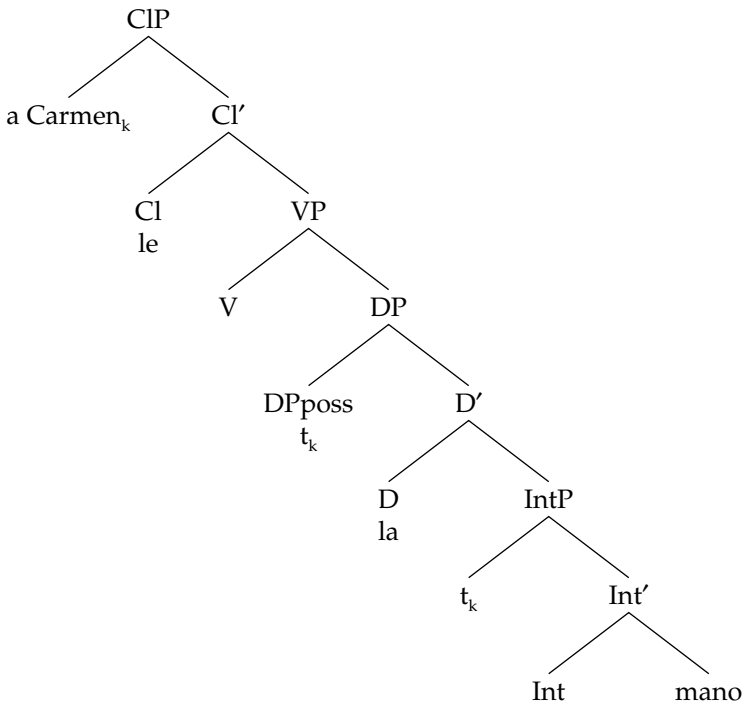


This syntax is very similar to the one proposed in Demonte (1995; see above).

For possessor raising constructions of the type illustrated in (100) Bleam (1999: chapter 3) argues for the structure in (101):

(100) Le vi la mano a Carmen. All Spanish
Cl-dat saw-I the hand to Carmen
'I saw Carmen's hand.'

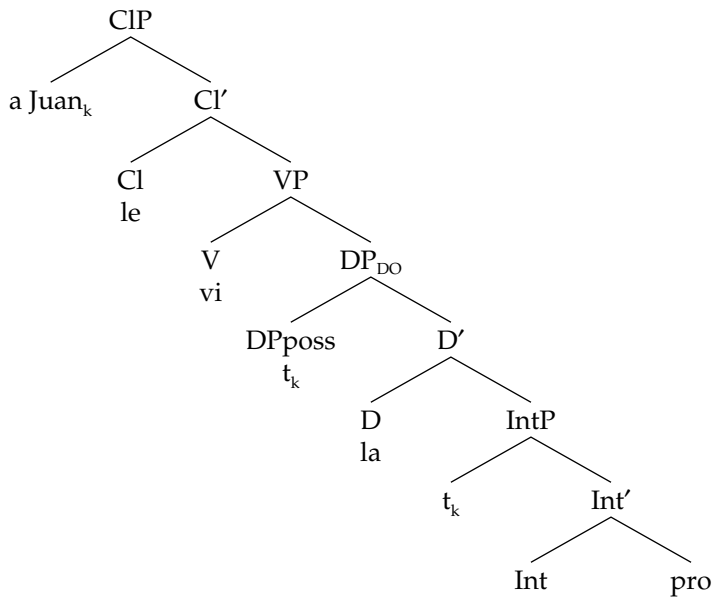
(101)



The possessor originates as the DP-internal subject of an integral (IntP) relation (Hornstein et al. 1994). It moves to the spec,DP, where it is associated with dative marking. From there, it moves to the specifier of the dative clitic, where it checks dative Case and the feature [+A] associated with animacy and affectedness, a feature that all indirect objects in the double object construction have.

Finally, Bleam (1999) extends the possessor-raising analysis of the type illustrated in (101) to direct object clitic doubling in Leísta Spanish. She argues that clitic doubling in this dialect is an instance of an integral relation. The double is a subconstituent of the direct object which escapes the DP and becomes a dative argument of the verb, thus accounting for the use of the dative clitic form with the direct object. This derivation is illustrated in (102) (Bleam 1999: 129):

(102)



In this representation, the overt double is the 'possessor' and pro is the possessed element. The possessor moves through spec,DP to the specifier of the *le*-phrase acquiring properties of an indirect object.

4.3 The Greek type of indirect object clitic doubling

Unlike Spanish, where the presence of a dative doubling clitic signifies a double object construction, in Greek indirect object doubling is just a variant of the double object construction. In active sentences, doubling optionally takes place with genitive indirect object DPs, which alternate with PPs in a manner reminiscent of the dative shift alternation in English. These facts are discussed at length in Anagnostopoulou (1999a, 2003) and will be briefly summarized here.

Greek possesses a variety of ditransitive constructions, in which indirect objects are realized as PPs, as DPs with morphological genitive case, or as DPs with morphological accusative case (see Philippaki-Warburton 1977; Mackridge 1985; Tzartzanos 1989; Holton et al. 1997; among others). The first construction consists of an accusative DP denoting a theme and a goal PP introduced by the preposition *s(e)* 'to'. The DP is assigned morphological accusative case by the preposition, as shown in (103). Similarly to English *to*, Greek *s(e)* is also used as a locative preposition, as in (104):

(103) O Janis estile to grama s-tin Maria. Greek
The John-nom sent the letter-acc to-the Mary-acc
'John sent the letter to Mary.'

(104) O Janis pige stin Olandia.
The John-nom went to-the Holland-acc
'John went to Holland.'

The second construction combines two non-prepositional DPs, a goal and a theme. The goal bears morphological genitive case, while the theme surfaces with morphological accusative:

(105) O Janis estile tis Marias to grama. Greek
The John-nom sent the Mary-gen the letter-acc
'John sent Mary the letter.'

Greek has lost the morphological distinction between genitive and dative case and has generalized the use of genitive. Finally, with a limited set of verbs, the goal can either be introduced by a PP headed by *s(e)* or be projected into a structure in which both the indirect object and the direct object surface with morphological accusative case. This construction will not be discussed here (see Anagnostopoulou 2001, 2003, for details).

The Greek alternation between a PP and an undoubled genitive DP shares many characteristics typical of the dative shift alternation in English. For one, the genitive construction in Greek is mainly tolerated with animate goals, like the double object construction in English (it is also possible with inanimate possessors, as in English):

(106) a. I Ilektra estile ena dhema s-tin Galia. Greek
The Ilektra-nom sent a parcel-acc to-the France
'Ilektra sent a parcel to France.'
b. *I Ilektra estile tis Galias ena dhema.
The Ilektra-nom sent the France-gen a parcel-acc
'*Ilektra sent France a parcel.'

Moreover, in English, there are verb classes that allow the genitive construction and others which don't (Oehrle 1976; Gropen et al. 1989: 243ff.; Pinker 1989; Pesetsky 1995: 141). The same observation holds for Greek (see Anagnostopoulou 2003 for details). Finally, in the genitive construction the genitive goal asymmetrically c-commands the theme, like the double object construction in English. This is illustrated here with the *each . . . the other* test (see Barss and Lasnik 1986; Larson 1988b; see Anagnostopoulou 1999a, 2003, for extensive discussion of word order and c-command in Greek ditransitives):

(107) a. Estila tis mias miteras to pedhi tis alis.
Sent-1sg the one mother-gen the child-acc the other-gen
'I sent each mother the other's child.'
b. *Estila tis miteras tu alu to ena pedhi.
Sent-1sg the mother-gen the other-gen the one child-acc
'*I sent the other's mother each child.'

Unlike Spanish, where *a*-phrases appear to be ambiguous between PPs and dative-shifted DPs, Greek genitives are unambiguously dative-shifted DPs and *se*-DPs qualify as PPs (at least in goal constructions; for benefactive *se*-phrases, see Anagnostopoulou 2005).

As has been seen in (57) and (58) in section 3, indirect objects bearing genitive case may optionally undergo doubling in active ditransitives, similarly to direct objects bearing accusative, and clitic doubling is blocked when the indirect object is a PP. These examples are repeated here:

(57) (Tu) (to) edhosa tu Jani to vivlio. Greek
Cl-gen Cl-acc gave-1sg the John-gen the book-acc
'I gave John the book.'

(58) a. *Tu edhosa to vivlio s-ton Jani. Greek
Cl-gen gave-1sg the book-acc to-the John
'I gave the book to John.'
b. *Tu pira to vivlio apo ton Jani.
Cl-gen took-1sg the book-acc from the John
'I took the book from John.'

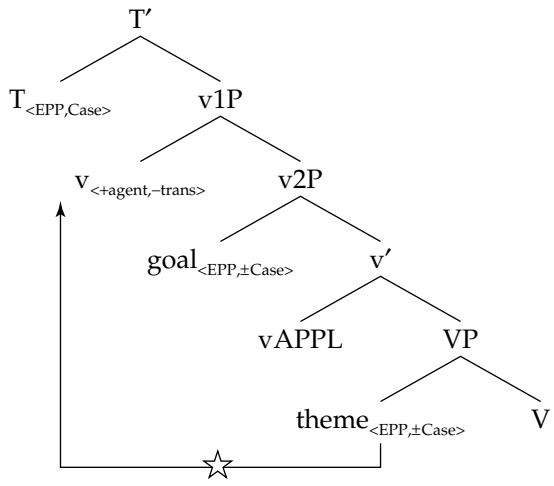
While a clitic is obligatory in the double object construction in Spanish, in Greek it is optional, as is illustrated in (57). This suggests that genitive clitics in Greek do not qualify as dative agreement/applicative-like heads of the type illustrated in, e.g., the structure (92) proposed by Demonte (1995) and the structure (99) proposed by Bleam (1999). In turn, this entails that Spanish and Greek indirect object doubling constructions have a different syntax.

While clitic doubling of genitives in Greek is optional in active sentences, genitives must undergo doubling obligatorily in constructions where the theme undergoes NP-movement. Doubling of a goal or experiencer is obligatory in passives, unaccusatives, and raising constructions, as illustrated in (108) with a passive example (see Anagnostopoulou 1999a, 2003, for details):

(108) a. ?*To vivlio charistike tis Marias apo ton Petro.
The book-nom award-Nact the Mary-gen from the Peter
'?*The book was awarded Mary by Peter.'
b. To vivlio tis charistike (tis Marias) apo ton Petro.
The book-nom Cl-gen award-Nact the Mary-gen from the Peter
'?*The book was awarded Mary by Peter.'

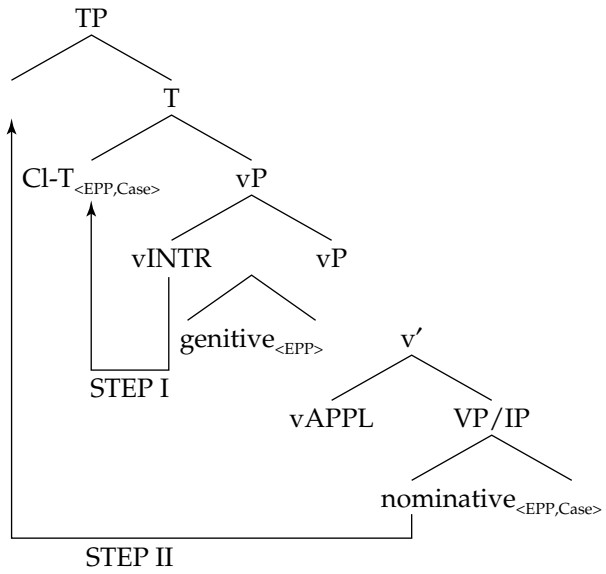
In Anagnostopoulou (1999a, 2003), I argue that (108a) is ungrammatical because the theme cannot undergo NP-movement to T. In the genitive construction, indirect objects are introduced by a higher zero applicative v (Marantz 1993) blocking NP movement of the lower direct object to T, as shown in (109):

(109)



I further argue that in clitic constructions, the intervening formal D-features of the genitive move to T before the nominative and are spelled out as a clitic, as illustrated in (110). In this derivation, locality is respected (Chomsky 1995c; Richards 1997) and, therefore, (108b) is grammatical:

(110)



According to the analysis in (110), genitive doubling clitics in Greek spell out formal nominal features that undergo overt EPP-triggered movement to the functional domain, leaving the genitive phrase behind. Morphological evidence that indirect object clitics are D-elements in Greek comes from the observation that

their forms are identical to determiners, as illustrated in (111) and (112). In this respect, they pattern with accusative clitics:

(111) **Determiners**

	Masculine	Feminine	Neuter
Singular			
Nominative	o	I	to
Genitive	tu	tis	tu
Accusative	ton	tin	to
Plural			
Nominative	i	i	ta
Genitive	ton	ton	ton
Accusative	tus	tis	ta

(112) **Clitics**

	Masculine	Feminine	Neuter
Singular			
Genitive	tu	tis	tu
Accusative	ton	tin	to
Plural			
Genitive	tus	tus	tus
Accusative	tus	tis	ta

Recall that in Spanish, dative clitics do not have the same form as determiners, unlike accusative clitics (see section 4.2 above).

Summarizing, in the preceding sections I have reviewed some proposals according to which indirect object clitics in Spanish are inflections; they head the projection hosting the indirect object in the double object construction, unlike accusative clitics, which have the semantics and morphology of determiners. I have then proceeded to examine Greek, where the double object construction is formed quite independently of the presence of a genitive clitic. On the basis of the optionality of genitive doubling in active sentences, I have suggested that the (applicative/aspectual) head forming the double object construction is zero in Greek, as in English and not as in Spanish. I have furthermore pointed out that genitive clitics in Greek are obligatory in NP-movement constructions and I have attributed their obligatoriness to their status as D-features of DPs, which undergo movement to the functional domain and, therefore, provide an escape hatch to locality violations. The comparison of the properties of the double object construction in the two languages leads to a novel typology of indirect object clitics. In Spanish, they are inflections; in Greek, they are D-features of DPs.

4.4 Aspectual factors and accusative clitics in Spanish

I will close my review of the literature on clitic doubling by presenting an analysis of accusative clitics in Spanish advanced by Torrego (1998). Torrego links

the presence of accusative clitics in Spanish to transitive v (Kratzer 1994; Chomsky 1995c) and proposes that they signal/host/provide the 'active' D-feature of that v (Torrego 1998: 14, 51, 58–72).

More specifically, Torrego (1998) investigates the conditions under which objects of transitive accusative verbs occur with the dative preposition *a* in Spanish, and formulates six generalizations characterizing Spanish accusative/direct objects marked by the dative preposition. These are summarized here (see Torrego 1998: 14–34 for details):

(i) The first generalization is **Kayne's Generalization**. In the dialects of Spanish permitting clitic doubling of direct objects, doubling is limited to direct objects preceded by *a* (see section 3 above).

(ii) The second generalization is that accusatives marked with *a* are **specific** in Spanish (compare this claim, however, to sections 3 and 4.2 above, where it is claimed that *a*-phrases are not always specific; those undergoing doubling are).

(iii) The third generalization is that **telicity** governs the distribution of *a* in Spanish (see, in particular, Schmitt's 1996 discussion of aspectual effects in Spanish; see also Bleam 1999). Torrego points out that (indefinite) objects of verbs that are inherently specified as accomplishments must be preceded by *a* when they are animate, as illustrated in (113):

(113) La policía encarceló *(a) varios ladrones.
The police jailed *a* several thieves
'The police jailed several thieves.'

With other aspectual classes, *a* is optional, as illustrated in (114):

(114) Escondieron (a) varios prisoneros.
Hide-they *a* several prisoners
'They hide several prisoners.'

Torrego argues that when *a* is present the predicate is telic and when it is absent the predicate is atelic.

(iv) The fourth generalization has to do with **agentivity/causation/eventiveness**. With predicates that are inherently agentive or causative, *a* (on indefinite animate objects) is required, regardless of whether the subject is animate or inanimate, as illustrated in (115):

(115) a. El soldado emborrachó *(a) varios colegas.
The soldier made-drunk *a* several friends
'The soldier got several friends drunk.'
b. El vino emborrachó *(a) varios invitados.
The wine made-drunk *a* several guests
'The wine made several guests drunk.'

With eventive transitive predicates that permit non-animate subjects, *a* on the object is possible only when the subject is animate, as illustrated in (116):

(116) a. El herido exigía (a) un médico.
the injured required *a* a doctor
'The injured required for a doctor.'
b. La situación exigía (*a) un médico
the situation required *a* a doctor
'The situation required for a doctor.'

Stative predicates require *a* (on indefinite animate objects) when they express 'active emotions' (Pesetsky 1995):

(117) Caín odiaba *(a) un hermano.
Cain hated *a* a brother
'Cain hated a brother.'

With other stative verbs, when the subject is animate, *a* is permitted (on indefinite animate objects), and when the subject is inanimate, *a* is disallowed:

(118) a. Inés conoce (a) un médico.
Inés knows *a* a doctor
'Inés knows a doctor.'
b. La ópera conoce (*a) muchos aficionados.
Opera knows *a* many fans
'Opera knows many fans.'

In examples like (118a), the presence vs. absence of *a* correlates with eventiveness vs. stativity. When *a* is present, the predicate qualifies as eventive by, e.g., the progressive test (Dowty 1979). When *a* is absent, the predicate is stative and the progressive is disallowed:

(119) a. Estoy conociendo a un vecino.
Am-I knowing *a* a neighbor
'I am getting to know a neighbor.'
b. *Estoy conociendo un vecino.
Am-I knowing a neighbor
*'I am knowing a neighbor.'

(v) The fifth generalization has to do with **animacy**. As already mentioned, the preposition *a* occurs mainly with animates (Torrego 1998: 55 points out that *a* can also occur on metals or proper names referring to anything, from a boat to a magazine).

(vi) The sixth generalization has to do with **affectedness**. Affected (indefinite animate) objects require *a*, unlike unaffected ones, where *a* is optional:

(120) a. El guardia vió (a) un prisoniero.
The guard saw *a* a prisoner
'The guard saw a prisoner.'
b. El guardia golpeó *(a) un prisoniero.
The guard beat *a* a prisoner
'The guard beat a prisoner.'

Note that generalizations (iii), (iv), and (vi) hold of indefinite animate objects. Definites must always be marked by *a* (see Torrego 1998: 66).

To provide a very brief and oversimplified overview of what Torrego (1998) proposes: she argues that non-affected morphologically marked accusatives have structural Case while affected marked accusatives have quirky Case. She furthermore hypothesizes that the mechanism responsible for the properties of marked accusatives listed above is overt raising of the object to spec,vP triggered by a D-feature of v, i.e., a kind of object shift. Among other things, she links object shift to the proposal that (i) affectedness is associated with a specifier position within the layered VP-domain (spec,vP for direct objects, the specifier of a lower functional head for dative shifted indirect objects), and (ii) quirky Case (assigned to the object when the subject is agentive/causative/eventive) is licensed by V in conjunction with v (Torrego 1998: 36). Specificity of marked accusatives is linked to overt raising to spec,vP; she points out that the D-feature of v has been linked to specificity in the case of, e.g., Icelandic object shift (see, in particular, Chomsky 1995c, 2000, 2001b, who proposes that the assignment of an EPP feature to the vP phase has interpretive effects). As for the fact that doubling is limited to marked accusatives in Spanish, Torrego (1998: 56) argues that accusative clitics are Ds overtly encoding the categorial feature D of v (and agreement features), which triggers raising of accusatives marked by *a*. (Torrego furthermore argues that the dative preposition introducing the indirect object in ditransitives is a functional head p, the counterpart of v, which is merged below v and that the dative clitic *le* is to p what the accusative *lo* is to v; she argues that doubled indirect objects do not raise outside VP, unlike direct objects.)

4.5 *Putting (some) pieces together*

In this section, I have presented the most recent literature on clitic doubling, concentrating on the differences within and across languages, which have led to non-uniform analyses (Spanish indirect objects vs. direct objects; Spanish vs. Greek indirect objects; Leísta vs. Argentinean vs. Standard Spanish direct objects). I will close the discussion with some thoughts on how to partially unify Greek indirect object doubling and Spanish direct object doubling.

It has been demonstrated that Greek doubling differs from its Spanish counterpart with respect to two properties. First, indirect object doubling in Greek is just a variant of the double object construction; in Spanish, it signifies the double object construction. Put differently, in the Greek double object construction, doubling of the indirect object is optional; in the Spanish double object construction,

doubling is obligatory. Second, direct object doubling in Greek optionally takes place with any accusative object of the appropriate semantic type (definites; for some speakers also specific indefinites); in Spanish it is limited to what Torrego calls 'marked accusatives', i.e., direct objects marked by the dative preposition *a*.

Interestingly, if Greek indirect object doubling is compared to Spanish direct object doubling as described by Torrego, it turns out that the two are descriptively rather similar. In both, clitics optionally co-occur with objects that have been characterized in the literature as 'affected', are usually animate, and alternate morphologically and syntactically with non-affected, non-animate objects. More specifically, in section 4.3, I have presented evidence that the Greek genitive construction is a double object construction. Genitive objects are usually animate (or inanimates in a possessor/part–whole relation with the theme); they are construed as affected (Marantz 1993); and they alternate with goal PPs, similarly to 'dative-shifted' objects in English. Torrego's (1998) description of *a* marked accusatives in Spanish, presented in section 4.4, reveals a number of related properties: they are usually animate; they are affected (as Torrego stresses, it is not a coincidence that they surface with the dative marking *a*); and they alternate with unmarked accusatives. One difference between genitive goals and marked accusatives is that, to the extent that I have been able to determine, realization of goals as genitive does not depend on properties of the external argument but rather on properties of the internal argument (the goal is affected by the event affecting the theme; the goal must be a possessor of the theme). On the other hand, according to Torrego, realization of direct objects as DPs preceded by *a* depends on whether the subject can be construed as an agent/causer.

It is rather standard to assume that the special semantic properties of indirect objects in the double object construction are located on a functional (applicative) head introducing the indirect object (or checking features of the indirect object in transformational analyses of dative shift) which is merged above the V introducing the theme (Marantz 1993). It is also widely assumed in the literature that 'dative-shifted' objects enter Agree/Move relations with (causative) v or T, unlike prepositional indirect objects (this intuition is expressed in various forms in Larson 1988b; Baker 1988a, 1996; Pesetsky 1995; McGinnis 1998; Anagnostopoulou 1999a, 2003, to mention some analyses). Genitive doubling can be viewed as the overt realization of the Move/Agree relation between v or T and the indirect object (see the discussion in section 4.3). Suppose we extend this line of analysis to Spanish marked accusatives. One possible implementation would be to suggest that the special semantic properties of marked accusatives in Spanish are also hosted on a functional head, presumably the agentive/causative/telic v introducing the subject (see Alexiadou and Anagnostopoulou 2000). It could be suggested that Spanish has two types of a transitive v: one with agentive/causative features for subjects and marked accusative case for animate objects, and one with non-agentive features for subjects and unmarked accusative case for animate objects. Doubling of marked accusatives in Spanish would accordingly be the overt realization of a Move/Agree relation between (agentive) v and the direct object it licenses, similarly to doubling of genitives in Greek.

NOTES

1 Jaeggli (1986b) actually proposed four arguments in favor of his position, but only three of them are mentioned here. Jaeggli's fourth argument relies on a difference between right dislocation and left dislocation in Spanish with respect to Subjacency, namely that right dislocation is subject to Subjacency while left dislocation is not. On the basis of this, Jaeggli proposed that right dislocation is a construction involving movement of the dislocated phrase from a clitic doubling position, and left dislocation is a base-generated dependency not showing island sensitivity. However, later research has shown that in Italian and Greek, there are actually two instances of left dislocation, one showing properties of base generation in not being subject to Subjacency (Hanging Topic Left Dislocation) and one showing properties of movement (CLLD) in being selectively sensitive to islands. Given this complication as well as the fact that right-peripheral constructions are not subject to the same type of locality conditions as left-peripheral ones, this argument is either not valid or requires further refinement.

2 Borer's proposal is the result of an attempt to explain certain properties of extraction from clitic doubling configurations in Hebrew free relatives and questions, as opposed to Romanian (Steriade 1980).

3 In this account, the formal relation between clitics and argument DPs is comparable, to some extent, to the relation between expletives and associates in expletive–associate chains in the framework of Chomsky (1995c). Similarly to associates that move to the expletive position at LF, doubled DPs move to the clitic position overtly (in CLLD and scrambling) or covertly (in clitic doubling; see Sportiche 1996b). It is easy to see that in the framework of Chomsky (2000, 2001b), movement of the associate to the clitic can be restated as an Agree relation between the clitic and the doubled phrase (or T and the doubled phrase; in the latter case, the clitic can be viewed as an overt signal of *Agree* between T and the object). Such an analysis dispenses with actual movement but maintains the locality characteristic of movement (for discussion, see Anagnostopoulou 2003).

4 The summary of clitic placement facts in Greek and of the analyses proposed for them is taken from Alexiadou and Anagnostopoulou (2000: 179–181).

5 In (81), the *l* indicates the form used when the clitic or the determiner is enclitic.

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15 Comparative Deletion and Subdeletion

NORBERT CORVER

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1 Introduction: missing elements in clausal comparatives

One of the earliest observations made in the research on comparatives was that in a comparative construction like (1) an element in the comparative clause (i.e., the clause introduced by *than*) is missing (Lees 1961; Hale 1970; Bresnan 1972, 1973b):[1]

(1) John met more linguists than I met.

Although the direct object of the comparative clause is absent phonetically, there are reasons for assuming that it is present syntactically. One of the most obvious reasons is the fact that in a declarative clause like (2) the direct object simply cannot be missing:

(2) *John believed that I met.

The ill-formedness of (2) is caused by the fact that the lexical restriction that the verb *meet* combines with a noun phrase complement (a subcategorization or thematic requirement) is not satisfied in the syntactic structure. The well-formedness of (1) suggests that this lexical restriction is somehow met in the comparative clause (i.e., the clausal complement of *than*). This is done by assuming the presence of a phonetically empty noun phrase (*e*) in the direct object position:

(3) John met more linguists than I met *e*.

This empty constituent represents the compared element of the comparative clause. It is compared with the head of the comparative clause, *more linguists*. In view of the interpretation of the entire comparative construction (in informal terms: 'the *number* of linguists John met exceeds the *number* of linguists I met'), the compared element of the comparative clause receives the interpretation of a quantified noun phrase, say: *x-many linguists*, where *x-many* forms a Q(uantifier) P(hrase) and *x* is a designated degree element specifiying the QP (Bresnan 1973b).[2,3] Given this interpretation, it has been proposed by Bresnan in a series of papers (Bresnan 1975, 1976a, 1976c, 1977) that a representation like (3), in which the compared direct object is phonetically empty, is derived from a structure like (4), in which the compared material is lexically present, via a transformational operation called Comparative Deletion. This operation deletes lexical material in the comparative clause under identity with material in the compared constituent of the matrix clause.[4] As indicated, it is assumed that the comparative form *more* (as in (3)) derives from the sequence *-er many*:[5]

(4) John met *[[-er many] linguists]* than I met *[[x-many] linguists]*.

In (3), the compared direct object has been removed in its entirety. On the basis of such examples as (5) it was concluded, however, that also a *sub*part of the compared constituent in the comparative clause could be omitted. Given the fact that in (5) the comparison is between the *number* of linguists John met and the *number* of biologists I met, it seems quite natural to analyze the amount indicating QP *x-many* as the deleted part (Bresnan 1973b). Thus, (5) derives from (6) by omitting the amount term *x-many* in the comparative clause. The operation that deletes the amount term (*x-many*) of the comparative clause is called Comparative Subdeletion (henceforth: Subdeletion):

(5) John met more linguists than I met biologists.

(6) John met [*[-er many]* linguists] than I met [*[x-many]* biologists].

As exemplified in (7) and (8), respectively, the processes of Comparative Deletion and Subdeletion apply not only to direct object noun phrases but also to those having a different grammatical function:

(7) a. More women stayed at home than I believed *e* went to the beach. (SU)
b. John sent more girls a postcard than he had given *e* a bunch of flowers. (IO)
c. He uttered more homilies than I'd ever listened to *e* in one sitting. (object of P)

(8) a. More women stayed at home than [*e* men] went to the beach. (SU)
b. John sent more boys a postcard than he had given [*e* girls] a bunch of flowers. (IO)
c. He uttered more homilies than I'd ever listened to [*e* prayers] in one sitting. (object of P)

The examples in (9) and (10) furthermore show that these phenomena are not restricted to noun phrases; the compared phrases can also be adjectival or adverbial:[6]

(9) a. She seems as happy now as she seemed *e* before.
b. My sister drives as carefully as I drive *e*.

(10) a. She seems as happy now as she seemed [*e* sad] before.
b. My sister drives as carefully as I drive [*e* carelessly].

A central question in the study of the syntax of Comparative Deletion and Subdeletion constructions has been: do these comparatives have essentially the same syntax or not? That is, should they receive a uniform syntactic analysis or are there reasons for assigning them different syntactic analyses? Another (related) important question concerns the nature of the computational rule(s) that is/are responsible for the missing compared element in the comparative clause. More in particular: is it a deletion rule, a displacement operation, or maybe some interpretive rule governing empty pronominals that is responsible for the missing element? It is the aim of this chapter to give insight into the linguistic discussions on these and other issues related to the syntax of Comparative Deletion and Subdeletion.

The chapter is organized as follows: section 2 provides a detailed discussion of certain properties of the Subdeletion construction. A central question that will be addressed is what evidence there is for the presence of an empty element within the subcompared constituent of the comparative clause. Although the presence

of an empty element is rather straightforward in the case of a Comparative Deletion construction like (1), it seems less so in the case of a Subdeletion construction like (5). After evidence for the presence of a missing element in Subdeletion contexts has been presented in section 2, section 3 addresses the question of what computational rule(s) is/are at the basis of the two types of comparative constructions. More in particular: what kind of computational operation is 'responsible' for the missing compared element in the comparative clause? Is it unbounded Deletion (Bresnan's approach) or is it *wh*-movement (Chomsky's approach)? Various arguments will be discussed that have been presented as evidence in support of or against one or the other analysis. Section 4 considers an alternative approach (proposed by Pinkham) toward Comparative Deletion and Subdeletion, viz., one according to which the missing element is a base-generated empty pronominal which is licensed by means of an interpretive rule. After the discussion in sections 3 and 4 about the nature of the computational process that applies within the comparative clause, section 5 considers the nature of the relationship between the comparative clause and the matrix clause. An important question that will be addressed concerns the nature of the comparative conjunction in the two types of comparative constructions: does it act as a truly subordinating conjunction or does it act as a coordinating conjunction? And related to that: does the comparative clause in the two types of comparative constructions display the same syntactic (i.e., subordinating/coordinating) behavior? Section 6 discusses the phenomenon of multiple Comparative Subdeletion, i.e., the presence of more than one missing compared element within the comparative clause. In sections 2 through 6, various grammatical properties of Comparative Deletion and Subdeletion will have passed in review. In section 7, these properties will be considered again by raising the important question of whether Comparative Deletion and Subdeleletion should be treated as a single, unified phenomenon or not. That is, do the two types of comparatives involve a single rule of comparative formation, or are they derived in fundamentally different ways? Section 8 is the conclusion.

It should be noted that many aspects of the syntax of comparative constructions will not be dealt with in this study; notably, the syntax of reduced comparatives and the syntax of phrasal comparatives (cf. Lechner 1999, 2001, for recent discussion). The former relates to the derivation of comparative constructions in which, besides the missing element in the compared constituent, there is additional material missing from the comparative clause, as in (11b–e); the latter concerns those comparative structures in which the lexical items *than* and *as* are followed immediately by a non-clausal constituent (as, for example, in *A person taller than Bill entered the room*; *Mary sings more loudly than beautifully*).[7] Some examples of the reduced comparative structures are given in (11b–e), in which, besides the subdeleted subject noun phrase, some other element seems to have been removed from the subcomparative clause:

(11) a. More women bought these apples than [*e* men] bought these pears.
b. More women bought these apples than [*e* men] did these pears.

c. More women bought these apples than [*e* men] these pears.
d. More women bought these apples than [*e* men] did.
e. More women bought these apples than [*e* men].

In (11a), only Subdeletion has operated. In (11b–e), a number of additional processes have been said to apply: pseudogapping (11b), gapping (11c), VP-deletion (11d), comparative ellipsis (11e). As regards this last comparative construction type, there has been discussion about the question of whether to interpret the constituent following *than* (or *as*) as a reduced (i.e., ellipted) clause (cf. Hankamer 1971; Bresnan 1973b; Pinkham 1982; McCawley 1988; Bierwisch 1989; Lechner 2001) or as a base-generated noun phrase (cf. Pinkham 1982; Brame 1983; Hoeksema 1983; Napoli 1983).

2 On the presence of QP

This section addresses the question of whether there is any evidence for a (subdeleted) QP within the subcompared phrase. Section 2.1 presents some of the arguments that have been adduced in favor of this hypothesis. Section 2.2 discusses what might be neutrally called *of*-comparatives (as in *John knows more of these linguists than I know [– of these biologists]*). Section 2.3 discusses an analysis which, like Bresnan's, assumes the presence of a QP within the comparative clause, but, contrary to Bresnan's analysis, locates this QP in a position external to the compared phrase.

2.1 Evidence for a missing element in Subdeletion constructions

Although for Comparative Deletion constructions it is quite clear that some element has been removed from the comparative clause, this is less so for comparative constructions involving Subdeletion. The comparative clause in (12), for example, superficially looks the same as the embedded declarative clause in (13) (modulo the clause-introducing element: *than* vs. *that*); there is no overt difference between compared adjective phrase *wide* in (12) and (absolute) adjective phrase *wide* in (13):

(12) The desk was longer than the table was wide.

(13) John said that the table was wide.

Semantically, however, there is a clear contrast between the two clauses. The declarative clause expresses that *the table* has the property of being wide. The comparative clause, on the other hand, expresses that it is wide *to a certain extent*. This extent of width is compared with the extent to which the desk is long. As is

clear from the compared element *longer* in the matrix clause, the length of the desk surpasses its width.

Thus, although superficially the same, the clause *the table was wide* has a different meaning in (12) and (13): a property reading vs. an extent or degree reading. This latter reading might be syntactically expressed by the presence of a quantifier-like element within the compared adjective phrase.

Besides this interpretive argument in support of the presence of an underlying QP within the subcompared phrase, Bresnan provided a number of other arguments for it. The strongest argument, one of complementary distribution, is the impossibility of having overt quantifiers in the position of the missing quantifier (Bresnan 1975):

(14) a. The desk was longer than the table was *too/*that wide.
b. John met more linguists than I met *many/*three/*most/*a few biologists at the party.

Another argument Bresnan presents in support of a missing quantifier within the subcompared phrase is based on the examples in (15–16):[8,9]

(15) a. *This mouse weighs ounces.
b. This mouse weighs six/that many ounces.

(16) a. John weighs more pounds than this mouse weighs ounces.
b. *John weighs more pounds than this mouse weighs six/that many ounces.

These examples feature a measure verb which selects a nominal measure phrase as its complement. As indicated by the ungrammaticality of (15a), the measure noun phrase cannot consist of a bare measure unit noun; the measure phrase must contain a cardinal (*six*) or a quantifier (*many*) specifying the measure, as in (15b). Knowing this, sentence (16a) is no exception to the required presence of a measure-indicating element within the measure phrase, if one assumes that there is an underlying QP in the specifier position of the measure noun phrase (say: *x-many*). Note that the ill-formedness of (16b) corroborates the presence of an underlying QP within the measure noun phrase; *six/that many* is not allowed to occur within the noun phrase, since they are in complementary distribution with the underlying QP.

A phonological indication for the presence of an empty QP comes from the phenomenon of tensed auxiliary contraction (King 1970; Bresnan 1971a). Bresnan (1973b) argues that this phenomenon, which is known to block directly before a deletion site, is inhibited directly before the Subdeletion site. As indicated by the b-examples (with the * representing Bresnan's judgments), Subcomparative formation can apply if the tense auxiliary has not been contracted:

(17) a. I am cleverer than you are [*e* prudent].
b. *I'm cleverer than you're [*e* prudent].

(18) a. It was as much trouble then as it is [*e* fun] now.
b. *It was as much trouble then as it's [*e* fun] now.

The strength of this phonological argument is disputed by Grimshaw (1987). She argues that the effects depicted in the b-examples are quite weak. Although it is true that contraction directly before a Subdeletion site yields a less than perfect result, contraction before a Subdeletion site turns out to be much better than contraction before a gap created by Comparative Deletion:

(19) a. I'm cleverer than you are *e*.
b. *I'm cleverer than you're *e*.

(20) a. It was as much trouble then as it is *e* now.
b. *It was as much trouble then as it's *e* now.

Also from other languages, empirical evidence has been adduced in support of the presence of a missing QP within the subcompared phrase. Bennis (1977), for example, points out for Dutch that, besides comparative clauses like (21a), in which the entire compared constituent has been deleted, we find comparative clauses like (21b) containing a clitic-like pronoun *er* (of-them/it), which replaces the N'-part of the compared noun phrase in the comparative clause (see also Bennis 1978 and den Besten 1978 for discussion of this point):

(21) a. Ik ken meer taalkundigen dan jij ontmoet hebt.
I know more linguists than you met have
'I know more linguists than you have met.'
b. Ik ken meer taalkundigen dan jij er ontmoet hebt.
I know more linguists than you CL met have
'I know more linguists than you have met.'

This clitic displays the syntactic behavior characteristic of so-called quantitative *er*, i.e., the clitic *er* which pronominalizes part of a quantified noun phrase (viz., N'), as in (22).[10] As illustrated in (23), quantitative *er* can substitute for a (plural) count noun like *boterhammen* but not, for example, for a mass noun like *brood*; it cannot replace part of a noun phrase which is modified by an attributive AP (24); it can replace part of a noun phrase leaving the associated relative clause unaffected (25):

(22) Ik geloof dat Jan *er* toen [veel/drie –] ontmoet heeft.
I believe that John CL then many/three met has
'I believe John met many/three of those.'

(23) a. Jan at gisteren weinig boterhammen. Vandaag eet hij er veel.
John ate yesterday few sandwiches. Today eats he CL many
'John ate few sandwiches yesterday. Today he eats many.'

b. Jan at gisteren weinig brood. *Vandaag eet hij er veel.
John ate yesterday little bread. Today eats he CL much
'John ate little bread yesterday. Today he eats a lot of bread.'

(24) Jan ontmoette er gisteren [drie (*Japanse) –].
John met CL yesterday [three (Japanese) –]
'John met three (Japanese) linguists yesterday.'

(25) Jan ontmoette er gisteren drie die uit Japan kwamen.
John met CL yesterday three who from Japan came
'John met three linguists who came from Japan.'

As illustrated in (26–28), these syntactic properties of quantitative *er* are also found with the item *er* appearing in comparative clauses. This suggests that this item is in fact quantitative *er*:

(26) a. Jan at gisteren meer boterhammen dan hij er vandaag heeft
John ate yesterday more sandwiches than he CL today has
gegeten.
eaten
'John ate more sandwiches yesterday than he has eaten today.'
b. *Jan at gisteren meer brood dan hij er vandaag heeft gegeten.
John ate yesterday more bread than he CL today has eaten
'John ate more bread yesterday than he has eaten today.'

(27) Jan heeft meer Chinese taalkundigen ontmoet dan jij er (*Japanse)
John has more Chinese linguists met than you CL (*Japanese)
ontmoet hebt.
met have
'John met more Chinese linguists than you met Japanese linguists.'

(28) Jan kent meer taalkundigen die uit China komen dan ik er ken
John knows more linguists that from China come than I CL know
die uit Japan komen.
who from Japan come.
'John knows more linguists who come from China than I know linguists who come from Japan.'

Given the fact that quantitative *er* typically replaces the N'-part of a quantified noun phrase (i.e., a noun phrase containing a QP) leaving the QP unaffected (as in (22)), the conclusion seems inescapable that the same holds for quantitative *er* appearing in comparative clauses (e.g., (21b)). The fact that the quantifier of the quantified noun phrase is absent must be due to some independent operation which is active in the comparative clause: Subdeletion. Notice also here that the correctness of assuming an underlying QP is corroborated by the fact that it is

impossible to have a quantifying element (e.g., *drie*) in the specifier position of the compared noun phrase (the argument of complementary distribution):

(29) *Ik ken meer taalkundigen dan jij er drie ontmoet hebt.
I know more linguists than you CL three met have
'I know more linguists than you met.'

French provides evidence for a missing QP roughly along the same lines as Dutch. As noted in Milner (1978a) and Pinkham (1982), comparative clauses in French feature the quantitative clitic *en* (of-it) when the compared element in the comparative clause is interpreted as identical to that of the matrix clause:

(30) J'ai plus de livres que Paul n'en a
I have more of books than Paul NEG CL has
'I have more books than Paul has.'

Just as in Dutch, this quantitative clitic typically combines with a quantifier in non-comparative contexts:

(31) Paul en a beaucoup/trois
Paul CL has many/three
'Paul has many/three books.'

Given this co-occurrence restriction, it seem plausible to assume that there is an underlying QP within the comparative clause containing *en* as well. The only difference is that in comparative clauses the quantifier is non-overt.[11]

2.2 Of-*comparatives*

Part of Bresnan's (1975, 1976a) argumentation in support of an underlying QP within the compared noun phrase is based on what may be neutrally called '*of*-comparatives'. These are comparative constructions in which the compared constituent of the comparative clause contains a lexical *of*-phrase as a residue; that is, the only part that is removed from the compared constituent is a QP. The minimal pair in (32) nicely compares this kind of comparative with the already familar Subdeletion construction:

(32) a. John met more linguists than I met biologists.
b. John met more of the linguists than I met of the biologists.

Bresnan argues that *of*-comparatives also instantiate Subcomparative formation; that is, they are derived by removing a quantifier phrase (QP) from the compared noun phrase. Thus, application of Subdeletion to the structure in (33a) gives us the derived structure in (33b):

(33) a. . . . than I met [*x-many* of the biologists]
b. . . . than I met [*e* of the biologists]

The fact that the *of*-comparative construction becomes ungrammatical when the compared phrase contains a lexicalized QP, as in (34), is again suggestive of the presence of an underlying (phonetically empty) QP within the compared phrase:

(34) *John met more of the linguists than I met three/many of the biologists.

Bresnan further observes that the presence of a QP in subcomparatives seems to be detectable through its local syntactic effects. When quantifiers such as *many* and *more* are followed by indefinite nouns, *of* cannot appear (see (35a)), but if they are followed by definites, *of* is obligatory (see (35b)):

(35) a. many (*of) linguists, more (*of) linguists
b. many *(of) those linguists, more *(of) those linguists

Bresnan notes that the same distribution holds in subcomparatives. This is exemplified in (36). If these examples involve an underlying QP that is removed, then the parallelism depicted in (35) and (36) can be explained, provided that the posited QP has the properties of *many* and *more*:

(36) a. We met more linguists than we met *e* biologists.
b. *We met more linguists than we met *e* (*of) of biologists.
c. We met more of the linguists than we met *e* of the biologists.
d. *We met more of the linguists than we met *e* *(of) the biologists.

Given the above considerations, Bresnan analyzes *of*-comparatives as instances of Subdeletion, in which a subpart of a compared noun phrase has been removed.

Grimshaw (1987) opposes Bresnan's view and takes the position that they should be treated in analogy with Comparative Deletion constructions; that is, 'deletion' involves removal – in her terms, following Chomsky (1977b), movement to Comp (i.e., [Spec, CP]) and subsequent local deletion of the entire compared phrase (see section 3.3). As far as removal is concerned, an *of*-comparative like (32b) would be treated analogously to a comparative construction like (37), which instantiates Comparative Deletion. That is, in both comparative constructions the entire compared constituent of the comparative clause is removed:

(37) John met more of the linguists than they met *e*.

But how can the *of*-phrase (a PP) in (32b) survive if Comparative Deletion (i.e., complete removal of the compared phrase) is involved? Along the lines of an analysis proposed in Taraldsen (1978) for Norwegian *of*-comparatives, Grimshaw proposes that removal of the entire noun phrase (i.e., in her analysis, movement of the compared noun phrase to [Spec, CP]) takes place after the PP has been

extraposed or reanalyzed from within the NP, leaving only the QP remaining inside. This way we get the superficial effect of QP-removal.

Why should an *of*-comparative like (32b) be treated differently from a subcomparative construction like (32a)? The answer lies in their different syntactic distribution. Whereas a subcompared noun phrase can occupy 'clause-internal', i.e., non-final positions within the clause (e.g., the subject position of the clause or a small clause), a compared noun phrase containing an *of*-phrase is blocked from those positions; it can only appear in a position at the end of VP.[12] These distributional facts are illustrated in (38–40):[13]

(38) a. I met more linguists than you met biologists. (final)
b. I met more of the linguists than you met of the biologists.

(39) a. I found more linguists dull than I found biologists interesting. (non-final)
b. *I found more of the linguists dull than I found of the biologists interesting.

(40) a. More linguists were dull than biologists were interesting. (non-final)
b. *More of the linguists were dull than of the biologists were interesting.

Grimshaw points out that the distributional behavior of the *of*-phrase is similar to that of *of*-phrases that combine with fronted *wh*-expressions: here too the residual PP is permitted only in VP-final position and not in internal positions. Compare, for example, the following sentences:

(41) a. How many did you meet – of the linguists?
b. *How many do you think – of the linguists were dull?
c. *How many do you find – of the linguists dull?

The contrast (38b) vs. (39b, 40b) and the contrast (41a) vs. (41b, c) can be explained now as follows: in (38b) and (41a), the PP can be extraposed out of the noun phrase, and therefore Comparative formation (i.e., *wh*-movement, according to Grimshaw) and Question formation (also *wh*-movement) can apply to the entire noun phrase. In the ill-formed examples, extraposition (see chapter 42) of PP has not taken place; witness their clause-internal placement. Consequently, Comparative formation and Question formation would have to apply to a subpart of the noun phrase. This, however, is not permitted, possibly because of the Subjacency Condition.

Returning now to the contrast in grammaticality of the a-examples and b-examples in (39–40), the different distribution of the subcompared noun phrase and the compared noun phrase combining with the *of*-phrase obviously raises a problem for a uniform treatment of the two types of compared constituents. Whatever process one considers responsible for Subdeletion, a unified treatment of the two types of compared noun phrases would predict a uniform behavior of the two elements. However, it is clear that they do not behave uniformly.

In view of the above considerations, Grimshaw concludes that *of*-comparatives do not instantiate Subdeletion.

2.3 Subcompared phrases as 'bare' noun/adjective phrases

If *of*-comparatives do not feature subremoval from the compared noun phrase, then we are left with such comparatives as (5) (i.e., *John met more linguists than I met biologists*) as instances of Subdeletion. However, even for those constructions, it has been argued (contra Bresnan) that no subremoval of a quantifying expression (QP) from the compared noun phrase is involved. Two variants of this hypothesis that there is no empty QP within the specifier position of the compared phrase can be distinguished in the literature. The first variant, hinted at in Taraldsen (1978), takes (42) to be the underlying representation for a Subdeletion construction like (5). No syntactic rule affects the compared phrase, and its comparative interpretation is realized by its being linked to its antecedent in the semantics only. Taraldsen further relates the well-formedness of the comparative clause to the grammaticality of the independent clause *I met biologists*. Note that in this latter sequence, *biologists* acts as a bare plural. Interestingly, Carlson (1977b) has proposed that even though a bare plural like *biologists* is interpreted as (narrow scope) 'some biologists', the indefinite interpretation is not syntactically represented by the presence of some empty element within the noun phrase (see chapter 4). The indefinite interpretation of the noun phrase is only represented in the semantics. Thus, Taraldsen's analysis is quite in line with Carlson's treatment of bare plural noun phrases:[14]

(42) John met [$_{NP}$[$_{QP}$ more linguists]] than I met [$_{NP}$ biologists].

The second variant, suggested in Grimshaw (1987), also interprets the compared noun phrase as a 'bare' (i.e., QP-less) noun phrase. However, as opposed to Taraldsen's analysis, the amount/extent interpretation of the comparative clause (say, *I met x-many biologists*; but see below) is syntactically represented. Following a suggestion by Roger Higgins, Grimshaw hypothesizes that the subcomparative clause contains a phonologically null Adverb Phrase which has an 'extent'-interpretation (i.e., 'to a certain/great extent'). Sentences like (5) and (12) would then receive structures like (43a) and (43b), respectively[15] (see also Izvorski 1995):

(43) a. I met more linguists than you met biologists [$_{AdvP}$ *e*].
<Extent>

b. The desk was longer than the table was wide [$_{AdvP}$ *e*].
<Extent>

The ill-formedness of such sentences as (44a) and (44b) may then be due to the fact that the empty adverbial modifier quantifies vacuously; it does not play any role in the semantic interpretation of the clause:

(44) a. *I met more linguists than you met three biologists.
b. *This table is longer than it is too wide.

In line with this adverbial analysis of Subcomparative Deletion, Ishii (1991) argues that the semantic content of a subdeletion comparative is a comparison between the events described by the comparative clause and the matrix clause, rather than between the individuals satisfying the comparative NP and its correlate. Thus, a sentence like (5) does not compare the number of biologists John met to the number of biologists I met; it rather compares the number of events at which John met linguists to the number of events at which I met biologists.[16]

This 'adverbial' analysis of Comparative Subdeletion was first defended in Pinkham (1982), though for a more restricted set of subcomparative constructions. Although she follows Bresnan in assuming that constructions like (5) and (12) involve 'Subdeletion' of a quantifier from the compared noun/adjective phrase, she rejects Bresnan's proposal that the constructions in (45) involve 'Subdeletion' of an attributive AP:

(45) a. He makes a better soufflé than he does [an – omelette].
b. They make better police dogs than they do pets.

Pinkham points out that Bresnan's claim that attributive APs can be 'subdeleted' is too strong; there are comparative environments in which subremoval of the attributive AP yields an ill-formed sentence:[17]

(46) a. *Mary has a better ear than she has [a – voice].
b. *She bought a prettier dress than she bought [a – shirt].
c. *John met taller linguists than I met [– biologists].
d. *John was a more famous linguist than Bill was [a – biologist].

Pinkham argues that the contrast between (45) and (46) relates to the semantics of the comparison: in the grammatical examples in (45), the comparison is understood as being adverbial, whereas in the ungrammatical examples, no such adverbial interpretation is possible. The adverbial meaning of (45) is clear from the paraphrases in (47). As shown in (48), such 'adverbial' paraphrases are impossible with the examples in (46):[18]

(47) a. He makes a soufflé better than he does an omelette.
b. They make police dogs better than they make pets.

(48) a. #Mary has an ear better than she has a voice.
b. #She bought a dress more prettily than she bought a shirt.

Thus, the generalization to be captured is that Subdeletion of an AP modifying an NP syntactically is permitted only if the comparison is adverbial semantically.

For example, 'to make good omelettes' is equated with 'to make omelettes well'. According to Pinkham, this adverbial interpretation of the AP is realized in the grammar by means of a semantic restructuring rule which modifies the semantic structure of the comparative clause in such a way that an AP which structurally modifies an NP is reanalyzed as a VP-modifier, i.e., a modifier of the predicate.[19] Thus, in (45a) the attributive AP can be semantically reinterpreted as modifier of the predicate *does an omelette*.

Clearly, Pinkham's 'adverbial' analysis of comparative clauses differs from the one defended in Grimshaw (1987) and Ishii (1991). Whereas the latter two start out from a syntactic structure in which the modifying element is a VP-modifier, Pinkham's analysis leaves the modifying element NP-internal at the level of syntactic representation (say, D-structure and S-structure) and assigns it a VP-modifying status at the level of semantic representation.

Summarizing, section 2 addressed the question of whether there is any evidence for the presence of an underlying quantifier (QP) within the compared constituent of the (sub)comparative clause. Bresnan (and other linguists) have tried to provide a variety of empirical arguments for the presence of an understood quantifier within the subcompared phrase of constructions like (5). A number of linguists (e.g., Grimshaw) have argued that there is indeed an amount-extent-designating phrase present in the subcomparative clause, but according to them this phrase is always represented as an adverbial phrase within the subcomparative clause. Taraldsen, finally, assumes that the amount/extent interpretation associated with the subcomparative clause is not syntactically represented by means of some syntactic phrase. The 'subcompared' noun phrase in a sentence like (5) is a bare NP and the amount interpretation is purely a matter of semantics.

3 Bounded vs. unbounded transformations

A common characteristic of Comparative Deletion constructions and Subdeletion constructions is that they both require some element to be omitted from the comparative clause (see Taraldsen's 1978 bare NP-analysis, though; section 2.3). As was shown in section 1, the presence of an 'understood' compared phrase in the comparative clause of a Comparative Deletion construction like (1) was rather straightforward. In section 2, arguments were presented in support of the presence of an empty compared constituent within the comparative clause of a Subdeletion construction like (5). A question which has received much attention in the generative literature concerns the nature of this missing (i.e., empty) constituent. More in particular, what syntactic process 'removes' the (sub)compared phrase in the comparative clause? This question has figured prominently in the controversy between Bresnan (Bresnan 1975, 1976a, 1976c, 1977) and Chomsky (Chomsky 1973, 1977b) about the proper description of unbounded syntactic relations (i.e., the question of whether or not syntactic theory should allow for unbounded transformations).

As shown in (49), the compared constituent in the comparative clause can be construed at a distance from the head of the comparative clause in Comparative Deletion constructions (Ross 1986):

(49) a. John met more linguists than you met –
b. John met more linguists than we thought you said Bill believed Sue met –

Bresnan describes this unbounded dependency between the two compared constituents by means of a transformation termed 'Comparative Deletion'. This rule deletes the compared constituent of the comparative clause under identity with the head of the comparative clause and can apply over an unbounded domain. Thus, the process of comparative formation defines a relationship between syntactic positions that can – modulo island constraints – be arbitrarily distant from each other. Schematically:

(50) . . . *more linguists* [than we thought [you said [(. . .) [Sue met *x-many linguists*]]]]
↓
ø

Chomsky rejects the existence of unbounded transformational rules and proposes that all syntactic transformations are subject to a bounding condition known as the Subjacency Condition. In line with this condition, the unbounded dependency between the two compared constituents in (50) is the result of successive-cyclic application of a bounded movement rule to the second compared constituent, with the result that the moved compared constituent ends up in a position close enough to the head of the comparative clause for the moved element to be locally deleted. Schematically:

(51) . . . *more linguists* than [*wh-many linguists*
↓
ø
we thought [*e* you said [(*e* . . .) [*e* Sue met *e*]]]]

In what follows, the two analyses will be discussed in more detail. As will become clear, the syntax of Subdeletion plays an important role in the debate.

3.1 'Comparative (Sub)deletion' as an unbounded deletion rule

Bresnan argues that unbounded dependencies exist not only between compared phrases in Comparative Deletion constructions but also between subcompared phrases in Subdeletion constructions:

(52) John met
  a. . . . more linguists than you met – biologists.
  b. . . . more linguists than we thought you met – biologists.
  c. . . . more linguists than we thought you said you met – biologists.

She admits, though, that the acceptability of the examples decays more rapidly than with Comparative Deletion constructions as the compared constituent is separated from the head of the comparative clause by more intervening clausal boundaries.

Under the assumption that Subdeletion constructions can involve an unbounded dependency between the two compared constituents, Bresnan claims that an analysis of such a dependency in terms of iterative-cyclic application of bounded movement cannot work, for the simple reason that normally left-branch-modifying elements cannot be moved away from the constituent they modify (cf. Ross's 1986 Left Branch Condition; see chapter 66). Thus, although it is possible to subdelete a QP in Subdeletion constructions (see (5) and (12)), it is impossible to move away the same type of phrase from the constituent it modifies in interrogative constructions:

(53) a. *How many did you meet [– biologists]?
  b. *How was the table [– wide]?

Left-branch adjectival modifiers display the same contrast: Subdeletion can remove the left-branch modifier, but movement cannot:

(54) Maggie is as fine a doctor as her sister is [– a lawyer].

(55) *So fine her sister is [– a lawyer], that they call her Portia.

In short, Subdeletion can remove a variety of modifying constituents which cannot be moved by movement rules. If there is a generalization over English movement rules, according to which certain left-branch modifiers are 'immovable' from certain constructions, then Subdeletion cannot be an exponent of such a rule. Furthermore, as Subdeletion constructions do not involve movement, the unbounded dependencies in (52) cannot be the result of iterative-cyclic application of bounded movement and subsequent local deletion of the *wh*-phrase, but rather should be analyzed in terms of an unbounded deletion rule which deletes part of the compared constituent.

The next question is: how much is deleted from the compared constituent in the comparative clause by the rule of Comparative Deletion? Bresnan argues that only as much is deleted from the compared constituent by the rule of Comparative Deletion as is maximally recoverable from the head of the comparative clause. Or, in somewhat more explicit terms, only the maximal subphrase of the compared constituent identical to a corresponding subphrase of the head undergoes Comparative Deletion. This generalization on the deleted part follows from

Bresnan's Relativized A-over-A Condition (RAOAC) (Bresnan 1975, 1976a, 1976c). This condition on the applicability of transformational rules states that a phrase of type A (= the target predicate), which a transformation affects, must be maximal with respect to the values assigned to the elements in the structural description of the transformational rules that are the context predicates (i.e., the constant factors not operated on by the rule). Maximalization is a function of the syntactic features (+/−N, +/−V) that are mentioned in the structural description.

Consider now Bresnan's (1975) rule of Comparative Deletion:

(56) $[_{Y'''}\ X'''\ W_1]\ [_{S'''}\ W_2\ [_{Y'''}\ X'''\ W_3]\ W_4]\ \ 4 \leq 1$
1 2 3 4 5 6 →
1 2 3 ø 5 6

The Y‴ and X‴-constituents in the Structural Description represent (material inside) the compared elements; the X and Y 'barred' variables are restricted to measure-phrase constituents: N‴, A‴, Q‴. W is a variable over labeled bracketings. The Y‴-constituent contained within the comparative clause (S‴) is the target predicate, i.e., the constant factor operated on by the deletion rule. The leftmost Y‴, the head of the comparative construction, functions as the context predicate. When W_1 and W_3 are null (which amounts to a situation in which X‴ = Y‴), the deletion rule removes the entire compared constituent within the comparative clause; this instantiates Comparative Deletion. When W_1 and W_3 are non-null, the deletion removes only part of the compared constituent, viz., the left-branch modifier; this instantiates Subdeletion. In line with the maximalization requirement on the target predicate, that part of Y‴ must be deleted which is maximally identical to the context predicate:

(57)

a. She has $[_{NP}\ [[_{QP}$ as many] friends] $[_{S'}$ as I had $[_{NP}\ [_{QP}$ x-many] friends]]]
1 2 3 4 5 (6 is null) →
1 2 3 ø 5 6
She has as many friends as I had –

b. She has $[_{NP}\ [[_{QP}$ as many] friends] $[_{S'}$ I had $[_{NP}\ [_{QP}$ x-many] enemies]]]
1 2 3 4 5 6 →
1 2 3 ø 5 6
She has as many friends as I had – enemies

Thus, depending on the value of W_1 and W_2, the deletion rule in (56) yields a Subdeletion construction (57b) or a Comparative Deletion construction (57a) as its output.

An important conclusion we can draw from this discussion is that Bresnan proposes a unified analysis of Comparative Deletion constructions and Subdeletion constructions. She thus considers these constructions to be instantiations of one and the same phenomenon, best analyzed in terms of a rule deleting a

constituent 'across a variable' that is under identity to a constituent which may be arbitrarily far from the deletion site.

Having shown on the basis of Subdeletion constructions that movement cannot be involved (see (53)) and having proposed a unified description of the two types of comparative constructions, Bresnan reaches the conclusion (contra Chomsky 1977b) that many of the grammatical constraints that are used as diagnostics for movement rules cannot be treated as such; the phenomenon of Comparative Deletion, which, according to Bresnan, must be described in terms of a deletion rule, is sensitive to the same constraints as a movement rule like Question Movement.

Let us consider this sensitivity to so-called 'movement constraints' somewhat more closely. First of all, both Comparative Deletion (58) and Subdeletion (59) are sensitive to Ross's island constraints (Ross 1986; see also Grosu 1972a): the Complex Noun Phrase Constraint, the Coordinate Structure Constraint, the Sentential Subject Constraint, the *Wh*-Island Constraint, and the Adjunct Condition; obviously, (most of) these island constraints fall under the unifying Subjacency Condition. Since Subdeletion cannot possibly involve movement (because of the left-branch effect) but nevertheless displays island behavior, Bresnan concludes that island sensitivity should not be interpreted as diagnostic for the presence of a movement process in a grammatical construction. It rather shows that not only movement operations (e.g., Question Formation) but also deletion operations are subject to island constraints:

(58) a. *John bought more oranges than we had discussed [a plan to buy –]]. (CNPC)
b. *John bought more oranges than we had bought [apples and –]. (CSC)
c. *John bought more oranges than [that he had sold –] was generally believed. (SSC)
d. *John bought more oranges than Sue wondered [whether to buy –]. (*Wh*-Island)
e. *John bought more oranges than Bill slept [after he had sold –]. (Adjunct C.)

(59) a. *John bought more oranges than we had discussed [a plan to buy [– apples]]. (CNPC)
b. *John bought more oranges than we had bought [three pears and – apples]. (CSC)
c. *John bought more oranges than [that he had sold [– apples]] was generally believed. (SSC)
d. *John bought more oranges than Sue wondered [whether to buy [– apples]]. (*Wh*-Island)
e. *John bought more oranges than Bill slept [after he had sold [– apples]]. (Adjunct C.)

Bresnan further observes that both Comparative Deletion and Subdeletion display Subjacency effects. The (sub)compared noun phrase in the comparative clause cannot be the complement to a noun which heads a noun phrase that is in turn complement to a higher noun (i.e., stacked picture noun phrase envrionments):[20]

(60) a. The official didn't confess to as many crimes as we had [$_{NP}$ evidence of –].
b. *The official didn't confess to as many crimes as we had [$_{NP}$ information about [$_{NP}$ evidence of –]].

(61) a. The official didn't confess to as many petty crimes as we had [$_{NP}$ evidence of [$_{NP}$ – grave ones]].
b. *The official didn't confess to as many petty crimes as we had [$_{NP}$ information about [$_{NP}$ evidence of [– grave ones]]].

Third, both Comparative Deletion and Subdeletion display Crossover effects. Although in (62a) and (63a), the compared phrase of the comparative clause can function as an antecedent for the pronoun, this is impossible in (62b) and (63b). In those 'crossover' contexts, the pronoun cannot be interpreted as a variable bound by the compared (i.e., quantified) phrase:

(62) a. More students flunked than $-_i$ thought they$_i$ would (flunk).
b. *More students flunked than they$_i$ thought $-_i$ would (flunk).

(63) a. As many new students flunked as [– old students]$_i$ imagined they$_i$ would (flunk).
b. *As many new students flunked as they$_i$ imagined [– old students]$_i$ would (flunk).

Since Comparative Subdeletion cannot involve movement (that is, it involves deletion), Bresnan concludes that crossover effects are not a diagnostic for movement.

In summary, Bresnan argues that the rule of Comparative Deletion (cf. (56)) obeys Ross's island constraints, the Subjacency Condition, and the Crossover Constraint. She concludes that these constraints cannot be used to determine whether or not movement has occurred in a derivation. Furthermore, she emphasizes that since Subdeletion displays the same locality effects as a movement rule like Question Formation, locality properties cannot be explained in terms of a theory of successive cyclicity.

3.2 Some problems for Comparative (Sub)deletion as an unbounded deletion rule

Besides various points of criticism which have been raised against Bresnan's argumentation for the presence of a missing QP within the subcompared phrase

(see section 2), two major problems have been pointed out in the literature for Bresnan's analysis of Subdeletion. The first problem concerns the generalization on the deleted part of the compared phrase, i.e., that part of the compared phrase is deleted which is maximally identical to that of the matrix compared phrase. This issue will be dealt with in section 3.2.1. The second problem, dealt with in section 3.2.2, concerns the placement of the comparative clause: Subdeletion turns out to be restricted to sentence-final comparative ('extraposed') clauses, whereas Comparative Deletion is permitted in both sentence-internal (non-extraposed) and sentence-final comparative clauses.

3.2.1 What does Subdeletion delete?

Bresnan's RAOAC essentially states that that part of the compared phrase within the *than*-clause must be deleted which is maximally identical to the compared phrase within the matrix clause. In a sense, this maximalization requirement on the deleted part seems to be both too strong and too weak; that is, it excludes certain grammatical sentences and fails to exclude certain ungrammatical ones. Let us first consider those cases in which it is too strong.

Chomsky (1977b) discusses the example in (64), where in speaker B's utterance the compared adjective phrase is not totally deleted:

(64) Speaker A: This desk is higher than that one is wide.
Speaker B: This desk is higher than that one is high.

He points out that the sentence is grammatical with emphatic stress on *high*, and argues that its grammaticality is unexpected under Bresnan's RAOAC, since the Comparative (Sub)deletion rule has not deleted the maximal phrase (X″) that is recoverable from the head of the comparative clause (i.e., the antecedent compared phrase). Under maximal deletion, it should have been only possible to delete the entire compared phrase (i.e., *x-much high*).[21]

As noted in Partee (1977), a rebuttal to Chomsky's argument would require showing that the second *high* in speaker B's utterance is not in fact identical to the first adjective phrase *high*. Partee hints at two possibilities. First, one might propose that the emphatic adjective phrase contains an abstract emphatic morpheme *EMPH*, which blocks identity with the antecedent adjective phrase (i.e., *[[-er much] high* versus *[[x-much] EMPH high*). A second way to implement non-identity would be to start out from an underlying structure in which the two compared adjective phrases are headed by differently indexed variables (say, *this desk is [[-er much] A_1] than that one is [[x-much] A_2]*), which are lexicalized by *high* later in the derivation.

Let us now turn to the second problem, viz., that the RAOAC is too weak, in the sense that it incorrectly permits certain subdeletion patterns. As we have just seen, a maximal phrase deletes relative to the context predicate, i.e., the head of the comparative clause. Thus far, we have mainly considered examples in which either the entire compared phrase is deleted (Comparative Deletion), or a QP (*x-much/x-many*) contained within a compared phrase which fulfills a

grammatical function at the clausal level (e.g., subject, object, predicate nominal, VP-adjunct) is deleted. The question arises whether Subdeletion can delete a constituent larger than *x-much/x-many* but smaller than the entire compared constituent.

In her articles, Bresnan provides a number of cases:

(65) a. There isn't *as large a number* of women as there was [– of men]. NP-deletion
b. They make *better* police dogs than they make [– pets]. AP-deletion

However, each of these has something special to it and therefore might be put aside. (65a) has been argued to be a structure in which removal, whatever syntactic operation instantiates it, applies after the PP has been reanalyzed out of the direct object; see section 2.2. Adopting that line of approach, (65a) might instantiate complete removal rather than subremoval. Subdeletion of the attributive AP in (65b) has been argued by Pinkham (1982) to be possible only with those APs which can be semantically restructured as VP-modifiers ('they are better at making police dogs than they are at making pets').[22]

Pinkham (1982) points out the examples in (66) and (67), showing that Bresnan's RAOAC is too weak:

(66) *John has a longer desk than Sue has [a [– wide] table].

(67) *John has [a [longer] desk] than Sue has [a – table].

In (66), the quantifier of an attributive adjective phrase has been deleted under identity with that of the matrix compared phrase; in (67), an attributive AP has been removed under identity with a modifying AP within the antecedent compared phrase. There is nothing in Bresnan's analysis which excludes the application of Subdeletion in these environments. What is more, removal of the entire compared element (i.e., the direct object noun phrase) is permitted:

(68) John has a longer desk than Sue has –.

As Pinkham notes, the contrast between (66–67), on the one hand, and (68), on the other, casts serious doubt on the idea that removal of a part of the compared element and removal of the entire compared element are achieved by a single rule (i.e., the rule of Subdeletion as stated in (56)).

3.2.2 Sentence-internal total 'deletion' vs. sentence-internal non-total 'deletion'

Another problem for Bresnan's rule of Subdeletion, which unifies the phenomena of Comparative Deletion and Comparative Subdeletion, comes from the following

set of facts, discussed in Pinkham (1982), which illustrate a clear asymmetry between the phenomenon of Comparative Deletion and that of Subdeletion (see also Huang 1977; Hendrick 1978):[23]

(69) a. More men than the company was willing to hire – came for an interview.
b. *More women than the company was willing to hire [– men] came for an interview.

(70) a. How many more men than you had invited – decided to come?
b. ?*How many more men than you had invited [– women] decided to come?

Since Bresnan's rule of Subdeletion deletes either a part or the entire compared element, we would expect the same judgments for these two pairs. However, as indicated, subremoval yields an ill-formed sentence when the comparative clause occupies a sentence-internal position.

3.3 Comparative formation as a bounded movement rule

Chomsky's (1977b) analysis of Comparative Deletion constructions is part of a research program, initiated in Chomsky (1973), which aims at (i) dismantling the formalism for writing construction-specific transformations in terms of features of the Structural Description (SD) or the Structural Change (SC) of the transformational rule, and (ii) identifying transformational properties which hold at a more general (say, cross-constructional) level and which can be attributed to general laws governing transformations, derivations, or their output. On the basis of an examination of a variety of construction types (e.g., topicalization, clefts, *wh*-interrogatives, relatives), Chomsky claims that each of these constructions is characterized by the application of a general movement schema, called Move *Wh*, which moves a *wh*-constituent to Comp (i.e., [Spec, CP]). This 'rule of *wh*-movement', furthermore, has the following general characteristics, referred to as the *wh*-diagnostics:

(71) a. It leaves a gap.
b. Certain verbs (so-called bridge verbs; see chapter 10) license (apparent) violations of subjacency.
c. It observes island constraints such as the Complex NP Constraint, the *Wh*-Island constraint, the Adjunct Condition, the CSC, etc.

Chomsky further argues that all movement processes (hence, *wh*-movement) apply in a local fashion and that unbounded relationships between a moved phrase and a source position are the result of successive cyclic application of local movement steps (i.e., Comp to Comp).

The considerations above raise two questions for the syntax of Comparative Deletion and Comparative Subdeletion. First, do they display the *wh*-movement

diagnostics? Second, is there any empirical evidence for the successive cyclic application of *wh*-movement within the domain of the comparative clause?

Let me first address the question of whether the *wh*-diagnostics hold of Comparative Deletion constructions. As was already observed in Ross (1986), Comparative Deletion constructions exhibit the properties in (71) (see also (58–59)):

(72) *John met more linguists than Sue had met (*them). (diagnostic a)

(73) a. John met more linguists than I believed that Sue had met. (diagnostic b)
b. *John met more linguists than I quipped that Sue had met.

(74) a. *John met more linguists than I believed the claim that Sue had met. (diagnostic c)
b. *John met more linguists than I wondered when Sue had met.

As regards the derivation of Subdeletion constructions, Chomsky considers two alternative approaches toward the phenomenon of Subdeletion: (i) an approach according to which Subdeletion does not really exhibit the *wh*-diagnostics, and (ii) one according to which it does. Which approach should be taken depends on judgments of grammaticality of such examples as in (75) (grammaticality judgments indicated are those of Chomsky 1977b):

(75) a. The desk is as high as it is [– wide].
b. *The desk is as high as they believe the claim that it is [– wide].
c. ?The desk is as high as they believe that Bill claims that it is [– wide].
d. The desk is as high as they believe that Bill claims that it is –.

The basic judgments seem to be that (75a) and (75d) are fully acceptable, whereas (75b) and (75c) are not. The pair (75a, b) shows that further embedding of a subdeleted phrase inside an island leads to a decay of acceptability. Example (75d) shows that depth of embedding of the compared constituent has no effect on the acceptability of comparative deletion construction.

The contrast between (75c) and (75d) may be interpreted as providing evidence against a uniform treatment of the two types of comparatives. If Comparative Deletion involves *wh*-movement and hence displays the *wh*-diagnostics, then Subdeletion should not be accounted for in terms of this movement rule. It might then be formulated as a rule deleting a quantifier in place, but – as opposed to Bresnan's analysis – not deleting it 'over a variable', since the antecedent of deletion may not be arbitrarily far from the deletion site (given the decreased status of (75c)). The decreased acceptability of the long-distance dependency in (75c) might be analyzed in terms of some as yet unkown 'complex phrase constraint'. This complex phrase constraint might also rule out apparent island violations like (75b), to the effect that Subdeletion does not really display the island diagnostics.

Alternatively, the contrast between (75b) and (75c) might be taken to support an analysis which predicts Subdeletion will display properties of *wh*-movement. On this view, the relative unacceptability of (75c) might be explained in terms of some performance factor. Obviously, this *wh*-movement approach raises the questions of what element undergoes Move *Wh* and why it does not display any left-branch effect. Chomsky proposes that a lexically empty *wh*-element or *wh*-feature is extracted from the compared constituent and raised to COMP. He further suggests that, since this feature lacks phonetic content, it does not fall under RAOAC.

The two alternative analyses are schematically represented in (76):

(76) a. The desk is as high as [it is [$_{AP}$ [$_{QP}$ x-much] wide]] (Subdeletion as (locally) delete QP)
↓
ø

b. The desk is as high as [*wh* it is [$_{AP}$ [$_{QP}$ *e* much] wide]] (Subdeletion as Move *Wh*)

As Chomsky (1977b: 124) states: "The choice between the two constructions will have to await a better understanding of the conditions on complexity and parallelism involved in C-Subconstructions."

3.4 Problems for a wh*-movement approach toward Subdeletion*

In the literature, a number of arguments have been presented against a treatment of Subdeletion in terms of the rule Move *Wh*. First of all, as noted in Bresnan (1976a), Chomsky's (tentative) proposal that a phonetically empty *wh*-element can escape a left-branch effect (i.e., disobey the Left Branch Condition) is merely an ad hoc stipulation. Furthermore, if it can escape the LBC, why not other island constraints as well (Corver 1990)?

Second, the Subdeletion site – which under a *wh*-movement analysis is occupied by a *wh*-trace – may occur in structural configurations which normally do not allow the presence of a *wh*-trace. As noted in Grimshaw (1987), for example, *that*-trace effects have much less effect on the Subdeletion gap than on the 'Comparative Deletion' gap (see also Bresnan 1977):

(77) a. Even fewer books were published than we expected that [– magazines] would be.

b. Even fewer books were published than we expected (*that) – would be.

Taraldsen (1978) also observes that the Subdeletion site can occur in typical island configurations. He observes for Norwegian that 'Subdeletion' can apply to

a possessor noun phrase which occupies the specifier position of a larger noun phrase. An English equivalent is given in (78b):[24]

(78) a. Han er like mange studenters venn som han er [$_{NP}$ [$_{NP}$ – læreres] fiende].
He is as many students' friend as he is teacher's enemy
b. John is as many women's lover as he is [$_{NP}$ [$_{NP}$ – men's] enemy].

Under a movement analysis, these structures should have been rejected by the Subjacency Condition, since the moved element crosses (at least) two bounding nodes, viz., the two NP-nodes.

A language like Dutch also displays the occurrence of subcompared phrases in typical island configurations. As illustrated in (79), a subcompared NP containing a quantifier gap occurs as a complement of a preposition (Corver 1993; see also Kennedy 2002 for Czech). Normally, removal of a complement of a preposition (see Van Riemsdijk 1978b) – as in (80a), the comparative equivalent of (79) – or subextraction of an element contained within the NP-complement – see (80b), involving extraction out of a so-called *wat voor*-phrase; see chapter 66 – is excluded in Dutch:

(79) Jan heeft [$_{PP}$ voor [$_{NP}$ meer voetbalclubs]] gevoetbald dan hij [$_{PP}$ voor [$_{NP}$ – tennisclubs]] getennist heeft.
John has for more soccer teams played-soccer than he for tennis clubs played-tennis has

(80) a. *Jan heeft [$_{PP}$ voor [$_{NP}$ meer clubs]] gevoetbald dan hij
John has for more clubs played-soccer than he
[$_{PP}$ voor –] getennist heeft.
for played-tennis has
b. *Wat$_i$ heeft Jan [$_{PP}$ met [$_{NP}$ t$_i$ voor meisje]] gedanst?
What has John with for girl danced
'What kind of girl did John dance with?'

The third argument against a *wh*-movement analysis of Subdeletion also comes from Dutch. In this language it is possible to have a subcompared constituent within a syntactic domain that does not include a [Spec, CP] position, which functions as the landing site for the left-branch *wh*-item (Corver 1990, 1993). This is illustrated by (81), where a topicalized VP occupying the [Spec, CP] position of the matrix clause contains the compared noun phrase *meisjes*.[25] Note that the comparative phrase *dan meisjes gekust* (than girls kissed) does not (and cannot) contain an overt subject (say, *Piet* 'Pete'), which seems to suggest that the sequence following *dan* (i.e., *meisjes gekust*) constitutes a non-clausal phrase (arguably VP) rather than a finite clause (say, CP) (but see Izvorski 1995):[26]

(81) [$_{VP}$ [Meer jongens] geslagen dan [– meisjes] gekust]$_i$ zei Jan [$_{CP}$ dat
More boys hit than girls kissed said John that
[$_{IP}$ hij t_i had]].
he had
'John said that he had hit more boys than he had kissed girls.'

Fourth, as argued in Corver (1993), the existence of so-called multiple subcomparatives (i.e., Subdeletion constructions containing a comparative clause featuring more than a single Subdeletion site; see section 6) seems to pose a problem for a *wh*-movement analysis, since they would involve multiple *wh*-movement to [Spec, CP], which is something that is excluded in English (e.g., **I don't know who$_i$ where$_j$ John will meet t_i t_j*):[27]

(82) In this class, [more girls] know [more Romance languages] than [– boys] know [– Germanic languages].

3.5 *On the presence and absence of* wh-*elements in Comp*

As observed in Chomsky (1977b), constructions featuring *wh*-movement to Comp differ with respect to the overtness of the *wh*-phrase in Comp. Whereas some constructions require overtness of the *wh*-phrase (as in question formation: *I wonder who$_i$/*Ø$_i$ John met t_i*), other constructions are characterized by the optional presence of an overt *wh*-element (as in tensed object relative clauses: *the boy whom$_i$/Ø$_i$ I met t_i*). Within the theory of *wh*-movement outlined by Chomsky, the occurrence of an overt *wh*-phrase in [Spec, CP] provides a very strong argument for the application of *wh*-movement within a certain construction.

The question therefore arises whether Comparative Deletion constructions can also feature an overt *wh*-phrase. In the English examples discussed so far, no overt *wh*-phrase was attested. However, as was already observed in some of the earliest treatments of comparative constructions, certain dialects of American English feature an overt *wh*-phrase in Comp (Hankamer 1971; Bresnan 1972; see also Chomsky and Lasnik 1977; Huang 1977). This phenomenon is exemplified in (83):[28]

(83) a. John is taller than what Mary is. (Chomsky 1977b)
b. No one sold more Kool-Aid than what Jimmy sold. (Huang 1977)
c. I hope you can walk quicker than what you eat. (Huang 1977)
d. They're just as quick with their tongues as what you are.
(Jespersen 1954–1958, vol. III: 9.6)

Chomsky (1977b) interprets this phenomenon as providing overt evidence for the application of *wh*-movement in Comparative Deletion constructions.[29] He states that languages which do not feature an overt *wh*-phrase in the comparative

clause differ from those which do only in the application of a local deletion rule which changes the overt phrase into a null phrase. Chomsky's analysis, which takes *than/as* to be a preposition, is depicted in (84) (CP is used here instead of S'):

(84) John is taller [$_{PP}$ than [$_{CP}$ what$_i$ [$_{IP}$ Mary is t$_i$]]].
↓
ø

Den Besten (1978) observes similar phenomena in standard Dutch, where both options simultaneously occur:

(85) a. Jan krijgt nu al meer geld dan wat zijn vader vroeger verdiende.
John gets now already more money than what his father formerly earned
b. Jan krijgt nu al meer geld dan – zijn vader vroeger verdiende.
John gets now already more money than his father formerly earned

He observes, however, that in principle there are two logically possible analyses for (85a). One is along the lines suggested in Chomsky (1977b): the comparative clause is a sentential complement of the preposition *dan* 'than'. The other analyzes the complement of *dan* as a free relative clause (see chapter 27). Under the latter analysis, we would have in fact a phrasal comparative, where the comparative clause is embedded within a containing NP:[30,31]

(86) [$_{PP}$ dan [$_{NP}$ [$_{NP}$] [$_{CP}$ wat$_i$ [$_{IP}$ zijn vader vroeger t$_i$ verdiende]]]]

This free-relative analysis cannot be extended to the comparative clause in (85b), because free relatives normally do not allow a phonetically empty relativizer (*Jan verdient *(wat) zijn vader vroeger verdiende* 'John earns *(what) his father earned in the past'). Thus, comparative constructions like (85b) are assigned a structure like (87), in which the comparative clause functions as a complement to *dan/than*:

(87) [$_{PP}$ dan [$_{CP}$ Ø$_i$ [$_{IP}$ zijn vader vroeger t$_i$ verdiende]]]

Den Besten observes that under a unified structural analysis of (85a, b), one would expect a similar grammatical behavior of the two comparatives. He points out, however, that they display a different grammatical behavior. This suggests that (85a) and (85b) have different underlying structures (viz., (86) and (87), respectively). A first difference concerns the interpretation of free relative comparatives and 'normal' Comparative Deletion constructions. This difference can be illustrated on the basis of the following minimal pair:

(88) a. Jan heeft meer mensen uitgenodigd [$_{PP}$ dan [Ø$_i$ [$_{IP}$ hij vorig jaar t$_i$ had uitgenodigd]]].
John has more people invited than he last year – had invited

b. Jan heeft meer mensen uitgenodigd [$_{PP}$ dan [$_{NP}$ [$_{CP}$ die$_i$ [$_{IP}$ hij vorig jaar t_i had uitgenodigd]]]].
John has more people invited than who he last year had invited

The Comparative Deletion construction (88a) only implies that the number of people Jan invited exceeds the number of people he invited last year. The comparative free relative (88b), on the contrary, implies not only this but also that the set of people that Jan has invited includes the set of people that he invited last year.

A second difference is that free relative comparatives do not allow quantitative *-er* (see section 2.1) within the comparative clause, whereas Comparative Deletion constructions do:

(89) a. Jan heeft meer mensen uitgenodigd dan hij er vorig jaar had uitgenodigd.
John has more people invited than he of-them last year had invited
b. *Jan heeft meer mensen uitgenodigd dan die hij er vorig jaar had uitgenodigd.
John has more people invited than who he of-them last year had invited

In sum, there are reasons for assigning the comparatives (85a) and (85b) a different structural analysis, and hence, not interpreting them as having a unified structural analysis with the options of an overt or covert realization of the *wh*-phrase.

Given the above considerations for Dutch, Den Besten (1978: fn. 15) suggests that also the equivalent English facts in (83) should not be treated as providing overt evidence for the application of overt *wh*-movement within a Comparative Deletion construction. A free relative analysis along the lines sketched above for Dutch seems a plausible alternative.[32,33]

Although it is difficult, and maybe even impossible, to find overt evidence in the form of an overt *wh*-phrase for the application of *wh*-movement within Comparative Deletion constructions, it has been argued that there is indirect evidence for the presence of a *wh*-phrase in the Comp-position (i.e., [Spec, CP]) of the comparative clause. Den Besten (1978), for example, observes a correlation between the obligatory absence of the Complementizer *dat* and the presence of a *wh*-phrase in Comp (i.e., [Spec, CP]). The relevant minimal pair is given in (90):[34]

(90) a. Jan zal eerder Kees uitnodigen, *dan dat* ie Marie zal uitnodigen.
John will rather Kees invite, than that he Mary will invite
'It is rather the case that John will invite Kees than that he will invite Mary.'
b. Jan had meer mensen uitgenodigd dan (*dat) hij vorig jaar – had uitgenodigd.
John had more people invited than (*that) he last year – had invited

The comparative construction (90a) does not feature a gap (corresponding to the compared phrase) in the comparative clause; rather, the comparative clause itself represents the compared constituent.[35] As suggested by the well-formedness of the sequence *dan dat*, a complementizer can be present overtly in the sentential complement of *dan* as long as no movement to [Spec, C] has taken place. Contrary to (90a), the Comparative Deletion construction (90b) has a gap in the comparative clause, which corresponds to the compared constituent. As indicated, *dat* cannot be present. This suggests that *wh*-movement blocks the appearance of an overt complementizer (or, to put it differently, triggers the deletion of a lexical *wh*-phrase). As such, the impossibilty of an overt complementizer can be used as a diagnostic for the application of *wh*-movement within a comparative clause.[36,37]

French also provides indirect evidence for the presence of a *wh*-element in the [Spec, C] position of the comparative clause in Comparative Deletion constructions. This evidence comes from the phenomenon of Stylistic Inversion. As Kayne and Pollock (1978) have shown, inversion of the subject and the verb can only apply in a clause (CP) if a *wh*-element has been moved into the [Spec, C] position of that clause. Given this restriction on the application of Stylistic Inversion, we cannot but conclude that in the comparative clauses in (91) a fronted *wh*-phrase occupies the [Spec, C] position (see Milner 1978a):

(91) a. Pierre a plus de livres que n'en a Paul.
Peter has more of books than NEG of-them has Paul
'Peter owns more books than Paul does.'
b. Elle est aussi triste que l'était Jeanne hier.
She is as sad as it was Jeanne yesterday
'She is as sad as Jeanne was yesterday.'

Note at this point that French Stylistic Inversion also provides an argument in support of the successive cyclic application of *wh*-movement. As shown in (92a), inversion of the subject (*Paul*) with the verb (*était*) is possible in an embedded declarative clause selected by the main verb (*disais*) of the comparative clause. If inversion can only take place if during the derivation some *wh*-element has been moved to [Spec, CP], then we must conclude that in a comparative clause such as (92a), a *wh*-element has been moved successive-cyclically, i.e., via the [Spec, CP] of the most deeply embedded clause (see (92a)):

(92) a. Pierre est plus gentil que tu ne disais qu'était Paul.
b. Pierre est plus gentil [$_{CP}$ Ø$_i$ [$_{C'}$ que[$_{IP}$ tu ne disais [$_{CP}$ t$'_i$ [$_{C'}$ que [– était t$_i$ *Paul*]]]]]]

Summarizing, in certain languages, comparative clauses display an overt *wh*-element in Comp (i.e., [Spec, CP]). This may be interpreted as evidence for the application of *wh*-movement in Comparative Deletion constructions. One should not draw this conclusion too quickly, though: the comparative clause could be a

free relative and not an embedded clause as found in true Comparative Deletion constructions. It was further shown that the appearance of inversion effects in the embedded comparative clause hints at the application of *wh*-movement in Comparative Deletion constructions.

4 Lexical pro-forms and base-generated gaps: an interpretive approach toward comparative formation

Section 3 presented two major types of analyses of Comparative Deletion and Subdeletion, viz., (i) an analysis in terms of an unbounded deletion rule (Bresnan), and (ii) an analysis in terms of *wh*-movement (Chomsky). According to the first analysis, the understood compared phrase in the comparative clause is deleted (possibly over a long distance) under identity with the compared phrase of the matrix clause. According to the second analysis, the missing element in the comparative clause is a *wh*-trace which is A′-bound by an (empty) *wh*-phrase in Comp (i.e., [Spec, CP]), whose content can be locally identified by the head of the comparative construction. Importantly, under both analyses the emptiness of the gap within the comparative clause is the result of some transformational operation (deletion or *wh*-movement). In this section, a third, more interpretive, approach toward Comparative Deletion and Subdeletion will be discussed, viz., the one proposed in Pinkham (1982). As opposed to the deletion and movement analyses, this analysis assumes that the gap in the (sub)comparative clause is a (base-generated) empty pronominal element, which is licensed by means of an interpretive rule.

As shown in (93), Comparative Deletion constructions in English are characterized by the presence of a gap, which stands for the compared constituent of the comparative clause:

(93) a. These days, John has more money than he used to have –.
b. John is taller than I am –.

As Pinkham (1982) observes, the French equivalents of these sentences feature a lexical proform (*en*, *le*), which replaces (part of) the compared constituent. In (94a), the compared element *d'argent* of the *than*-clause has been replaced by the proform *en*; in (94b), the proform *le* replaces the compared adjective *grand*. Pinkham further argues that the use of these pronouns is obligatory when the compared element of the matrix clause and that of the comparative clause are identical:[38]

(94) a. Ces jours-ci, il a plus d'argent qu'il n'*(en) avait.
These days, he has more of money than he NEG (of-it) had
'These days, he has more money than he used to have.'

b. Jean est plus grand que je ne *(le) suis.
John is more tall than I NEG (it) am
'John is taller than I am.'

The proform *en* is interpreted as the quantitative clitic which also features in such clauses as (95a), where it replaces part of the noun phrase (say, N'), leaving the quantifier unaffected. The pro-form *le* is the same clitic as in (95b), where it replaces the adjective phrase except for the quantifier and the associated *que*-phrase (i.e., A'-replacement):

(95) a. Il en a beaucoup.
He of-it has a-lot
'He has a lot of it (e.g., money).'
b. (Tu trouves Jean intelligent?) Il l'est bien moins que mon frère.
(You find John intelligent?) He it is quite less than my brother
'(Do you find John intelligent?) He is less so than my brother.'

The only difference between (94), on the one hand, and (95), on the other, is that while the latter feature an overt quantifier within the quantified phrase, the former do not. Given the 'quantified reading' of the compared phrase (i.e., *x-much money, x-much intelligent*) in (94), it is assumed that there is a QP present within this phrase.

What makes the examples in (94a) and (94b) interesting is that they seem to pose a problem for analyses which make use of a rule which deletes the compared constituent of the comparative clause (e.g., Bresnan's unbounded deletion rule; Chomsky's local deletion rule, which removes the compared constituent after it has been moved to Comp). That is, there is no gap; therefore, comparative formation in French does not seem to involve a deletion rule. Of course, one might argue that the proforms are copies or resumptive proforms that are left behind after application of the Comparative formation rule. For Bresnan's analysis, this would mean that after the unbounded rule of Subdeletion has deleted the compared constituent of the comparative clause, a resumptive pronoun is inserted in the deletion site late in the derivation. For Chomsky's analysis, this would imply that after application of *wh*-movement, a pronominal copy is left behind in the position of the *wh*-trace. Pinkham argues against such a resumptive pronoun analysis on the grounds that in French no other rules applying over a variable (e.g., relative clause formation, question formation) employ this resumptive pronoun strategy:

(96) a. Paul a vu la fille que tu (*la) connais.
Paul has seen the girl that you (*her) knows
b. Qui est-ce que tu (*la) connais?
Who is it that you (*her) know
'Who do you know?'

In view of the above, Pinkham proposes an interpretive approach toward comparative formation, according to which an anaphoric proform (*en/le*) is base generated within the compared constituent of the comparative clause. This proform (N′) gets co-indexed with the N′/A′ of the 'antecedent' compared phrase (i.e., the N′/A′ of the head of the comparative clause) by means of the rule of comparative indexing. Besides the comparative indexing rule, which renders the proforms interpretable, Pinkham also proposes an indexing rule (called Quantifier Binding) which relates the phonetically empty QP of the compared phrase to the highest COMP of the comparative clause (i.e., the comparative subordinator: *than* in English; *que* in French). This binding relation identifies the locus of the compared constituent within the comparative clause.

Under this analysis, the sentences (94a) and (94b) are assigned the representations (97a) and (97b), respectively, after application of the two co-indexing rules:

(97) a. Ces jours-ci, il a [[[$_{QP}$ plus] [$_{N'}$ d'argent]$_i$] [qu$_j$'il n'avait [$_{NP}$ QP$_j$ [$_{N'}$ en]$_i$]]].
b. Jean est [[$_{AP}$ [$_{QP}$ plus] [$_{A'}$ grand]$_i$] [que$_j$ je ne suis [$_{AP}$ QP$_j$ [$_{A'}$ le]$_i$]]].

After co-indexing has taken place, the proform undergoes the syntactic rule of cliticization and ends up in its surface position. This yields the structures in (94).

Given the overall similarity between French and English, Pinkham extends this interpretive analysis of comparative constructions to English comparatives. The two languages only differ from each other with respect to the lexicalization of the anaphoric pronoun: French Comparative Deletion constructions contain overt pronominals such as *le/en*, whereas English uses empty base-generated pronominals, i.e., PRO in Pinkham's analysis.[39,40] The comparative constructions (93a) and (93b) get the following representations, respectively:

(98) a. These days, John has [[$_{NP}$ [$_{QP}$ more] [$_{N'}$ money]$_i$] [than$_j$ he used to have [$_{NP}$ QP$_j$ [$_{N'}$ PRO]$_i$]]].
b. John is [[$_{AP}$ [$_{QP}$ -er much] [$_{A'}$ tall]$_i$] [than$_j$ I am [$_{AP}$ QP$_j$ [$_{A'}$ PRO]$_i$]]].

In Subdeletion constructions, the rule of comparative indexing will not apply, since the compared element of the comparative clause is not identical (in kind) to that of the matrix clause. Thus, Quantifier Binding is the only interpretive rule which is operative in Subdeletion contexts, and it is this rule which unifies Comparative Deletion constructions and Subdeletion constructions. After Quantifier Binding has applied, we get such Subdeletion structures as (99):

(99) a. La table est [[$_{AP}$ [$_{QP}$ plus] [$_{A'}$ longue]] [qu'$_i$ elle n'est [$_{AP}$ QP$_i$ [$_{A'}$ large]]]].
The table is more long than she NEG is wide
'The table is longer than it is wide.'
b. Ces jours-ci, ils ont embauché [[$_{NP}$[$_{QP}$ plus] de femmes]
These days, they have hired more of women
[qu$_i$ 'ils n'ont embauché [$_{NP}$ [QP$_i$] [d'hommes]]]].
than they NEG have hired of men
'These days, they hired more women than they hired men.'

Pinkham's interpretive approach toward Comparative (Sub)deletion raises a number of questions. A first obvious question concerns the existence of empty noun phrases as structured NPs containing an anaphoric pronoun in the specifier position and an anaphoric pronoun for N'. If such 'layered' empty nominals are allowed by the grammar, one would expect them to occur in different structural environments as well. As Moltmann (1992) observes, however, other plausible structural environments do not permit the occurrence of a layered empty noun phrase: **John told [[the]$_i$ man$_j$] that Mary liked [[pro]$_i$ [pro]$_j$]*. Second, given the fact that Comparative Deletion (and also Subdeletion, according to Pinkham) respects Ross's island constraints and Subjacency, in general, Pinkham's binding approach toward comparatives leads to a model of grammar in which binding/construal rules and movement rules are no longer distinguished in terms of locality conditions. This is quite remarkable, given the fact that it is generally assumed that construal rules are not subject to island/subjacency effects. This is shown, for example, by the well-formedness of such sentences as *[$_{IP}$ They$_i$ thought [$_{IP}$ I said that [$_{IP}$ [PRO to feed each other] would be difficult]]]* (Chomsky 1981), where *they* can be the antecedent of PRO across more than one bounding node *IP*.

It should be pointed out that the occurrence of lexical proforms in comparative clauses is not necessarily incompatible with a *wh*-movement approach toward Comparative (Sub)deletion. Two possible movement approaches toward the derivation of a sentence like (94a) are possible (abstracting away from the question of whether the clitic is base generated in situ or undergoes syntactic movement; gap indicated by ""). According to the first analysis, it is only the QP which is moved to [Spec, CP]; i.e., Comparative Deletion, in that case, resembles Subdeletion in that a subpart of the compared constituent, viz., QP, gets removed (see Milner 1978a; Kayne 1981a; see also Bennis 1978 for a similar proposal for Dutch Comparative Deletion constructions featuring the quantitative clitic *er* – see (21b)). According to the second analysis, it is the entire compared constituent (i.e., NP) that is moved to [Spec, CP]; the only difference with English is that the fronted phrase contains a gap that is related to the clitic *en* (see Den Besten 1978 for Dutch comparative deletion constructions featuring *er*):

(100) a. . . . plus d'argent [QP$_i$ [qu'il n'en avait [$_{NP}$ [$_{QP}$ t$_i$] [$_{N'}$ Δ]]]].
b. . . . plus d'argent [[$_{NP}$ [$_{QP}$ t]$_i$ [$_{N'}$ Δ]] [qu'il n'en avait t$_i$]].

5 On the coordinate-like nature of comparatives

This section addresses the question of the nature of the relationship between the comparative clause and the matrix clause. In line with Bresnan's (1972) phrase structural analysis of the comparative clause, it is generally assumed that the comparative clause stands in a subordinate relation to the matrix compared constituent and hence also to the clause containing the 'antecedent' compared constituent:

(101) [More linguists [than I had ever met –]] were present at the party.

Comparative clauses standing in a sentence-final position are analyzed as extraposed constituents (see chapter 25). It is generally assumed that the clause extraposed from within the subject noun phrase gets adjoined to the matrix IP:

(102) $[_{IP}\ [_{IP}\ [_{NP}$ More linguists –] were at the party] [than I had ever met –]].

There has been some discussion in the literature concerning the categorial status of the comparative subordinator *than*. Bresnan (1972) treats *than* on a par with the declarative subordinator *that*: i.e., *than* is subsumed under the category Comp. Chomsky and Lasnik (1977) offer several considerations against Bresnan's interpretation of *than/as* as COMP. Following a suggestion by Hankamer (1973b) for phrasal comparatives, Chomsky (1977b: 88) analyzes the comparative subordinator *than* in (101) as a Preposition, which takes a clause as its complement.

Besides the above analysis, according to which the comparative clause stands in a subordinate relationship to the matrix clause, it has been proposed that (certain) comparative structures instantiate syntactic coordination. According to such an analysis, the 'antecedent' clause and the comparative clause stand in a 'symmetric' relation to each other, in the sense that one is not hierarchically superior to the other.[41] Although such a coordination analysis is not very plausible for a structure like (101), in which the comparative clause occupies a position embedded within the matrix clause, it is defensible for those comparative structures in which the comparative clause surfaces in clause-final position, as in (102). Rather than interpreting these sentence-final clauses as extraposed subordinate clauses, one might analyze them as (base-generated) right conjuncts of a coordinate structure in which *than/as* functions as the coordinating conjunction. Schematically:

(103) $[_{CP/IP}\ [_{CP/IP}\ \ldots\ ]$ than/as $[_{CP/IP}\ \ldots\ ]]$

In what follows, some arguments in support of *than/as* as a coordinator will be presented. The discussion will initially focus on comparative clauses involving Subdeletion.

A first argument in support of a coordinate relationship between the antecedent clause and the comparative clause comes from Gapping, a rule which deletes strings including a finite verb in the right conjunct of a coordinated structure under identity with the verb(s) in the left conjunct (Huang 1977; Thiersch 1982; Corver 1990). As shown by the contrast between (104a) and (104b), this deletion rule only applies in clauses that are in a coordinate relationship to the preceding clause (Jackendoff 1971):

(104) a. John kissed Mary and Sue – Bill.
b. *John kissed Mary when Sue – Bill.

Observe now that Gapping is permitted in the comparative clause, suggesting that the antecedent clause and the comparative clause form a coordinate structure:[42]

(105) John kissed more girls than Mary – boys.

As shown in Huang (1977), properties of Gapping attested in standard coordinate constructions are also found in Subdeletion constructions (see also Hendriks 1995 for Dutch). First, as shown in (106), Gapping cannot apply in the right conjunct to a clause that is embedded within another clause. The same restriction holds for Gapping in comparative clauses:

(106) a. John wore the top hat and (*I believe that) Mary – the suspenders.
b. Felix knows more Greek than (*I believe that) Max – Latin.

Second, as observed by Bresnan (1975), the sequence *take advantage* behaves as a verbal unit (a complex verb) with respect to Gapping in coordinate structures; that is, Gapping does not remove just the verb *take*:

(107) John took advantage of Mary, and Mary – (*advantage) of John.

The same restriction holds for the sequence *take advantage* showing up in subcomparative clauses:

(108) John took more advantage of Mary than Mary – (*advantage) of John.

Finally, as observed in Ross (1970a), whenever Gapping applies to a string of verbs, it cannot delete a verb unless all the verbs to its left are deleted as well. This restriction is illustrated by the paradigm in (109):

(109) I want to try to begin to write a novel and
a. Mary – to try to begin to write a play.
b. Mary – to begin to write a play.
c. Mary – to write a play.
d. Mary – a play.
e. *Mary wants – a play.
f. *Mary wants – to begin – a play.

Huang observes that exactly the same deletion pattern holds for verb strings in comparative clauses:

(110) I want to try to begin to grow more cauliflowers than
a. Mary – to try to begin to grow carrots.
b. Mary – to begin to grow carrots.
c. Mary – to grow carrots.
d. Mary – carrots.
e. *Mary wants – carrots.
f. *Mary wants – to begin – carrots.

In sum, Gapping, a rule whose application is restricted to coordinate environments, occurs under exactly the same conditions in comparative clauses displaying Subdeletion. This strongly suggests that the antecedent clause and the comparative clause stand in a coordinate relationship with respect to each other.

A second argument that the subcomparative clause stands in a coordinate relation to the antecedent clause comes from Right Node Raising, a phenomenon which is only attested in coordinated structures:

(111) a. Mary liked –, but John hated [the man with the red beard].
b. *Mary liked –, although John hated [the man with the red beard].

As shown in (112), Right Node Raising is also possible in Comparative Subdeletion constructions (Corver 1993; Hendriks 1995). This again favors an analysis in which the (sentence-final) comparative clause is treated as the right conjunct of a coordinate structure:

(112) More women like –, than men hate [the man with the red beard].

A third argument supporting a coordination analysis of Subcomparative constructions is the fact that these comparatives exhibit the same behavior with respect to subextraction operations as coordinate structures do (Huang 1977; Corver 1990, 1993). As Ross (1986) stated in his Coordinate Structure Constraint (CSC), no element contained within a conjunct may be moved out of that conjunct. As an exception to this constraint, he added that extraction is permitted if the same element is removed from both conjuncts, that is, in an Across-The-Board (ATB) fashion. The CSC and the ATB-exception to this constraint are illustrated in (113a) and (113b), respectively:

(113) a. *What kind of vegetable do women like – and men detest Brussels sprouts?
b. What kind of vegetable do women like – and men detest –?

Notice now that exactly the same movement effects are found in subcomparative constructions, a fact that is again compatible with a coordination analysis of subcomparative constructions:

(114) a. *What kind of vegetable do more women like – than men detest Brussels sprouts?
b. What kind of vegetable do more women like – than men detest –?

Another characteristic of coordinate structures is what might intuitively be called the property of 'parallelism'. Although the exact nature of these effects is often ill-understood, it is sufficient to observe that parallelism effects are found at various levels in coordinate structures. ATB-extractions, for example, typically apply to constituents occupying parallel structural positions within the two coordinated clauses (cf. Williams 1978).

Interestingly, parallelism effects have also been claimed to exist in Subdeletion constructions. George (1980), for example, observes a contrast between the a-examples in (115–116) and the b-examples. In the former, the compared phrases occupy parallel structural positions (viz., the direct object position in (115a) and the subject position in (115b)), whereas in the latter, they occupy different (i.e., non-parallel) structural positions:

(115) a. John killed more Englishmen than the Inquisition burned – Frenchmen.
b. *John killed more Englishmen than – Frenchmen fought the Inquisition.

(116) a. More Frenchmen revered John than – Englishmen adored Sir Thomas.
b. *More Frenchmen revered John than Sir Thomas More converted – Englishmen.

Similar contrasts are observed in Pinkham (1982):

(117) a. More women have been hired than men were supposed to be (hired).
b. ?More women have been hired than they were supposed to hire men.

As argued by Bresnan (1976a), and also by Pinkham, this parallelism requirement might also be at the basis of the decay in acceptability of such constructions as (118) (see section 3):

(118) a. This desk is as high as it is wide.
b. ?This desk is as high as they believe that Bill claims it is wide.

Although the two compared (adjective phrase) constituents occupy parallel structural positions, they differ in their level of embedding.

In view of the above considerations, it seems fair to conclude that Subcomparative constructions have coordinate-like properties. Note at this point that the awkwardness or even ungrammaticality of Subdeletion in contexts where the comparative clause is very clearly embedded in (and, hence, subordinate to) the 'antecedent' clause is not unexpected, if comparative clauses involving Subdeletion are in fact clauses which can only occur in a coordinate relationship with a preceding clause (cf. Corver 1990, 1993; Moltmann 1992). Thus, in (119a), as opposed to (119b), the comparative clause is obviously in a sentence-internal, 'non-extraposed' position, as it is followed by the indirect object PP of the matrix clause. In (120), the comparative clause is moved along with the *wh*-phase *how many* to [Spec, CP]. Being part of the *wh*-phrase, the comparative clause cannot possibly stand in a coordinate relationship with the matrix clause:

(119) a. *John gave more books than he had given – pencils to Sue to his best friend Peter.
b. John gave more books to Sue than he had given – pencils to his best friend Peter.

(120) *How many more records than Sue owns books will John buy?

If Subdeletion constructions obligatorily instantiate coordination structures, then it seems plausible to interpret the clause-introducing element *than/as* as a coordinating conjunction (rather than a prepositional subordinator). The question naturally arises why subcomparison should require a coordinate structure. One possibility discussed in Corver (1993), who rejects a (syntactic) *wh*-movement approach toward Subdeletion, is that a coordination configuration is required for a Subdeletion construction like (121a) in order to be able to interpret via ATB-binding the QP-gap in the comparative clause as a variable at LF. That is, starting from a coordinate structure as in (121b) for a sentence like (5), the base-generated gap within the subcomparative clause is locally A'-bound in an ATB-fashion by the quantifier of the antecedent clause (i.e., the left conjunct) that has been raised at LF and adjoined to IP:[43]

(121) a. John met $[_{NP}[_{QP}$more] biologists] than I met $[_{NP}[_{QP}\ e]$ biologists].

b. more x_i | $[_{IP}$ John met $[x_i$ biologists]] |
| than |
$|_{IP}$ $[_{IP}$ I met $[x_i$ linguists]] |

Turning now to Comparative Deletion, we can observe that this phenomenon differs from Subdeletion in being permitted to occur in truly subordinate comparative clauses:

(122) a. John gave more books than he had given – to Sue to his best friend Peter.

b. [How many more records [than Sue owns –]] will he buy –?

In fact, coordination of the CP *he had given to Sue* with the NP *more books* would be impossible, since it would violate the Law of the Coordination of Likes. That is, the two strings do not have the same syntactic and semantic function and hence cannot be analyzed as standing in a coordinate relationship to each other. The same holds for *how many more records* and *Sue owns* in (122b). Notice further that in this example, the head of the relative clause and the comparative clause have been fronted together, with the result that the comparative clause is structurally subordinate to the head of the comparative clause.

The question which now arises is whether sentence-final comparative clauses featuring Comparative Deletion display properties characteristic of coordinate structures. At several places in the literature, it has been observed that Comparative Deletion constructions exhibit coordination-like properties. Bresnan (1977), for example, points out that Comparative Deletion constructions resemble coordinate constructions in permitting relativization when there are parallel (i.e., ATB) applications into every clause (cf. also Napoli 1983).[44] This is exemplified in (123a). Napoli (1983) observes that Comparative Deletion constructions allow for Right Node Raising, as in (123b). Emonds (1985) further points out that the phenomenon of Gapping is found in comparative clauses featuring comparative deletion; see, for example (123c), where the infinitival verb *read* has been deleted in the comparative clause:

(123) a. a man who Mary called – an idiot as often as June called – a cretin
b. More people admire than love [this woman I met yesterday in the park].
c. Fred can read newspapers as quickly as Jim can – letters.

Although certain coordination-like characteristics of Comparative Deletion constructions have been observed, it has not been investigated in any systematic and detailed way (though see Moltmann 1992). The same essentially holds for Subdeletion constructions. One of the puzzles is that a comparative clause sometimes displays coordinate and subordinate characteristics at the same time. In the Dutch example (124), for example, ATB-extraction of *waar* has taken place from the main clause and the comparative clause, which suggests a coordinate relationship between the two clauses. At the same, the comparative clause has the subordinate characteristic of having the finite verb (the second *heeft* in (124)) in final position (i.e., not in the Verb Second position characteristic of root clauses; that is, the position occupied by *heeft* in the matrix clause):

(124) Waar$_i$ *heeft* Jan [$_{NP}$ evenveel foto's [$_{PP}$ t$_i$ van]] gezien als Marie [$_{NP}$
What has John as-many pictures – of seen as Mary
tekeningen [$_{PP}$ t$_i$ van]] *heeft* gekocht.
drawings – of has bought
'What did John see as many pictures of as Mary saw drawings of?'

Given this mixed behavior of the comparative clause, Moltmann (1992) argues that comparative constructions have two structural representations simultaneously: one in which the comparative clause stands in a coordinate relationship with the 'matrix' clause, and one in which it stands in a subordinate relationship to this clause.[45] The coordinate structural representation encodes the coordinate properties, whereas the other structure represents the subordinate characteristics. Another line of approach would be to say that an alleged diagnostic for subordination or coordination is not a true diagnostic. In Hendriks (1995), for example, it is argued that the Verb Second property is not a true diagnostic for subordination.

Thus, although it seems fair to state that comparative constructions display coordinate-like behavior, it is obvious that more research is needed to substantiate this claim (for recent discussion, see Lechner 1999).

6 Multiple Comparative Subdeletion

In the previous section, it was argued that *than* in Subdeletion constructions behaves like a coordinator and that the two clauses containing a compared constituent stand in a coordinate relationship with each other. Thus far, we have only seen comparative constructions containing one compared constituent in each clause. As exemplified in (125), it is also possible to have more than one

compared constituent in each of the two clauses (cf. von Stechow 1984; Corver 1990, 1993; Moltmann 1992):

(125) More women ate more sandwiches than men ate bananas.

This phenomenon of multiple comparative Subdeletion is interesting for a number of reasons. First of all, it seems to argue against an analysis according to which the clause-final position of the *than*-clause is derived by extraposition; the problem for an extraposition analysis is that there is not a unique source position for the 'extraposed' clause. A coordinate-like analysis seems more plausible and is supported by the possibility of gapping:

(126) More women ate more sandwiches than men bananas.

Second, as pointed out in Corver (1993), multiple subdeletion is problematic for a *wh*-movement analysis of Subdeletion (Chomsky 1977b), for the simple reason that it would involve multiple *wh*-movement to [Spec, CP]. That is, if subcomparative formation involves *wh*-movement of an underlying quantifier to [Spec, CP], then multiple subdeletion is problematic since it would involve multiple *wh*-movement to [Spec, CP]. It is impossible, however, for a language like English to have more than one *wh*-element in [Spec, CP] (**I don't know who where John will meet*).[46]

Third, multiple Subdeletion instantiates another asymmetry with Comparative Deletion; multiple Comparative Deletion is impossible (Corver 1990, 1993; Ishii 1991):[47,48]

(127) a. More men sold more apples than [– women] had bought [– pears].
b. *More men sold more apples than – had bought –.

In fact, under a *wh*-movement analysis of Comparative Deletion, as in Chomsky (1977b), the ill-formedness of (127b) directly follows from the fact that multiple *wh*-movement to [Spec, CP] is impossible in English.

Much of the syntactic analysis of Multiple Subdeletion will depend on the semantics of this construction. As von Stechow (1984) has pointed out, a multiple Subdeletion construction like (125) does not involve a simple comparison of the number of sandwiches and the number of bananas, on the one hand, and the number of women and the number of men, on the other. It rather involves a comparison of (i) the number of women that ate sandwiches to the number of men that ate bananas (requiring that the first outnumbers the second), and (ii) the number of sandwiches eaten by women to the number of bananas eaten by men (with the result that the first outnumbers the second).[49]

This interpretation of multiple Subdeletion as comparison at the clausal level can be captured quite easily by those syntactic analyses which take Subdeletion to instantiate comparison at the event level (i.e., between the event described by the matrix clause and that described by the comparative clause) rather than

comparison between individuals. Such an analysis was discussed in section 2.3 (see especially Ishii 1991; Moltmann 1992). According to this analysis, the multiple Subdeletion construction in (125) in fact involves a single comparison of two events, viz., the number of events at which women ate sandwiches and the number of events in which men ate bananas, where the former outnumbers the latter. This event comparison is syntactically encoded by the presence of an 'adverbial' (i.e., VP-modifying) QP, which quantifies over the events rather than over individuals participating in the event. Schematically:

(128) More women ate more sandwiches [than men ate bananas MORE].

7 Comparative Deletion and Subdeletion: one and the same phenomenon?

In the previous sections, various grammatical properties of Comparative Deletion and Subdeletion were discussed. In some cases, the two comparative construction types seemed to display similar behavior (e.g., the syntactic presence of a non-overt compared element, the obeying of certain locality constraints), while in other cases they seemed to differ in their syntactic behavior (e.g., the possibility of multiple Subdeletion vs. the impossibility of multiple Comparative Deletion). A question which has always been central in research on Comparative Deletion and Subdeletion constructions is about their uniformity: should the two phenomena be unified and accounted for in terms of a single syntactic rule of comparative formation? Or should one take the opposite view and assign different syntactic analyses to them? This section gives an overview of some of the positions taken on this issue, making use of facts discussed in previous sections.

The hypothesis that Comparative Deletion and Subdeletion involve a single rule of comparative formation is most fully developed in Bresnan (1973b, 1975). Her (unbounded) rule of Subdeletion (56) unifies the phenomena of Comparative Deletion and Subdeletion. They are considered the derivational output of one and the same syntactic rule (cf. section 3.1). The same holds for Chomsky's (1977b) analysis of comparatives, at least if one adopts an analysis of Subdeletion in terms of movement of a *wh*-feature (cf. section 3.3). Pinkham's (1982) interpretive approach toward comparative formation also provides a unified analysis of Comparative Deletion and Subdeletion; both involve quantifier binding of the empty QP within the compared phrase (see section 4).

If one adopts Chomsky's (1977b) alternative analysis of Subdeletion in terms of some local operation deleting QP, Comparative Deletion and Subdeletion are no longer considered to be instantiations of the same phenomenon. (Other) advocates of a non-unified approach toward Comparative Deletion and Subdeletion are Taraldsen (1978), Grimshaw (1987), and Corver (1993). While these three analyses seem to agree on an analysis of Comparative Deletion in terms of syntactic *wh*-movement (à la Chomsky 1977b), they differ in their analysis of Subdeletion. Taraldsen essentially states that the comparative clause is a clause without

any gap and without any quantifier syntactically representing the amount of the compared phrase (cf. section 2.3). Grimshaw, building on Taraldsen's analysis, argues that the comparative clause in Subdeletion environments is characterized by the presence of a phonetically empty extent-modifier which has scope over the compared phrase (cf. section 3.2). Corver, finally, treats the comparative clause in Subdeletion constructions as a right conjunct containing a base-generated QP-gap, which gets interpreted in an ATB-fashion by being bound by the quantifier of the left conjunct that has undergone QP-raising at LF (see section 5).

How can we decide between the unified and the non-unified approach toward Comparative Deletion and Subdeletion? In (129), an overview is given of some of the similarities and differences between Comparative Deletion and Subdeletion that have been noted in the literature:[50]

(129)

	Comparative Deletion:	**Subdeletion**:
a. Requires a gap	Yes	Yes
b. Gap can be embedded in an extraction island	CNPC: no (58a) CSC: no (58b) Sentential Subject C: no (58c) *Wh*-island: no (58d) Adjunct Condition: no (58e) Possessor phrase: no (cf. note 24) PP-island: no (80a)	CNPC: no (59a) CSC: no (59b) Sentential Subject C: no (59c) *Wh*-island: no (59d) Adjunct Condition: no (59e) Possessor phrase: yes (78) PP-island: yes (79)
c. Gap can be long-distance bound	Yes (49), (75d)	Yes/no (52), (75c)
d. Displays *that*-trace effect	Yes (77b)	No (77a)
e. Displays crossover effects	Yes (62)	Yes (63)
f. Can apply in sentence-internal (i.e., non-extraposed) clauses	Yes (69a), (70a)	No (69b), (70b)
g. Blocks contraction	Yes (19b), (20b)	Yes (Bresnan), no (Grimshaw) (17b), (18b)
h. Multiple comparative formation	No (127a)	Yes (127b)

The question is, of course, how to interpret these differences. Are there independent, non-syntactic (e.g., performance) reasons for these contrasts, so that one

could maintain a unified syntactic analysis of the two comparative construction types? Or should the differences be attributed to the fact that distinct syntactic rules are at the basis of Comparative Deletion and Subdeletion? In connection with the asymmetries related to (129c, f), Bresnan (1976a) hints at the first way of dealing with the noted asymmetries. The decreased acceptability of Subdeletion in embedded contexts is related to the non-syntactic factor that Subdeletion constructions (as opposed to Comparative Deletion) involves a comparison of 'contrasts'; i.e., the compared constituents are contrasted with each other. This additional complicating semantic factor may explain the observed decay in acceptability. She also hints at the possibility that Subdeletion constructions are harder to parse, because the Subdeletion site is not as obviously marked syntactically as in the case of Comparative Deletion. Even though this account in terms of performance factors may be applied to asymmetries such as those in (129c, f), it is quite clear that the asymmetries in (129b, d, g, h) are less easily reducible to performance factors.

Two recent studies on Comparative Formation, Izvorski (1995) and Kennedy (2002), take the position that Comparative Deletion and Subdeletion are the same in their syntactic properties; i.e., they involve the same type of elements and are subject to the same syntactic operations. To start with Izvorksi, she argues that Subdeletion constructions, just like Comparative Deletion constructions, involve *wh*-movement. Importantly, though, she assumes that the term targeted by movement in subcomparatives is not a prehead (i.e., left-branch) modifier (i.e., a functional degree-head), but rather a (phonologically empty) adjoined degree/amount phrase of the type *in what quantity/to what degree* (see the proposal by Grimshaw 1987, discussed in section 2.3). A sentence like (130a) is then assigned the derived structure in (130b):

(130) a. John met more linguists than I met biologists.
b. John met more linguists than [in what quantity]$_i$ I met biologists t_i.

As Izvorski notes, *wh*-movement of a degree-amount-denoting adverbial is possible:

(131) a. [In what quantity] did Mary eat apples?
b. We know [in what quantities] Mary used to drink wine.

If this adjunct analysis is adopted, the *wh*-movement analysis of Subdeletion constructions no longer faces the 'left-branch extraction puzzle' (i.e., why would extraction of a left-branch degree/amount term be possible in Subdeletion constructions, but not, e.g., in question formation constructions – cf. (53)?). The sensitivity to island constraints such as the CNPC, Sentential Subject Condition, etc. (cf. (129b)) obviously still follows: the amount adverbial is fronted to the left periphery of the (sub)comparative clause, and the *wh*-trace left behind cannot be located inside an island. So the ill-formedness of (59a), repeated here as (132a), follows straightforwardly: the amount adjunct is moved from its adverbial

position and extracted out of a complex NP, which leads to a violation of the CNPC (and consequently Subjacency); cf. (132b):

(132) a. *John bought more oranges than we had discussed [a plan [to buy apples]].
b. John bought more oranges than [in what quantity]$_i$ we had discussed [a plan [to buy apples t_i]].

Izvorksi further tries to show that apparent 'problems' for a unified analysis of Comparative Deletion and Subdeletion (e.g., the absence of a *that*-trace effect, the existence of multiple subcomparatives) can be accounted for under her *wh*-movement analysis. To give an example: the absence of a *that*-trace effect with subcomparatives directly follows from the fact that the presence of overt complementizers does not have any effect on adjunct extraction (cf. Lasnik and Saito 1984).

Kennedy (2002) also takes the position that Comparative Deletion and Subdeletion are the same in their basic syntactic properties. They both involve A'-movement of the compared constituent to the specifier of the clausal complement of *than* (i.e., [Spec, CP]). A crucial assumption in his analysis is that the two constructions differ in when this movement applies. He claims that Comparative Deletion involves overt movement of the compared constituent to [Spec, CP] of the comparative clause plus deletion under identity with the head of the comparative. The overtness of the movement operation implies that the movement is represented (i.e., visible) at PF (and typically at LF as well). As opposed to Comparative Deletion, Subdeletion involves covert movement of the compared constituent to [Spec, CP] of the comparative clause. This means that the A'-movement is only visible at LF. A consequence of this proposal is that Comparative Deletion and Subdeletion have structurally identical LF representations (but distinct PF representations). This is illustrated in the pair (133–134):[51]

(133) a. John met more linguists than I met.
b. John met more linguists than [$_{CP}$ [$_{DP}$ D^o_C linguists]$_i$ I met t_i]. (LF)

(134) a. John met more linguists than I met biologists.
b. John met more linguists than [$_{CP}$ [$_{DP}$ D^o_C biologists]$_i$ I met t_i]. (LF)

Kennedy notes that the observed similarities between Comparative Deletion and Subdeletion, such as sensitivity to extraction islands and crossover effects, are phenomena that have typically been analyzed as involving constraints on LF representations. If the two types of comparatives have structurally identical LF structures, it follows that they should display the same range of (un)acceptability in these contexts. Kennedy further argues that the properties that differentiate Comparative Deletion and Subdeletion (e.g., P-stranding, *that*-trace effects, and contraction) are phenomena that involve conditions on overt movement only.

To give an example: P-stranding is impossible in overt syntax in many languages (cf. (135a)). Application of covert movement to a *wh*-in-situ phrase is possible, though (cf. (135b)):

(135) a. *Wie_i heeft Jan [$_{PP}$ op t_i] gerekend. Dutch
Who has John on ? counted
b. Wie heeft er [$_{PP}$ op [wie]] gerekend?
Who has there on whom counted
'Who counted on whom?'

To illustrate how Kennedy's analysis accounts for the contrast in PP-island sensitivity (cf. (129b)), consider again the Comparative Deletion construction in (80a) and the Subdeletion construction in (79):

(80) a. *Jan heeft [$_{PP}$ voor [$_{NP}$ meer clubs]] gevoetbald dan hij [$_{PP}$ voor –]
John has for more clubs played-soccer than he for
getennist heeft.
played-tennis has

(79) Jan heeft [$_{PP}$ voor [$_{NP}$ meer voetbalclubs]] gevoetbald dan hij [$_{PP}$voor [$_{NP}$–tennisclubs]] getennist heeft.
John has for more soccer teams played-soccer than he for tennis clubs played-tennis has

The Comparative Deletion construction in (80a) involves overt A'-movement of the compared constituent (*x-many clubs*) to the [Spec, CP] of the comparative clause (with subsequent deletion applied to it). Since overt extraction is sensitive to the PP-island constraint, the sentence is ruled out. In the Subdeletion construction in (79), the compared constituent raises to [Spec, CP] at LF. Since covert movement is not sensitive to the PP-island constraint, the sentence is well-formed. Thus, in both types of comparatives A'-movement applies, which means: uniformity. The different behavior with respect to the PP-island condition is explained in terms of a derivational distinction: application of A'-movement in overt syntax (Comparative Deletion) or covert syntax (Subdeletion).

8 Conclusion

In this chapter, several aspects of the syntax of Comparative Deletion and Subdeletion have been discussed. The aim of this chapter was to give an impression of the various thoughts on these constructions, as they can be found in the generative literature. On the whole, there seems to have emerged a certain amount of consensus on the right analysis of the phenomenon of Comparative Deletion; that is, the majority of analyses follow Chomsky's (1977b) *wh*-movement approach, according to which the compared constituent of the comparative

clause undergoes *wh*-movement to Comp (i.e., [Spec, CP]); see Lechner (1999), though, for a different approach. There is much more controversy about the correct analysis of Subdeletion. Is there really a gap within the subcompared phrase? And if there is a gap, where is it located in the syntactic structure? Also, what rule is 'responsible' for the gap in the subcompared phrase? And, finally, is this rule the same type of computational operation as is at the basis of Comparative Deletion constructions? Clearly, interesting answers have been given to these questions. It is also clear, however, that many issues are still open to debate.

NOTES

I would like to thank two anonymous reviewers for insightful comments and suggestions. I take full responsibility for any shortcomings that remain in this chapter after all of the helpful input.

1 In the discussion of comparatives, no further distinction will be made between comparatives of equality (so-called equative constructions (as in (i)) and inequality (as in (iia, b)):

(i) John met as many linguists as I met.
(ii) a. John met more linguists than I met.
b. John met fewer linguists than I met.

2 In McCawley (1988), it is suggested that the degree element contained within the QP is the (demonstrative) pronominal degree word *that* (i.e., *that many linguists*). Chomsky (1977b) proposes that the degree word is interrogative and represents the degree element as *wh* (i.e., *wh-many linguists*).

3 For discussion of the semantics of comparative constructions, see Klein (1980); von Stechow (1984); Heim (1985); Kennedy (1997b); Lechner (1999).

4 As noted in Bresnan (1976c: fn. 10), the sequence *x-many linguists* is not strictly identical to *x-many linguists*. The degree element (DegP) of the compared phrase to be deleted is a designated element *x* (or in Bresnan's description, Δ), while that of the 'antecedent' compared constituent is *-er*. Thus, the notion of structural identity should be replaced by the notion of structural non-distinctness, to permit deletion of structures dominating designated elements under 'identity' to lexically saturated structures. Just as in Bresnan's articles, the notion of structural identity will be used here.

5 In this chapter, the precise phrase-structural analysis of the compared phrase will be abstracted away from. Essentially, Bresnan's analysis, according to which the QP occupies the specifier of the compared phrase (e.g., noun phrase or adjective phrase), will be followed. Her analysis will be slightly adapted to more common versions of X-Bar Theory (Chomsky 1970). More precisely, Bresnan assumes QP to be a sister of AP and daughter of AP'. She also uses the label Det for the Degree element which specifies Q and takes this element to be a left-branch sister of Q. In this chapter, the structure of the compared noun phrase and the compared adjective phrase will be as in (ia) and (ib), respectively:

(i) a. $[_{NP}\ [_{QP}\ [_{DegP}$ -er/as$]\ [_{Q'}$ many$]]\ [_{N'}$ books$]]$
b. $[_{AP}\ [_{QP}\ [_{DegP}$ -er/as$]\ [_{Q'}$ much$]]\ [_{N'}$ tall$]]$

In Bresnan's analysis, a comparative form like *more* (as in *more books* and *more interesting*) is derived by a transformational operation which attaches the comparative morpheme *-er* to the quantifier, yielding *many+-er* and *much+-er*. These are spelled out as the suppletive form *more*.

In recent analyses of nominal and adjectival phrase structure, the lexical part of the phrase is often analyzed as being contained within the functional structure of the phrase. For the nominal domain, this yields a structure like (iia) (see among others Abney 1987; Ritter 1991) and for the adjectival domain, a structure like (iib) (see Abney 1987; Corver 1991a, 1997a):

(ii) a. $[_{DP}$ D $[_{QP}$ Q $[_{NP}$ N]]]
b. $[_{DegP}$ Deg $[_{QP}$ Q $[_{AP}$ A]]]

6 Under an analysis in which *-ly* adverbs are reduced to adjectives (Emonds 1976; see also chapter 4), (9b) and (10b) would be instances of compared adjective phrases as well.

7 For discussions about the syntax of phrasal comparatives, see, among others, Pinkham (1982); Hoeksema (1983); Napoli (1983). It should be noted that not all comparative structures in which the lexical item *than* or *as* is followed immediately by a non-clausal constituent qualify as phrasal comparatives; e.g., comparatives with VP remnants like: *I introduced [VP Sally more often to linguistics] than [VP Bill to biologists].*

8 Not all QPs are licit in this context:

(i) This mouse weighs *most/*no ounces.

9 Grimshaw (1987) observes that in certain contexts, a measure verb can take a "bare" measure phrase as its sister. Observe that in these contexts the measure nominal tends to be focused:

(i) a. You can't pick that one up – it weighs ounces.
b. This one's easy to pick up – it only weighs ounces.

10 Besides quantitative *er*, Dutch has three other uses of the clitic *er*: prepositional *er*, as in (ia), locative *er*, as in (ib), and expletive *er*, as in (ic). See Bennis (1986) for extensive discussion of the various types of *er*:

(i) a. Jan rekende $[_{PP}$ erop].
John counted it on
'John counted on it.'
b. Jan woonde er.
'John lived there.'
c. Er was eens een koning.
'There was once a king.'

11 See Pinkham (1982) for an elaborate discussion of the parallel behavior of quantitative *en* in comparative environments and quantitative *en* in non-comparative environments.

12 In fact, Bresnan (1975) is aware of these asymmetries between 'normal' subcomparatives and *of*-comparatives. She attributes the contrast to Kuno's (1973a) Clause Nonfinal Incomplete Constituent Constraint.

13 As pointed out by an anonymous reviewer, another test distinguishing between the two analyses for *of*-comparatives (Subdeletion vs. Comparative Deletion) could be based on the parallelism constraint on Subdeletion (George 1980; see the discussion of (115) and (116)). If *of*-comparatives were instances of Subdeletion, mixed grammatical functions for the comparative NP and the Subdeletion site should lead to ungrammaticality. This expectation seems to be borne out:

(i) *More of the linguists were invited by Sam than I invited of the biologists.

14 Recent analyses of bare plurals (Delfitto and Schroten 1991; Longobardi 1994), making use of the DP-hypothesis, provide syntactic arguments for the presence of an empty determiner-like element (D) within bare plural noun phrases.

15 As pointed out by an anonymous reviewer, a question which arises for this analysis is why the Adverb Phrase cannot be overt:

(i) *I met more linguists than you met biologists [to a certain/great extent].

16 Ishii further assumes that the adverbial phrase undergoes syntactic *wh*-movement to [Spec, CP]. This (adverbial) *wh*-analysis of Subdeletion makes this phenomenon more similar to Comparative Deletion, which Ishii, following Chomsky (1977b), analyzes as *wh*-movement of the compared constituent of the comparative clause:

(i) I met more linguists $[_{PP}$ than $[_{CP}$ $\emptyset_i$ $[_{IP}$ you met biologists $[_{AdvP}$ $t]_i]]]$.

There is an important interpretive difference, though, between Subdeletion and Comparative Deletion: the former involves comparison of the event expressed in the matrix clause with that of the comparative clause; the latter, on the contrary, involves comparison of individuals.

Interestingly, Ishii's adverbial analysis of Subdeletion is to a certain extent similar to Obenauer's (1984/1985) treatment of so-called QAD-structures (i.e., Quantification At a Distance), like (ii):

(ii) J'ai beaucoup conduit de camions.
I have a-lot driven of trucks
'I drove many trucks.'

Obenauer argues that the quantified interpretation of the direct object (i.e., *[e de camions]*) is obtained through quantification of the verb meaning (*conduit*), i.e., the verb's ability to lend itself to an 'X TIMES V' interpretation when combined with the preverbal (i.e., adverbial) QP. Thus, quite similarly to Ishii's analysis of Subdeletion in English, Obenauer's analysis of QAD-structures involves quantification over the event denoted by the verb. The interpretation of (ii) is that the event of my driving a truck took place many times.

17 See Kennedy and Merchant (2000) for a recent discussion of the syntax of attributive comparative deletion. On the basis of data from a variety of languages, they derive two empirical generalizations: (i) that there is a direct correlation between left-branch extractions in interrogatives and the acceptability of attributive Comparative Deletion constructions, and (ii) that languages in which left-branch extractions are impossible can 'bypass' this constraint by eliding a constituent that includes the extraction site.

18 As pointed out by an anonyomous reviewer, a closer adverbial paraphrase for (48a), which parallels (47), would be: *Mary has a good ear more than she has a voice*.

19 Pinkham formulates a number of conditions (unified under the label 'equivalence requirement') which must be satisfied in order for semantic restructuring to take place. A first restriction is that the attributive adjective must be of a certain type, e.g., *good*, *successful*, *convincing*. Other restrictions are that the action is understood as a general property rather than a specific occurrence and that the verb denotes a creative process.

20 According to Chomsky (1977b), removal out of a 'picture noun phrase' can only take place after the *of*-phrase has been extraposed or reanalyzed out of the NP. Thus, subextraction applies to the extraposed phrase. Note, however, that for an analysis of Subdeletion in terms of subextraction of a *wh*-feature, the subextracted *wh*-element would still pass two bounding nodes, viz., NP and S, and hence, strictly speaking, violate the Subjacency Condition.

21 It should be pointed out that Bresnan (1976a) argues that Chomsky's claim that the RAOAC is incompatible with the fact in (64) is the result of a misinterpretation of her analysis. She argues that the RAOAC is, strictly speaking, not incompatible with the facts in (64). The only thing the RAOAC states is that phrases undergoing some transformation must be maximal *relative to* a fixed context specified by the transformation. That is, phrases do not have to be *absolutely* maximal in the set of possible movements or deletions. Thus, a sentence like (i) would involve deletion, with the QP *-er much* of the antecedent compared phrase as the context predicate:

(i) $[_{Y'''}$ *-er much* tall$][_{S'''}$ W_2 $[_{Y'''}$ *x-much* tall$]$ W_4 $]$ 4≤1
1 2 3 4 5 6 →
1 2 3 ø 5 6

A comparative deletion featuring total deletion of the entire compared constituent (as in *John is taller now than he was – yesterday*) takes the head of the comparative clause in its entirety as the context predicate:

(ii) $[_{Y'''}$ *-er much tall* ø $][_{S'''}$ W_2 $[_{Y'''}$ *x-much tall* ø $]$ W_4 $]$ 4≤1
1 2 3 4 5 6 →
1 2 3 ø 5 6

In sum, the RAOAC permits optionality: although deletion should always be maximal, maximality being defined relative to the context predicate.

22 Pinkham's adverbial analysis might possibly be extended to such examples as (i), presented in Bresnan (1975) as an instance of subremoval from an AP. Under such an analysis, (i) would roughly be interpreted as: 'It is more nearly so that her eyes are ogival than that they are oval':

(i) Her eyes are $[_{AP}$[more nearly] ogival] than they are $[_{AP}$ – oval].

Other instances of subremoval are the following:

(ii) a. Mary is $[_{AP}$ [more expensively] coiffed] than Sue is $[_{AP}$ – dressed].
b. My town lies $[_{PP}$[as many feet] below sea-level] as your town lies $[_{PP}$ – above it].

In (iia), a subpart of the AP headed by *dressed* has been removed; in (iib), it is the measure phrase *x-many feet* that has been removed from the locative PP. It should be noted that these instances of subremoval are not incompatible with Chomsky's (1977b) movement approach toward Comparative Deletion. The reason is that syntactic movement of these left-branch constituents is permitted. This is shown by the well-formedness of the following subextractions:

(iii) a. How expensively did he say she was [– dressed]?
b. How many feet does your town lie [– above sea-level]?

23 As Bresnan (1976c) observes, there are examples involving Subdeletion in a sentence-internal comparative clause which are quite acceptable:

(i) a. I can tell you that fewer women than there are fingers on my right hand, passed.
b. He has as many women as he has horses, in his stable.

She further remarks that certain examples featuring Comparative Deletion in sentence-internal position sound very awkward:

(ii) a. More women than – flunked, passed.
b. I gave as many women as I had – in my courses, A's.

24 Observe that the Comparative Deletion counterpart of (78b) is ungrammatical. This gives us another asymmetry between Subdeletion and Comparative Deletion:

(i) *John is as many women's lover as he is [$_{NP}$ [$_{NP}$ –] enemy].

25 Similar examples in English mixing subdeletion and VP-topicalization are not very acceptable:

(i) *? . . . and give more girls an apple than boys a pear, John certainly will.

26 Not all speakers of Dutch find sentence (81) acceptable.

27 As pointed out by an anonymous reviewer, one could develop an analysis in which the second comparative NP is treated as an instance of *wh*-in-situ. The empty operator associated with the second comparative could then move at LF, in analogy to multiple *wh*-questions.

28 On the basis of such examples as (83), among others, the earliest generative accounts of comparatives (Hankamer 1971; Bresnan 1972) suggest that comparative formation is analogous to relative clause formation and involves a movement rule.

29 See also van Riemsdijk (1978b) for a similar line of argumentation on the basis of Dutch comparatives featuring an overt *wh*-word.

30 The analysis of free relatives as defended in Groos and Van Riemsdijk (1981) is adopted here.

31 See also Izvorksi (1995) for a free-relative analysis of certain comparative clauses. She further points out that in certain languages an overt *wh*-phrase is found not only in the embedded clause of Comparative Deletion constructions (cf. (i)), but also in the embedded clause of Subdeletion constructions (cf. (ii)); the example from Afrikaans is drawn from den Besten 1978: fn. 13:

(i) a. Ivan izpi poveče vino ot-*kolkoto* bjahme kupili. Bulgarian
Ivan drank more wine from-how-much were-1pl bought.
'Ivan drank more wine than we had bought.'
b. Jan het meer boeke gekoop as *wat* Piet gekoop het. Afrikaans
John has more books bought than what Pete bought has

(ii) a. Ivan izpi poveče vino ot-*kolkoto* Maria bira Bulgarian
Ivan drank more wine from-how-much-REL Maria beer
'Ivan drank more wine than Maria drank beer.'
b. Jan koop meer boeke as *wat* Piet plate koop. Afrikaans
John buys more books than what Pete records buy
'John buys more books than Peter buys records.'

32 Also in English, there turn out to be asymmetries between comparatives featuring an overt *wh*-phrase and 'normal' comparative deletion constructions. As observed in Huang (1977), for example, a subject 'deletion site' is permitted in the latter (cf. (ib)), whereas it is impossible to have *what* when the subject is the compared constituent (cf. (ia)):

(i) a. *More girls know Harry than what know Sam.
b. More girls know Harry than know Sam.

Den Besten (1978: fn. 15) argues that, given its invariant form, it is improbable that dialectal *what* is a *wh*-phrase. He proposes that *what* in examples such as (83) is a complementizer, whose shape has changed from *that* into *what* as the result of a *wh*-element in COMP that has been deleted.

33 Chomsky (1977b) discusses examples like (i) and uses them as counter-evidence to Bresnan's deletion analysis of comparatives. Chomsky remarks that for an example like (i), a deletion analysis seems rather artificial, since in contrast with normal comparatives there is no overt matrix phrase that can trigger and control the deletion. He then argues that this example is derived as follows: a *wh*-phrase *what* is moved within the comparative clause to COMP, yielding (ii); this *wh*-phrase in COMP is subsequently deleted, yielding the surface pattern in (i):

(i) Mary is (more or less) as she was five years ago.

(ii) Mary is (more or less) as [$_{S'}$ what$_i$ she was t$_i$ five years ago].

As an alternative, along the lines of den Besten's free-relative interpretation of certain comparative clauses, one might explore the free-relative analysis, with *as* functioning as the relativizer:

(iii) Mary is (more or less) [$_{AP}$ Δ [as$_i$ she was t$_i$ five years ago]].

34 It should be noted here that many Dutch speakers accept sentence (90b), which is considered to be ungrammatical in Den Besten's article.

35 The pattern in (90a) is referred to as a 'metacomparative' in McCawley (1988).

36 Thus, three 'COMP'-configurations can be distinguished for Dutch comparatives, according to Den Besten:

(i) a. $[_{PP}$ dan $[_{S'}$ $[_{comp}$ dat] . . .]] (dan dat)
b. $[_{PP}$ dan $[_{S'}$ $[_{comp}$ $[_{XP}$ *e*] *e*]]] (dan)
c. $[_{PP}$ dan $[_{NP}$ $[_{NP}$ Δ] $[_{S'}$ $[_{comp}$ $[_{XP}$ +WH] *e*] . . .]]] (dan *wh*-phrase)

37 Den Besten argues that the same judgments hold for Subdeletion constructions, i.e., an overt *dat* is blocked in subdeletion environments. According to Den Besten's theory, the obligatory absence of the complementizer means that a *wh*-phrase has been moved to COMP. Thus, *wh*-movement takes place in Dutch Subdeletion contexts:

(i) Deze tafel is langer dan (?dat) die tafel breed is.
This table is longer than (?that) that table wide is

It should be noted here that for many speakers of Dutch the pattern containing *dat* is just as acceptable as the one without *dat*.

38 Pinkham (1982) argues that the use of the proform *le* in the comparative clause is obligatory. Milner (1978a: fn. 13), however, notes that many speakers of French also accept the comparative clause without the lexical pro-form *le*, as in (ii):

(i) *Jean est plus grand que je ne suis.

(ii) Elle est aussi triste qu'elle était.

39 Pinkham observes that compared adverb phrases do not lexicalize in French. In this respect, French and English are alike. That is, in both languages, the compared adverb phrase of the comparative clause is an empty element (as in (ib)):

(i) a. Je tape plus vite que je n'écris.
'I type faster than I write.'
b. Je tape plus vite que je n'écris $[_{ADVP}$ PRO].

40 See also Gazdar (1981) for an analysis in terms of a base-generated gap within the comparative clause that gets interpreted by being linked to *than*.

41 For the sake of simplicity, recent analyses will be ignored here according to which coordinate structures are in fact asymmetric syntactic structures (see, among others, Thiersch 1993; Kayne 1994).

42 Similar examples featuring Gapping have been observed for French in Kayne (1981a):

(i) Marie a écrit autant d'articles que Jean de livres
Mary has written as-many of articles as John of books
'Mary has written as many articles as John has written books.'

43 This analysis raises the question why the QP-gap has to be ATB-bound in the first place.

44 Chomsky and Lasnik (1977) consider these ATB-facts rather marginal.

45 See Goodall (1987b) for a discussion of parallel structures in syntax.

46 As pointed out by an anonymous reviewer, one line to explore would be an analysis in which the second instance of movement proceeds at LF (*wh*-in-situ style).

47 As noted in Kennedy (2002), 'mixed' multiply-headed comparatives – i.e., comparatives involving both Comparative Deletion and Subdeletion – are acceptable:

(i) a. Christmas makes as many people as happy as it makes – [– unhappy].
b. Max persuaded more people to buy more cars than you persuaded – to buy [– trucks].

48 Multiple comparatives are acceptable when other material has been elided within the comparative clause, as arguably in the following examples from Andrews (1985):

(i) a. People do crazier things at higher speeds on the McGrath Highway than they do other places.
b. Marcille gave a longer talk at a better attended session than did her husband.

49 In Hendriks (1992), von Stechow's (1984) interpretation of multiple Subdeletion constructions, and hence the idea that Subdeletion can apply twice in one comparative, is criticized on the basis of the uninterpretability of cases like: *Fewer dogs ate more rats than cats ate mice*.

50 See also Kennedy (2002) for a systematic overview of the similarities and differences between Comparative Deletion and Subdeletion.

51 Kennedy (2002) adopts a copy theory of movement. Thus, in both (133b) and (134b) there is a copy of the fronted compared constituent in the extraction site at LF.

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16 Conditionals

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1 Introduction

This chapter provides a survey of the major issues in the syntax of conditionals. We present and critically evaluate the findings in the literature pertaining to conditional structures. We furthermore advance a particular view, not articulated in its entirety before, namely that conditional clauses (e.g., *if*-clauses) are essentially free relatives of possible worlds. Similarly to the more familiar instances of free relatives of individuals, (i) conditional clauses likely involve clause-internal operator-movement to Spec, CP; (ii) they receive the interpretation of definite descriptions; and (iii) they may participate in correlative structures, as happens in the subcase of conditionals with the proform *then*.

Conditional structures involve an adverbial clause, often referred to as the conditional clause, antecedent, or protasis (the underlined constituent in (1)), and a main clause, known as the consequent or apodosis. Conditional structures are interpreted, in general terms, with the proposition expressed by the antecedent clause specifying the (modal) circumstances in which the proposition expressed by the main clause is true. Thus, (1) states that the possible worlds/situations in which Andrea arrives late (the denotation of the conditional clause) are possible worlds/situations in which Clara gets upset (the denotation of the main clause):

(1) <u>If Andrea arrives late</u>, Clara will get upset.

Conditionals as in (1) are known as hypothetical conditionals. They are the most common kind of conditional structures discussed in the literature, and consequently, our contribution will mostly focus on them.

Other types of conditionals exist as well, notably relevance conditionals, as illustrated in (2a), and factual conditionals (cf. Iatridou 1991; also called premise-conditionals in Haegeman 2003), as in (2b):

(2) a. If you are thirsty, there is beer in the fridge.
    b. If Fred is (indeed) so smart, why didn't he get the job?

In the case of relevance conditionals, clearly the antecedent does not specify the circumstances in which the proposition expressed by the consequent is true, as the latter is, in fact, asserted to be true (in the world of evaluation). Rather, the possible worlds/situations in which the proposition expressed by the antecedent is true are possible worlds/situations in which it is relevant, from the perspective of the speech act, that the proposition expressed by the consequent clause is true. It is as if in a relevance conditional, there is an implicit performative clause embedding the surface main clause, and this performative is the true consequent in a (hypothetical) conditional structure (*If you are thirsty, then* it is relevant for you to know *that there is beer in the fridge*).[1]

Factual conditionals are somewhat harder to distinguish from hypothetical conditionals. According to Iatridou (1991), the conditional clause in a factual

conditional is presupposed to be true. Haegeman (2003) notes that while in a hypothetical conditional the antecedent clause is integrated into the speech act of the matrix clause, the antecedent in a factual conditional has an independent illocutionary force.

We note some facts about the syntax of relevance and factual conditionals in section 5, but we remain primarily concerned with hypothetical conditionals in this introduction.

Conditionals are not unique in their overall structure; rather conditional clauses belong to a class of adverbial clauses that includes, among others, clausal adverbials of time, cause, and concession, as illustrated in (3):[2]

(3) a. If Andrea arrived late, Clara must have gotten upset.
b. When Andrea arrived late, Clara got upset.
c. Because Andrea arrived late, Clara got upset.
d. Although Andrea arrived on time, Clara got upset.

Like the other clausal adverbials, conditional clauses are typically introduced by a CP-related element, a complementizer or an operator in Spec, CP (cf. *if*, *when*, *because*, *although* in (3) above). And like the other adverbial clauses, conditional clauses may precede or follow the main clause. Historically, and typologically, clausal adverbials are related, though of course, in individual languages they may have undergone distinct development and as a result diverged from each other. For instance, in English, conditionals allow the presence of a proform in the main clause 'linked' to the adverbial clause (i.e., *then*), and concessives do too (i.e., *still*, *nevertheless*). However, *because*-clauses disallow such proforms, and *when*-clauses allow them only marginally (cf. (4)):

(4) a. If Andrea arrived late, then Clara must have gotten upset.
b. When Andrea arrived late, (*/??then) Clara got upset (??then).
c. Because Andrea arrived late, (*for that reason) Clara got upset (*for that reason).
d. Although Andrea arrived on time, (still/nevertheless) Clara (still/nevertheless) got upset.

In this chapter, we discuss both the internal and external syntax of conditional clauses: the structure of the adverbial CP and the way it is merged to the matrix clause. We draw some, though not extensive, parallels with the other kinds of adverbial clauses, and suggest a direction for their analysis in a uniform manner.

A caveat regarding the scope of our presentation is in order: here we only discuss in detail issues having to do with the syntax of conditionals. Some reference to their semantics is made, when necessary for the exposition, but it is not put in formal terms, and is not claimed to be in any way exhaustive. There is a vast philosophical literature on the topic of conditional reasoning and logic, and also a growing number of formal semantic analyses of conditionals in natural

language, to which we could not do a proper justice even in references (still, see Harper et al. 1981; Jackson 1991; among many others).

2 Defining conditionals

2.1 What is a conditional?

Before we begin, we have to clarify the basis on which we decide whether a particular sentence is a conditional or not. Above, we have defined conditionals as structures involving an adverbial clause interpreted as stating the conditions under which the proposition expressed by the main clause is true (or its truth is relevant, as in the case of relevance conditionals). Surely there are other syntactic ways to convey a conditional meaning. The following examples illustrate just such cases:

(5) a. Kiss my dog and you'll get fleas.
b. For you to do that would be nice.

Sentence (5a) is interpreted along the lines of *If you kiss my dog you'll get fleas*; similarly sentence (5b) receives a conditional interpretation such as *It would be nice if you do that*. Cases like these are not some peculiarity of English. In a number of languages a structure involving an imperative clause conjoined with a non-past indicative clause receives a conditional interpretation: the imperative clause is interpreted as the antecedent clause of a conditional, and the indicative clause in the coordination is interpreted as the consequent (cf. Clark 1993; Han 2000; among others). This structure-to-meaning mapping appears to be compositional, given that the coordinating conjunction *or* has the semantic import of the coordinating conjunction *and* plus negation of the proposition expressed by the imperative clause. In other words, whereas (6a), with *and* as the coordinator, is interpreted as *if* p, q (where p and q are the propositions denoted by the imperative and indicative clauses, respectively), (6b), with *or* as the coordinator, is interpreted as *if* $\neg$ p, q. The facts of (6) are furthermore cross-linguistically attested:

(6) a. Kiss my dog and you'll get fleas.
p *and* $q \rightarrow$ *if* p, q
b. Kiss my dog or you'll get fleas.
p *or* $q \rightarrow$ *if* $\neg$ p, q

Turning to (5b), here the relevant facts in deriving the conditional interpretation are the non-finiteness of the sentential subject, and the mood morphology in the main clause. In many languages a specialized mood, often called conditional mood, is employed in such cases.[3] Again, as in the case of the conjoined imperative, the two clauses involved in (5b) correspond systematically to the antecedent and consequent of a conditional: the non-finite sentential subject is interpreted as

the antecedent, and the main clause is interpreted as the consequent of a conditional. (See Pesetsky 1995 for a discussion of such structures.)

Do the regularities characterizing the structure-to-interpretation mapping in sentences such as the ones in (5) and their cross-linguistic availability justify considering these to be conditionals? We believe that comprehensive discussions of conditionality should include an investigation of cases such as these. The term 'conditional' in its strict sense, however, is being used in the literature only to refer to constructions involving an *adverbial* clause merged to a particular position in a main clause. We follow this convention here and discuss further only such adverbial structures, partly for reasons of space, partly because the literature has been almost exclusively devoted to the adverbial structures, but partly also because the conventional split isolates a well-defined class of cases whose properties can be fruitfully explored. The fact that we do not mention any further cases like the ones in (5) should not be taken to mean that they should be excluded from a wider study of conditional expressions.

2.2 *The marking of conditionals*

Languages use a variety of means to indicate that a particular syntactic structure is a conditional rather than some other construction that involves two clauses. Without an attempt to give an exhaustive description of the range of options and typological tendencies, we present in this section some of the common structural means of forming conditionals.

Overt marking of the protasis (the antecedent of the conditional) appears to be the commonest strategy, cross-linguistically (cf. Comrie 1986; Zaefferer 1991). This can be done by employing certain lexical items (i.e., free morphemes), through particular inflectional morphology, or by purely syntactic means (e.g., verb-movement).[4] The English *if*, the German *wenn* and *falls*, and the Mandarin Chinese *ruguo* exemplify the marking of an antecedent using lexical items, arguably functional elements in the CP-domain – complementizers or operators in Spec, CP:

(7) a. *If* it is sunny, I will go for a walk.
b. *Wenn* Steffi gewinnt, wird gefeiert. German
if Steffi wins Impers.Passive celebrate
'If Steffi wins, people celebrate.'
c. *Falls* Steffi gewinnt, wird gefeiert. German
in-case Steffi wins Impers.Passive celebrate
'In case Steffi wins, people celebrate.'
d. *Rúguǒ* Zhangsan hē jǐu, wǒ mà tā. Mandarin
if Zhangsan drink wine I scold him
'If Zhangsan drinks wine, I will scold him.'

Many languages use temporal *wh*-pronouns (e.g., German *wenn* 'when/if'[5]) as conditional markers (cf. Traugott et al. 1986). Other common lexical devices for

forming a conditional are interrogative complementizers/operators, e.g., English *if* is also used in embedded yes/no questions.[6]

The marker on the antecedent does not have to be a single lexical item. It can also be a phrase, as is the case with the English *in case*, and the Spanish *con tal que* literally 'with such that':

(8) Te perdono con tal que vayas. Spanish
To-you forgive-1s with such that go-Sbjv-2s
'I forgive you if you go.'

Languages can also mark the antecedent through inflectional morphology on the verb in the antecedent clause. Examples of such languages include West Greenlandic, Turkish, and Basque:

(9) **West Greenlandic (cf. Fortescue 1984):**
pakasa-anna-rukku pissanganar-niru-vuq.
surprise-just-2s.3s.COND be.exciting-more-3s.INDIC
'If you just surprise him, it will be more exciting.'

The inflection that serves as the overt marker of the antecedent clause need not be unambiguously conditional (i.e., only realized in conditionals). Some languages mark antecedent clauses by using imperative verbs (in the absence of a coordinating conjunction). Consider (10), from Jacab (forthcoming):

(10) Znaj ja kakoj-nibud' inostrannyj jazyk, Russian
know-imper.2sg I some-kind foreign language
rabotal by perevodčikom.
worked would translator-instr
'If I knew some foreign language, I would work as a translator.'

Morphosyntactically, conditionals like (10) differ from true imperatives in, at least, the absence of subject–verb agreement and the fact that they can be formed from verbs that do not normally appear in the imperative, such as *happen* or *turn out* (see Hacking 1998; Jacab forthcoming; for discussion). The imperative verb, which in imperatives can show number distinction, with forms for 2sg and 2pl, can only be 2sg in its use in this type of conditionals.[7]

The use of subjunctive morphology is another common formal device in building conditional antecedents. Consider the following examples from Russian in this respect (from Hacking 1998):

(11) Pročitala by ona etu stat'ju, ona smogla Russian
read-sg.fem subj she this-acc article-acc she can-sg.fem
by otvetit' na vaš vopros.
subj answer-inf to your question
'Had she read/were she to read the article, she would have been/be able to answer your question.'

Interestingly, when there is no conditional complementizer, as in the above Russian examples, the verb, whether marked as subjunctive or imperative, undergoes movement to C. I-to-C movement is in fact another formal mechanism for forming antecedents of conditionals, often employed by languages in the absence of any other indicator, lexical or morphological, of conditional marking.

In English, I-to-C movement is restricted to the antecedents of counterfactual conditionals (cf. Iatridou and Embick 1994), and also some future-less-vivid conditionals, i.e., conditionals that implicate that if p is the proposition expressed by the antecedent, $\neg p$ is more likely than p (the term 'future-less-vivid' is introduced in Iatridou 2000). In other languages, inversion is less restricted and is available in indicative conditionals as well, as the German example below illustrates:

(12) a. Had I known, I would not have gone.
b. Were he to come, we would not go.
c. Hast du was, dann bist du was. German
Have you something then are you something
'If you have something, then you are something.'

The preceding discussion might suggest that the explicit marking of the antecedent is cross-linguistically obligatory. This is not the case. In Bengali (cf. Comrie 1986) and Hindi, for example, it is the presence of the *then* which is obligatory, not the presence of the *if*:

(13) **Hindi (cf. McGregor 1995):**
(agar) mehnat karoge to safal hoge.
if hard-work do-Fut.2Pl then succesful be-Fut.2Pl
'If you work hard, you'll be successful.'

The marker of the apodosis (the main clause) in Bengali and Hindi is clearly of pronominal origin. Comrie (1986) notes that all instances of overt apodosis marking known to him involve particles, often of pronominal origin. He suggests that these may therefore be analyzable as resumptive pronouns.

Finally, there are conditional constructions where no overt marking of any sort seems to be necessary. Mandarin Chinese allows for conditional interpretation in the absence of any overt marking of conditionality, since *rugou* 'if' is optional, and so is the pronominal in the consequent clause *jiu* 'then':

(14) (rúguǒ) Zhangsan hē jǐu, wǒ (jìu) mà tā. Mandarin
if Zhangsan drink wine I then scold him
'If Zhangsan drinks wine, (then) I will scold him.'

However, Comrie (1986) notes that in the absence of any overt conditional marking, a sentence like (14) is ambiguous between a variety of relations holding between the two clauses (e.g., *if/when/because*).[8]

In summary, conditionals are formed through a variety of means. They share a basic bi-clausal structure, with the antecedent adjoined to the main clause, though, as we will see below in the discussion of adnominal conditionals, other adjunction possibilities are also attested. The internal syntax of the antecedent clause involves the CP-domain, where presumably clause-typing features are lexicalized by special complementizers or they trigger verb-movement. A particularly interesting question arises regarding the structure of conditionals: how, in the absence of a specialized marker, such as a conditional complementizer or conditional inflection, can a clausal adjunct receive the interpretation of a conditional? In other words, *ruguo* in Mandarin may be posited to carry the relevant features that a semantics for conditionals would need, and that would distinguish an adjunct clause headed by *ruguo* from one headed by, e.g., *because*. However, given that I-to-C movement in English is clearly not limited to conditionals, that is, it is also found in matrix questions, and in certain focus contexts,[9] why is it that an adjunct as in (12a) is interpreted as a conditional rather than as a *because*-clause? Similar facts obtain in other languages besides English that employ I-to-C movement in conditionals.

3 Structural issues

We begin with a discussion of simple conditionals without *then*, like *If you open the refrigerator, it won't explode*. Once these basic cases have been discussed, we will look at conditionals with *then* and the different structural properties of other kinds of conditionals.

A basic observation is that *if*-clauses can be clause-initial or clause-final. To the limited extent to which they can be clause-medial, they must be set off by parenthetical intonation ((15), from Lasersohn 1996):

(15) a. **Clause initial:**
If you bother him long enough, John will give you five dollars.
b. **Clause final:**
John will give you five dollars if you bother him long enough.
c. **Clause medial:**
John, if you bother him long enough, will give you five dollars.
*John if you bother him long enough will give you five dollars.

We will address two questions concerning the *if*-clause here. First, what is the structural location of the *if*-clause with respect to the main clause? And second, what is the clause-internal syntax of the *if*-clause?

3.1 The position of merger of the if*-clause*

Greenberg (1963) states the following universal concerning the linear order between the antecedent and the consequent clause of a conditional.

Universal of Word Order 14:
In conditional statements, the conditional clause precedes the conclusion as the normal order in all languages.

Comrie (1986) claims that while many languages allow for both clause-initial and clause-final placement of the *if*-clause, there are also rigidly verb-final languages, where the clause-final option is unavailable.[10,11]

Greenberg's and Comrie's observations are important, but it should be noted that they are observations about the surface positions of *if*-clauses. Typological tendencies are compatible with *if*-clauses having an origin distinct from their clause-initial surface position. As we will see soon, there is evidence that the clause-initial/clause-final difference reflects difference in attachment height, and that at least some clause-initial *if*-clauses need to be derived via movement from clause-final *if*-clauses.

3.1.1 If-*clauses as adverbial clauses*

One logically possible analysis of conditional sentences is that the two clauses are coordinated syntactically, with *if* functioning as a 'true conjunction', to borrow a phrase from Jespersen (1954–1958). There have not been explicit syntactic proposals that the antecedent and consequent of conditional sentences are coordinated clauses, as far as we are aware.[12] There are, in fact, important differences between *if* and a coordinator like *and*. Whereas *if*-clauses can appear both sentence-initially and sentence-finally, the same is not true in the case of coordinated structures involving *and*/*but*/*or*:

(16) a. Joe will leave and/but/or Mary will stay.
b. *And/but/or Mary will stay, Joe will leave.

Furthermore, *only* and *even* can modify *if*-clauses but not second conjuncts in coordinations:

(17) a. Lee will give you five dollars only/even [if you bother him].
b. Lee will give you five dollars (*only/*even) [and/but/or Ken will give you ten].

In being able to appear both sentence-initially and sentence-finally conditional clauses are like other adverbial clauses:

(18) a. I will leave at noon/because you leave.
b. At noon/because you leave, I will leave.

Clear evidence that sentence-final *if*-clauses are constituents of the VP and therefore adverbials comes from VP deletion and *do so* anaphora. The most conservative interpretation of the data below is that the place holders refer back to

constituents, and therefore that the conditional clauses are constituents of the VP. Hence they are also adverbials (given that they are not nominal arguments):

(19) a. I will leave if you do and John will $_{\text{leave if you do}}$, too.
b. I will leave if you do and John will *do so* too.

Evidence for the adjuncthood of *if*-clauses also comes from their behavior under *it*-clefting. *If*-clauses can be clefted but not out of a *wh*-island ((20), from Collins 1998):

(20) a. It is if the student fails that the teacher will fire the TA.
b. ?It is if the student fails that Bill said that the teacher would fire the TA.
c. *It is if the student fails that Bill wonders why the teacher will fire the TA.

The severity of the violation in (20c) – what used to be analyzed as an ECP rather than a Subjacency violation – suggests that the *if*-clause is an adjunct (given that it is clearly not a subject).

The data involving modification by *only* and *even* (cf. 17), and VP ellipsis phenomena (cf. 19), provide strong evidence against the view that the antecedent and consequent of conditionals are coordinated. These data support the view that *if*-clauses are adverbials, like temporal phrases and clauses. Furthermore, pronominalization by *then* suggests that *if*-clauses are adverbials, since their anaphoric reflex – *then* – is an adverb.

3.1.2 *Height of attachment*

If sentence-initial *if*-clauses are in an adjoined position, then they are clearly adjoined to the main clause, as opposed to a constituent inside it.[13] As expected, sentence-initial *if*-clauses are not c-commanded by the subject of the main clause (cf. (21b)). Concerning the position of sentence-final *if*-clauses, there is evidence suggesting that adjunction to the main clause is not involved. Condition C judgments show that an *if*-clause in sentence-final position is c-commanded by the subject of the main clause. Consider example (21). Coreference between *she* and *Mary* is prohibited in (21a) but possible in the minimally distinct (21b, c). Given these facts, the *if*-clause must be adjoined at most as high as I', and if adjunction to a bar-level projection is to be avoided, the *if*-clause must be merged even lower:

(21) a. *She$_i$ yells at Bill if Mary$_i$ is hungry.
b. If Mary$_i$ is hungry, she$_i$ yells at Bill.
c. If she$_i$ is hungry, Mary$_i$ yells at Bill.

A direct object cannot c-command into an *if*-clause, irrespective of whether it is sentence-initial or sentence-final:

(22) a. Bill visits her$_i$ if Mary$_i$ is sick.
b. If Mary$_i$ is sick, Bill visits her$_i$.

We have so far concluded that a sentence-final *if*-clause is adjoined lower than IP but above the VP or at least higher than the object. Further evidence concerning the structural location of the sentence-final *if*-clause comes from VP topicalization. We see that while the *if*-clause can be topicalized with the VP, it does not have to be:

(23) I told Peter to take the dog out if it rains,
a. . . . and take the dog out if it rains, he will.
b. . . . and take the dog out he will if it rains.

Based on these tests, Iatridou (1991) proposes that sentence-final *if*-clauses involve VP-adjunction, while sentence-initial *if*-clauses involve IP-adjunction (or in some cases CP-adjunction, to accommodate sentences like the ones in (24)):

(24) a. If it rains, what shall we do?
b. If it rains, are we going to leave?
c. If he is right, what a fool I've been!

Saying that sentence-final *if*-clauses are adjoined to VP underdetermines their actual position. There is evidence from their interaction with negation which suggests that they can be adjoined below or above negation. Sentence-final, but not sentence-initial, *if*-clauses interact scopally with negation.[14]

As indicated by the two continuations provided, (25) is ambiguous between two readings, one where the negation takes scope over the entire conditional (= 25a), and another where the negation takes scope only over the main clause (= 25b):

(25) Mary doesn't yell at Bill if she is hungry
a. . . . but if she is sleepy. ($\neg > if$)
b. . . . since hunger keeps her quiet. ($if > \neg$)

The ambiguity may be due to LF-raising of the *if*-clause and scopal interaction with negation. Iatridou argues, however, that the ambiguity is the result of different levels of attachment. Combining VP topicalization and interaction with negation provides the relevant piece of evidence in favor of Iatridou's position:

(26) a. Smile at Bill if she is hungry though she doesn't . . . ($\neg > if$)
b. Smile at Bill though she doesn't if she is hungry . . . ($if > \neg$)

The above are unambiguous: in the former negation has scope over the *if*-clause and in the latter the scopes are reversed. This strongly suggests that a postverbal *if*-clause can adjoin at different sites – above negation and below negation.

3.1.3 *A source for sentence-initial* if*-clauses*

A natural question that arises is whether the clause-initial and clause-final positions for *if*-clauses are related by movement. There is evidence that at least some sentence-initial *if*-clauses have a source lower than their surface position. This evidence comes from the interpretation of sentences like (27):

(27) a. I think that if you leave I will leave.
b. If you leave, I think that I will leave.

In (27b), on the most plausible reading, there is no conditional relationship between the hearer's leaving and the speaker's thinking about leaving, contrary to what we would expect from the surface form. We can account for this by saying that the *if*-clause has been preposed from an underlying position within the scope of *think*, perhaps as in (27a). Of course, this is only evidence, furthermore indirect, of movement of the *if*-clause from one clause-initial position to another. It may still be the case that clause-initial antecedent clauses are never the result of movement from the VP-adjoined position in which the *if*-clause may also surface.

To further complicate the picture, along with evidence that certain sentence-initial *if*-clauses involve fronting from a lower position, there also seems to be evidence that not all sentence-initial *if*-clauses involve movement. The analysis is complicated by the fact that the *if*-clause is an adjunct and so its reconstruction is not obligatory (or alternatively, it can be merged counter-cyclically; cf. Lebeaux 1990). This can be seen by the absence of a Condition C violation in (28b):

(28) a. *She$_i$ yells at Bill if Mary$_i$ is hungry.
b. If Mary$_i$ is hungry, she$_i$ yells at Bill.

Either it is not obligatory (or not possible, assuming late merge) to reconstruct the sentence-initial *if*-clause to a sentence-final position, or base generation in a sentence-initial site is also an option.

Iatridou (1991) discusses a number of cases where she argues that reconstruction of the *if*-clause is obligatory. It should be noted, however, that her tests illustrate that reconstruction is obligatory only for a sentence-initial position. Her facts are silent about whether reconstruction to a sentence-final position is obligatory. The cases where Iatridou argues reconstruction is obligatory are like the ones in (27): the *if*-clause is construed below the matrix verb:

(29) If it rains, Mary believes/said/heard/assumed that Bill will come.

That these cases involve movement of the *if*-clause to a sentence-initial position and not base generation is demonstrated by the fact that the relationship between the *if*-clause and the clause it is associated with is sensitive to islands:

(30) a. *If it rains Mary regretted/forgot/resented/recognized that Bill will come. (factive island)
b. *If it rains Mary didn't say that Bill will come. (negative island)
c. *If it rains Mary heard the rumor that Bill will come. (complex NP island)
d. *If it rains Mary wondered whether Bill will come. (*wh*-island)

In such cases, reconstruction is obligatory, as is shown by the Condition C effect in (31):[15]

(31) *If John$_i$ is sick, he$_i$ thinks that Bill will visit.

To derive the Condition C effect in (31), we only need reconstruction to the sentence-initial position in the embedded clause. Reconstruction to the sentence-final position of the embedded clause is not required. In fact there is evidence that reconstruction to the sentence-final position of the embedded clause is not obligatory. This is shown by the possibility of coreference between *John* and *he* in (32). Obligatory sentence-final reconstruction would induce a Condition C violation. Thus we can conclude that this is a case where the *if*-clause is generated clause-initially (below the matrix), and is then preposed to the sentence-initial position:

(32) If John$_i$ is sick Mary says that he$_i$ should take aspirin.

We have just seen that reconstruction of the *if*-clause to the sentence-final position is not obligatory. Is there evidence that reconstruction to the sentence-final position is ever possible? Given certain assumptions, it seems that there is. It is reasonable to assume that c-command has to obtain at some point in the derivation prior to spell-out, for anaphoric and variable binding.

In (33a) and (34a), the binder surface c-commands the bindee, and a binding relationship is possible. In (33b) and (34b), the binder does not c-command the bindee in overt syntax, but a binding relationship is still possible. We can take the possibility of binding as showing there must be a point in the derivation where the sentence-initial *if*-clause is in the c-command domain of the binder, i.e., in the sentence-final VP-adjoined position:

(33) a. John$_i$ will be happy if pictures of himself$_i$ are on sale.
b. If pictures of himself$_i$ are on sale, John$_i$ will be happy.

(34) a. Every mother$_i$ is upset if her$_i$ child is late from school.
b. If her$_i$ child is late from school, every mother$_i$ is upset.

Complications are introduced in (34b), where it seems that the quantifier *every mother* could scope over the conditional clause and bind a variable in the *if*-clause at LF. Note, however, that binding achieved in such a way would lead to an illegitimate Weak Crossover configuration.[16]

The proposal that reconstruction is necessary to receive a bound reading in (33) and (34) receives support from the fact that reconstruction for binding reasons can yield a Condition C violation:

(35) a. Every mother$_i$ is upset at John if he ignores her$_i$ child.
b. *Every mother$_i$ is upset at him if John ignores her$_i$ child.
c. *If John ignores her$_i$ child, every mother$_i$ is upset at him.

If QR applied to the spell-out of the sentence above, and QR and not reconstruction produced the configuration for variable binding, then we would have no account of why (35c) is ungrammatical. Therefore, it is reasonable to assume that reconstruction is necessary to obtain a bound-variable reading.

3.2 *Clause-internal syntax of the* **if**-*clause*

3.2.1 *The location of* if

It is quite commonly assumed that *if* is a complementizer. There is indeed evidence that *if* is within the CP-domain. But it turns out that it is not easy to find conclusive arguments as to its being in C. Furthermore, in some languages the counterpart to *if* is a *wh*-pronoun, suggesting that it is an element in Spec, CP, at least in these languages.

Let us begin with the arguments that *if* is within the CP-domain. *If* and *when* pattern differently than *until/before/after* with respect to anaphora possibilities:

(36) a. I will work until Joe leaves and Harry will work until then too.
b. *I will leave when/if Joe leaves and Harry will leave when/if then, too.
(vs. I will leave when/if Joe leaves and Harry will leave then, too.)

We see that it is possible to refer back to the complement of *after/before/until* with a pronoun but not to the complement/sister constituent of *if/when*. It is, however, possible to refer to the entire complex, i.e., to the *if/when* together. This situation resembles what we find with questions:

(37) Sean wonders whether Mirwais likes Madonna.
a. Rob wonders *that*, too.
b. *Rob wonders whether *that*, too.

The contrast between *if/when* and *until/before/after* suggests that the former are either in [Spec, CP] or C^0, while the latter are prepositions that take CP/IPs as complements.

To decide on the the location of *if* in the CP-domain, researchers have looked at interrogative complements. Kayne (1991) in particular has argued that the conditional *if* and the interrogative *if* are one and the same. If so, we can conjecture that *if* in conditional clauses and in questions occupies the same position:

(38) a. *Lee knows [if [PRO to leave]].
b. Lee knows [whether [PRO to leave]].

Kayne (1991) argues that *if* is in C^0 while *whether* is in [Spec, CP]. The grammaticality contrast between (38a) and (38b) is argued to follow from the respective location of *if* and *whether*. In particular, (38a) is ungrammatical because *if* illicitly governs PRO.[17]

The explanation for the contrast in (38) is in need of reconsideration, however. Note that in English, *if* can take participial complements ((39), from the *Wall Street Journal* corpus):

(39) a. If elected, he has said that he will seek to renegotiate much of the country's foreign debt.
b. If convicted on all counts, the individuals could be imprisoned for as long as five years and fined $250,000 each.

Presumably *elected* and *convicted* have PRO subjects. It is not clear why government by *if* does not render these illegitimate. Furthermore, given minimalist aspirations to eliminate the notion of government from the theoretical apparatus, and given alternative accounts for the distribution of PRO based on case (cf. Lasnik 1995a, among others), the distinction in grammaticality in (38) may not be used to argue for a different syntactic location of *if* and *whether*.

The proposal that *if* is in C^0 receives some support from the complementary distribution of *if* and conditional inversion ((40), from Iatridou and Embick 1994):

(40) a. If John had eaten the calamari, he would have been better now.
b. Had John eaten the calamari, he would have been better now.

When conditional inversion takes place, an *if* may not be present. Pesetsky (1989) and Iatridou and Embick (1994) propose that conditional inversion involves I-to-C movement. The complementary distribution of *if* and conditional inversion, and the analysis of conditional inversion as movement to C^0, suggest that *if* is in C^0.

On the analysis of *if* as a complementizer, the fact that its presence blocks conditional inversion may thus receive the same explanation as the root-embedded asymmetry with respect to V2 in languages such as German and Dutch. In these languages, when the complementizer is present the finite verb does not raise to C, but in main clauses, and in complements of certain verbs when there is no complementizer present, I-to-C movement obtains.[18] Note, however, that the complementarity between conditional inversion and the presence of a CP-related element is seen in German as well. Yet in German, *wenn* 'if, when' does not appear to have a different location whether it functions as a conditional marker or a relative pronoun.[19] Thus, the complementarity of *if* and conditional inversion is also not a conclusive argument in favor of *if* being a complementizer.

We have to conclude that there is suggestive but not conclusive evidence in favor of analyzing *if* in conditionals as a complementizer. Fortunately, not much hinges on this particular point. Conditional C^0 will have to have certain features, distinguishing it from other types of clauses, and whether *if* lexicalizes these features, or enters into a checking relationship in a Spec–head agreement with them, is of lesser importance. Furthermore, languages likely differ in this respect. Languages where the counterpart of *if* is a *wh*-related pronoun would merge it as a specifier of CP, possibly after extraction from within the clause (on that see further below), while other languages would merge the counterpart of *if* as a C^0.

3.2.2 *The conditional–interrogative link*

As noted above, Kayne (1991) has proposed that conditional and interrogative *if* are the same element. Presumably what is meant is that the featural content of *if* is the same whether it appears in a conditional clause or in an interrogative clause. This is in fact a phenomenon wider than English. For instance, in Bulgarian one of the ways to form a conditional clause is to use the interrogative complementizer *li*:

(41) a. Znae li anglijski, šte go vzemat na rabota.
know-3sg Q English will him take to work
'If he knows English they will hire him.'
b. (Čudja se) znae li anglijski?
wonder-1sg refl know-3sg Q English
'I wonder whether he knows English/Does he know English?'

Similarly, antecedent clauses in Mandarin Chinese *dou*-conditionals have been analyzed by Cheng and Huang (1996) as interrogative clauses, showing that the parallels between conditionals and questions extend beyond the use of identical complementizers.

Furthermore, arguably, I-to-C movement is another formal instantiation of the close structural parallels between conditionals and questions. As Iatridou and Embick (1994) have pointed out, languages that exhibit I-to-C movement in conditionals also have I-to-C movement in questions. The facts of *if-/li-* use in questions and conditionals, and the facts of conditional inversion, can then be unified under the following generalization:

(42) Interrogative adjunct clauses are interpreted as conditionals.

A similar conclusion is reached on independent grounds in Izvorski (2001). It is argued there that free relative clauses used as free adjuncts (see (43)) depend for their interpretation on the following factors (in addition to some others): (i) having the structure and semantics of questions, and (ii) conditional interpretation being available to clausal adjuncts:

(43) Whatever Bill says, Mary will quit her job.

Further elaboration on the link between conditionals and questions comes from Larson's (1985a) suggestion of a covert operator in the Spec, CP of conditional and interrogative *if*-clauses. Larson (1985a) posits that in interrogative *if*-clauses there is a covert *whether* marking the scope of covert *or*. This covert *whether* is what makes *if*-interrogatives into *wh*-islands. It is the case that extraction of complements is degraded out of embedded yes/no questions, while the extraction of adjuncts and subjects is impossible:

(44) a. ?Who did you wonder if/whether Mary saw?
b. *Who did you wonder if/whether saw Mary?
c. *How/when did you wonder if/whether Mary fixed the car?

By Larson's proposal, the difference between interrogative and conditional *if*-clauses extends beyond their attachment site. Larson has a covert *whether* in the [Spec, CP] of an *if*-clause as well. (Conditional clauses, being adjuncts, are of course strong islands.)

We believe something like Larson's proposal to be on the right track. Arguably, conditional *if*-clauses have a structure, and correspondingly aspects of interpretation, similar to those of questions, including the presence of an operator in Spec, CP. Yet ultimately, conditionals and questions diverge in interpretation. Conditionals receive the interpretation of free relatives, that is, of definite expressions. Thus, there is indeed a link between conditionals and questions but this link is indirect, derivative of the link between free relatives and questions. Parallels between *if*- and temporal *when*-clauses have prompted Geis (1985) to argue that conditionals are species of relative clauses. Our proposal is a further step in this direction, arguing for an isomorphism between conditionals and free relatives.

Let us consider the relation between conditionals/free relatives and questions in some detail. *Wh*-questions and free relatives have a common structure (cf. (45a)). Some of the features in C^0 are common as well (presumably the one(s) triggering *wh*-movement), which accounts for common syncretisms across languages between questions and free relatives. Some of the features in C^0 are different, which leads to questions and free relatives being interpreted differently. Questions are interpreted as sets of propositions where the variable abstracted over (as a result of *wh*-movement) has been existentially quantified (e.g., Hamblin 1973; Karttunen 1977) (cf. the simplified (45b)). Free relatives are interpreted as definite descriptions, i.e., with the variable abstracted over being bound by a definite operator (e.g., Jacobson 1995, among others) (cf. (45c)):

(45) what John bought
a. LF: wh_x C^0 John bought x
b. $\lambda p[p = \exists x[\text{John bought x}]]$
c. $\iota x[\text{John bought x}]$

Turning to conditionals, our proposal that they are interpreted as free relatives amounts to the claim that they are definite descriptions of possible worlds. The

structure yielding this interpretation is analogous to the one in (45a) in all the relevant respects:

(46) if John arrives late
  a. LF: Op_w C^0 John arrives late in w
  b. ιw[John arrives late in w]

Conditionals involve abstraction over a possible world variable. The null operator in Spec, CP of *if*-clauses, and likely the *when* itself in, e.g., German conditionals, is a definite binder of the possible world variable.

Schein (2001) argues on independent grounds that *if*-clauses are plural definite descriptions of events. Similarly, that conditionals are interpreted as definite descriptions of possible worlds has recently been independently proposed by Schlenker (2001b). Within a general program of semantic uniformity (cf. Schlenker 1999, 2001b), he analyzes *if* as the counterpart of *the* applied to a description of possible worlds rather than of individuals. Thus *if p* denotes the closest *p*-world(s), whereas *the P* denotes the most salient *P*-individual(s). Schlenker points out that *if*-clauses, like definites, may be topicalized; that they may be coreferential with a world pronoun *then*, the way definites may be coreferential with individual pronouns; and that they may give rise to Condition C effects in certain structural configurations, just as definites can. We will return to Schlenker's proposal below, when we discuss in more detail conditionals with *then* and the parallels with correlatives.

We are now in a position to give an explanation for the conditional–interrogative link, to an extent that has not been previously achieved. The fact that *if* functions in many languages as both a conditional and an interrogative complementizer makes sense within the general proposal that conditionals are free relative clauses. In English, and in many other languages, this syncretism would be part of a more general structural parallelism between questions and free relatives in these languages.

3.2.3 *The absence of low construals*

The parallel between conditional clauses and free relatives suggested above is apparently challenged by certain facts, first noticed by Geis (1970). These facts led him to conclude in fact that conditionals should be given a distinct analysis from relative clauses, a position which he reversed in Geis (1985). Geis (1970, 1985) noted that whereas *when*-clauses are ambiguous as per extraction sites of the relative pronoun, *if*-clauses are not. Conditional statements employing overt headed relatives are ambiguous. We can further observe that conditionals formed with *in case* and conditionals formed with I-to-C movement are also not ambiguous and only allow for high construals:

(47) a. I will leave when you say you'll do.
  high construal: I will leave at time *t* s.t. at time *t*, you say that you'll leave (at time *t'*).

low construal: I will leave at time *t*. You said that you would leave at time *t*.

b. I will leave if you say you will do.
high construal: In situations *s*, you say you'll leave (in situations *s'*). In those situations *s*, I will leave.
*low construal: You say that in situations *s*, you'll leave. In those situations *s*, I will leave.

c. I will leave in any circumstance in which you say you'll leave.
high construal: In situations *s*, you say you'll leave (in situations *s'*). In those situations *s*, I will leave.
low construal: You say that in situations *c*, you'll leave. In those situations *c*, I will leave.

(48) a. I will leave in case you say you'll leave. (high construal only)
b. Had he said he would leave, I would have left. (high construal only)

The ambiguity in (47a, c) arises due to two possible sources for the adjunct phrase that undergoes A'-movement, *when* in (47a), *in which circumstances* in (47c). The lack of low construals in *if*-clauses suggests that *if*-clauses do not involve A'-movement of a covert adjunct.

One response would be to say, as Iatridou (1991) does, that *if*-clauses do not involve A'-movement. If this is the case, *if*-clauses would be perhaps more akin to reduced relatives where only the top-level argument can be abstracted over. Other than this difference, conditional constructions would be like free relative constructions. Still, we think that the explanation lies elsewhere.[20]

In lacking low construals, *if*-clauses resemble *because* and causal *since*-clauses. *Because* and *since* are sentential functions and not quantifiers, that is, they do not bind positions inside their clause. Thus in (49), my leaving has to be due to John's writing and not to Mary's leaving. In other words, it cannot be for the reason *r* such that John wrote that Mary left for reason *r*:

(49) I left because/since John wrote that Mary left.

This point can be made even sharper by abstracting away from the question of matrix vs. embedded extraction and corresponding ambiguities. The complement of *because/since* in (50a) gives the reason for Mary's leaving. This is not the case with (50b), where it is stated that the two events have the same cause:

(50) a. Mary left because/since the bell rang
reason for Mary's leaving = the bell ringing
b. Mary left for the reason for which the bell rang
reason for Mary's leaving = reason for the bell's ringing

Unlike the case of *because* and *since* clauses, however, judgments are not as clear cut with *if*-clauses. Thus Iatridou (1991) suggests that it is not in fact obvious

whether in (51) *if* has a construal like that in (50b), i.e., whether we have 'John will leave in any circumstance in which Peter calls Mary' or 'John will leave under the condition that Peter calls Mary'. The latter involves no variable-binding in the *if*-clause:

(51) John will leave if Peter calls Mary.

The above proposal gets locality by stipulating that *if*-clauses do not involve A'-movement. However, such a proposal seems less attractive for languages like German where the equivalent of *if* is *wenn*, which also appears in *when*-clauses. There seems to be no evidence suggesting that the syntactic behavior of *wenn* is different in conditional and in temporal clauses, i.e., it does undergo A'-movement in both cases. However, the locality effects seen in English conditionals are also found in German. When *wenn* is interpreted as a temporal pronoun it allows low construals; when it is interpreted as a conditional marker, it only allows high construals. So perhaps the explanation is not to be sought in the absence of a null operator, and corresponding absence of A'-movement in conditionals, but in the kind of variable that is being abstracted over.

Thus we believe that while *if*-clauses do not have low construals, they do in fact involve binding. Simplifying grossly, what is said in (51) is that the situations of Peter calling Mary all extend to situations of John leaving. So we do have a situation/world variable which is abstracted over. What is special about conditionals is that we can only abstract over the situation/world variable of the highest predicate. That perhaps situation/world variables only allow local abstraction has been suggested by Heim (p.c., to Iatridou 1991). Hence local A'-movement would proceed unconstrained. But if A'-movements creates a long-distance chain involving a situation/world variable, such a chain would be ruled out on independent grounds, which remain to be explicated.[21]

3.2.4 *Conditional inversion*

Forming conditionals through I-to-C movement is a cross-linguistically attested phenomeonon. On the basis of a survey of several Romance, Germanic, and Slavic languages, and Greek, Iatridou and Embick (1994) make several observations regarding conditional inversion.

First, it appears to be the case that languages which exhibit conditional inversion also have inversion in questions.[22] We are now in a position to account for this generalization. We could assume that V1 antecedents are interrogative clauses, and that they are interpreted as conditional in conformity with the principle in (42), which states that interrogative adjunct clauses are interpreted as conditionals. If V1 antecedents are structurally questions, then it follows that languages which have conditional inversion will have I-to-C movement in questions.

Second, Iatridou and Embick observe that V1 tensed adjunct clauses (i.e., clauses where I-to-C movement has occurred) are always interpreted as conditional and never as, e.g., *because*-clauses. This is an important generalization which we are now in a position to reduce to the principle in (42). This generalization

follows from our assumption above that V1 adjuncts are interrogative clauses and from the principle that interrogative adjuncts are interpreted as conditionals (cf. (42)).

Third, Iatridou and Embick point out that V1 conditional clauses may not be focused. In particular, they show that V1 antecedents may not be the associates of focus adverbs like *only* and *even* and of constituent negation; that they may not be clefted; and that they may not be used as answers to questions. The sentences below illustrate these findings:

(52) a. *Only had I thought that he was sick would I have called him.
b. Only if I had thought that he was sick would I have called him.

(53) a. ??Even had Joe served truffles Kathy would not have been happy.
b. Even if Joe had served truffles Kathy would not have been happy.

(54) a. *It is had John come that Mary would have left.
b. It is if John had come that Mary would have left.

(55) Under what circumstances would Mary have come?
a. #Had she been offered many artichokes.
b. If she had been offered many artichokes.

Iatridou and Embick propose that the truth-value of the proposition expressed by a V1 conditional has to be discourse-old, i.e., there is a requirement not just that the proposition has been under discussion but that also its truth-value is known. This raises some issues with respect to indicative conditionals. If Iatridou and Embick's suggestion is on the right track, the requirement that the truth-value of the proposition expressed by a V1 conditional be known may be the reason why conditional inversion is so restricted in indicative conditionals, given that indicative conditionals do not come with the presupposition or implicature that the truth-value of their antecedent is known. Yet some languages allow conditional inversion in indicative conditionals (e.g., the German examples (12c) and (59c) below). It remains an open question how the discourse-old requirement is to apply to cases like these.[23]

One possibility to explore is that the inability of V1 conditional antecedents to be focused may be derived from their syntactic position. In the discussion of sentence-initial and sentence-final *if*-clauses above we noted that some sentence-initial antecedents are moved from a lower position in the clause, whereas some have to be analyzed as having been base generated as clausal adjuncts. Later we will see evidence for the relation between conditionals and correlative structures. As a preview, correlative adjuncts are base generated outside of the clause and are co-indexed with a proform (in the case of conditionals the proform is *then*). As a result of this structure, correlative clauses may not be focused. If V1 conditional antecedents are in fact base generated in a correlative structure, then it will follow that they should not be able to be focused.

The tests for base generation of the V1 antecedent clause, however, are not conclusive. The absence of Condition C effects with sentence-initial V1 conditionals is in conformity with a proposal that suggests that such antecedents are generated in a clause-adjoined position and not moved there. Yet of course, there is the possibility that V1 antecedents are generated in a lower position but reconstruction is not forced, given that they are adjuncts:

(56) a. Had Mary$_i$ been hungry, she$_i$ would have yelled at Bill.
b. *She$_i$ would have yelled at Bill had Mary$_i$ been hungry.
c. Mary$_i$ would have yelled at Bill had she$_i$ been hungry.

When reconstruction is forced for the purposes of variable-binding, the following paradigm obtains:

(57) a. Had pictures of himself$_i$ been on sale, John$_i$ would have been happy.
b. Had John ignored her$_j$ child, every mother$_j$ would have been upset.

(58) a. *Had John$_i$ ignored her$_j$ child every mother$_j$ would have been upset at him$_i$.
b. *Every mother$_j$ would have been upset at him$_i$ had John$_i$ ignored her$_j$ child.
c. Every mother$_j$ would have been upset at John$_i$ had he$_i$ ignored her$_j$ child.

The examples above show that V1 conditionals are apparently able to reconstruct to a lower position, for the purposes of variable-binding. If V1 clauses were not able to reconstruct, presumably the examples in (57) would have been ungrammatical. Condition C effects obtain, as (58a) shows, indicating that indeed reconstruction is forced for variable-binding. Thus, unfortunately, we cannot reach a conclusion with respect to Iatridou and Embick's generalization regarding the impossibility of focusing a V1 conditional antecedent.

Finally, Iatridou and Embick point out that inversion in counterfactual conditionals is more widely attested than inversion in indicative conditionals; that is, if a language allows inversion in indicatives it will also allow it in counterfactuals, whether the conditional clause is sentence-initial or sentence-final. German is an example of a language where sentence-initial V1 conditional antecedents may be either indicative or counterfactual, but sentence-final ones may only be counterfactual ((59), from Iatridou and Embick 1994):

(59) a. Susanne wäre abgefahren wäre Hans gekommen. German
Susanne would-have left had Hans come
'Susanne would have left if Hans had come.'
b. *Susanne geht kommt Hans
Susanne goes comes Hans
'Susanne goes if Hans comes.'

c. Kommt Hans dann geht Susanne.
comes Hans then goes Susanne
'If Hans comes then Susanne goes.'

In English, as mentioned earlier, counterfactual and future-less-vivid conditionals allow inversion, but indicative conditionals disallow it. The facts are the same in sentence-final conditional clauses:

(60) a. Had he come, we would not have gone.
b. Were he to come, we would not go.
c. Should he come, we would not go.
d. *Does he come, we will not go.
e. *Is he coming, we will not go.

Unlike the two generalizations which we were able to reduce to a single principle, on the assumption that V1 clauses are syntactically questions, this generalization turns out to be harder to explain. It is not clear why counterfactuals (and future-less-vivid conditionals) should more easily allow conditional inversion than indicative conditionals. Perhaps we should rephrase the question and refer to the principle in (42). It may be the case that some languages place restrictions on the kind of interrogative clauses in adjunct position that may be interpreted as conditional. Clearly, more research into this question is necessary.

It is interesting to further note that V1 and non-inverted counterfactual conditionals differ with respect to the implicature of counterfactuality. As often observed (e.g., Stalnaker 1975; Karttunen and Peters 1979; Palmer 1986) counterfactuality in conditionals is implicated, not asserted. The example given to illustrate this is as follows:

(61) If the patient had the measles, he would have exactly the symptoms he has now. We conclude, therefore, that the patient has the measles.

This example shows that although a counterfactual conditional does convey that the proposition expressed by the antecedent is false, this inference is an implicature because it is cancelable. Similarly, one can assert the falsity of the proposition expressed by the antecedent without redundancy:

(62) If the butler had done it, we would have found blood on the kitchen knife. The knife was clean, therefore the butler did not do it.

Interestingly, Iatridou and Embick (1994) point out that in V1 conditionals the counterfactuality inference cannot be canceled. Consider the contrast in the examples below (from Iatridou and Embick 1994):

(63) a. If he had broken his leg in his childhood, which, in fact, he did, he would have exactly this type of scar.

b. #Had he broken his leg in his childhood, which, in fact, he did, he would have exactly this type of scar.

Iatridou and Embick make the conjecture that the discourse-old status of the proposition expressed by a V1 conditional is responsible for the non-cancelability of the counterfactuality inference.

4 The conditional–correlative link

Correlative constructions involve a free relative clause adjoined to the matrix clause and co-indexed with a proform inside it (cf. Srivastav 1991b; Dayal 1996a; among others):

(64) [free relative]$_i$ [. . . proform$_i$ . . .]

In many languages conditionals are correlative structures themselves or are historically derived from correlative constructions. The *if*-clause is the correlative clause, and *then* is a correlative proform. Our proposal that *if*-clauses are free relatives, i.e., definite descriptions of possible worlds, naturally predicts that they should be able to appear in the correlative construction.

Geis (1985), von Fintel (1994), and Izvorski (1997b), among others, have suggested that conditional constructions are related to correlatives. Geis was perhaps the first to note that conditional constructions in English are the remnants of a strategy of correlativization that was once more productive in the language.

Treating some conditionals as correlatives helps us to understand several aspects of the behavior of conditionals cross-linguistically. In languages where correlativization is a productive strategy, it is apparent that conditionals are correlatives (e.g. Marathi) ((65), from Pandharipande 1997):

(65) a. *(dzar)* tyāne abhyās kelā *tar* to pā hoīl.
if he-ag studying do.Pst.3MSg then he pass be.Fut.3S
'If he studies, he will pass (the exam).'

b. *dzo* māṇūs tudzhyā śedzārī rāhto *to* māṇūs
which man your neighborhood-in live-Prs.3MSg that man
lekhak āhe.
writer is
'The man who lives in your neighborhood is a writer.'
(Lit. 'Which man lives in your neighborhood, that man is a writer.')

In addition, treating conditionals as correlatives helps to explain facts concerning the semantic contribution of *then* (section 4.1), the syntax of conditionals with *then* (section 4.2), and constraints on stacked *if*-clauses (section 4.2). There are also some challenges that need to be faced by a theory that treats conditionals as correlatives, and these are discussed in section 4.3.

4.1 Then *as a correlative proform*

One of the arguments for treating conditionals as correlatives is the existence of *then*, which is plausibly analyzed as the correlative proform corresponding to the *if*-clause. Treating *then* as a correlative proform is advantageous because we are able to provide a very general analysis of its syntax and semantics. Its semantic properties turn out to be properties shared by correlative proforms, and its syntactic properties turn out to be shared by correlative constructions more generally. Here we review a few properties of *then* and how they are part of the larger picture of correlative constructions.

4.1.1 *The semantic contribution of* then

Conditional *then* appears to have hardly any interpretive contribution. Its presence in conditionals is not required (except in reduced conditionals; see below), and the difference in meaning between *if p*, *q* and *if p*, *then q* is not obvious. For this reason, in semantic discussions *then* is usually either treated as part of a discontinuous logical connective *if . . . then* or simply ignored. Iatridou (1991, 1994) challenges the view that conditional *then* is semantically vacuous. She proposes that *then* is associated with a particular presupposition; when this presupposition is incompatible with the meaning of the conditional, the appearance of *then* is precluded.

Specifically, Iatridou proposes that a statement of the type *if p*, *then q* has the assertion of a conditional without *then*, and that, in addition, *then* contributes the presupposition that at least some of the $\neg$ *p*-cases are $\neg$ *q*-cases.

To illustrate with an example, the conditional in (66) asserts (66a) and presupposes (66b):

(66) If Stefan is happy, *then* he sings in the shower.
   a. In every case in which Stefan is happy, he sings in the shower.
   b. Not in every case in which Stefan is not happy does he sing in the shower.

The presupposition in (66b) is in effect a statement that there is some case in which Stefan is not happy and he does not sing in the shower. Thus (66) cannot be felicitously uttered if the speaker wants to convey that Stefan always sings in the shower, happy or not.

The interpretive contribution of conditional *then* is discussed in von Fintel (1994) as well. Von Fintel assumes Iatridou's proposal about the meaning of *then* but also differs from her in one respect. For him the use of *then* triggers a (conventional) implicature that alternatives to the antecedent (all $\neg$ *p* cases) do not satisfy the matrix proposition.

The meaning contribution of conditional *then* is of particular interest here, because Izvorski (1996b) shows that correlative proforms behave quite similarly to conditional *then*. In particular, Izvorski proposes that, given a choice between structures like (67a) (a correlative) and (67b) (a free relative in argument or

adjunct position inside the clause, i.e., a non-dislocated free relative), the structure with the proform is associated with a presupposition that alternatives to the free relative do not make the main clause true:[24]

(67) a. $[_{CP}$ [free relative]$_i$ $[_{CP}$ . . . proform$_i$ . . .]]
b. $[_{CP}$ . . . [free relative] . . .]

Thus, we see that there are good reasons to treat conditional *then* as an anaphoric element of the correlative proform type.

Next, we briefly examine several cases where *then* is unacceptable. The examples fall in two categories; namely, *then* is not felicitous (i) when the consequent of the conditional is asserted, and (ii) when the consequent presupposes the antecedent.

The set of examples in (68–70) illustrates the case of the asserted consequent. If the antecedent explicitly exhausts all possibilities (as in (68a)), is the associate of *even* (as in (68b)),[25] or is scalarly exhaustive (as in (68c) and (68d)), *then* is precluded (examples from Iatridou):

(68) a. If John is dead or alive, (#*then*) Bill will find him.
b. Even if John is drunk, (#*then*) Bill will vote for him.
c. If I were the richest linguist on earth, (#*then*) I (still) wouldn't be able to afford this house.
d. If he were to wear an Armani suit, (#*then*) she (still) wouldn't like him.

Consider (68a). Because the predicate *dead or alive* does not allow for alternatives (i.e., John is necessarily dead or alive), the conditional asserts that Bill will find John. Predictably, *then* is not acceptable. Similarly, in (68b), the conditional without *then* asserts that Bill will vote for John under any circumstances. As in the previous case, the antecedent is exhaustive: the use of *even* is associated with universal quantification over a scale; the associate of *even* marks an end-point on the scale and the proposition is taken to hold for all other alternatives to the associate on the scale (cf. Horn 1969; Fauconnier 1975; Karttunen and Peters 1979; Rooth 1985). The appearance of *then* brings about the presupposition that in some state of affairs Bill will not vote for John, which clearly clashes with the assertions of the sentence. Therefore, *then* is unacceptable in *even if* conditionals. Yet another way to have an exhaustive antecedent is to use a superlative or pragmatically determined end-point of a scale (cf. Fauconnier 1975). These cases are completely analogous to *even if* conditionals, and *then* behaves in a similar fashion, as (68c) and (68d) show.

Related to the above cases is the observation in von Fintel (1994) that *unless* conditionals also prohibit the use of *then*. This fact is illustrated in (69) (from von Fintel 1994: 96):

(69) Unless it rains tomorrow, (#*then*) I won't leave.

The behavior of *unless* conditionals with respect to *then* is predicted by Iatridou's proposal in combination with von Fintel's analysis of the semantics of *unless* clauses. Von Fintel proposes that *unless* is an exceptive operator on the restrictive clause of conditionals. Assuming the Lewis–Kratzer (cf. Lewis 1975; Kratzer 1986) approach to conditionals, *unless p*, *q* receives a semantic representation *Op [except p] [q]*, i.e., (69) is interpreted roughly as *All cases, except the ones in which it rains tomorrow, are cases in which I won't leave.* Under the approach pursued by von Fintel, *unless p*, *q* is paraphrasable as *except if p, q*, and it asserts that for all the alternatives to *p*, *q* holds. Since the presupposition associated with *then* requires at least some of the $\neg p$ cases to be $\neg q$ cases, clearly *then* is expected to be disallowed in an *unless* conditional.

Finally, relevance conditionals also prohibit *then*. Their antecedent does not form the restrictive clause of an operator (in a Lewis–Kratzer-style approach) but rather presents the conditions under which the information provided by the consequent would be relevant. Since the consequent in relevance conditionals is always asserted, the unacceptability of *then* is to be expected:

(70) If you are thirsty, (#*then*) there's beer in the fridge.

In (70) *then* would bring about the meaning that at least in some situations in which the hearer is not thirsty, there will not be beer in the fridge, which contradicts the assertion of the sentence.

The second set of cases in which *then* cannot appear in conditionals is when the antecedent is a presupposition of the consequent. Consider (71a) and (71b) (from Iatridou):

(71) a. If [there are clouds in the sky]$_i$ (#*then*) it$_i$ puts her in a good mood.
b. If Mary bakes [a cake]$_i$, (#*then*) she gives some slices of it$_i$ to John.

In (71a), in order for the consequent to be evaluated, *it* has to have a referent and therefore the antecedent should be true, i.e., the cases considered should be the cases in which there are clouds in the sky. However, the presupposition contributed by *then* is exactly that in some alternatives to the antecedent, i.e., situations where there are no clouds in the sky, the consequent is false. But to evaluate situations where there are no clouds in the sky would mean that *it* would no longer have its original referent. Thus, predictably, *then* is not permitted in (71a). In (71b) the consequent also has to presuppose the truth of the antecedent for the licensing of anaphora. Since in (71b) *it* refers to the cake baked by Mary, it requires the truth of the antecedent for establishing its reference. The use of *then*, on the other hand, requires evaluating at least some cases where the antecedent doesn't hold, thus preventing felicitous anaphora.

In discussing the environments that prohibit the use of conditional *then*, Iatridou (1994) identifies a problematic case: *only if* conditionals are compatible with the presupposition of *then*, yet they disallow it:

(72) #Only if it is sunny (#*then*) will I visit you.[26]

Only if conditionals are expected to permit *then* because their assertion in fact strengthens the presupposition introduced by *then*. Whereas the appearance of *then* requires that some of the $\neg p$ cases be $\neg q$ cases, the *only if* conditional asserts that none of the alternatives to p satisfies q; that is, that all $\neg p$ cases are $\neg q$ cases. The clash between *only* and *then*, then, is a puzzle. And, of course, *only* is not inherently incompatible with conditional *then*. When *only* takes *then* as its associate, rather than the antecedent clause, the sentences are grammatical:

(73) If he comes only then will she leave.

The solution to this problem cannot be quite as straightforward as the suggestion that *only* is a quantificational element and cannot be left-dislocated, together with its antecedent, on analogy with *everyone/someone* in the case of left dislocation in (74):

(74) *Everyone$_i$/someone$_i$, Mary likes him$_i$.

The reasons for this are several. First, treating *only* as a dyadic quantifier taking the antecedent and the consequent clause of conditionals as its arguments is problematic. Instead, as shown by von Fintel (1997), *only* is better analyzed as an operator on propositions. If so, constraints against left dislocation of *only* and the *if*-clause are harder to formulate, as the two do not form a constituent.

A second problem, as Iatridou points out, is that the discussion about *then* is situated within a semantic theory of conditionals that takes any conditional to be a quantificational construct, with the *if*-clause restricting an overt or covert operator. But then, *then* is expected to be always precluded, as in its presence the *if*-clause must be left-dislocated. We cannot simultaneously hold that the #*only if . . . then* problem is due to the fact that left-dislocated clauses do not make good restrictors of quantificational operators, and still analyze *if p then q* conditionals as quantificational constructions.

A solution to the #*only if . . . then* problem has been suggested in Izvorski (1997b). She proposes that the relevant factor in the behavior of proforms in the presence of *only* is a clash in the requirements of focus: the associate of *only* needs to be focused, yet the antecedent in the correlative construction cannot be focused.

4.1.2 *The distribution of* then

The proform *then* may be present without an overt *if*-clause:

(75) A: John might come.
B: Well, then I will leave.

However, with an overt *if*-clause, *then* may appear only if the *if*-clause is sentence-initial:

(76) a. If John leaves, I will come home.
b. If John leaves, then I will come home.

(77) a. I will come home if John leaves.
b. *Then I will come home, if John leaves.

More generally, an overt *if*-clause needs to be structurally adjacent to the *then*-clause with which it is associated ((78), from Izvorski 1997b; also see Collins 1998):

(78) a. If it rains, *then* I think that we should stay at home.
b. *If it rains, I think that *then* we should stay at home.

Correlative proforms can, in general, stand by themselves. Cross-linguistically they tend to be drawn from the class of demonstrative pronouns and in the absence of a correlative clause to restrict what they pick out, they just behave like ordinary demonstratives. This is why *then* can appear by itself (cf. 75). The relationship between a correlative proform and the correlative clause involves binding and thus requires c-command. (77b) is ungrammatical because the correlative clause (= the *if*-clause) does not c-command the correlative proform. In addition to the c-command requirement, there is also a locality requirement that holds between the correlative clause and correlative proform. There are different ways of stating this requirement, but the intuition is that the surface location of the *then* marks a predicate that combines with the *if*-clause. Thus the *if*-clause and the *then* must be structurally adjacent. (78b) is ungrammatical due to the failure of structural adjacency.

The assimilation of conditionals with correlatives also helps us to explain the distribution of *then* in stacked *if*-clauses. As discussed earlier, the presence of *then* in a conditional is not obligatory. However, if more than one *if*-clause is present, then only the most deeply embedded *then* may be omitted. All others must be present ((79), based on an example in Kratzer 1986):

(79) If you are back before eight, *(then) if the roast is ready, *(then) if we are both hungry, (then) we will have dinner together.

These facts are reminiscent of facts concerning stacked relative clauses discussed by Jacobson (1983), who noted that when more than one relative clause modifies a DP, all but the innermost relative clause must have overt material in its COMP domain, i.e., there must be an overt relative operator or an overt relative complementizer:

(80) every man (who/that) I like *(who/that) I invited

However, it is not plausible to analyze *then* as a relative pronoun. For one thing, it is the *if*-clause that we have analyzed as a free relative. It is well known that correlatives, unlike headed relative clauses, do not allow stacking. This falls out naturally from the semantics of correlatives which involve variable-binding. Once a correlative clause binds a correlative proform, that correlative proform cannot be bound by another correlative clause. In contrast, headed relative clauses combine with the head they modify by set-intersection, which imposes no such limitation. It is plausible that the requirement for overt *then* has a similar source. The lowest *if*-clause can combine directly with the main clause, and hence it does not require a *then*. The higher *if*-clause cannot combine directly with the main clause, because there is only one position for an *if*-clause and it is already occupied by the lowest *if*-clause. Any further modification requires an overt *then* which is bound by the next highest *if*-clause. A *then* can only be bound by its immediately superior *if*-clause. Therefore all but the lowest *if*-clauses need to appear with an overt *then*. According to this analysis there are never any truly stacked *if*-clauses.

4.2 *Structure for conditionals with* then

Collins (1998) and Iatridou (1991) have noted that there is a contrast between extraction from the main clause of a conditional with *then* and from a conditional without *then*. Extraction out of consequents of conditionals is degraded, but extraction out of the consequents of conditionals which have *then* is perceived to be worse:

(81) **Clefting (from Collins 1998):**
   a. ?It is the TA that if the student does poorly, the teacher will fire.
   b. ?*It is the TA that if the student does poorly, then the teacher will fire.

(82) **Question formation (from Collins 1998):**
   a. ?Which TA did John say that if the student does poorly, the teacher would fire?
   b. ?*Which TA did John say that if the student does poorly, then the teacher would fire?

It is possible to cleft *if*-clauses. However, clefting of the *if*-clause is blocked in the presence of *then* ((83–84), from Collins 1998):

(83) a. It is if Bill comes home that Mary will leave.
   b. *It is if Bill comes home that *then* Mary will leave.

(84) a. It is if Bill comes home that John said (that) Mary would leave.
   b. *It is if Bill comes home that John said (that) *then* Mary would leave.

Finally, the presence of *then* blocks adjunct extractions ((85–86), from Collins 1998):

(85) a. How did John say that Bill would fix the car if Mary brought the tools?
b. (?)How did John say that if Mary brought the tools, Bill would fix the car?
c. *How did John say that if Mary brought the tools, then Bill would fix the car?

(86) a. Why did John say that Bill would be upset, if Mary left?
b. (?)Why did John say that if Mary left, Bill would be upset?
c. * Why did John say that if Mary left, then Bill would be upset?

Iatridou (1991) and Collins (1998) propose structures which reflect the fact that extraction from conditionals with *then* is degraded. We have already seen that sentence-initial *if*-clauses without *then* can be handled as involving IP/CP adjunction and that sentence-final *if*-clauses involve VP-adjunction. The basic intuition that Iatridou's and Collins's structures capture is that conditionals with *then* involve additional structure which provides an extra barrier to movement. Due to this extra barrier, extraction is degraded.

Collins entertains the following structures for conditional with *then*. The extra FP layer is responsible for making extraction of the consequent clause degraded:

(87) a. $[_{FP}$ *if*-clause $[_{F'}$ $[_{F}$ then] $[_{IP} \ldots]]]$
b. $[_{FP}$ *if*-clause $[_{FP}$ then $[_{F'}$ F^0 $[_{IP} \ldots]]]]$

While Collins does not actually choose (87a) over (87b), he suggests that the structure in (87b) is unable to account for the fact seen in (83) and (84), namely that *if*-clauses can only be clefted in the absence of a *then*. This is putatively so because both (87b) and the structure assumed for *then*-less sentence-initial conditionals involve adjunction. Collins notes that in both these structures the *if*-clause crosses no barriers, and thus clefting should be good irrespective of the presence of *then*. The contrast between the location of the *if*-clause in a sentence-initial conditional without *then* (IP-adjunction) and in (87a) (= [Spec, FP]) is exploited by Collins within a Barriers-style extraction theory to derive the difference in grammaticality between (83a) and (83b), and (84a) and (84b), respectively.

The fact in (83) and (84) can be offered an alternative explanation, however. As Collins notes, the structure in (87b) resembles (88), which is a structure that has been proposed for topicalization:

(88) $[_{CP}$ NP $[_{CP}$ Op_i $[_{C'} \ldots]]]$

If-clauses have been claimed to be *topics* (cf. Haiman 1978, 1993), and so the structure in (87b) is preferable, since it captures the affinity between conditional constructions and topicalizations. The structure in (87b) also makes the parallel with correlatives clearest. Let us consider a variant of this structure:

(89) [*if*-clause]$_i$ [then$_i$ $[_{IP} \ldots t_i]]$

This variant of (87b) eliminates the functional projection FP. The main reason for postulating FP was to provide a barrier that would degrade the extraction of arguments and block the extraction of adjuncts. This blocking effect is created in (89) by the movement of *then*. We assume that *then* needs to move to create a predicate (cf. Heim and Kratzer 1998).[27]

That we need to move *then* is shown by contrasts like the following (= (78); from Izvorski 1997b; also see Collins 1998):

(90) a. If it rains, $then_i$ I think that [we should stay at home t_i].
b. * If it rains, I think that *then* we should stay at home.

For further arguments that the correlative proform undergoes obligatory movement in a number of languages, see Izvorski (1996b). This A'-movement of *then* makes further movements out of the main clause Subjacency violations.

The ungrammaticality of *then* with clefted *if*-clauses can be related to the marginality of variable-binding in *it*-clefts:

(91) a. No Italian man_i loves his_i mother.
b. ???/*It is no Italian man_i who loves his_i mother.

Under the proposed structure, there needs to be a relationship of variable-binding between the conditional clause and *then*. The clefted structures with *then* are bad because the structure of the *it*-cleft does not provide an appropriate configuration for a variable-binding relationship to hold between the *if*-clause and the *then*.

What happens when there is no *then*? In these cases, the *if*-clause, being an adjunct, can be merged at the IP-level (sentence-initial) or VP-level (sentence-final). As discussed earlier, there seems to be some evidence that an IP-level *if*-clause has two sources: it may have been merged there or it may have moved there from a VP-adjoined position. In the absence of *then*, the *if*-clause behaves like an ordinary free relative.

We could have assumed that in the absence of an overt *then*, there is always a covert *then*. However, this option can be ruled out. If a covert *then* was obligatorily present, it would move like the overt *then* and therefore block adjunct extractions. We would not find any extractability contrasts that depended upon the presence of *then*.

4.2.1 If-*clauses as definites*

As mentioned earlier, two recent semantic treatments of conditional clauses analyze them as plural definite descriptions (cf. Schein 2001; Schlenker 2001b). This is exactly the interpretation that conditionals would receive if they are free relatives involving abstraction over possible worlds. Free relatives involving abstraction over individuals are interpreted as plural definite descriptions of individuals (cf. Jacobson 1995; Dayal 1996a). The semantic arguments put forth by Schein and Schlenker are outside the scope of this chapter, but we will present some of the syntactic facts that Schlenker uses in support of his proposal.

Schlenker notes that if *if*-clauses are definite world descriptions which furthermore can be doubled by a world pronoun (*then*), we would expect them to share the binding properties of referential elements. In particular, it can be shown that *if*-clauses are subject to Condition C of the Binding Theory ((92), from Schlenker 2001b):

(92) a. [If it were sunny right now]$_i$ I would see people who would then$_i$ be getting sunburned.[28]
b. *I would then$_i$ see people who would be getting sunburned [if it were sunny right now]$_i$.
c. Because I would then$_i$ hear lots of people playing on the beach, I would be unhappy [if it were sunny right now]$_i$.

The examples make reference to the time of utterance, as a result of which *then* has to be interpreted modally and not temporally. Crucially, backward anaphora between the pronoun and the *if*-clause is possible, as (92c) shows, yet when the pronoun c-commands the *if*-clause, coreference is precluded. As Schlenker notes, the natural conclusion is that *if*-clauses, like other R-expressions, are subject to Condition C of the Binding Theory.

4.3 *Some apparent problems for the conditional–correlative link*

We have sketched some of the arguments, both conceptual and empirical, for treating conditionals with *then* in English as a kind of correlative construction. We believe that, on the whole, the evidence supports the analysis of conditionals as correlative constructions and *if*-clauses as free relatives. However, there are still some hurdles that this assimilatory analysis has to get over.

One may be the absence of low construals in the case of *if*-clauses, discussed earlier. Free relatives normally allow the variable abstracted over to be long-distance bound by the *wh*-operator. We suggested that possibly the nature of world variables is such that they need to be locally bound. Still, the issue needs further research.

Another problem arises in the apparent availability of reconstruction in the presence of *then*. Let us go over the analysis of conditionals with and without *then*:

(93) a. **Sentence-final *if*-clause:**
Bill will [$_{VP}$ [$_{VP}$ leave] [$_{CP}$ if Mary comes]].
b. **Sentence-initial *if*-clause, no *then*:**
Structure 1: merger in VP-adjoined position followed by fronting:
[$_{IP}$ [$_{CP}$ If Mary comes]$_i$ [Bill will [$_{VP}$ [$_{VP}$ leave] t$_i$]]]
Structure 2: merger in IP-adjoined position:
[$_{IP}$ [$_{CP}$ If Mary comes] [$_{IP}$ Bill will leave]]
c. **Sentence-initial *if*-clause, then**:
[$_{IP}$ [$_{CP}$ If Mary comes]$_i$ [$_{IP}$ then$_i$ [Bill will [$_{VP}$ [$_{VP}$ leave] t$_i$]]]

Note that according to the structures in (93), a sentence-initial *if*-clause can originate lower than its surface position only when there is no *then*. When a *then* is present, it is the *then* that moves, and not the *if*-clause.

However, an argument for reconstruction comes from cases like (94) and (95), where the *if*-clause appears separated from the structure it modifies:

(94) *If John$_i$ is sick, he$_i$ thought that Bill would visit.

(95) *If John$_i$ is sick, then he$_i$ thought that Bill would visit.

Under the proposed analysis, at LF the *if*-clause would appear in the c-command domain of *he*. This explains why coreference between *he* and *John* is ruled out in (94). However, as far as we can tell, the coreference judgments stay the same even if a *then* is present.

By the structures in (93), only the *then* has raised in (95). The *if*-clause is merged high. Hence the Condition C effects seen in (95) are unexpected.[29]

5 Factual and relevance conditionals

The conditionals we have discussed so far are also known as hypothetical conditionals. They are the prototypical example of the conditional construction, but in fact there are also two other types of conditionals.[30] Relevance conditionals, also called 'conditional speech acts', are illustrated below:

(96) a. If I may be honest, you are not looking good
b. If you want to know, 4 isn't a prime number.
c. If you are thirsty, there is beer in the fridge.

The *if*-clause in relevance conditionals specifies the circumstances in which the consequent is discourse-relevant, not the circumstances in which it is true.

Factual conditionals, on the other hand, carry the presupposition that someone (other than the speaker) believes the proposition expressed by the *if*-clause to be true:[31]

(97) A. This book that I am reading is really stupid.
B. I haven't read it but if it is so stupid you shouldn't bother with it.

(98) A. My friend Joe, whom you haven't met, is very smart.
B. Oh yeah? If he's so smart why isn't he rich?

Languages may employ distinct complementizers/operators to introduce factual conditionals. For instance, in Bulgarian, *štom* 'when, given that' may be used in factual conditionals but not in hypothetical or relevance conditionals, which employ *ako* 'if'.

Relevance and factual conditionals exhibit syntactic behavior distinct from that of hypothetical conditionals. Here we will examine a number of syntactic differences.

5.1 Relevance conditionals

Relevance conditionals cannot contain the world proform *then*:

(99) a. #If I may be honest, then you are not looking good
b. #If you want to know, then 4 isn't a prime number.
c. #If you are thirsty, then there is beer in the fridge.

If a *then* is nevertheless used, then the interpretation changes to one of a hypothetical conditional. This follows from the analysis of the semantic contribution of *then* proposed by Iatridou (1994), and discussed above.

In Dutch (and other V2 languages) the *if*-clause of a hypothetical conditional behaves like the first element for V2, but the antecedent of a relevance conditional does not:

(100) a. Als Jan weggaat ga ik ook weg.
if John away goes go I also away
'If John goes away I will go away too.'
b. *Als Jan weggaat ga ik ook weg.
c. Als je het wil weten 4 is geen priem getal.
if you it want know 4 is no prime number
'If you want to know 4 is not a prime number.'
d. *Als je het wil weten is is geen priem getal.

Again, if a V2 order is forced on a relevance conditional, then it is coerced into a hypothetical:

(101) Als je honger hebt is er een boterham op de tafel.
if you hunger have is there a sandwich on the table
'If you are hungry there is a sandwich on the table.'

The relevance conditional can only be embedded under speech-act verbs:

(102) a. John said that if you are thirsty there is beer in the fridge.
b. *John believes that if you are thirsty there is beer in the fridge.

There is evidence that even when it is sentence-final, the *if*-clause of a relevance conditional is attached high, to IP/CP. Relevance conditionals cannot be fronted by VP fronting (or left stranded):

(103) a. *Look sick if I may say so though John does . . .
b. ??Look sick though John does if I may say so . . .

5.2 Factual conditionals

The proposition expressed by the *if*-clause in a factual conditional is presupposed, as evidenced by the fact that the *if*-clause cannot associate with focus:

(104) *She only should leave [if she is so unhappy].

(105) a. It is if I drink too much wine that I get dizzy.
(Haegeman and Wekker 1984)
b. *It is if you like her so much that you should invite her.

Like hypothetical but unlike relevance conditionals, factual conditionals accept the proform *then*:

(106) a. If it is stupid then you shouldn't bother with it.
b. If he's so smart then why isn't he rich?

Like the *if*-clause in a hypothetical conditional, but unlike the antecedent in relevance conditionals, the *if*-clause in factual conditionals behaves as the first element for V2:

(107) a. Als je zo ongelukkig bent moet je weggaan. Dutch
if you so unhappy are must you leave
'If you are so unhappy you must leave.'
b. *Als je zo ongelukkig je moet weggaan.

Factual *if*-clauses cannot be preposed together with the VP in case of VP fronting; however, they can be stranded:

(108) a. *Leave this place if he is so unhappy though he should . . .
b. *Leave this place though he should if he is so unhappy . . .

The above facts suggest that the sentence-final *if*-clause in a factual conditional is adjoined higher than the VP. Yet Condition C effects also obtain, suggesting that the *if*-clause is not as high as the matrix IP/CP:

(109) *He$_i$ should leave if Bill$_i$ is so unhappy.

Generally, factual *if*-clauses share properties with appositives. As with appositives, no binding into factual *if*-clauses is possible:

(110) a. Every boy$_i$ saw the teacher who flunked him$_i$ walk away.
b. *Every boy$_i$ saw John, who flunked him$_i$, walk away.

(111) a. Every boy$_i$ yells at Bill if he$_i$ is hungry.
b. *Every boy$_i$ should leave if he$_i$ is so unhappy.

Parasitic gaps are possible in hypothetical conditionals but not in factual conditionals. This contrast cannot be attributed to a difference in attachment sites, because the anti-c-command requirement between the parasitic gap and the licensing variable is satisfied, no matter what the attachment of the *if*-clause is. Rather, this characteristic of factual antecedents is attributable to their similarity to appositives, i.e., they do not permit any dependence that is not satisfied in the clause itself:

(112) a. Who should she invite if she sees again?
b. *Who should she invite if she likes so much?
c. Bill, who she should invite if she sees again . . .
d. *Bill, who she should invite if she likes so much . . .

5.3 *Stacking* if*-clauses of different types*

The discussion above shows that *if*-clauses of different types attach at different levels. If they appear together, predictably ordering restrictions apply. Sentence-final *if*-clauses appear in the order hypothetical, factual, relevance:

(113) a. You should leave [$_{FC}$ if you are so unhappy] [$_{RC}$ if I may say so].
b. *You should leave [$_{RC}$ if I may say so] [$_{FC}$ if you are so unhappy].

(114) a. You should invite her to tea [$_{HC}$ if you see her again] [$_{FC}$ if you like her so much].
b. *You should invite her to tea [$_{FC}$ if you like her so much] [$_{HC}$ if you see her again].

(115) a. Peter takes his dog out [$_{HC}$ if it rains] [$_{RC}$ if you want to know].
b. *Peter takes his dog out [$_{RC}$ if you want to know] [$_{HC}$ if it rains].

(116) You should invite her to tea [$_{HC}$ if you see her again] [$_{FC}$ if you like her so much] [$_{RC}$ if I may say so].

6 Other conditional structures

6.1 *Adnominal conditionals*

The conditionals discussed so far have involved antecedents adjoined to clausal constituents (IP, VP). We have suggested that these should be analyzed on a par with free relative clauses, which sometimes appear clause-internally and sometimes in correlative structures. Lasersohn (1996) introduces a class of conditionals which he calls *adnominal* conditionals, where, he argues, the antecedent clause is adjoined to an NP:

(117) But we all know the consequences if we fail.

The structure that Lasersohn suggests has the *if*-clause internal to a DP:

(118) [Det [NP *if*-clause]]

This structure resembles closely the structure for headed relative clauses. Adnominal conditionals can thus be seen as the headed relative counterpart of VP/IP adjoined conditionals, which have been analyzed here as free relative clauses.

Since adnominal conditionals appear DP-internally, they can occur in positions where other DPs can, but where conditional clauses cannot. We have seen earlier that *if*-clauses cannot appear clause-medially unless they are set off by parenthetical intonation:

(119) a. John, if you bother him long enough, will give you five dollars.
b. * John if you bother him long enough will give you five dollars.

In contrast, adnominal conditionals can appear in clause-medial positions without requiring parenthetical intonation:

(120) a. The fine if you park in a handicapped spot is higher than the fine if your meter expires.
b. The outcome if John gets his way is sure to be unpleasant for the rest of us.

Evidence for the DP-internal location of the adnominal conditional is also provided by evidence from coordination, as well as the fact that a DP containing an adnominal conditional can be further modified by a relative clause:

(121) a. [[The location if it rains] and [the location if it doesn't rain]] are within five miles of each other.
b. The [[consequences if we fail] [that he mentioned]] are not nearly as bad as the [[consequences if we fail] [that he didn't mention]].

In certain cases, it seems plausible to treat the nominal expression modified by the adnominal conditional as a concealed question. If we do this the exceptionality of adnominal conditionals (modifying NPs instead of VP/IPs) seems to disappear:

(122) a. We all know the consequences if we fail.
b. We all know [what the consequences will be if we fail].

However, Lasersohn points out that such an approach is not generally tenable, because not all nominals modified by adnominal conditionals appear as complements of verbs that take interrogative complements.

Lasersohn considers another approach where the nominal modified by the adnominal conditional could be treated as a concealed free relative:

(123) a. the consequences if we fail
b. what(ever) the consequences would be if we fail

This approach seems initially plausible but requires much further justification. For one, the free relative *whatever the consequences would be* replaces *the consequences*. This means that the structure of the adnominal construction must be [[Det N] *if*-clause], and not [Det [N *if*-clause]]. Now consider (121b), which involves restrictive modification by a relative clause. To restrictively modify the free relative, the relative clause must be associated with *the consequences*. However, what it needs to really modify is *consequences [if we fail]*, and there does not seem to be any constituent in the free relative with equivalent semantics.

Instead Lasersohn provides a semantics to interpret [N *if*-clause] structures directly. According to his semantics, [N *if*-clause] picks out objects in the denotation of N in the words where the *if*-clause holds. The objects in the denotation of N have to exist in the world where the *if*-clause holds but need not exist in the actual world. Therefore an adnominal conditional gives us a way of making reference to non-existent objects.

6.2 Reduced conditionals

Typically, the consequents of conditionals constitute well-formed sentences by themselves:

(124) a. If it is sunny, then I will go to the park.
b. Then I will go to the park.

Schwarz (1998) discusses a class of conditionals from German where the consequent does not constitute a well-formed sentence by itself:

(125) **Reduced conditional:**
a. Wenn einer den Peter besucht, dann der Hans.
if someone-Nom the-Acc Peter visits then the-Nom Hans
'If someone visits Peter then it's Hans.'
b. Wenn der Hans wen besucht, dann den Peter.
if the-Nom Hans someone-Acc visits then the-Acc Peter
'If Hans visits someone then it's Peter.'

(126) a. *Dann der Hans
then the-Nom Hans
b. *Dann den Peter
then the-Acc Peter

Reduced conditionals can be related to the corresponding unreduced conditional by supplying material from the antecedent. Thus (125a, b) can be taken to involve the following reductions respectively:

(127) a. Wenn einer **den Peter besucht**, dann $_{\text{besucht}}$ der
if someone-Nom the-Acc Peter visits then the-Nom
Hans $_{\text{den Peter}}$.
Hans
'If someone visits Peter then it's Hans.'

b. Wenn **der Hans** wen **besucht**, dann $_{\text{besucht der Hans}}$
if the-Nom Hans someone-Acc visits then
den Peter.
the-Acc Peter
'If Hans visits someone then it's Peter.'

However, reduced conditionals seem to have several properties, both syntactic and semantic, that suggest that they are not merely reduced versions of their unreduced counterparts.[32] Structurally reduced conditionals differ from full conditionals in that *dann* 'then' is obligatory in reduced conditionals but optional in full conditionals. Interpretively, too, reduced conditionals differ from full conditionals on several properties identified by Schwarz (1998). The first difference is that the antecedent of a reduced conditional must contain an indefinite:

(128) **Indefiniteness requirement:**

a. *Wenn ich den Karl besuche, dann immer den Peter.
if I the-Acc Karl visit then always the-Acc Peter

b. Wenn ich den Karl besuche, dann besuche ich immer den
if I the-Acc Karl visit then visit I always the-Acc
Peter.
Peter
'If I visit Karl then I always visit Peter.'

c. Wenn ich wen besuche, dann immer den Peter.
if I someone-Acc visit then always the-Acc Peter
'If I visit someone then it's always Peter.'

The second distinction is shown in (129), which shows that reduced conditionals introduce presuppositional requirements that unreduced conditionals do not:

(129) **Presupposition effect:**

a. !!Wenn ich was zum Lesen mitnehme, dann immer
if I something to read along-take then always
meine Brille.
my glasses
'If I take something to read then it's always my glasses.'

b. Wenn ich was zum Lesen mitnehme, dann nehme ich immer
if I something to read along-take then take I always
meine Brille mit.
my glasses along
'If I take something to read then I always take my glasses.'

(129a) comes with a presupposition to the effect that glasses are something to read, and so it is perceived to be deviant. There is no such presupposition associated with (129b).

Schwarz refers to the third distinction as the *exhaustiveness* effect. This effect is exemplified by (130):

(130) **Exhaustiveness effect:**

a. Wenn ich wen besuche, dann immer den Peter.
if I someone-Acc visit then always the-Acc Peter
'If I visit someone then it's always Peter.'
(I cannot visit anybody other than Peter.)

b. Wenn ich wen besuche, dann besuche ich immer den Peter.
if I someone-Acc visit then visit I always the-Acc Peter
'If I visit someone then I always visit Peter.'
(I may visit people other than Peter.)

(130a, b) are both grammatical. However, as indicated, they differ in their truth-conditions.

According to Schwarz, these differences between reduced and unreduced conditionals follow if we assume that both the antecedent and the consequent clause in a reduced conditional make reference to the same event. In contrast, the antecedent and the consequent of an unreduced conditional can make reference to distinct events.

The indefiniteness requirement illustrated by the ungrammaticality of (128a) comes about as follows. Since (128a) is a reduced conditional, both the antecedent and the consequent make reference to the same event. For the truth of (128a), it is necessary that events of my visiting Karl are events of my visiting Peter. Now by the minimality of events, an event of my visiting Karl cannot simultaneously be an event of my visiting Peter. Thus (128a) is false if there is an event of my visiting Karl. From De Swart (1993), we know that multi-case conditional are felicitous only when there are at least two distinct events for the proposition expressed by the antecedent. The sentence is thus false whenever it is felicitous. In other words, it presupposes that it is false. Schwarz suggests that sentences that presuppose their falsehood are ungrammatical. This is why (128a) is ungrammatical.

The presupposition effect and the exhaustiveness effect also follow from the assumption that reduced conditionals involve the same event, and that events are minimal. For the truth of (129a), the minimal event of my taking something to read must involve my glasses. For this event to be truly minimal, my glasses

must be something to read. If not, we could always remove them and have a more minimal event. This is why (129a) presupposes that my glasses are something to read. The unreduced conditional in (129b) does not introduce such a presupposition because here the antecedent and the consequent make reference to distinct events. The event corresponding to the antecedent and the event corresponding to the consequent are both minimal, but since they are distinct events, minimality of events can be satisfied without presupposing that glasses are things to read.

The exhaustiveness effect follows similarly. For the truth of (130a), a minimal event of my visiting someone must be a minimal event of my visiting Karl. However, as noted earlier, a minimal event of my visiting Karl cannot also be a minimal event of my visiting Peter. Again, the possibility of having distinct events in the antecedent and the consequent of a unreduced conditional is responsible for the absence of an exhaustiveness effect. Since the antecedent and the consequent pick out distinct events, a minimal event of my visiting someone does not have to be identified with minimal events of my visiting Karl. The possibility is left open that there are minimal events of my visiting Peter.

6.3 *Chinese bare conditionals*

Bare conditionals in Chinese involve no obligatory overt marking in either the antecedent or the consequent clause. Optionally, *jiu* 'then' may be present in the consequent clause. It is, however, not clear whether the presence of *jiu* 'then' is not in fact indicative of another conditional structure in Mandarin Chinese – a conditional introduced by the complementizer *ruguo* (what Cheng and Huang 1996 call *ruguo*-conditional), given that *ruguo* 'if' may be dropped in certain cases.

Bare conditionals are further characterized by the presence of one or more *wh*-words in the antecedent clause matched by an equal *wh*-word in the consequent (cf. Cheng and Huang 1996). This last requirement is what distinguishes bare conditionals from *ruguo*-conditionals, given that *ruguo* 'if' need not appear overtly:

(131) shei yan shei, shei jiu xiang shei.
who plays who who then resemble who
'If X plays the role of Y, X then will resemble Y.'

The two other types of conditional structures in Chinese, *ruguo*- and *dou*-conditionals, may have *wh*-words in the antecedent. However, they need not have an anaphoric element in the consequent clause, and if they do, the anaphor cannot be a *wh*-word itself:

(132) a. *ruguo ni kandao shei qing jiao shei lai jian wo.
if you see who please tell who come see me
'If you see someone, please tell him/her to come see me.'

b. ruguo ni kandao shei qing jiao tal/Ø/na-ge-ren lai
if you see who please tell him/Ø/that-CL-person come
jian wo.
see me
'If you see someone, please tell him/her/that person to come see me.'

The interpretation of bare conditionals involves unselective binding by the (possibly covert) operator present in conditionals (as in Kratzer 1991), in the analyses of Cheng and Huang (1996) and Chierchia (2000). The two analyses differ as to the exact interpretation they assign to *wh*-words. Whereas for Cheng and Huang the *wh*-words are variables, bound DRT-style, for Chierchia they start out existentially quantified, but then a pair (one for each clause) of disclosure operators, associated with the conditional operator, removes the existential quantifier, and leaves the *wh*-words to be bound by the conditional operator. The two approaches' articulated LFs are given below:

(133) a. Operator$_i$ λ x$_i$ [. . . x$_i$ . . .] λ x$_i$ [. . . x$_i$ . . .] (Cheng and Huang 1996)
b. Operator$_i$ λ x$_i$ [. . . ∃x$_i$ x$_i$ . . .] λ x$_i$ [. . . ∃x$_i$ x$_i$ . . .] (Chierchia 2000)

A schematized LF of a bare conditional, and its interpretation, would be as follows:

(134) a. Operator$_i$ [. . . wh$_i$ . . .][. . . wh$_i$ . . .]
b. ∀x [. . . x . . .][. . . x . . .]

In sum, it is the syntactic dependency between the operator and the variables that it binds that make bare conditionals conditional.

7 Conclusion

Various questions arise in the syntax of conditionals, as we have seen in this chapter. We have tried to present some of the most important issues, and to relate distinct proposals that exist in the literature. We have also proposed a view that is distinct from previous analyses of conditionals, namely that conditional clauses are free relatives of possible worlds. Accordingly, conditionals with *then* are correlative structures. This view makes a number of facts about the syntactic behavior of conditionals and their interpretation fall out naturally.

Needless to say, many interesting questions have remained unaddressed. We have alluded to some, while some have not even been mentioned – these include, among others, issues of compositionality with *only if* and *even if* conditionals, exceptive and concessive conditionals, and the link with exceptive and concessive structures more generally.

NOTES

1 For this reason, relevance conditionals are often called speech act conditionals.

2 Some of these clausal adverbials are known as adverbials of contingency in traditional grammar (cf. Quirk et al. 1985): conditionals (e.g., *if q, p*), resultatives (e.g., *p, so q*), causatives (e.g., *because q, p*), exceptives (e.g., *p, except (that) q*), purpose clauses (e.g., *p, so that q*), and concessives (e.g., *although q, p*), where *p* is the proposition expressed by the main clause, and *q* is the proposition expressed by the adverbial clause.

3 See Iatridou (2000), who argues that the conditional mood is further decomposable, and one of its constituents is a past tense morpheme, which, however, is interpreted not along a temporal but along a modal dimension.

4 By 'purely syntactic' we mean the absence of accompanying insertion of a specialized lexical item or the appearance of specialized inflection. Of course, syntax still underlies the use of lexical items such as the complementizer *if*, or the licensing of conditional inflection on the verb.

5 Technically, the 'when/if' ambiguity obtains only in non-past clauses since past tense temporal adverbials require a different temporal relative pronoun, *wann*.

6 Finally, epistemic and optative modality, copulas, and topic markers are typologically very often employed in conditionals (cf. Traugott et al. 1986); some examples are given below:

(i) **Arrernte (cf. Wierzbicka (1997)):**
   a. Ingwenthe *peke* kwatye urnte-me.
      tomorrow maybe water fall
      'Perhaps it will rain tomorrow.'
   b. Kwatye *peke* urnte-me, ayenge petye-tyekenhe.
      water maybe fall 1sgS come-Vb-Neg
      'If it rains I won't come.'

7 And, given the absence of subject-verb agreement, pro-drop in such conditionals is impossible in Russian. All these features, in addition to the adjoined status of the conditional clause, distinguish a conditional such as (10) from a conjoined imperative with a conditional meaning, as in (i), again from Jacab (to appear).

(i) Udar' menja i ty ob etom požaleješ! Russian
   hit-2sg me and you-sg about this regret
   'Hit me (you-sg) and you will be sorry about it.'

8 Similar facts obtain in the case of free adjuncts in English. A free adjunct such as the one in (i) can be interpreted as an adjunct of condition, cause, or concession, depending in part on the tense of the matrix clause:

(i) a. Working hard, I will finish at 8.
   b. Working hard, I finished at 8.

Stump (1985) proposes that the grammar assigns a conjunctive interpretation to a free adjunct structure (*I (will) work(ed) hard and I will finish(ed) at 8*), with context providing the eventual interpretation.

9 Consider (i):

(i) a. Never before has Dana seen anything like this.
b. Only with Rebecca will Pat be happy.

10 A language in which Comrie claims this is the case is Turkish. As far as we have been able to verify with native speakers, however, all the following word orders are possible in Turkish:

(i) a. Biz eger hava günesli ol-ur-sa disari çik-acag-iz.
we if weather sunny be-pres.-cond. out go-fut.-2pl
'If it is sunny we will go out.'
b. Biz disari çik-acag-iz eger hava günesli ol-ur-sa
we out go-fut-agr.2nd.pl if weather sunny be-pres.-cond.
'We will go out if it is sunny.'
c. Eger hava günesli ol-ur-sa biz disari çik-acag-iz.
if weather sunny be-pres.-cond. we out go-fut.-2pl
'If it is sunny, we'll go out.'

11 Additionally, Greenberg's and Comrie's typological claim may need to be qualified. Geis (1985) cites Zwicky (p.c.) for the claim that there are languages which cannot place *if*-clauses in sentence-initial position. We have not been able to verify this claim for a particular language.

12 Geis (1985) points out that Heinämäki (1974) proposed that temporal connectives like *when*, *before*, and *until* be analyzed as coordinating conjunctions. Given the similarities between *when* and *if*, it seems reasonable to assume that Heinämäki's proposal could extend to *if*.

13 Assuming an approach to adverbials as specifiers of functional projections, as in Alexiadou (1997) and Cinque (1999), would naturally involve an analysis of sentence-initial *if*-clauses as specifiers of a covert functional head.

14 In this they resemble *because* clauses:

(i) Mary didn't vote for Bush because she supported Nader.
a. . . . she voted for Bush because she is rich. ($\neg$ > *because*)
b. . . . she voted for Nader. (*because* > $\neg$)

See Linebarger (1987) for extensive discussion of cases like these.

15 This sentence only has a reading where John's thinking is conditional on his being sick, i.e., where the matrix clause is part of the consequent.

16 Unless, just by virtue of being adjoined to IP as a result of QR, the quantifier can have scope over the IP-adjoined adverbial clause. May (1985) proposed, in fact, that quantified expressions adjoined to IP can be interpreted in each other's scopes.

17 This test cannot be replicated in conditionals, since infinitival conditionals are ungrammatical in English:

(i) a. *If to come, Bill will leave.
b. *When to come, Bill will leave.

The ungrammaticality of (ia) follows if we assume that *if* is in C^0 and illicitly governs PRO. (Of course, this account retains government as a theoretical construct, and uses

it further to constrain the distribution of PRO, and both of these approaches have been challenged.) The location of *when* in [Spec, CP] does not predict the ungrammaticality of (ib). The ungrammaticality follows if we assume that (i) non-interrogative *when*-clauses are free relatives, and (ii) infinitival free relatives are ungrammatical in English, and perhaps cross-linguistically (cf. Izvorski 1998). Note further that treating conditional *if*-clauses analogously to free relatives would give (ia) and (ib) a uniform explanation.

18 Consider (i), which is a case of V2 in an embedded clause, which obtains in case the complementizer is not present:

(i) a. Er sagt dass die Kinder diesen Film gesehn haben. German
he says that the kids this film seen have
'He says that the kids have seen this movie.'
b. Er sagt diesen Film haben die Kinder gesehen.
he says this film have the kids seen
'He says that the kids have seen this movie.'

The examples in (i) are particularly telling because they demonstrate that I-to-C movement in German correlates with the presence of an overt complementizer, and not, as is the case in English, with the root/embedded asymmetry.

19 The absence of inversion, i.e., V2 in German *wenn* clauses follows from the fact that *wenn* clauses are free relatives, and free relatives, unlike questions, do not permit V2.

20 It has to be noted that the ambiguity obtains only with sentence-final *when*-clauses. When *when*-clauses are sentence-initial, only local (high) construals are available:

(i) When you say you'll leave, I'll leave. (unambiguous)

At least this is the case with neutral intonation. If the *when*-clause is interpreted as focused then ambiguity becomes a possibility, which may be due to the fact that in such a case the *when*-clause is moved from sentence-final position.

Sentence-initial *when*-clauses would still presumably involve A'-movement. Thus an account of the absence of low construals in terms of absence of A'-movement is undermined.

21 Philippe Schlenker suggested to us the relevance of Orin Percus's work in this respect. Percus (2000) argues that some world variables need to be locally bound.

22 Curiously, while in English contracted negation can be moved with I to C in questions, it may not be in conditionals. The following sentences are from Iatridou and Embick (1994):

(i) a. Hadn't he seen the car coming?
b. *Hadn't he seen the car coming, he would have been killed.
c. Had he not seen the car coming, he would have been killed.

23 There is some suggestion that non-counterfactual inverted conditionals are special – in Icelandic and Old English, indicative inverted conditionals are not technically 'indicative', since the raised verb in C has to be subjunctive:

(i) a. Ef hann hefur faridh eg kom. Icelandic (Iatridou and Embick 1994)
if he has-pres.ind. gone I come
'If he has gone, I will come.'
b. Hafi hann faridh eg kom.
has-pres.subj. he gone I come
'If he has gone, I will come.'
c.* *Hefur hann faridh eg kom.
has-pres.ind. he gone I come
'If he has gone, I will come.'
d. *Ef hann hafi faridh eg kom.
if he has-pres.subj. gone I come
'If he has gone, I will come.'

The subjunctive is also used in concessive ('although, even though') clauses, which are normally taken to presuppose the truth of the proposition they express.

24 The choice condition is meant to restrict the proposal to languages which allow 'optionality' of this kind, as there are languages which do not permit free relatives inside the clause (e.g., according to Srivastav 1991b, free relatives in Hindi cannot appear in argument position). For this latter type of language see Bhatt (2002).

25 Care should be taken to interpret the whole antecedent as the associate of *even*. In cases when some constituent of the antecedent is the associate of *even*, *then* should be acceptable.

26 The other syntactic option, without verb-raising, is also unacceptable:

(i) #Only if it is sunny *then* I will visit you.

27 It is also plausible that *then*, being a bare NP-adverb in the sense of Larson (1985a), needs to be merged lower in the tree where it can be licensed. In this it would differ from an *if*-clause, which could be merged high or low.

28 We find this example slightly marginal. It becomes perfect with *then* A'-moved to the front of the matrix clause. This does not affect Schlenker's argument.

29 These effects are a problem only if we assume that reconstruction effects imply movement. As much work on connectivity has argued, such an assumption is far from obvious.

30 The discussion in this section is based on Iatridou (1991).

31 Thus, the antecedent *if p* in a factual conditional can always be substituted by *if it is true that p*.

32 Though see Romero (2000) for an alternative analysis of reduced conditionals in German. Romero argues that the distinctions between full and reduced conditionals can be derived without stipulating different LF representations for full and reduced conditionals.

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17 Contraction

GRANT GOODALL

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1 Introduction

'Contraction' is the term traditionally used to describe phenomena where one word is reduced and apparently affixed to another, as when *have not* is realized as *haven't*, or *we have* as *we've*. It should be stressed that this is only a descriptive term and does not presuppose any particular type of analysis. Indeed, whether a particular type of contraction is to be analyzed in morphological, phonological, or syntactic terms is often a point of contention. Here we will examine some contraction phenomena which have been thought to relate to syntax, i.e., those which appear to result from or interact with syntactic processes.

2 *Wanna*-contraction

2.1 The basic paradigm

The best-known such contraction by far is that in which *want to* is realized as *wanna*. This phenomenon first caught the eye of syntacticians because of facts like (1), first discussed by Lakoff (1970):

(1) a. Who do you wanna dance with?
b. *Who do you wanna dance?

The contrast between (1a) and (1b) here is surprising at first, because they would seem to result from the contraction of the *want to* sequences in (2a) and (2b), respectively, which are both fine:

(2) a. Who do you want to dance with?
b. Who do you want to dance?

The most obvious difference between (2a) and (2b), though, is that the *wh*-phrase originates as the object of *with* in (a), and as the subject of *dance* in (b). If we assume that *want* and *to* may contract only when they are adjacent, and that the trace of *who* intervenes between *want* and *to* in (b) but not in (a), then the contrast follows. This is the thrust of the analysis in Chomsky (1976), and it is still presented in many basic textbooks as an argument for the existence of traces (e.g., Napoli 1993; Radford 1997).

Although very appealing, this analysis is less straightforward than it might seem. First, one could argue that there is also an intervening trace in (2a), since by successive cyclic movement the *wh*-phrase will stop in the embedded SPEC of CP (between *want* and *to*) before moving to its surface position. Second, there is a PRO subject in the embedded clause in (2a), and this would appear to make *want* and *to* non-adjacent. Third, traces of A-movement do not seem to block similar types of contraction. This may be seen in (3), where the fact that *John* might originate in a position between *going* and *to* does not prevent contraction of these to *gonna*:

(3) a. John is going to dance with Mary.
b. John is gonna dance with Mary.

Thus, simply saying that *wanna*-contraction is sensitive to the presence of empty categories is not sufficient, since we have seen that only some empty categories appear to block contraction. As Jaeggli (1980) pointed out, those that do are Case-marked (in GB terms). This of course opens up the question of why contraction would be sensitive to the presence of an intervening Case-marked empty category but not to Case-less empty categories such as the intermediate *wh*-trace,

PRO, and NP-trace mentioned above. For the facts seen so far, however, Jaeggli's distinction based on Case seems to yield the right results.

2.2 Fuller view of data

The picture is complicated by the fact that *wanna*-contraction is sometimes blocked even when there is no intervening Case-marked trace, as noted by Postal and Pullum (1982). Contraction is impossible in all of the following sentences, for example:

(4) a. I don't want to flagellate oneself in public to become standard practice in this monastery.
b. It seems like to want to regret that one does not have.
c. I don't want anyone who continues to want to stop wanting.
d. One must want (in order) to become an over-effective consumer.
e. I want to dance and to sing.
f. I don't need or want to hear about it.

In (4c) in particular, there is arguably no empty category at all intervening between *want* and *to*, but in none of them is there an intervening Case-marked trace. What, then, is the difference between (2a), where contraction is possible, and (4), where it is not? In (2a), *to* is in I of the complement clause of *want*, but this configuration does not obtain in any of the examples in (4). This may be seen straightforwardly in (4a–d). In (4e) it appears that *to* is in an I embedded within a coordinate structure, and in (f) *want* is part of a coordinate structure.

2.3 Adding government

The generalization which now emerges is that contraction between *want* and *to* is possible only when *to* is in the main I of the complement of *want*. This sort of head-complement requirement between the verb *want* and the *to* of its complement clause is reminiscent of the government relation, and it is thus tempting to formulate the conditions on *wanna*-contraction in terms of this relation, i.e., by saying that for *want* and *to* to contract, *want* must govern *to* (see Aoun and Lightfoot 1984; Lobeck and Kaisse 1984; Bouchard 1986).

The basic intuition behind government-based accounts, that *want* and *to* must be in a kind of head-complement relation, is clear enough, but getting the technical details to work out right is more challenging. Under standard assumptions about clause structure and government, in fact, *want* does not govern *to* in ordinary sentences where contraction is possible (e.g., (1a)), the reason being that there is an intervening CP maximal projection which will prevent *want* from governing IP and its head *to*. Under standard GB assumptions about PRO, we want this CP to be present, since otherwise the PRO subject of the embedded clause would be governed illicitly. Of course there are a number of ways one might address these difficulties. Barss (1995), for

instance, adopts the view that there is no intervening CP in control clauses and that PRO can be governed.

2.4 Contraction and restructuring

It has been known for a long time that there are some significant similarities between *wanna*-contraction and the phenomenon known as restructuring (or clause reduction), and analyses making use of this fact have been developed which either complement or are in opposition to those based on the presence of a trace and/or a government requirement (e.g., Frantz 1978; Postal and Pullum 1978; Goodall 1991; Roberts 1997b). An example of restructuring is given in (5), from Spanish:

(5) Juan lo quiere ver.
Juan it want see
'Juan wants to see it.'

Despite the presence of two verbs here, sentences of this type display some properties of a single clause, such as the clitic-climbing seen in (5).

One obvious similarity between restructuring and *wanna*-contraction is that they both affect the verb *want*. This fact in itself is not very impressive, but it becomes more so if one considers that there are other verbs which have been argued to participate in contraction with *to* of the same type as *wanna* (see, e.g., Pullum 1997):

(6)

	Verb	**Contracted form**	**Example**
a.	go	gonna	I'm gonna dance.
b.	used	usta	I usta dance.
c.	have	hafta	I hafta dance.
d.	got	gotta	I gotta dance.
e.	ought	oughta	I oughta dance.
f.	supposed	suposta	I'm suposta dance

These verbs are either aspectual, as in (6a–b), or modal, as in (6c–f) and *want*. These turn out to be two of the major classes of verbs which participate in restructuring.

This similarity in verb classes could of course just be a coincidence, but when considered in combination with a number of significant syntactic similarities, this seems less likely (see Goodall 1991 for discussion). We have seen, for instance, that contraction is only possible when *to* is in the complement clause of *want*, and likewise restructuring is only possible between a verb and its complement clause. Both phenomena are also restricted to control or raising structures, i.e., neither is possible when the embedded subject is not coreferential with the matrix subject (cf. (1b) for contraction). In addition, the behavior

of contraction in coordinate structures that we saw earlier in (4e–f) is replicated exactly with restructuring.

If these similarities are in fact significant, then of course one would want to know why they obtain. This question is particularly intriguing since at a descriptive level, contraction and restructuring would not seem to have much in common in terms of how they operate. One possible account is given by Roberts (1997b), who argues that restructuring is the result of raising embedded T into the matrix clause through head movement. Assuming that *to* is generated in T, contraction could then be seen as the same process. This then gives us an immediate account of the cases in (4).

Since contraction is now the result of syntactic head movement, it is disallowed here for whatever reasons generally prevent movement out of a subject, adjunct, or coordinate structure, or into a subject or coordinate structure.

This also allows us to explain the contrast between (1a) and (1b). With the ECM use of *want*, it is often assumed that there is a null version of *for* in C, which provides case for the embedded subject. If true, this complementizer should block raising of *to* to the matrix clause. This accounts for the ungrammaticality of (1b). (1a), on the other hand, is not an ECM structure, so C is not filled and nothing should prevent raising of *to*.

This analysis thus allows us to account for the constraints on contraction and its fundamental similarities with restructuring in an elegant and relatively simple way. In fact, for reasons having to do with the theory of adjunction he is assuming, Roberts proposes that *wanna* itself is formed in the lexicon, so there is actually no syntactic raising of *to* as such. Instead, *wanna* is endowed with a restructuring feature which must be checked by T of the embedded clause. Given that this checking is accomplished by raising of the embedded T, the account of the constraints on *wanna*-contraction just sketched remains basically unchanged.

2.5 Wanna *and subcategorization*

Under Roberts's checking analysis, the T embedded under *wanna* must be null, since overt *to* is neither adjoined to *wanna* nor present in the embedded clause, and the embedded clause cannot be tensed. Thus we can say that *wanna* subcategorizes for a kind of bare infinitive. This may seem like an innocent conclusion, but in fact it can account for much of the data seen so far in and of itself, if we make the standard assumption that a head may subcategorize only for a complement. Thus the fact that contraction is disallowed in (4) now follows. In (4a–d), the clause to the right of *want* is not a complement of *want*, so even if we used *wanna* in place of *want*, the clause to its right would not be licensed as a bare infinitive. In (4e), replacing *want* with *wanna* would mean that both conjuncts would have to be bare infinitives, not just the first, and in (4f), using *wanna* would result in a conjunction of verbs with different subcategorization requirements, which we would expect to be ungrammatical. Specifically, only *wanna* would subcategorize for a bare infinitival.

By saying that *wanna* subcategorizes for a bare infinitive, then, as appears to be necessary under Roberts's analysis, we can straightforwardly account for the lack of contraction in (4) without appealing to raising of the embedded T. This is in fact the analysis that Pullum (1997) proposes: *wanna* is related to *want* by derivational morphology and it subcategorizes for a bare infinitive. One can now reasonably ask whether there is any evidence for the raising of T that Roberts proposes, given that subcategorization alone can account for a significant range of facts. One possible piece of evidence may come from the basic contrast we saw in (1).

In order to account for the ungrammaticality of (1b) under a subcategorization-only analysis, we have to say that *wanna* subcategorizes specifically for a control bare infinitival clause, with a PRO subject (cf. Pullum 1997). Such a specification is independently needed to account for impossible contractions such as (7):

(7) *You wanna Bill eat the pie.

What remains unexplained under this account, though, is why *wanna* should be restricted in this way. It cannot be that overt subjects are disallowed in principle in bare infinitival clauses, because verbs like *make*, for example, allow them, as in (8):

(8) Bill made it rain.

Under Roberts's analysis with raising of embedded T, the ungrammaticality of (1b) and (7) follows from the assumption that these ECM cases require a filled C in order to license case on the embedded subject. If C is filled, then raising of T to matrix V is blocked, and contraction is impossible. Thus there is some advantage to adopting an account which makes use of more than just subcategorization, in that we can then account for the impossibility of an overt embedded subject with *wanna* without stipulating it.

Whether or not we supplement it with raising of the embedded T, the subcategorization account of *wanna* predicts that we should find no evidence for the presence of *to* in the embedded clause. Pullum (1997) points out that in principle we should be able to look for such evidence by examining the behavior of *wanna* vs. *want to* in constructions where an overt element in T is required. VP ellipsis (as opposed to null complement anaphora) and VP fronting are two such constructions. Examples of the latter are given in (9):

(9) a. I said I'd wash the dishes, and wash them I did.
    b. *I said I'd help wash the dishes, and wash them I helped.

If *wanna* involves no overt element in the embedded T, we would then predict that (10b) would be worse than (10a):

(10) a. I said I'd feel like climbing the mountain, and climb it I want to.
     b. I said I'd feel like climbing the mountain, and climb it I wanna.

Pullum reports that unfortunately, judgments on sentences like these are so unclear and inconsistent as to be of little use (and similar results obtain with examples involving VP ellipsis), so at this point it is an open question whether it is possible to find evidence for or against the presence of *to* in the clause embedded under *wanna*.

2.6 Adjacency again

One interesting property of the accounts of Roberts (1997b) and Pullum (1997) just examined is that adjacency between *want* and *to* plays no role in the analysis. That is, the only restriction on *wanna* is that its complement clause be of the appropriate type and, for Roberts, that the T of this complement clause raise to check the restructuring feature of *wanna*. Since they assume that *wanna* is formed in the lexicon, there is no requirement, nor could there be, that for *wanna* to be well-formed, the non-*wanna* version of the sentence must have *want* and *to* in adjacent positions.

The data which originally motivated such a requirement, such as (1) and (7), can now be accounted for in a different way, as we have seen.

For Pullum, (1b) and (7) are out because *wanna* subcategorizes for a bare infinitival clause with a PRO subject, and for Roberts, they are out because T of the embedded clause is unable to raise to *wanna*. The subject of the embedded clause requires a filled C for case reasons, and this blocks movement of T to the matrix V.

Thus the role that (1b) played historically as a kind of unusually concrete evidence for the existence of traces is gone under these analyses. An account of (1b) may still crucially involve a trace (although there are ways to do this without a trace also; see Pullum 1997 for discussion), but only in the way that many other sentence types do. That is, positing a trace in (1b) may allow us to give a unified account of (1b) and (7), but we cannot say under these analyses that it is the trace itself which directly blocks the contraction.

This point is of more than historical interest. Recall that one of the problems facing an adjacency analysis of *wanna*-contraction is that an A′-trace disrupts the adjacency of *want* and *to* but PRO does not (as seen, for instance, in the contrast in (1)). One possible response to this problem is to say that if we assume that the adjacency analysis is correct and that A′-trace and PRO are present in the syntactic structure, then it must be that only A′-trace intervenes between *want* and *to*. This amounts to saying that A′-trace raises to the specifier of an inflectional head but that PRO does not, or at least does not need to. This is the line of argument adopted by Baltin (1995), who proposes that PRO remains in a VP-internal position. Under this analysis, then, *wanna*-contraction can provide valuable evidence regarding the surface position of PRO.

Another possible response to the problem for an adjacency analysis of intervening PRO is to assimilate control to A-movement, as in Horstein (1999), and to assume that A-movement does not leave a trace/copy. This is essentially the analysis of Boeckx (2000), who shows that adopting these assumptions allows

one to say that *want* and *to* are indeed adjacent in (1a) and (3), but not in (1b), where the A'-trace intervenes, just as in the classical analysis. This solves the problems of PRO and NP-trace for an adjacency analysis that we examined earlier (and see Boeckx 2000 for a brief discussion of how facts like (4) might be handled under his analysis).

So far, then, we have seen analyses such as those by Roberts (1997b) and Pullum (1997), which account for the 'adjacency' facts of *wanna*-contraction (i.e., (1) and (7)) without actually appealing to adjacency as part of the analysis, and analyses such as those by Baltin (1995) and Boeckx (2000), which claim that *wanna* is possible only when *want* and *to* are adjacent. To decide between these two approaches, one could look for cases of non-adjacent contraction, i.e., cases where *wanna* is possible but where *want* and *to* would not be adjacent in the corresponding sentence without contraction. Such cases might be expected to surface if Roberts (1997b) and Pullum (1997) are correct, but they are clearly predicted to be impossible under Baltin's (1995) and Boeckx's (2000) accounts. One possible example of such a case is the 'Langendoen dialect' noted by Postal and Pullum (1978) and discussed more recently by Pullum (1997). In this dialect, reportedly spoken by Terence Langendoen, (11a) is possible but (11b) is not:

(11) a. %I wanna very MUCH go to the game this evening!
b. *I want to very MUCH go to the game this evening!

The adverbial expression *very much* must clearly appear within the matrix clause, i.e., to the left of *to* in (11b). Thus the possibility of *wanna* in this dialect is very surprising if we assume an adjacency analysis. With an analysis such as Roberts's or Pullum's, on the other hand, (11a) is straightforward. What would seem more difficult, in fact, is explaining why most speakers do not accept it. Pullum points out, though, that the ungrammaticality of (11a) for most speakers is probably due to the fact that in general, verbs must be adjacent to their bare infinitival complements (for whatever reason). *Wanna* then falls into the general pattern. (11a) appears to be good for Langendoen because for some reason he does not have this restriction in general, so of course he does not have it for *wanna* either.

The contrast in (11) thus in principle provides interesting evidence in favor of a non-adjacency analysis of *wanna*-contraction, but it is difficult to place much confidence in this conclusion, since it is hard to find speakers who accept this contrast. Using different adverbials may help; I have found that some speakers detect a slight contrast between (12a) and (12b), for instance:

(12) a. ??I wanna with all my heart go with you.
b. *I want to with all my heart go with you. (cf. I want with all my heart to go with you.)

Still, the judgments are subtle at best, so neither (11) nor (12) is as decisive as one would like.

2.7 The liberal dialects

Another area of possible dialectal variation concerns the so-called "liberal dialects" (Postal and Pullum 1982), for whose speakers (1b) is grammatical. This type of dialect is very difficult to account for with an adjacency analysis, and it is not much easier with a non-adjacency analysis such as those of Roberts (1997b) or Pullum (1997). Probably the best that can be done under these latter analyses is to say that the liberal dialects differ from others in their phonology, not in their syntax, in that they allow reduction of *want to* to *wanna* within a phonological phrase, as proposed in Pullum (1997).

But it is hard to know to what extent one should take these liberal dialects into account without better documentation of their existence. As Carden (1983: 48, fn. 11) stated, "the force of the data based on the liberal dialects is weakened by worries about whether the claimed dialect difference is real, or whether the subjects are simply reporting introspections based on different assumed speech rates." Unfortunately, we know nothing more about this now than we did when Carden made this statement.

2.8 Conclusion

As we have seen, there are some analyses, such as those of Baltin (1995), Boeckx (2000), and their many predecessors, that claim that *wanna* is only possible when *want* and *to* are adjacent, and other analyses, such as those of Roberts (1997b) and Pullum (1997), that claim that adjacency is not relevant. Notice that under the latter approach, the term '*wanna*-contraction' is in a sense a misnomer, since it really doesn't involve contraction at all, at least not in the phonological or syntactic sense. *Wanna* under these analyses is formed in the lexicon, and it is inserted in the syntax just like an ordinary verb. The fact that it seems to interact in such interesting ways with the syntax, which is what drew attention to this phenomenon in the first place, follows from its subcategorization properties and, for Roberts, from the fact that it must check a feature on the embedded T.

3 Finite auxiliary contraction

3.1 A comparison with wanna-contraction

The term 'finite auxiliary contraction' is used to label the phenomenon in which finite auxiliaries (*have*, *be*, and modals *will* and *would*) appear to contract with elements to their left, as in (13):

(13) a. We've eaten the pie.
b. We're eating the pie.
c. We'll eat the pie.
d. We'd eat the pie.

This phenomenon resembles *wanna*-contraction in a couple of ways which could turn out to be significant. First, it involves the apparent contraction of an element in T with something to its left (though see Bresnan 1971a for an alternative view). Assuming that *to* is in T, this description would fit *wanna*-contraction as well. Second, the finite auxiliary cannot skip over a lexical subject to contract with something further to the left. This is seen in (14):

(14) *I don't know who's John going to the party with.

Here *is* has contracted with *who* despite the intervening subject *John*, and the result is ill-formed. This is reminiscent of the restriction that we saw in (7), where *wanna*-contraction may not cross an intervening subject.

Although we saw earlier that both of these descriptions of *wanna*-contraction (that it involves contraction of an element in T and that it may not cross intervening material) are open to question, still the initial similarity between it and finite auxiliary contraction might give us hope that they could receive a common analysis and that the additional data that auxiliary contraction could provide might resolve some of the open questions remaining in the analysis of *wanna*-contraction.

However, a closer look shows that there are some significant differences between the two phenomena. For example, *wanna*-contraction involves the apparent contraction of *to* with a specific word to its left, i.e., the verb *want* or one of the handful of other verbs that behave similarly (see the list in (6)). The finite auxiliary, on the other hand, contracts with whatever is to its left. This means that the sort of subcategorization analysis that we saw earlier for *wanna*-contraction will be unworkable for finite auxiliary contraction. In fact, the finite auxiliary is able to contract with more than just subjects, as seen in (15):

(15) Who's John going to the party with?

In this case, *is* has presumably raised to C, but it is still able to contract.

An even more striking difference is that finite auxiliary contraction does not behave like *wanna*-contraction in terms of the latter's most celebrated property: its inability to contract across an A'-trace. Whereas *wanna*-contraction is impossible in cases like (1b), finite auxiliary contraction is perfect in analogous cases such as (16):

(16) Who do you think's dancing?

The well-formedness of (16) is particularly interesting given the fact that auxiliary contraction is not able to operate across an overt subject, as we saw in (14). Thus the parallelism between overt arguments and A'-traces that has drawn so much attention in *wanna*-contraction is not found in finite auxiliary contraction.

3.2 Finite auxiliary contraction and syntax

The above differences should make us somewhat pessimistic about finding a common analysis for these two types of contraction. In fact, they could even suggest that whereas *wanna*-contraction is clearly sensitive to a number of syntactic factors, finite auxiliary contraction seems largely oblivious to the syntax. For instance, we have seen that the finite auxiliary may contract with a variety of elements to its left (e.g., a subject in (13), an element in SPEC/C in (15), a verb in (16)) regardless of the syntactic position. Moreover, finite auxiliary contraction is blocked by the presence of intervening overt material, but not by the presence of a trace (e.g., (14) and (16)). We might thus conclude that finite auxiliary contraction, unlike *wanna*-contraction, is an entirely phonological operation. This conclusion is rendered more plausible by the fact that contraction of *is* undergoes voicing assimilation with the preceding segment:

(17) a. Ted's eating the pie.
b. Pete's eating the pie.

Contracted *'s* is voiced in (17a) and voiceless in (17b).

However, the literature points to a number of ways in which this conclusion appears to be too hasty, in that finite auxiliary contraction does seem to be sensitive to the syntax in a way we would not expect of a purely phonological process. First, whether or not a finite auxiliary may contract with a preceding adverb depends on the class, and presumably structural position, of the adverb. Sentential adverbs allow contraction, as seen in (18), but aspectual adverbs do not, as seen in (19) (Baker 1971; Bresnan 1971a; Kaisse 1985):

(18) a. John clearly'd eat the pie if he had the chance.
b. Jane apparently's eating the pie.

(19) a. *John never'd eat the pie.
b. *Jane often's eating pie.

The full, non-contracted form of the auxiliary is possible to the right of the adverb in cases like (19) (though the position to the left of the adverb is preferred), as is the 'reduced' form, i.e., the form in which the vowel of the auxiliary is reduced but still present. Given this, it is not clear why further phonological reduction of the auxiliary, resulting in the contracted form, would not be possible here. But if auxiliary contraction is at least partly a syntactic operation, the different positions of the adverbs in (18) and (19) might make an explanation possible (see Wilder 1997 for an analysis). Radford (1997) points out that the position of the auxiliary itself seems to affect the possibility of contraction as well, as seen in (20):

(20) a. *The chairman may've gone home.
b. *It would have been a pity to've given up syntax.

c. *She wouldn't let me've gone there on my own.
d. *Should we've helped him?

It can be argued in all of these cases that the auxiliary is not in T, and that would seem to be related to their inability to contract. This of course is why the phenomenon we are examining is called 'finite auxiliary contraction', but the very fact that the auxiliary must be finite (i.e., in T) makes it unlikely that a purely phonological analysis would suffice, especially since the finite and non-finite forms of the auxiliary in question in (20) (*have*) can be homophonous.

Another way in which finite auxiliary contraction might be sensitive to the syntax is that contraction is barred when the element immediately to the right of the auxiliary is null, either because of movement or deletion (see Baker 1971; Bresnan 1971a; King 1970; Lakoff 1970):

(21) a. *I don't know what kind of lawyer Mary's.
b. *Tom has eaten as much pie as we've.
c. *They'll water the plants on Tuesday, and I'll on Thursday.
d. *If John would get some exercise, then Mary'd as well.

All of these sentences are grammatical without contraction. What seems odd about this restriction, of course, is that the auxiliary contracts with the word to its left, yet here we see it is sensitive to the type of material to its right. One way to make sense of this is to assume that the contracted auxiliary is not able to properly govern the null element to its right and thus attribute the ungrammaticality of (21) to the ECP (see Zagona 1982 and Wilder 1997 for discussion). Another way is to assume some sort of prosodic condition which prohibits contracted forms before a gap (see Wilder 1997 for recent discussion of this approach). This view is supported by the fact that contraction is still prohibited even when the destressed, weak pronoun *it* intervenes between the auxiliary and the gap, as seen in (22) (from Bresnan 1971a):

(22) a. *What's it? (cf. What's that?)
b. What's it for?

It appears that the word immediately to the left of the gap must bear stress, and if *it* can't do this, then the auxiliary can take over. But a contracted auxiliary can't bear stress either, so (22a) is ruled out, as are the examples in (21). Notice that (22b) is fine, because *for* can bear stress. If a prosodic account such as this is ultimately successful, then (21) may be irrelevant to the issue of whether finite auxiliary contraction is syntactic in some sense, but for now the proper treatment of (21) remains an open question.

A third area in which finite auxiliary contraction seems to show an interesting interaction with syntax is in the differing behavior of contraction with stage-level and individual-level predicates. Barss (1995) shows that when the predicate to the right of the auxiliary is stage-level, as in (23), contraction is perfect, but when the predicate is individual-level, as in (24), it is not:

(23) a. Who do you think's available?
b. Who did you say's coming to the party?
c. Who do you think's outside?

(24) a. ?*Who do you think's altruistic?
b. ?*Who did you say's tall?
c. ?*Who do you think's moral?

The distinction is subtle, although it appears to be real. Barss claims that one can account for this contrast if one assumes that stage-level predicates theta-mark their subjects internal to their projections and that with individual-level predicates, there is a control relation between a subject outside the predicate projection (in SPEC of TP) and a PRO subject inside the predicate projection, as in Diesing (1990a). This means that in (23), the *wh*-phrase can move directly from the predicate-internal position to SPEC of CP, without leaving a trace in SPEC of TP. In (24), on the other hand, the *wh*-phrase starts out in SPEC of TP and so does leave a trace there before moving to SPEC of CP. With certain further reasonable assumptions, the presence or absence of this trace accounts for the contrast between (23) and (24), and for the contrast that we saw earlier between finite auxiliary contraction and *wanna*-contraction in (1b) and (16). Under Barss's account, then, finite auxiliary contraction is just as sensitive to the presence of an A'-trace as *wanna*-contraction is, but this sensitivity is not apparent in (23) because there is no A'-trace in SPEC of TP. Unfortunately, perhaps, this account may not be fully compatible with some current assumptions. For instance, if we say that T has an EPP feature that needs to be checked, then the *wh*-phrase will need to stop in SPEC of TP even in structures like (23), and the contrast between (23) and (24) will be lost. At a minimum, though, Barss's analysis shows that one cannot be too quick to reject the possibility that finite auxiliary contraction has a syntactic basis.

A fourth type of possible syntactic effect with finite auxiliary contraction comes from Radford (1997). Radford points out that contraction between an auxiliary and a head is always perfect, as in (25), whereas contraction between an auxiliary and a phrase seems degraded, as in (26):

(25) a. You've upset her.
b. They'd probably refuse you if you asked them.
c. We'll help you out.
d. Who've they chosen?

(26) a. *John and you've got a lot in common.
b. *The Masai've been driven out of their homeland.
c. *Di'd like to be an ambassador for Britain.
d. *Which one of you've they chosen?

Why would this be? Radford proposes that contracted auxiliaries are affixal heads in T which are only legitimate PF objects if another head adjoins to them.

Thus pronouns are able to adjoin and, as a result, check case, but full DPs are not. Contraction with full DPs is therefore ruled out.

A few comments about the contrast between (25) and (26) are in order. First, as Radford points out, this contrast only obtains with the fully contracted forms of the auxiliaries, where what remains of the auxiliary is just a single consonant. Reduced auxiliaries, in which a schwa vowel is still present, are fine in (26). Second, Radford claims that the contrast is also restricted to those auxiliaries whose fully contracted forms can only attach to a previous vowel. Auxiliaries *have*, *had*, *would*, *will*, and *am* have this constraint on what they can be fully contracted with, but *has* and *is* do not, as seen in (27):

(27) a. Tom's been to the zoo several times.
b. The girl in the car's studying chemistry.

As (27) also shows, *has* and *is* are also not restricted to contracting with a head. Finally, not all combinations of full DPs and contracted auxiliaries of this class seem equally bad. (28), for instance, seems quite good, but the sentences in (29) are noticeably worse (when the auxiliaries are fully contracted):

(28) An Apache'd never do something like that.

(29) a. ?*The Apache've opened a new hotel.
b. ?*An Apache'll be waiting for you at the gate.

Clearly, then, the data need to be explored more deeply before firm conclusions can be drawn, but the contrast in (25) and (26) presents an intriguing case where syntax might be intimately involved in a constraint on finite auxiliary contraction.

3.3 Conclusion

The literature offers no grand consensus on how finite auxiliary contraction is to be analyzed. We have seen that in some ways it appears to operate independently of syntax, such as in (16), where it seems to be oblivious to the presence of an A'-trace. On the other hand, we have seen a number of cases where syntactic factors appear to be crucially involved. Even (16) may turn out to require a purely syntactic approach, as in Barss's account. For now, though, the question of the precise role of syntax in accounting for finite auxiliary contraction remains open.

4 Conclusion

It is often said that nature does not necessarily divide itself up the way our a priori ideas would lead us to expect. Within the realm of language, contraction is a perfect example of this, for two reasons. First, given that contraction involves the loss of segments and word boundaries, one would expect that accounting for

it would be a matter for phonology. In fact, however, investigation has shown that contraction behaves, to one degree or another, in ways that are not consistent with a purely phonological analysis and that seem to require some recourse to syntax. Second, the fact that we use the term 'contraction' does not mean that there is truly a unified phenomenon that this term refers to. We have seen that *wanna*-contraction and finite auxiliary contraction exhibit some significant differences, at least superficially, and whether they share any basic mechanisms is an empirical question that has yet to be fully resolved. As we explore other contraction phenomena in English and in other languages, it is good to keep in mind that there is no guarantee that they will in fact have much in common with what we have examined here beyond the descriptive label.

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Preface

Generative grammar has always set its aims high. From its inception in the 1950s, the ambition has been to go beyond observational and descriptive adequacy to reach explanatory bliss. Important work would be about 'conditions on transformations' rather than on 'some properties of *wh*-movement in English', about the 'transformational cycle' rather than on verb clusters.[1] This is what science should be like. And while earlier attempts at achieving a semblance of an explanatory theory were often clumsy and inadequate, these past forty or so years have shown that truly fundamental questions can now be asked and addressed.[2] This emphasis on theory has not, of course, altered the fact that linguistics is a thoroughly empirical science, but data and analyses are seen as what they are: tools to help us understand the structure and properties of the human language faculty. It is the fate of tools that when the product is finished they are put away. When some (as it turns out controversial) data from Italian had suggested that the notion of bounding node should be parameterized, we then forgot about the Italian data and happily proceeded with the idea of parameters.[3] Numerous other examples could be added.

More generally, the data and analyses that at some point in the history of generative grammar played an important, sometimes even a crucial, role have a tendency to fade into the background rather quickly.[4] This effect is particularly strong when the piece of theorizing they helped to establish becomes obsolete, but it is even true when the theoretical insight persists over time. As time went on, and as generative grammar (using the term in the broad sense, including all its theoretical diversity), in its explosive success, expanded to dozens of countries, hundreds of universities and colleges, and many hundreds of researchers, the muckheap of once useful but then discarded empirical material continued to grow. Old hands in the field may still be served by a good memory, helping them to dig out some of these rejects if they seem useful at some later stage, but successive new generations of young linguists simply don't have access to the wealth of data, generalizations, and analyses that might be terribly important to their research if only they knew about them.

But it is not only a problem for younger generations. Researchers who like to keep track of developments, particularly (but not only) in those subfields that are not directly related to their own research, or who work in closely related disciplines such as, for instance, psycholinguistics or sociolinguistics, find it increasingly difficult to keep track. Current handbooks are often concerned with current theorizing, but only marginally with the history of the various versions of the theory and even less with the empirical generalizations underlying those theories. As a consequence, an ever smaller percentage of the potentially useful empirical material is treated in standard textbooks, and hence the rest is not part of the knowledge that researchers and students in the field may be expected to possess.

It might be objected that the articles in which all this wisdom is stored are, after all, still around in the journals, in the books, in the libraries. But given their theoretical focus, the titles are often unrevealing as far as the empirical domain is concerned, keywords are notoriously absent or unreliable, relevant data are scattered over several articles, and, most importantly, the presentation of the data in these articles is subservient to the theoretical claims that are made and hence not presented in succinct, didactically useful ways.[5] So searching for the relevant materials, even if you know what to look for, is often hard. For young researchers, such a search task is doubly difficult because very often the descriptive generalizations are presented in a jargon and formalism that were characteristic of the theoretical framework at the time, sometimes decades ago. Who thinks to look up the term 'backward equi' when looking for data relevant to what we now call exceptional case marking (ECM)?[6]

Having a good, theoretically oriented mind is not enough. You cannot gain an understanding of the abstract properties of Universal Grammar without having any ideas about interesting empirical areas that might provide the crucial evidence (or counter-evidence) for your claims. But these flashes of empirical insight can only come if you have enough knowledge in your head to start the neurons firing away. And you can only have that knowledge if you have been taught about a certain range of phenomena in a variety of languages, or if you have had access to a repository of such materials to work through by yourself. The problem is that such courses are rarely taught, the reason being more often than not that the relevant data are not available in a form that is didactically usable.

This is the lacuna that we are hoping to fill with *The Blackwell Companion to Syntax*. In these five volumes, we offer you 77 case studies of syntactic phenomena that should, at least partly, fill the gap and constitute an important research tool for the working linguist and for teachers and students of syntax (and its interfaces). In bringing these chapters together, we were guided by a working definition of what a syntactic case study was supposed to be. The following properties were thought to be central: *a well-delimited empirical area (both as to the construction(s) involved and as to the languages in which the phenomena are found) whose analysis has, at one time or another in the history of generative grammar, played an important role in the theoretical debates at that time*. More often than not, we will find that such results are relatively robust in the sense that they will stand and

be interpretable regardless of various innovations or adaptations of the version of the theory in which they first saw the light.

The so-called 'verb-raising' construction in Continental-West Germanic languages (chapter 75) will serve as an example. Much has been published on this subject, a reasonable degree of consensus exists about the most important properties of the construction, its analyses have been frequently used to support theoretical proposals, etc. Nevertheless, the existence of this complex of facts is hardly known outside the small group of specialists in this field, the main properties cannot be presupposed as common knowledge, and no one in the field can be properly held responsible for ignoring the verb-raising construction. In a situation like that, the chapter's presentation will be oriented toward combining views and formulating them in such a way that they will be accessible to researchers from various approaches to the theory of grammar.

In addition, of course, the delimitation had to be such that the empirical subdomain in question could be treated in manageable chapters. It would have been unthinkable to include a case about relative clauses: even a thick monograph would not do such a topic justice. But the subtopic of free (headless) relative clauses (chapter 27), a topic that in the late 1970s and the 1980s generated a considerable literature, is a typical example of what we had in mind.

What about the theory? We wanted to make the empirical generalizations, the insights into the properties of constructions, the main focus of each chapter. But wherever useful and possible, of course, reference can be and is made to the theoretical issues that the phenomena in question were or even are relevant to. This introduces a certain bandwidth, and indeed some of our authors stress the empirical side more strongly while others swerve more easily into theoretical discussions. With a project this size it has been impractical to impose more uniformity than we have achieved here. It was, frankly, not always easy to convince our authors to take time away from their primary theoretical research to write the chapters we asked them to. And it was also on occasion hard to curb the attention that they tended to give to theoretical issues and their own role in those theoretical developments. More generally, wherever possible we suggested that theoretical issues be addressed in robust, sustainable ways, not in terms that would reflect the fads and the terminological peculiarities typical of a specific brief period in the short history of generative grammar.

It does not take a great deal of knowledge of the field to realize that an enterprise such as the present one is a highly open-ended affair. Even if we had achieved complete coverage at the time of appearance, new cases would soon present themselves. But complete coverage is unattainable in the first place. It is always possible to come up with other potential cases, not represented in the present work. Even now we already have a number of ideas about cases that might be added and which may at some point be added to the present collection. Nevertheless, we believe that the coverage that the present collection achieves is very considerable. So much ground is covered that already it seems doubtful that future graduate students of linguistics could be expected to work through all of this material. If a student manages part of it and has the rest at his or her disposal

as an encyclopedia of linguistic phenomena, we feel certain that his or her research will greatly benefit. As teachers we are frequently confronted by a big question mark in the faces of students or even fellow faculty members when we use terms like 'contraction', 'subdeletion', or 'freezing effect'. And when asked "Where can I read up on this?" we are often faced with our own bad memory and the virtual impossibility of pointing toward one representative text that will concisely and competently explain what kind of phenomena are hiding behind these terms. This, we feel sure, is now a problem of the past.

If, as we are convinced, this *Companion* will become an important research tool in linguistics, a pressing need will also be felt for additional case studies to be added. While it may well be possible to project further volumes in the future, or an updated or extended version of the present publication, it has been clear to us from the start that the best way to make this an incremental enterprise is to publish these cases electronically. This would allow the possibility of reviewing cases now published, adding new cases relatively easily, and allowing discussion fora, etc. When that happens, the way to expanded coverage of the field will be paved. For the moment we refer you to www.syntaxcompanion.org to keep you informed on developments in this area.

One point to make about the references: every individual chapter has a reference section; the consolidated reference list is in volume V, and in the XML CD version the links are to the consolidated list rather than to the end-of-chapter lists. So in the chapter references you may find entries with a, b, etc. after the date even if there is only entry with that author and date in that chapter, because there is more than one entry in the whole five volumes with the same author and date. For example, even if there's only one Chomsky 1995 cited in any one chapter, it will appear as Chomsky 1995a or 1995b or 1995c, because there are three Chomsky 1995 entries in the consolidated references for the whole five volumes, identified as a, b, and c.

As editors of this encyclopedia of case studies, we have had to make many choices. In doing so we were greatly helped by the project group at NIAS, the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, at Wassenaar, in the dunes lining the Dutch coast, in 1996/1997. The definition of what we would consider a typical case study was intensively discussed and ultimately fixed by that group: Reineke Bok-Bennema, Norbert Corver, Denis Delfitto, Joe Emonds, Martin Haiden, Itziar Laka, Eric Reuland, Tim Stowell, Sten Vikner, and, to some extent, Ian Roberts. We were also fortunate to have good input and feedback from Hagit Borer, Jan Koster, and Edwin Williams, our special outside consultants. The original list of cases was also compiled by that group. First sample chapters were produced during that year. And we brainstormed a lot about who would be the ideal author for which chapter. Nevertheless, we accept full responsibility for all the choices that were made.

We do wish to emphasize, however, that it has never been our intention to suggest that the present collection could be interpreted as a kind of canon, in the literary sense of the word (to the extent that literary scholars are still prepared to advocate such a notion). What we say above about the open-ended character of

an enterprise such as this should underline the fact that nobody could pretend that it is at all possible to establish such a canon, even if one tried to.

The first plans for this project were made in 1993. That is when we decided to apply to NIAS to see if we could get together a team of colleagues with whom to discuss the scope, the objectives, and the realization of the present work. The application was approved. We gratefully acknowledge the generous support, financial, logistic, and otherwise, of NIAS and, in particular, Dick van de Kaa and Wouter Hugenholtz, respectively the rector and the director of the institute. The group convened in the splendid isolation of NIAS in the academic year 1996/1997. There, we were happy to be able to work together with the colleagues mentioned above. Ilke van den Ende joined us as a student trainee. We were also happy to be able to organize two workshops at NIAS during that year. A third was held in Los Angeles at USC with the help and support of Hagit Borer and Tim Stowell in 2001. We wish to thank the participants at these workshops for their contributions, and LOT (the Dutch National Graduate School of Linguistics) as well as NWO and KNAW (the Netherlands Organization for Scientific Research and the Dutch Royal Academy of Sciences respectively) for financial support for these workshops. We also wish to thank the BSGM Foundation for an additional grant to the NIAS group. Last but not least we wish to thank those who have assisted us with the administration and correspondence, with the copy-editing and the HTML-conversion and the maintenance of the website: Jenny Doetjes, Bart Hollebrandse, Rob Goedemans, and Hannah de Mulder. Without them we literally and figuratively could not have managed. Thanks are due to NWO and the Utrecht Institute of Linguistics OTS (Language in Use project) for grants that made this assistance possible.

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Utrecht and Tilburg
Martin Everaert and Henk van Riemsdijk

NOTES

1 Cf. Chomsky (1973); Evers (1975b).
2 See, for example, Chomsky (2004).
3 Cf. Rizzi (1982b).
4 The reverse also holds true. Certain empirical domains have never figured prominently in theoretical debates, and remain, thus, uncharted territory from a descriptive point of view.
5 We should add that publications like *Linguistics Abstracts Online* will, in future, solve part of the problem we note.
6 Cf. Postal (1974).

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18 Copular Sentences

ANDREA MORO

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2 The anomaly of copular sentences
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1 Introduction: what is a copular sentence?

Few concepts in the history of linguistics have received more attention than the concept of 'copula', which was first introduced in the field by Abelard in his *Dialectica*. In fact, the term 'copula' and the associated phrase 'copular sentences' are meant to refer to a variety of conceptually distinct objects; for example, copular sentences involve a special verb in Indo-European languages whereas they may involve a pronoun in Semitic languages. In fact, there is no 'standard' definition of the notion of 'copula'. Leaving discussions and full references for a brief history of the notion of copula to the appendix of Moro (1997), we can at least single out three distinct analytical traditions: first, stemming from Aristotle's own work in the field, the copula has been considered as the sign of tense,

or more generally of those inflectional features that are normally expressed syncretically on the verbal predicate; second, starting at least from Abelard, the copula has been considered as the sign of affirmation, and this meaning has been pursued by the Port Royal school, influencing many subsequent theories; third, ever since Frege's and Russell's works in the field, the copula has been considered as ambiguous between the sign of identity and that of predication. In this case study, we will concentrate on copular sentences from two Indo-European languages, English and Italian, that played a central role in the development of generative grammar and more generally of formal syntax in the twentieth century; for a general and in-depth source of studies of the verb *be* and its equivalent across languages see Verhaar (1967, 1968a, 1968b, 1969, 1972, 1973). It is nevertheless important to highlight the fact that copular sentences have always constituted and still constitute a challenging field for all grammatical models: the aim of this work is to illustrate both some well-understood and some rather murky aspects of these constructions, concentrating on the general consequences that the syntax of copular sentences has for the general design of grammar. Data will be mainly taken from English and Italian for three distinct reasons: first, these two languages do have verbal copulas (*be* and *essere*, respectively); second, most recent literature is based on analyses of these two languages (especially since current analyses of copular sentences are related to the analysis of expletives: see chapter 24); third, the two languages instantiate two opposite values of the pro-drop parameter, allowing us to extend our knowledge of the impact of this parameter on grammar.

Let us define 'copular sentences' as those sentences whose main verb is *be* (the copula) and its equivalents across languages. In English, such a verb can be followed by DPs, APs and PPs:

(1) a. John [$_{VP}$ is [$_{DP}$ the cause of the riot]]
    b. John [$_{VP}$ is [$_{AP}$ angry]]
    c. John [$_{VP}$ is [$_{PP}$ on the wall]]

In some languages, such as Italian, moreover, bare NPs can also follow the copula:

(2) Gianni [$_{VP}$ è [$_{NP}$ causa della rivolta]
    'Gianni is (the) cause of the riot.'

As for those cases where the copula is followed by a VP, such as in *John is coming here* or *John is to come here*, they are not generally labeled as 'copular sentences', since the verb *be* in these cases rather plays the role of an auxiliary or a modal respectively. *A priori*, there wouldn't be a reason to consider the sentences in (1) and (2) as special with respect to any other sentence of the kind [DP VP]. This expectation is generally borne out, with one exception: in fact, a particular subtype of copular sentence, i.e. sentences of the type [DP copula DP], does show surprising properties, with many consequences both theoretical and empirical. These properties have attracted the attention of linguists throughout the

development of the discipline, and their discussion has often reflected the debate within generative grammar.[1] In the next section, some of these properties will be reviewed.

2 The anomaly of copular sentences

Consider a sentence of the type [DP V DP] in an SVO language like Italian or English. For any choice of V we expect there to be a set of asymmetries distinguishing the two DPs from a syntactic point of view. For example, we expect the preverbal DP to trigger agreement on the verb, to c-command the postverbal DP asymmetrically, and to be subject to more restrictions with respect to movement transformation than the postverbal DP (e.g., *that*-trace effect in English, absence of cliticization from preverbal DPs, etc.). These asymmetries, which are frequently dubbed the 'subject–object' asymmetries, constitute some of the major empirical arguments for assuming an asymmetric representation of sentences in natural language syntax such as the following (cf. Chomsky 1986b: 62):

(3) [DP [$_{VP}$ [V DP]]]

Indeed, there is no *a priori* reason to expect the same asymmetric representation not to remain valid when a sentence of the type [DP V DP] is construed by choosing the copula as a V. But in fact, this expectation is not borne out.

2.1 Testing verbal agreement, wh*-movement, and cliticization on copular sentences of the type [DP V DP]*

Let us first of all consider a copular sentence like the following in English:

(4) [a picture of the wall] is [the cause of the riot]

It can be easily shown that verbal agreement yields exactly the same pattern as all sentences of the type [DP V DP], i.e. the verb agrees with the preverbal DPs, not with the postverbal one:

(5) [some pictures of the wall] are/*is [the cause of the riot]

Wh-movement of preverbal and postverbal DP, however, yields a first anomalous fact:

(6) a. [which picture of the wall] do you think (*that) t is the cause of the riot?
b. *[which wall] do you think that [a picture of t] is the cause of the riot?
c. [which riot] do you think that a picture of the wall is [the cause of t]?

d. *[which cause of the riot] do you think that a picture of the wall is t?
e. [what] do you think that a picture of the wall is t?

As far as *wh*-movement is concerned, the behavior of preverbal DPs in copular sentences indeed parallels the well-known behavior of non copular sentences: *wh*-movement *of* a preverbal DP is possible only across non-overt complementizers (6a) and *wh*-movement *from* a preverbal DP is not possible (6b). As for postverbal DPs, instead, the situation for copular sentences is different from that for non-copular sentences: *wh*-movement *from* a postcopular DP is possible as in non-copular sentences (6c), but if one tests movement *of* the whole postverbal DP in a sentence like (4), the result is that only *what* can be extracted (6e); the phrase headed by *which* is banned (6d).[2]

This anomaly with respect to *wh*-movement is not inherently related to this specific type of movement, though. If we turn to a language like Italian, which allows clitic movement, for example, similar patterns can be easily detected. Normally, a postverbal noun phrase in a sequence of the type [DP V DP] can be cliticized onto the verb or there can be cliticization of subparts of it onto the verb. *Prima facie*, copular sentences are not deviant. Consider the following examples:

(7) a. una foto del muro è la causa della rivolta
a picture of the wall is the cause of the riot
b. una foto del muro lo è t
a picture of the wall it is
c. una foto del muro ne è [la causa t]
a picture of the wall of-it is the cause

Yet there is an anomalous fact here: copular sentences are different from all other sentences of the type [DP V DP] in that the clitic replacing the postverbal DP is always the uninflected form *lo*, as opposed to the case with verbs other than the copula, where inflected clitics occur, such as *lo*, *la*, *le li* etc. (cf. Burzio 1986).

2.2 *Surprising anomalies of some copular sentences of the type [DP V DP]*

The result of movement tests changes dramatically if we now check a sentence like the following:

(8) [the cause of the riot] is [a picture of the wall]

A priori, there is no reason to expect this sentence to be different from its associate in (4). In fact, (8) is superficially identical to (4), i.e. it is a [DP V DP]-type sentence.

Agreement offers a first cross-linguistic contrast:

(9) a. the cause of the riot is/*are some pictures of the wall
b. la causa della rivolta sono/*è alcune foto del muro
the cause of the riot are/is some pictures of the wall

In Italian, the copula now agrees with the postverbal DP: notice that the sentence in (9b) is by no means to be considered as a typical case of rightward agreement with subject inversion, which is typical of pro-drop languages like Italian. Indeed such a case could exist, but it would correspond to the linear sequence [V DP DP] or to the one involving cliticization [clitic V DP]:

(10) a. [[sono la causa della rivolta] alcune foto del muro]
are the cause of the riot some pictures of the wall
b. [[lo sono t] alcune foto del muro]
it are some pictures of the wall

Rather, the sequence here is DP V DP; thus rightward agreement is totally unexpected, even in a null-subject language like Italian.

Let us now focus on the postverbal DP of the copular sentence of the type [DP V DP] in (8) and test movement from and of it in turn (cf. (6c)):

(11) *which wall do you think that the cause of the riot is [a picture of t]

Movement from the postverbal DP now yields the same violation as movement from the preverbal DP. As for movement of the postverbal DP, we have the following result (cf. (6d) and (6e)):

(12) a. *which picture of the wall do you think that the cause of the riot is t
b. what do you think that the cause of the riot is t

Movement involving a phrase headed by *which* gives an ungrammatical result whereas movement involving *what* does not. This contrast between *which* and *what* constitutes a sharp and apparently not immediately understandable departure from the general pattern concerning postverbal DPs. If we turn to cliticization in Italian we obtain similar unexpected results (cf. (7b–c)):

(13) a. *la causa della rivolta lo sono t
the cause of the riot it are
b. *la causa della rivolta ne è [una foto t]
the cause of the riot of-it is a picture

Cliticization of and from the postverbal DP is blocked here. There is no other sequence of the kind [DP V DP] in Italian that shows the same behavior (excluding, of course, those where the postverbal DP is an adverbial like *due volte* (twice), as in *Gianni ha letto il libro due volte* (Gianni has read the book twice)).

2.3 Testing infinitival copular sentences of the type [DP V DP]

We have so far collected some surprising facts concerning copular sentences by considering finite contexts; let us briefly consider copular sentences in infinitival sentences. Another unexected asymmetry can be easily detected. As a first step, consider the following sentence:

(14) John considers [a picture of the wall to be the cause of the riot]

It is a well-known fact that the copula can be omitted in these contexts:

(15) John considers [a picture of the wall the cause of the riot]

If we test the same fact with respect to the associated copular construction we have the following sharp contrast:

(16) a. John considers [the cause of the riot to be a picture of the wall]
b. *John considers [the cause of the riot a picture of the wall]

Summarizing, we have isolated a cluster of surprising facts concerning copular sentences of the type [DP V DP]. In certain sentences of this type, but crucially not in all sentences of this type: (a) there can be no *wh*-movement of and from the postverbal DP, unlike for all other choices of V; (b) *wh*-movement of the postverbal DP is limited to *what* and impossible for phrases headed by *which*; (c) in Italian, agreement anomalously goes with the postverbal DP and (d) cliticization of and from the postverbal DP is banned; (e) omission of the infinitival copula is impossible in English. Again, one must crucially observe that these restrictions do not occur for all instances of sentence of the kind [DP copula DP], but only for a subset of sentences. More specifically, referring to the pair we tested here, these restrictions occur for the sentence *the cause of the riot is a picture of the wall* but not for the associated sentence *a picture of the wall is the cause of the riot*. Since both sentences are [DP V DP] type, there can be hardly any doubt that the simple asymmetric representation in (3), i.e. [DP [V DP]], cannot be maintained for both sentences.

2.4 Further anomalies

In the final section we will present a sketchy illustration of a proposal that accounts for the observed anomalies within a principled framework. For now, let us proceed to illustrate the anomaly of copular sentences by considering some other challenging facts: let us focus first on Binding theoretical effects.

2.4.1 Binding theoretical effects and the unambiguous interpretation of the copula

It is a well-known fact that the Binding domain of an anaphor or a pronoun contained in a DP can be altered when it occurs with the copula. For example:

(17) a. $John_i$ met his_i cook
b. *$John_i$ is his_i cook

The pronoun cannot be bound by the subject of the sentence when the verb is the copula. These kinds of data have been observed by many authors as they challenged the definition of 'minimal binding domain', i.e. the domain where Binding principles must be satisfied. To account for data like (17), and many others, Giorgi and Longobardi (1991), for example, proposed that Chomsky's (1986b) definition of minimal domain as a Complete Functional Complex was to be refined in such a way that the predicative nature of the postverbal DP with copular sentences mattered. Accordingly, a domain is defined as complete with respect to a head whenever it exhausts either all theta-roles assigned by the head or all the grammatical functions pertaining to the same head. This could derive the cases in (17): *John* is within the functional complex of *cook* in (17b) only, since only in that case does *John* play the grammatical function of subject of *cook*; thus the minimal domain of Binding is the whole sentence in (17b), whereas it is the postverbal DP itself in (17a); this explains the observed contrast. However, other anomalous properties have been discovered which go uncaptured even within the more refined version of the definition of Complete Functional Complex. I will briefly illustrate them by relying again on Moro (1997).

Consider a case like the following:

(18) a. $[John and Mary]_i$ considered [these to be [each other's$_i$ best performances]]
b. $[John]_i$ believes [these to be [the best pictures of $himself_i$]]

In both cases, the anaphors contained in the postverbal DP can be bound by the subject of the matrix clause. If the domain of binding were defined as proposed by Chomsky 1986b (and refined by Giorgi and Longobardi 1991) this should not be possible, since the minimal domain where all grammatical functions pertaining to a head are exhausted in (18a–b) is the embedded clause where *these* plays the role of subject of predication.

Relying on observations of Binding theoretical effects, it is also possible to show that the nineteenth-century semantic view according to which the copula is ambiguous between identity and predication cannot be maintained in syntax. This view, which is traditionally attributed to Russell (1903), is standardly exemplified in the following sentence (which in fact goes back at least to Frege's works):

(19) [the morning star] is [the evening star]

Allegedly, the interpretation of this example has been considered as a sign that the copula is ambiguous: (19) is analyzed as though the copula was expressing identity between *the morning star* and *the evening star*, as opposed to cases like *Socrates is a man* where it is analyzed as a sign of predication. Empirical consideration involving Binding effects show that this conclusion cannot be maintained. Suppose we construct the following sentence, intending it to be an identity statement, that is, a sentence where both DPs are symmetrically referential:

(20) *[the morning star]$_i$ is [its$_i$ source of energy]

Clearly, there is no way for the pronoun to be bound by the subject. On the other hand, if a predicate indicating identity, say *one and the same as*, is explicitly expressed in the sentence, the result is totally different:

(21) [the morning star]$_i$ is one and the same as [its$_i$ source of energy]

Coreference is possible here on a par with pure transitive constructions which do not involve predicative nominals, such as:

(22) [the morning star]$_i$ lost [its$_i$ source of energy]

In (21), indeed, we do have a genuine identity predicate (the AP *one and the same as*) as opposed to the case of the bare copula in (20): neither DP is the predicate of the other, given that the local domain for binding is limited to the DP itself in each case. Notice also that if (19) is analyzed as an identity statement, the same should be said for the embedded sentence in a case like the following:

(23) I consider [[the morning star] [the evening star]]

Clearly, (23) does not contain any copula, but the relationship between the two DPs is the same as in (19), reinforcing the hypothesis that the copula is not a predicate (of identity).[3] Finally, it is important to notice that Russell unambiguously considered the copula as a sign of identity when it is followed by a noun phrase, and a sign of predication when it is followed by an adjective (the original examples are *Socrates is a man* vs. *Socrates is human*). This passage has often been neglected or misquoted, it appears; otherwise linguists who refer to Russell's thought should always analyze nominal copular sentences as identity statements, and they clearly do not. All in all, I would like to emphasize that what must be affirmed here is that identity is not predicated *by the copula* or equivalently that one of the two noun phrases involved in a copular sentence always plays the role of a predicate. Whether or not the notion of 'identity' is suitable to an understanding of the relation between the two noun phrases is a different matter that involve the semantics of DPs rather than the copula.

2.4.2 Backward reflexivization: a recalcitrant case

Naturally, we have not exhausted all empirical issues concerning Binding effects in copular sentences. Many interesting facts still call for an explanation. I will simply refer here to two of them: so-called 'backward reflexivization' and pseudo-extraction. Another interesting topic, namely specificational copular sentences and pseudocleft sentences, is treated separately in chapter 61. The first phenomenon, discovered by Ruwet (1975), can be simply illustrated via the following paradigm (reproduced from Moro 1997):

(24) a. le sue$_i$ lettere sono l'alibi di Gianni$_i$
the his letters are the alibi of Gianni
b. l'alibi di Gianni$_i$ sono le sue$_i$ lettere
the alibi of Gianni are the his letters
c. le lettere di Gianni$_i$ sono il suo$_i$ alibi
the letters of Gianni are the his alibi
d. *il suo$_i$ alibi sono le lettere di Gianni$_i$
the his alibi are the letters of Gianni

Only in one case can the pronoun not be bound by *Gianni*. As far as I know, no reason has been given to explain this recalcitrant fact: any simple application of Binding theory does not give the correct output.[4]

2.4.3 Pseudo-extraction

Copular sentences are anomalous even for Theta theoretical considerations. Consider the following pair (cited from Moro 1997: 79 ff):

(25) a. Beatrice è desiderata da Dante
Beatrix is desired by Dante
b. Beatrice è il desiderio di Dante
Beatrice is the desire of Dante

The first example is a simple case of a passive sentence: *Beatrice* is assigned its theta-role in the object position and promoted to the preverbal position, where it plays the role of a subject. *Prima facie*, the two sentences, which both involve *be*, should be analyzed in a parallel way. More specifically, the null hypothesis is that in both cases Beatrice is moved from a thematic position to the subject position. Although this simple solution is surely appealing, it cannot be maintained. The reason why this anaysis cannot be adopted lies in the fact that it involves extraction from a DP and would thus go against a rather well-established generalization, which owes its origin to an observation by Cinque (1980). This generalization states that a constituent can be extracted from a DP only if it can be possessivized (see Giorgi and Longobardi 1991 for an updated discussion and a new derivation of this phenomenon). Unfortunately, if we apply this to the DP under discussion, we actually obtain the opposite of the result we need to support an analysis involving extraction. Consider the following fragment:

(26) [il suo desiderio . . .]
the his desire

The pronoun *suo* can only be interpreted as the experiencer as in *il suo desiderio per Beatrice* (the his desire for Beatrice). Thus, the hypothesis that *Beatrice*, which is interpreted as the patient, be extracted from the predicative nominal in the corresponding copular sentence in (25b) cannot be maintained. The phenomenon exemplified in (25b) has been labeled 'pseudo-extraction', a term which at least has the merit of emphasizing – at one and the same time – both the similarities and the differences between this construction and the passives.

Although no solution has been offered to solve this puzzle concerning copular sentences, one can get some idea of the extension of such a phenomenon within the class of noun phrases occurring in copular sentences. Let us consider in particular a number of noun heads which are compatible with two arguments. It is easy to establish that like *desiderio*, other nouns such as *paura* (fear), *timore* (fear), *preoccupazione* (worry), *piacere* (pleasure) allow pseudo-extraction:

(27) a. l'inferno è la paura di Dante
the inferno is the fear of Dante
b. Virgilio conosce [la paura di Dante per l'inferno]
Virgil knows the fear of Dante for the inferno
c. la città di Dite è il timore di Dante
the city of Dite is the fear of Dante
d. Beatrice conosce [il timore di Dante per la città di Dite]
Beatrice knows the fear of Dante for the city of Dite
e. Cerbero è la preoccupazione di Dante
Cerbero is the worry of Dante
f. Maria conosce la preoccupazione di Dante per Cerbero
Maria knows the worry of Dante for Cerbero
g. la luce è il piacere di Dante
the light is the pleasure of Dante
h. Ulisse conosce il piacere di Dante per la luce
Ulisse knows the pleasure of Dante for light

On the other hand, by no means do all bi-argumental nouns allow pseudo-extraction: for example, *descrizione* (description), *racconto* (narration), *fotografia* (photograph), *apparizione* (apparition) yield ungrammatical sentences:

(28) a. *l'inferno è la descrizione di Dante
the inferno is the description of Dante
b. Virgilio conosce [la descrizione di Dante dell'inferno]
Virgil knows the description of Dante of-the inferno
c. *la città di Dite è il racconto di Dante
the city of Dite is the narration of Dante
d. Beatrice conosce [il racconto di Dante della città di Dite]
Beatrice knows the narration of Dante of-the city of Dite

e. *Cerbero è la foto di Dante
Cerbero is the photograph of Dante
f. Ulisse conosce [la foto di Dante di Cerbero]
Ulisse knows the photograph of Dante of Cerbero
g. *la luce è l'apparizione di Dante
the light is the apparition of Dante
h. Maria conosce [l'apparizione della luce a Dante]
Maria knows the apparition of-the light to Dante

A first rough generalization may now be formulated. It seems that pseudo-extraction is allowed only with those noun phrases which express psychological attitudes and not with those 'extensional' verbs which denote activities like describing, narrating, etc. Thus, borrowing the terminology proposed for certain class of verbs by Belletti and Rizzi (1988), it is tempting to call this class of noun phrases 'psych-nouns'. Accordingly, the following provisional generalization can tentatively be formulated:

(29) Only psych-nouns allow pseudo-extraction

Keeping the discussion on a descriptive level, we can push this generalization to the limit by asking whether it should be reformulated as an 'if-and-only-if' clause. In other words, we can try to establish whether all (and only) psych-nouns allow pseudo-extraction. It seems that the answer to this is negative. For example, there are cases like *cruccio* (worry) that surely are psych-nouns from a semantic point of view, which show a different pattern when compared to elements like *desiderio* (desire):

(30) a. Beatrice è il cruccio di Dante
Beatrice is the worry of Dante
b. Virgilio conosce [il cruccio di Dante (* per Beatrice)]
Virgil knows the worry of Dante for Beatrice

On the one hand, they allow constructions like (30a), namely *Beatrice è il cruccio di Dante* (Beatrice is the worry of Dante), which strongly resembles cases of pseudo-extraction (specifically, the theta-role assigned to *Beatrice* comes from the N^0). On the other, they are clearly not bi-argumental, as (30b) shows, and so the very idea of extraction has to be excluded in principle. This (together with other possible cases) suggests that the generalization presented above calls for a further refinement.

Summarizing, in this section we have highlighted some empirical reasons which make copular sentences anomalous. First, we observed that a subset of copular sentences of the kind [DP V DP] does not respect the usual subject–object asymmetry (specifically, in certain cases extraction of and from the postverbal DP cannot take place with both *wh*-phrases and clitics); second, some Binding theoretical anomalies have been presented which challenge the standard frameworks;

third, theta-role assignment in copular sentences appears to run against a well-known generalization, suggesting that passivization in DPs is not well understood. Of course, this review does not exhaust all the facts that concern copular sentences; nevertheless, the cluster of facts considered here is indicative of how this field of research has had a deep impact on the general theory of grammar. In the next section, I will present a unified theory of copular sentences that has generated some debate in the field by solving some of the problems illustrated here and raising further questions.

3 Inverse copular sentences

In the previous section, we observed a cluster of anomalies which concerned copular sentences and which involved movement. More specifically, we observed that in a subset of copular sentences of the kind [DP V DP], the postverbal DP does not allow movement from it and at the same time it cannot be moved, with respect to both *wh*-movement and clitic movement. The postverbal DP, rather, behaves like the preverbal subject of embedded sentences with an overt complementizer. Clearly, the structure in (3), namely [DP [V DP]], is not empirically adequate to explain the syntax of copular sentences exhaustively.

3.1 The raising of predicates

The first step toward a principle-based explanation of the anomalies of copular sentences came from Stowell's (1978) proposal that *be* is a raising verb. On this proposal, the structure in (3), repeated here as (31a), must be extended as indicated in (31b):

(31) a. [DP [V DP]
b. [DP [V [t DP]]

where the subject moves to preverbal position to be assigned case. Stowell's argument was crucially based on the assumption that the position held by the preverbal DP in a copular sentence can be occupied by a subject expletive such as English *there* or Italian *ci* (see existential sentences and *there* insertion, chapter 24, for a detailed illustration of these constructions). Clearly, taken on its own (31b) cannot solve the problems illustrated in the previous section concerning movement. Even if the structural 'space' between the two DPs is augmented, one cannot see any reason why the postverbal DP should behave anomalously *only in certain cases*. The solution that I will present here, proposed in Moro (1987, 1988) (and refined in Moro 1997), is based on a simple consideration. A traditional view stemming from Chomsky's work and further elaborated by Rothstein (1983) maintains that the preverbal DP 'saturates' the function expressed by the predicate, in 'roughly the Fregean sense' (Chomsky 1981: 116). This is generally true for verbal predicates, but what happens if the predicate is a noun phrase?

The key step is to assume that in such a case the preverbal position is accessible to the predicate provided that it belongs to the proper lexical type, namely a noun phrase. More specifically, the proposal is to abandon the 'Fregean' approach and assume that the only requirement for a preverbal position is that it hosts a DP. Accordingly, a structure like (31b) has the following 'mirror' counterpart:

(32) [DP [V [DP t]]

Such a structure, which was labeled 'inverse copular sentence' to contrast with the 'canonical copular sentence' in (31b), offers the possibility of construing a unified theory of copular sentences, one which on the basis of a principled framework explains the whole cluster of anomalies with respect to movement. Again, the only difference with respect to the standard theory of clause structure is to abandon the idea that the preverbal DP 'saturates' the function expressed by the predicate.[5] In what follows, I will sketch the essentials of the unified of theory of copular sentences by highlighting some of its empirical consequences and the paths of research it opens.[6]

As a preliminary, let us assign the two sentences we tested in the previous section two distinct structures, indicating that the preverbal DP is respectively moving from either the subject or postverbal position, and call them 'canonical' vs. 'inverse' sentences, respectively:[7]

(33) a. [a picture of the wall] is [t [cause of the riot]] (canonical sentence)
b. [the cause of the riot is [[a picture of the wall] t] (inverse sentence)

In such a case the two postverbal DPs appear in different contexts and play different grammatical roles. In the canonical sentence (33a), the postverbal DP plays the role of the predicate, while the subject of predication has been raised to the preverbal position; in the inverse sentence (33b), by contrast, the postverbal DP plays the role of the subject of predication, while the predicate has been raised to the preverbal position. In other words, the two sentences have the same lexical underlying structures and are transformationally related.[8] Before approaching the issue of locality of movement, let us immediately observe that this theory explains why the copula cannot be omitted in infinitival inverse copular sentences. Consider the relevant cases, reproduced here as (34):

(34) a. John considers [a picture of the wall (to be) the cause of the riot]
b. John considers [the cause of the riot *(to be) a picture of the wall]

If there were no infinitival copula in (34b), there would be no landing site below the matrix verb for the predicative noun phrase, so there would be no way of forming an 'inverse copular sentence'. On the other hand, the copula can be omitted in (34a), since the corresponding structure would simply be one where neither the subject nor the predicative DP has moved. Let us now briefly turn to the locality facts: relying on the unified theory of copular sentences presented

here, we can reformulate the question in a more precise way by asking why extraction of and from the subject (i.e. the postverbal DP) of an inverse copular sentence is prohibited.

3.2 Explaining locality restrictions on the subject of inverse copular sentences

Although we cannot go through a detailed analysis, I would like to suggest the major lines of reasoning.[9] The crucial fact to notice is that the postverbal subject of an inverse copular sentence is in fact in the same kind of situation as the preverbal subject is in, as far as locality is concerned. For the sake of simplicity, let us represent the two fragments as follows:

(35) a. . . . V^0 [DP . . .
b. . . . C^0 [DP . . .

In both cases, the subject is governed by a non-lexical head within a clause structure; the complementizer in (35a) and the copula in (35b). Taking the traditional view stemming from the Aristotelian tradition, we will consider the copula as a functional head expressing the inflectional feature of the clause. This allows us to understand the locality phenomena in a principled framework.

Let me synthetically anticipate the lines of reasoning. The central idea is that the absence of movement of and from the postcopular DP of an inverse copular sentence is related to two independent locality conditions that have been recognized since the early models within the Principles and Parameters framework: first, movement of a phrase can originate only in a context that is 'rich' enough to signal the origin of movement (ECP); second, movement cannot cross two arguments in a single step (Subjacency). These two notions have been variously implemented, although there is general agreement that they depend on two distinct grammatical features (although the two are not totally independent, of course): the ECP is related to agreement (cf. Chomsky 1981: 251; Rizzi 1990b) while the Subjacency condition is related to lexicality (cf. Chomsky 1986b; Cinque 1990c; Chomsky 2000: 117). Adopting this view, we can explain the extraction asymmetries as follows. Any version of the Subjacency condition based on L-marking would immediately exclude extraction *from* the postverbal noun phrase of an inverse copular sentence (cf. (35a)). Why is this? L-marking is a local relation between a head and a full phrase: the head marks the full phrase according to the information specified in the lexicon. Prototypically, a head would L-mark its complement; hence, V^0 L-marks the object, P^0 L-marks the noun phrase it precedes, etc.[10] In general, the local relation that counts for L-marking is the government relation.[11] The fact is that neither C^0 nor V^0 is able to L-mark the lower DP. Although they govern it, they do not select it; hence the DP counts as a barrier and it blocks movement from the noun phrase.

However, the absence of L-marking cannot be regarded as the reason why movement *of* the postverbal noun phrase of an inverse copular sentence is not

possible. In fact, movement of the noun phrase from this position is fully grammatical in canonical copular sentences. To understand why movement of the noun phrase is blocked, we can rely again on the fact that the subject of inverse copular sentences is in the same syntactic environment as a preverbal subject, i.e. that (35a) and (35b) are essentially analogous as regards locality conditions. Consider the structural condition that permits extraction of the preverbal subject. Since Rizzi (1990b), it has been assumed that such a movement can be performed by passing through the spec position of a governing head and activating agreement on it;[12] if that position is already occupied, say by a *wh*-phrase, there can be no extraction from the preverbal position (cf. *who do you know t* C^0 *t represented Heaven in this way t?* vs. **who do you know how* C^0 *t represented Heaven t?*). Thus, we can simply extend Rizzi's ECP-based analysis to the case of copular sentences: if the spec of the copula is hosting the raised predicate, the lower subject cannot be extracted from the small clause for ECP reasons. Thus, we can derive the facts of the previous section from principled reasons: the subject of an inverse sentence cannot be moved as a whole and there cannot be extraction from it, for ECP and Subjacency reasons respectively.[13]

The contrast between phrases headed by *which* and *what* in both canonical and inverse copular sentences is also explained. Consider again the relevant examples, reproduced here as (36):

(36) a. *which picture of the wall do you think that the cause of the riot is?
b. what do you think that the cause of the riot is?
c. *[which cause of the riot] do you think that a picture of the wall is t?
d. [what] do you think that a picture of the wall is t?

The fact that *which picture of the wall* cannot be extracted is explained regardless of the difference between canonical and inverse copular sentences, as we just said: the agreement features of the copula have already been activated by the chain of the predicate, witness the agreement on the verb: thus, movement of *which picture of the wall* yields an ECP violation in (36a). In fact, if *which picture of the wall* is to be extracted, this can only happen from a preverbal position such as *which picture of the wall do you think is the cause of the riot?* But why is it possible to move *what* in (36b)? If we maintain the theory presented here, the possibility of extracting *what* in (36b) forces us to assume that: first, (36b) is a canonical sentence where the extracted element is the predicate not the subject, i.e. (36b) is the interrogative counterpart of a sentence like *the cause of the riot is a very stupid event*; second, the trace of *what* is not governed by the agreement features contained in the copula – rather it is governed by an abstract head contained in the predicative DP it is extracted from. Notice that there is independent evidence that *what* is more embedded than *which* in the DP it is contained; witness contrasts like the following:

(37) a. *[which a girl] I met!
b. [what a girl] I met!

This contrast suggests that the proper internal structure of the *wh*-phrase is one where *what* is generated in a lower position than *a*, as if it were the *wh*-counterpart of an expression like *a wonderful girl*, whereas *which* competes for the same position as *a* and thus is excluded:

(38) [what [$_{D^0}$a] [. . . t . . .

Thus, the reason why (36b) and (36d) escape the ECP violation is that the trace has a different proper governor to rely on, arguably an abstract head belonging to the D^0 system which is not available to *which*.

3.3 Rightward agreement in inverse copular sentences: pro as a null predicate

Let us now turn to the contrast between English and Italian concerning agreement. Recall the relevant examples, reproduced here as (39):

(39) a. the cause of the riot is/*are some pictures of the wall
b. la causa della rivolta sono/*è alcune foto del muro
c. the cause of the riot are/is some pictures of the wall

Two assumptions must hold in explaining these facts: first, agreement in Italian cannot be the result of a spec–head relation between the copula and the subject because we independently know that the subject of an inverse copular sentence can never move; second, it would be highly desirable from a theoretical point of view if such a cross-linguistic distinction could be traced back to the presence of pro in Italian, since this contrast could then be immediately traced back to an independently motivated parametric distinction between the two languages concerning verbal agreement, i.e. the pro-drop parameter. These considerations lead to the following partial representation in Italian:

(40) [DP . . . pro copula [DP . . .

What triggers agreement on the copula in Italian is not the preverbal DP but rather pro, which indirectly agrees with the subject in situ: in other words, pro would play the role of a *null predicate* rather than of a *null subject*. Notice that the fact that pro can play the role of a null predicate along with that of a null subject is independently motivated by sentences like *sono io* 'am I', 'it's me', whose correct structure (41a) is the exact opposite of the one assigned by Chomsky (1981: 88, 289fn 14) (41b), where *io* (I) was considered to be the predicate while *pro* was considered to be the null subject:

(41) a. pro sono [io t]
b. pro sono [t io]

That (41) is an inverse copular sentence can be easily proved by noting that: first, *io* cannot be cliticized to yield *lo sono* (which incidentally is grammatical but

corresponds to the cliticization of the predicate in a canonical sentence like *sono stanco* 'am tired');[14] second, by no means can *sono io* be considered as similar to *telefono io* 'telephone I', namely as an instance of the inverted subject sentences typical of null-subject languages (cf. Chomsky 1981; Rizzi 1990b). In fact, *io telefono* is a well-formed sentence whereas **io sono* is ungrammatical. The reason why the latter sentence is not well-formed is due to the conspiracy of two independent factors: on the one hand, the copula must co-occur with a subject and a predicate (unlike *telefonare*, which can occur with only one DP); on the other hand, pro cannot be licensed in situ in the small clause; it can be licensed only in sufficiently rich morphological environments, such as the preverbal position. Thus, **io sono* is ungrammatical for the lack of a predicate and *sono io* is an inverse copular sentence.

Second, in which structural position is the preverbal DP? There are two possibilities here. Either the DP is in a spec position of the split Comp field in the sense of Rizzi (1997), or it is within the IP system higher than spec-AgrS (or any equivalent spec position which triggers agreement on the verb). That such a DP cannot be in the split CP field can be tested by activating the lower head position of such a split system, namely Fin^0. One possibility is to occupy Fin^0 by a verb, as in Aux-to-Comp constructions, and see where the DP is:

(42) a. . . . [essendo] [$_{IP}$ la causa della rivolta t le foto del muro . . .
being the cause of the riot the pictures of the wall
b. *. . . la causa della rivolta . . . [essendo] t le foto del muro . . .
'being the cause of the riot the pictures of the wall'

The preferred sequence is the one where the DP follows the auxiliary raised to Fin^0, offering a piece of evidence in favor of the idea that the preverbal DP in Italian inverse copular sentences is lower than the split Comp field. Interestingly, notice that if this analysis proves tenable, inverse copular sentences would offer a strong clue to children acquiring Italian, since they would be forced to assume that pro is obligatory in preverbal position with all verbs, unless one wants to assume the rather implausible hypothesis that pro is obligatory only with the copula and specifically only with inverse copular sentences.[15]

Third, why is pro coreferential with the overt DP? There is no explanation for this fact, but it must be observed that this is the very same phenomenon one observes in inverted subject constructions in a pro-drop language, as in *telefona Gianni* (pro *telephones Gianni*, 'Gianni telephones') where pro is forced to be coreferential with the postverbal DP *Gianni*.

4 Conclusion

Summarizing, the unified theory of copular sentences of the type [DP V DP] presented here crucially relies on the hypothesis that along with canonical copular sentences where the subject is raised to the preverbal position ([DP V [t DP]]),

there also exist inverse copular sentences where the predicative noun phrase is raised to the preverbal position, leaving the subject in situ ([DP V [DP t]). This allows us to derive the observed anomalies concerning movement in copular sentences. Specifically, it can be observed that the postverbal subject of an inverse copular sentence is in a local environment similar to that of the preverbal subject of an embedded sentence governed by an uninflected overt complementizer: there can be no movement of the subject (for ECP reasons) and there can be no movement from the subject (for Subjacency reasons). The distribution of the copula in infinitival copular sentences can be immediately interpreted, since it is only in inverse copular sentences that the copula cannot be omitted, i.e. it cannot be omitted when there would be no specifier position for the predicative DP to cross over the subject. As for the agreement facts, the unified theory allows us to assume a conservative analysis, suggesting that along with the role of the null subject, pro can also play the role of a null predicate, yielding non-trivial consequences for language acquisition.

Clearly, this unified theory of copular sentences is not able to solve all problems and questions raised by this type of construction. Nevertheless, this theory has provided promising tools for a progressive unification of other fields. A first example is existential sentences of the type *there copula DP*: this particular type of copular sentence has played a central role in the development of formal syntax since at least Jespersen (1924). I will simply refer here to chapter 24, where *there*-sentences are treated in detail. Another example is cleft and pseudocleft-sentences. Given that cleft and pseudo-cleft sentences are instances of copular sentences of the kind [DP V DP], the obvious question has been raised whether clefts and pseudo-clefts are instances of canonical or inverse copular sentences and, more importantly, whether this unified theory is helpful in understanding their syntax (see chapter 61).[16] A further question is raised by sentences of the kind *it copula CP*, such as *it's that John will not come here today*, as the answer to *what is is that bothers you?*: clearly, assuming the unified theory proposed here it would be hard to say that they are instances of canonical copular sentences, because this would amount to saying that the CP following the copula plays the role of a predicate – hardly a plausible assumption. Rather, the residual option allowed by the unified theory of copular sentences is more promising, since sentences of the kind *it copula CP* (like *What is it that bothers you?*, *It's that John left*) can be considered inverse copular sentences, where the CP plays the role of a subject and the preverbal DP (*it*) plays the role of the propredicate; i.e. [it is [CP t]] is their structure. Interestingly, this analysis of sentences of the type *it copula CP* raises an obvious question as to the structure of the type *it seems CP* (like *it seems that John left*), where the so-called 'quasi-copula' *seem* occurs. Indeed, in Moro (1997) a theory of *seem*-sentences was proposed that analyses *it seems CP* sentences as involving raising of a propredicative *it* out of an embedded clausal structure whose subject is a CP (namely, [it seems [CP t]]), paralleling inverse copular sentences of the type [it is [CP t]]. Other questions raised by the unified theory presented here involve the plausibility of predicative DP raising in other domains. Indeed, an extension of the analysis based on predicative raising has

been proposed by Kayne (1994), Dikken (1995b), Zamparelli (1995) and Bennis et al. (1998) in the field of noun phrases, interpreting, for example, cases like possessive constructions (*the car of John*) or epithets (*this idiot of (a) John*) as involving predicative raising across the subject, first proposed in the field of copular constructions.

We end the discussion here, concluding much as we have started, observing that copular sentences still constitute an open field of discussion and one that has very intricate relations with many other domains of grammar.

NOTES

1 For a quick list of references within generative grammar, one could see Ruwet (1975); Higgins (1979); Moro (1987, 1988, 1997); Stowell (1978); Longobardi (1985); Heggie (1988); Williams (1980); Heycock (1994b); Guéron (1992); Dikken (1998b); Heycock and Kroch (1999). For a full list of references in the field since Aristotle, instead, see the appendix of Moro (1997).

2 Higgins (1979), quoting Geach (1962), suggests that the impossibility of *wh*-moving a predicate headed by *which* is a semantic restriction called Buridan's Law: we will see that such an asymmetry can be traced back to the different syntactic nature of the two *wh*-words.

3 The fact that the two DPs in (23) can be inverted simply shows that in these cases there is no way to decide *a priori* which noun phrase is the subject and which one is the predicate, as was already clear in Jespersen (1924: 153 ff).

4 Although this is not the place to expand working intuitions, it may be noticed that the postverbal subject of (24d) is focused: this could be a hint to construe an explanation for backward reflexivization. See also Moro (1997: 274) for a critical discussion. For the role of Focus on Binding phenomena see also Heycock and Kroch (1999).

5 This type of structure is to be kept carefully distinct from cases of 'locative inversion.' Hoekstra and Mulder (1990), for example, suggested that unaccusatives can be analyzed as 'locative inversion' constructions where spec-IP is occupied by a PP (ia) on a par with copular constructions like those in (ib) (see Hoekstra and Mulder 1990: 28 ff):

(i) a. $[_{IP}\ [_{PP}$ into the room$]_i$ enters $[_{SC}$ a man $t_i]]$
b. $[_{IP}\ [_{PP}$ in the room$]_i$ is $[_{SC}$ a man $t_i]]$

This analysis, which explicitly subsumes the theory of *there*-sentences as inverse sentences proposed in Moro (1991) (cf. Hoekstra and Mulder 1990: 33 ff), cannot be maintained, for empirical reasons. Consider the following examples:

(ii) a. $[_{DP}$ the cause of the riot$]_i$ is $[_{SC}$ a man $t_i]$
b. $[_{DP}$ the cause of the riot$]_i$ is/*are $[_{SC}$ John and Mary $t_i]$
c. $[_{PP}$ in the room$]_i$ is $[_{SC}$ a man $t_i]$
d. $[_{PP}$ in the room$]_i$ are/*is $[_{SC}$ John and Mary $t_i]$

Assuming that agreement is invariantly established in spec-IP, it would be hard to assume that (ia) and (ib) instantiate the same type of structure. Rather, (ib), repeated

as (iic), is an instance of the topic constructions that have been analyzed by Cinque (1990c) and Rizzi (1997) involving some portion of the scattered CP layer (and movement of the verb to a higher functional head). This would explain why the equivalent of (ib) in Italian involves a locative clitic *ci* (iiia) which is not allowed in an inverse copular constructions (iiib):

(iii) a. $[_{IP}\ [_{PP}$ nella stanza$]_i$ *(c') era $[_{SC}$ un uomo $t_i]]$
b. $[_{IP}\ [_{DP}$ la causa della rivolta$]_i$ (*c') era $[_{SC}$ un uomo $t_i]]$

The status of *ci* with the copula is discussed in detail in a separate case study, chapter 24. As for the lack of *ci* in Italian unaccusatives (but not in many northern Italian dialects; see Burzio 1986 and Poletto 1993), see Moro (1997).

6 It should be noted that the idea that copular sentences always occur with one predicative and one referential DP (hence the idea that the preverbal noun phrase can be a predicate when the postverbal one is a subject) was first proposed by Jespersen (1924), and independently introduced in generative grammar by Longobardi (1985). Moro's contribution (in Moro 1987, 1988, and subsequent works) was to propose a *transformational* analysis relating the two surface structures.

7 I will not discuss here the reasons that drive DP movement to preverbal position. Whether it is Case, as generally assumed, or Dynamic Antisymmetry (as proposed in Moro 2000), is still under debate.

8 The fact that the two sentences share the same lexical structure does not imply that they are synonymous. In fact, in the inverse copular sentence the postverbal subject is inherently focused, as opposed to what occurs in canonical copular sentences. The nature of focus within VPs is quite an obscure issue; certainly one cannot simply assume that the focus-related position here is the same as the Focus position in the split-Comp field explored by Rizzi (1997); see Belletti (1999a) and Longobardi (1999) for extensive discussion of postverbal focus positions.

9 See Moro (1997) or the appendix of Moro (2000) and references cited there for a detailed proposal on the locality conditions applying on the subject of inverse copular sentences.

10 There are various ways of implementing the notion of L-marking relying, for example, on theta-relations (Chomsky 1986a) or selection (Cinque 1992). The latter appears to be empirically more adequate; a head X^0 L-marks a phrase YP if and only if X^0 governs YP and X^0 selects YP. It is interesting to note that the notion of L-marking endures even in the Minimalist framework. "Though varieties of govenment would be 'imperfections,' to be avoided if possible, the closer-to-primitive notion of L-marking should pass muster, hence also the notions of barrier that are based on nothing more than L-marking" (Chomsky 2000: 117).

As for the class of phrases to which L-marking applies, notice that when the predicate is left in situ, extraction is fully grammatical even if there is no L-marking. Hence, we should regard L-marking (hence barrierhood) as a specific condition on argumental noun phrases, not on predicative ones, which behave like verbal phrases much as in the original definitions of the Subjacency conditions (see Roberts 1988a for a critical discussion).

11 For the sake of clarity, let us assume government to be a local c-command relation: a head governs its complement, the head of its complement, and the spec of its complement. For a critical discussion of government see Giorgi and Longobardi (1991); Rizzi (1990b).

12 Agreement then turns out to be the element which performs the 'action at a distance' that the ECP is about, and it has been proposed that it can be generalized to virtually all cases in Moro (1993b). In fact this appears to be one possible implementation of a universal requirement that has long been recognized within generative grammar: "it is not unreasonable that Universal Grammar should require that the presence of an empty category be signalled in some manner by elements that are overtly present" (Chomsky 1981: 251).

13 For independent reasons for assuming a two-principle theory of locality, see chapter 24.

14 Notice that *chi sono* 'who am' cannot be considered as the counterpart of *sono io* 'am I'; first person pronouns can never be *wh*-moved (cf. *telefono io* 'telephone I' vs. * *chi telefono?* 'who telephone-first sing.'. This can be regarded as a further support to the idea that the subject of inverse sentences does not move.

15 Incidentally, notice that inverse copular sentences are not rare: they are extremely productive in Italian, even in child speech contexts.

16 Rightward agreement in Italian can be exploited as a diagnostic in these cases. In fact, in Italian cleft and pseudo-cleft sentences it is clearly the case that agreement goes to the right, as in *sono i libri che Gianni legge* 'it are books that Gianni reads' or *ciò che Gianni non gradisce sono i libri* 'what John doesn't like are books'. One can easily conclude that cleft and pseudo-cleft sentences are instances of inverse copular sentences.

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19 Derived Nominals

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1 Introduction

Derived nominals are nominal structures derived from other syntactic categories by means of derivational affixes. In modern linguistic tradition this term is associated with deverbal nominalizations denoting eventualities of various sorts (as opposed to, e.g., agentive *er* nominals). In the generative tradition the study of derived nominals thus understood dates back to Lees (1960). Since then, during subsequent stages of the development of the theory of grammar, and as a result

of the ever growing interest in nominalizations, various problems have been identified and their number keeps growing in view of the recent intensive cross-linguistic studies.

Cross-linguistically, derived nominals have a mixture of nominal and verbal properties. As categorial hybrids they constitute a challenge to the modern theory of grammar. Even in a single language such as English the range of derived nominal constructions is quite diversified with respect to their nominal and verbal properties: derived nominals such as *destruction*, nominal gerunds such as *the destroying of the city*, or verbal gerunds such as *destroying the city* (chapter 30). Different languages show different nominalization patterns and variations. Therefore it is very difficult to develop a theory that would provide a consistent account of all the varieties. There is no consensus as to the nature of the nominalization process and the relationship of the derived nominal to the base verb. Among derived nominals, action nominalizations (that is, those derived from Agent–Patient verbs like *destroy*) have been studied most extensively. They have usually constituted the basis for the development of various theories, which, on closer scrutiny, do not always work when confronted with derived nominals from other semantic classes, such as, for example, nominalizations of the notorious Experiencer verbs like *fear* or *amuse*. The mixed categorial nature of derived nominals, the inter-language and intra-language variations as well as the Experiencer problem have inspired research in this area, at the same time leading to a lot of controversy. Here we will be primarily concerned with the derived nominals proper, and not with gerundial constructions or nominal infinitives (chapter 30). The prototypical derived nominal is presented in (1):

(1) a. the enemy's destruction of the city
    b. the destruction of the city by the enemy
    c. the city's destruction by the enemy

Koptjevskaja-Tamm (1993), following the tradition represented earlier by Comrie (1976b) or Comrie and Thompson (1985), provides an exhaustive cross-linguistic and typological classification of languages with respect to action nominal constructions (ANCs). Typological studies reveal that languages vary as to the closeness of nominalizations to underived noun phrases or to verb phrases in respect of both semantic and syntactic properties. Their intermediate nature is unquestionable, though: they are indeed a mixed category rather than an independent category whose properties would be different from those of NPs or VPs. Although they have nominal external distribution, their internal syntax is often not unlike that of a verb phrase. The degree of their 'nouniness' and 'verbness' varies from the point of view of both intra-language and inter-language variation. All these facts remain problematic in view of the generally endocentric phrasal pattern encapsulated in the X-bar conventions and the prevailing generative conception of syntactic categories as discrete elements within a system of contrastive oppositions. In view of the universality of the noun–verb distinction (which is assumed in different linguistic traditions; cf. Sapir 1921: 117–19; Hopper

and Thompson 1985), the task of the linguistic theory is to provide an account of the categories which clearly show both nominal and verbal properties. The history of nominalization studies shows that at various points different aspects of the properties of derived nominal structures were discovered and emphasized. Particular theories focus either on what nominalizations share with verbs or on what makes them nominal. There is no single division line between various approaches, though some researchers try to simplify the issue and group the approaches into complementary pairs. Thus we can often encounter such binary divisions as transformationalist vs. lexicalist approach or syntactic vs. lexical derivation.

2 Transformationalist–lexicalist controversy

This binary contrast is assumed by Koptjevskaja-Tamm (1993), Borer (1991, 1993), and Fu (1994). The early transformational approach is represented by Chomsky (1957) and Lees (1960) and contrasted to the Lexicalist Hypothesis developed in Chomsky (1970). The transformationalist approach is to make the link between derived nominals and their corresponding verbs a matter of syntactic derivation; the lexicalist approach is to express the link in the lexicon. In the early stages of the development of generative grammar the only possibility of expressing the link between related structures was via a syntactic transformational process operating on sentences, which by its nature accounted for clausal properties of derived nominals. Chomsky's (1970) seminal paper "Remarks on Nominalization" was a reaction to the transformationalist hypothesis. He argued against a transformationalist analysis of derived nominals, illustrated further in (2) and having their sentential counterparts in (3):

(2) a. John's eagerness to please
    b. John's refusal of the offer
    c. John's criticism of the book

(3) a. John is eager to please.
    b. John has refused the offer.
    c. John criticized the book.

Chomsky (1970) pointed out that the following properties of derived nominals are problematic for the transformationalist approach:

- The productivity of derived nominals is restricted.
- The semantic relations between the associated proposition and the derived nominal are quite varied and idiosyncratic.
- The nominal has the internal structure of a noun phrase.
- Well-known transformations that apply to sentences (such as raising to object, raising to subject, or dative shift) are barred from nominalizations.

He provided an alternative account, the Lexicalist Hypothesis, according to which derived nominals constitute separate items in the lexicon. Building on an elaborated system of syntactic features introduced in Chomsky (1965), he proposed that the same selectional properties of verbs and related nominals should be captured by the same lexical entry with the same selectional requirements, but neutral with respect to the category. This gave rise to the X-bar theory, widely adopted in modern grammar and extended later on. In this way the link between a derived nominal and its corresponding verb was located in the lexicon, that component of the grammar where all the idiosyncracies are listed. This theoretical move took care of the problems enumerated above. Since then the consensus has been that nominalizations are base-generated in the lexicon rather than syntactically derived, but the question of the relationship between nouns and verbs has not been settled. Rather, it has become much more complex and now it occupies a central place in theoretical research. The dominating tendency in recent studies is to introduce mechanisms which would allow different derivations of different types of derived nominals. Both the lexical tradition and the syntactic tradition in nominalization studies have come to the point where it is necessary to recognize syntactically different, though morphologically identical deverbal derived nominals. There are various independent versions of what might be regarded as the neo-transformational approach. Differ as they may in initial assumptions and theoretically important details, they share the basic claim that the difference in interpretation and argument distribution corresponds either to the level at which a morphological operation takes place or to the functional layers that dominate the nominal head.

The point of departure for the various approaches is the argument distribution in nominals as compared to verbs. Only from the point of view of this single property it turns out that the debate cannot be reduced to the simple transformationalist–lexicalist controversy.

2.1 Configurational hypothesis

The lexicalist approach developed in various directions. One of its most recent versions is represented by Giorgi and Longobardi (1991), who develop Chomsky's (1970) assumption that the structure related to a verb is the same as that related to the corresponding noun. Accordingly, their thematic properties remain the same as well. To put it in simple words, both nouns and verbs have subjects and complements, and both nouns and verbs assign theta-roles to the respective positions in the same way. Furthermore, various rearrangements of arguments within the nominal and verbal projections are due to the same principles of grammar, such as 'Move α', which apply both in the domain of clauses and in the domain of noun phrases. Thus the well-known analogy illustrated in (4) and (5) below obtains:

(4) a. The barbarians destroyed the city.
    b. The city was destroyed by the barbarians.

(5) a. The barbarians' destruction of the city
b. The city's destruction by the barbarians

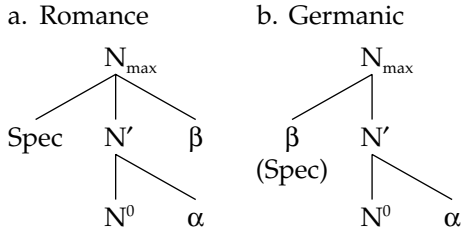
Under this approach (5a) and (5b) are transformationally related in the same sense in which (4a) and (4b) are, and the possessive phrases of (5) have the same prominence as the surface subjects of (4). These views are generalized into the Configurational Hypothesis, consisting of two clauses:

(6) **Configurational Hypothesis:**

- It is possible to identify, within NPs, definite theta- (and non-theta-) positions at various levels of hierarchical attachment: whenever an element of the N-frame appears in a position arguably different from the one where it should be projected at D-structure, its displacement must, then, be governed by the general conditions holding on antecedent–trace relationships created by 'Move α'; moreover, the binding of anaphors and pronouns in NPs obeys the same constraints as observed in clauses.
- The theta-structure of Ns (their theta-grid and the conditions on theta-assignment) strictly parallels that of Vs, so that the differences appearing on the surface must be due to the intervention of other modules of grammar which determine some systematic variation (Giorgi and Longobardi 1991: 2).

To accommodate the differences in the distribution of NP satellites between Germanic and Romance languages, Giorgi and Longobardi enrich the X-bar theory with the directionality parameters: 'Head–Complement' and 'Head–Subject'. Internal arguments are projected to the right of the head in Romance and in Germanic; external semantic functions are licensed at D-structure on the right in Romance but on the left in Germanic, as represented in a simplified way in (7):

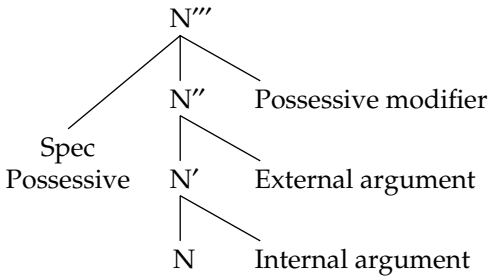
(7) **The Head–Subject Hypothesis:**



(β = subject, α = complement).

Next, on the grounds of binding evidence, Giorgi and Longobardi propose a three-layer structure for an Italian NP:

(8)



In Italian NPs, all the occurrences of arguments to the left of N are the result of movement to Spec (core case of movement), which together with the Possessivization Principle quoted in (9) is supposed to account for the distribution of arguments and for the binding facts in Italian:

(9) **Possessivization Principle:**
The unique phrase allowed to appear as a possessive is the hierarchically highest genitive argument of an NP (Giorgi and Longobardi 1991: 68).

Giorgi and Longobardi claim that the syntactic template of the NP determined by the parameters fully predicts the distribution of arguments in nominals. This is by virtue of the fact that the null assumption of the Configurational Hypothesis is that all the grammatical processes, including the theta-assignment conditions, are identical for verbs and nouns. On this approach no reference to lexical or semantic information is allowed, apart from recognizing the classic syntactic distinction between external and internal arguments (introduced by Williams 1981a) in the theta-grid of a lexical item, neutral with respect to the category. Given the syntactic template for the NP with canonical D-structure positions for the internal and external arguments of the theta-grid (which distinction is equivalent to the distinction between the object and the subject), the distribution of arguments is predicted. By its nature, configurational approach does not refer either to the content of thematic roles or to any other kind of lexical information.

Giorgi and Longobardi (1991) are primarily concerned with the structure of NP as such. They do not discuss complexities within the domain of derived nominals such as the result/process distinction. Nor do they provide any explanation for the failure of Agents of transitive actions to surface as subjects of NPs, which is attested in a number of languages (e.g., Romance, Slavic, Modern Greek), as opposed to Agents of result nominals (sometimes also referred to as material nouns).

2.2 Non-configurational thematic approaches

The configurational hypothesis assumes complete parallelism between verbs and nouns and, as described in the previous section, mapping principles are stated in syntactic terms. On closer investigation it turns out that the argument realization

in derived nominals depends on some semantic distinctions which the categorial view ignores. Those who recognize the distinctions differ in what they consider crucial for stating important generalizations.

The regular pattern in (1), which gave rise to the categorial lexicalist approach, is attested only for prototypical Agent–Patient predicates. English nominalizations from verbs with non-affected objects (chapter 5) do not have a passive nominal:

(10) a. John enjoys the movie.
b. The movie is enjoyed by John.
c. John's enjoyment of the movie
d. *the movie's enjoyment by John

Anderson (1984) proposes a constraint which prohibits movement of non-affected objects to the Specifier position of an English NP. In addition to cases like (10) we observe the non-existence of nominalizations derived from Object Experiencer verbs:

(11) a. *the book's amusement of the children
b. *the news' terror/horror of Mary
c. *his rude behaviour's disgust of Mary
d. *the book's delight of the public

The regularity of the patterns illustrated in (10) and (11) inspired lexicalist non-categorial thematic approaches to nominalization represented among others by Amritavalli (1980), Rappaport (1983), Hoekstra (1986a), and Rozwadowska (1988). Their essence is the claim that formal realization of arguments is determined by their thematic role with respect to the head. In other words, it is not the syntactic structure which is directly inherited from the verb by the nominal, but the thematic grid. The mapping rules are then formulated directly in terms of thematic relations assigned by a predicate. Moreover, verbal and nominal projections are treated separately, and accordingly, the mapping rules between theta-roles and structural positions for nominals are formulated separately from the corresponding verbal projections. The theta-grid itself can be shared by nominals and verbs, but the rules are independent.

Although the thematic generalizations formulated in various ways and using various thematic labels are observationally adequate, the explanatory value of thematic generalizations both with respect to nominalizations and with respect to other grammatical phenomena has been questioned. Thematic systems are notorious for the arbitrariness of their definitions and the multiplicity of their thematic labels. New thematic labels are often introduced as the need arises, and it is quite difficult to achieve a consensus on what and how many thematic relations do exist. The attempts to decompose the thematic labels into a small, finite set of features (such as, e.g., Rozwadowska 1992; Reinhart 1996) reduce the number of primitives and account for the substantial overlap among the

traditional atomic concepts but do not provide any more principled, motivated, or explanatory basis for the generalizations.

The next stage in the non-configurational lexical approach was the event-structure approach to derived nominals developed in Grimshaw (1990) and discussed in section 4. The event-structure approach is closely connected with the result/process ambiguity discussed in section 3. The Event Structure Theory of nominalization developed in Grimshaw (1990) can be placed in between the configurational (categorial) view and the thematic view. There are two important ingredients of this approach. First, it makes crucial use of the distinction between result nominals and process nominals, and second, it introduces a derived lexical level of argument structure, which determines both the argument distribution in nominalizations and the existence of a nominalization itself. The mapping rules do not refer directly to thematic roles, but to the lexical level of Argument Structure, which is derived from the Lexical-Conceptual Structure via a two-dimensional hierarchy, one dimension being thematic and the other aspectual. The aspectual hierarchy presupposes the existence of an event structure in the sense of Pustejovsky (1988). Thus, ultimately, nominalizations are analyzed in terms of event structure.

3 Result/process ambiguity

Significant ambiguities within the system of nominalization were discussed by Anderson (1984), Walinska de Hackbeil (1984), Grimshaw (1986, 1990), Lebeaux (1986), Roeper (1987b), Zubizarreta (1987), Malicka-Kleparska (1988), Picallo (1991), Bottari (1992), Schoorlemmer (1995, 1998a), Rozwadowska (1997), Engelhardt and Trugman (1998a, 1998b), Rappaport (1998), and Alexiadou (1999b), among others. Anderson (1984) distinguishes between concrete nouns, such as *store*, which take lexical possessives, and abstract nouns, such as *reliance*, where *'s* is inserted transformationally. A similar distinction between abstract and concrete nominals is the basis for Malicka-Kleparska's (1988) distinction between regular nominalizations and their irregular lexicalizations. Walinska de Hackbeil (1984) discusses a relation between clausal nominals with a full theta-grid, and the so called theta-nominals, where one of the argument positions is absorbed in the lexical process. The properties of the clausal nominals as contrasted to those of the theta-nominals are illustrated below:

(12) a. Possession *(of such knife) was her dream.
b. This is my favorite possession (*of such knife).

(13) a. Their acquisition by the museum was thoughtless.
b. *Their recent acquisitions are here. (ungrammatical on the passive interpretation)

(14) a. The doctor coldly observed this nervous crossing and uncrossing of legs.
b. This (*un)crossing on the Ave is dangerous.

In (12a) the clausal nominal requires the presence of the theme argument, which contrasts with (12b), where we have the corresponding theta-nominal with no argument possible. Examples in (13) illustrate a possibility of passivization within the clausal nominal and its impossibility in the case of the theta-nominal. This is claimed to be a consequence of the absence of the argument structure in the latter case. (14) illustrates the difference between the two kinds of nominals with respect to propositional negation. To summarize Walinska de Hackbeil's observations, the action/process nominals in the (a) examples above are clausal nominals because they share a number of properties with clauses, while the theta-nominals in the (b) examples lack such properties.

The distinction between process nominals (since Grimshaw 1990, these are often referred to as complex event nominals and abbreviated to CENs) and result nominals has been well documented cross-linguistically. Zubizarreta (1987) draws a similar distinction between result and event nominals and accounts for the difference between them with respect to argument realization, illustrated in (15) and (16) for Romance languages. The nominals in (16) have only the event interpretation as opposed to the result interpretation in (15):

(15) a. la descrizione degli avvenimenti di Gianni
the description of the facts of Gianni
'Giannni's description of the facts'
b. la description du paysage de Pierre (Fr.)
la descripcion del paisaje de Pedro (Sp.)
'Pierre's description of the landscape'
c. sa description du paysage (Fr.)
su descripcion del paisaje (Sp.)
'his description of the landscape'

(16) a. la description du paysage par Pierre (Fr.)
la descripcion del paisaje por Pedro (Sp.)
'the description of the landscape by Pierre'
b. l'interprétation des données par Pierre (Fr.)
la interpretacion de los datos por Pedro (Sp.)
'the interpretation of the data by Pierre'
c. la traduction de l'oeuvre de Balzac par Pierre (Fr.)
la traduccion de la obra de Balzac por Pedro (Sp.)
'the translation of Balzac's work by Pierre'
d. la démonstration du théorème de Pythagore par Pierre (Fr.)
la demonstracion del teorema de Pitagora por Pedro (Sp.)
'the proof of Pythagoras's theorem by Pierre'

The main difference between (15) and (16) is that the Agent is realized as the second post-nominal genitive (or a prenominal possessive pronoun) with result nominals but in the *par* phrase (the equivalent of the English *by* phrase) with event nominals. There is a clear complementary distribution between these two varieties.

Similar facts obtain in other languages. The clear difference between result nominals and process/event nominals in respect of both the internal and external distribution, including co-occurence with adjectives and adverbs, has been discussed recently for Italian in Bottari (1992); for Catalan in Picallo (1991); for Greek in Markantonatou (1995), Alexiadou (1999b), and numerous references therein; for Russian in Schoorlemmer (1995, 1998a, 1998b), Engelhardt and Trugman (1998a, 1998b), Rappaport (1998); for Polish in Rozwadowska (1997) and Willim (1999, 2000). It turns out that in addition to the distinctions similar to those identified for English, one of the salient and very clear properties of derived result nominals in Romance, Slavic, and Greek is the possibility of two adnominal genitives in the case of result nominals derived from transitive verbs. Such distribution is never possible with process/event readings. The latter may take only one adnominal genitive, always expressing the Theme (Patient) argument. The Agent must appear in an optional prepositional phrase or in the instrumental case (equivalents of the English *by* phrase). While the contrast is uncontroversial and widely recognized, the terminology and the views are not uniform. Thus, for instance, nominals with the *by* phrase are standardly referred to as passive nominalizations. In a non-standard way, Alexiadou (1999b) takes the single genitive restriction as the indication of the intransitivity and accordingly refers to them as intransitive nominals. Consistently, result nominals taking two adnominal genitives are treated by her as transitive nominals.

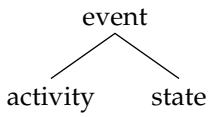
This obvious contrast has led to the development of various approaches concerning both the internal structure and the derivation of the respective subtypes of derived nominals. Zubizarreta (1987) attributes that difference to a universal distinction between *description*-type nominals and *destruction*-type nominals, the former being ambiguous between the result, non-argument taking nominal, and the event nominal with predicate–argument structure. Thus for Zubizarreta, in Romance nominals the adjunct genitive phrase (i.e., the external postnominal argument in Giorgi and Longobardi's 1991 theory), generated in the postnominal position immediately under the NP node, has two essential properties: it is lexically marked as +Poss and it is syntactically bound to the Specifier position. Zubizarreta defends the hypothesis that the nominals which denote an event cannot carry a Poss-variable, while the nominals which denote the result of a process can. This explains the contrast between the *destruction*-type and the *description*-type nominals: the event nominals in contrast to the result nominals cannot carry the Poss variable, and consequently the genitive adjunct *de NP* cannot receive an interpretation.

4 The event-structure theory of nominalizations

The result/event ambiguity was taken as the starting point for a more elaborated theory developed by Grimshaw (1990), who refers to that ambiguity as the result/process distinction and links the ambiguity with aspectual properties, arguing that the real distinction is between nouns that have an associated event

structure (the so called complex event nominals) and nouns that do not. The latter include both the result nominals discussed in section 3 and simple event nominals (abbreviated to SENs) such as, e.g., *examination* (=*exam*), *race*, *war*, *storm*, etc. An example of the internal event structure for an accomplishment, analyzed as consisting of two subevents, is given in (17):

(17)



For an event to count as complex, it does not need to be necessarily a branching event. This means that one of the branches may be empty. It is only crucial that it should be analyzable in terms of aspectual distinctions, i.e., that it has some temporal organization. Thus all kinds of Vendlerian events count as complex: activities, achievements, accomplishments, and also states (such as, for instance, *fear* or *love* in Grimshaw's analysis).

In Grimshaw's theory, argument structure is composed from the thematic and aspectual analyses of a predicate according to the respective hierarchies given in (18). She hypothesizes that any predicate lacking an aspectual analysis will also lack an argument structure and will never take any grammatical arguments at all:

(18) a. (Agent(Experiencer(Goal/Source/Location(Theme))))
b. (Cause(other(. . .)))

The prediction is that complements to complex event nominals will be obligatory (i.e., capable in principle of being obligatory but perhaps subject to lexical variation). Since derived nominals are often ambiguous, it is not always obvious how they behave with respect to their argument-taking properties. On closer investigation it turns out that only on their complex event interpretation can they take grammatical arguments. The result nominals take neither Agent nor Patient (or Theme). The complex event nominals do not pluralize, while the result or simple event nominals do. Moreover, the complex event nominals can be modified by aspectual adverbs. These contrasts are illustrated in (19):

(19) a. The assignments were long. (no a-structure)
b. the assignment *(of unsolvable problems) by the instructor
c. Only observation of the patient for several weeks can determine the most likely . . .
d. These observations are very interesting. (no a-structure)

The modifiers *frequent* and *constant* force the complex event reading of the noun and thus its a-structure must be satisfied. Therefore (20b) and (21b) are not grammatical:

(20) a. The expression is desirable.
b. *The frequent expression is desirable.
c. The frequent expression of one's feelings is desirable.
d. We express *(our feelings).

(21) a. The assignment is to be avoided.
b. *The constant assignment is to be avoided.
c. The constant assignment of unsolvable problems is to be avoided.
d. We constantly assign *(unsolvable problems).

According to Grimshaw, the process of nominalization consists in the suppression of the external argument, defined as the argument which is most prominent on both the thematic and the aspectual hierarchies quoted in (18) above. The non-existence of nominals in (22a–b) is explained as a consequence of the non-existence of the external argument in the case of Object Experiencer (OE) predicates: there is a conflict in prominence between the thematic and the aspectual dimensions, and thus there is no argument which could be most prominent on both dimensions, thus qualifying for being the external one. The nominals in (22c–e) are claimed to be result nominals without argument structure – their satellites are mere modifiers:

(22) a. *the event's embarrassment/humiliation of Mary
b. *the movie's (constant) amusement/entertainment of the children
c. Mary's embarrassment/humiliation
d. the embarrassment/humiliation of the bystanders
e. the amusement/entertainment of the children

The suppressed external argument can be realized in a *by* phrase, which is an argument-adjunct (a-adjunct) linked to it. As summarized in (23), the *by* phrase is licensed by the suppressed external argument and in nominals limited to Agents only:

(23) a. by, a-adjunct, external argument
b. by, a-adjunct, Agent

If there is no external argument, the nominalization does not exist, and the *by* phrase is not licensed. (23b), originally proposed by Rappaport (1983), is supposed to explain the impossibility of the Experiencer of a Subject Experiencer predicate being realized in the *by* phrase, as illustrated in (24):

(24) a. *Fear of flying by many people
b. *Dislike of flying by many people

With respect to argument distribution, the predictions of Grimshaw's theory can be summarized as follows: both the *by* phrase and the prenominal possessive are

argument-adjuncts linked to the external argument, lexically suppressed in the process of nominalization. Only complex events undergo the process of nominalization and only such complex event nominals have an argument structure. All the other nominals are either result nominals or simple event nominals, and the rule of the suppression of the external argument of a predicate does not apply to them.

Grimshaw's theory inspired a lot of cross-linguistic research and raised a lot of controversy. The division of nominals into three types (i.e., results, simple events, and complex events) has been generally accepted. What has been questioned or has become highly controversial is the suppression mechanism and the explanation for the distribution of the *by* phrase. This controversy is also closely related to the debate on whether derived nominals are instances of passive nominals or not (cf. Borer 1993; Engelhardt and Trugman 1998b; Rappaport 1998; Schoorlemmer 1998b; Alexiadou 1999b).

5 Neo-transformational account of nominalizations

Another line of current research is represented by Borer (1991, 1993), Hazout (1995), Picallo (1991), Fu (1994), Schoorlemmer (1995, 1998a, 1998b), Engelhardt and Trugman (1998a, 1998b), Van Hout and Roeper (1998), and Alexiadou (1999b). They argue for the syntactic derivation of process nominals in contrast to the lexical derivation of result nominals. Thus their approach can be treated as the revival of the early transformationalist approach within a much more sophisticated and refined syntactic theory, which offers mechanisms and solutions capable of overcoming the drawbacks of the early transformational account. Individual researchers differ in many points, but they all share the assumption that the environment for the morphological operation of combining the nominalizing suffix with the root may be regulated by the presence vs. absence of different functional projections and/or syntactic processes. The inspiration for this approach is the parallel morphology model developed by Borer (1991, 1993).

5.1 Parallel morphology and derived nominals

In contrast to the traditional view on the autonomy of the word-formation component, which assumes the linear ordering between morphology and syntax, Borer (1991, 1993) considers an alternative notion of autonomy which allows the interaction between the two modules in a parallel fashion. According to her, a module is autonomous if (a) it has a distinct set of primitives not found in other modules, and (b) it constitutes a coherent set of formal operations which are distinct from those found in other components. Given this notion of autonomy, there is no need to maintain that two autonomous modules interact with one another at a fixed unique point (like D-structure level in the standard approach). A word can be derived either in the lexicon, before the D-structure insertion, or later on, after D-structure. The post-D-structure word formation is novel as compared to the lexicalist approach. The relevant aspects of the output of each syntactic operation

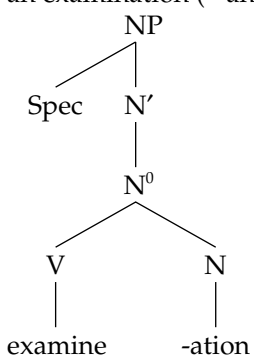
are available to the word-formation component, and likewise, the relevant aspects of the output of each word-formation operation are available to syntax.

A morphological word, an M-word, is the output of the autonomous morphological component with its independent restrictions and properties. Syntactic operations, such as the head-to-head movement, can create the environment in which such word formation can take place. In that case the word formation takes place after a syntactic operation. This process is referred to as the syntactic derivation as opposed to the lexical derivation, which takes place in the lexicon, without any prior syntactic processes. So the word $[YX]_X$, where X (the affix) is the head, can be derived either in the lexicon, prior to D-structure insertion, or in syntax, after D-structure. In the former case the properties of Y, the non-head (the root the affix attaches to), are opaque, whereas in the latter case the properties of the non-head are transparent, because it originates in a syntactic head position, and then is raised to adjoin to the affix. Parallel morphology attributes the transparency of a non-head of a word to the presence of a syntactic projection of that non-head. The transparent properties include both argument structure and adjunct phrases of the non-head. In this regard, parallel morphology differs from lexicalist approaches in assuming that the non-head is syntactically present in the structure.

A word inserted following D-structure, which is both an M-word and an X_0 with a complex syntactic structure, results in the impossibility of any semantic drift in that case. The dual representation as both M-word and X_0 with an internal structure ensures that such words will always have as a subpart of their meaning the semantic and selectional properties of the phrases embedded in them, or a violation of the Projection Principle would result. M-words which do not have a syntactic representation are not thus constrained. Some properties of the embedded morphemes may and will disappear, without any violation resulting.

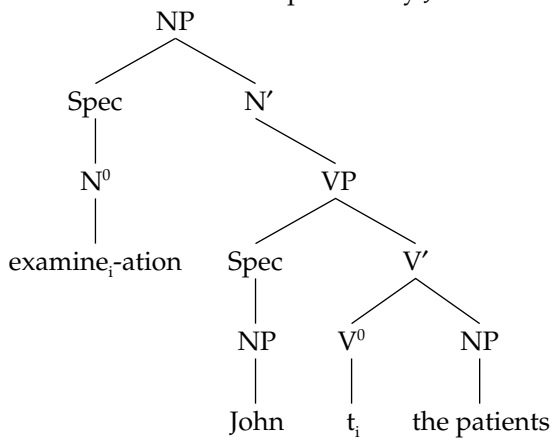
Parallel morphology (or its spirit) has been adopted in recent accounts of mixed categories, in particular nominalizations. Borer (1993) uses her model to account for the result/process ambiguity of derived nominals by attributing it to the presence of the VP constituent within the NP in the case of process nominals and its absence in the case of result nominals. A result nominal is formed in the lexicon and can be inserted at D-structure as an N_0, which then projects an NP like an ordinary noun:

(25) an examination (= an exam)



A process nominal, on the other hand, is inserted at S-structure. The environment for the respective morphological rule to apply is created by V-raising, which takes place to satisfy the morphological requirement of the N (*-ation*):

(26) The examination of the patients by John.



The parallel morphology approach directly accounts for the presence of argument structure in the case of process nominals (here attributed to the presence of the VP) and its lack in the case of result nominals. However, mere presence of the argument structure is not the most important criterion for the V-raising (neo-transformational) approach as such, because in lexical accounts the presence of the argument structure can be attributed to the inheritance of the theta-grid. Therefore further evidence has been brought up in defense of the V-raising structure for derived nominals. This has been done for various languages: Fu et al. (1995) argue for the presence of the VP in English derived nominals on the basis of their admitting certain adverbs and the *do-so* test. Hazout (1994, 1995) presents evidence for the presence of the VP constituent in the action nominalization constructions in Hebrew and Arabic, while Fu (1994) gives extensive support for the V-raising structure in Chinese derived nominals, at the same time modifying and extending Borer's original idea. Schoorlemmer (1995) and Engelhardt and Trugman (1998a, 1998b) adopt parallel morphology for Russian.

Fu (1994) admits that there remains a problem: if there is an underlying VP in derived nominals, then why is it that some VP-related elements such as verbal case-marked NPs and adverbs do not occur in derived nominals? What is the difference between VPs in derived nominals and other VPs? Borer (1993) and Fu (1994) propose that head licensing (Case and Adverbs) requires that the licensing head be dominated by its 'extended projection' in the sense of Grimshaw (1991). The absence of verbal case-marked NPs and adverb phrases is to be explained, then, by the absence of extended verbal projection in derived nominals. Fu proposes that nominalization structures may vary between an underlying VP and an underlying IP. Languages whose nominalization constructions admit verbal cases

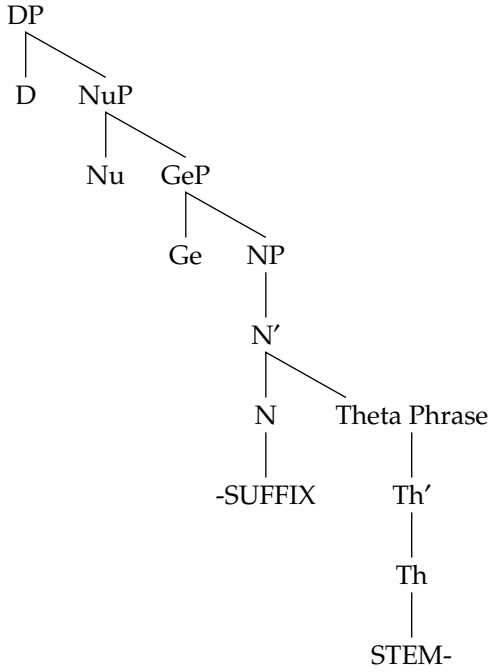
and adverbs have nominalizers which select for an IP rather than VP. It is the presence of an IP that makes the head licensing possible for verbal Cases and adverbs. Similar arguments are extensively discussed in Alexiadou (1999b).

5.2 Picallo's account

Similar ideas are presented in Picallo (1991). Unlike Borer, however, Picallo regards her proposal as the continuation of Chomsky's (1970) "Remarks on Nominalization." She supports the view that the thematic structure of Nouns parallels that of Verbs and adapts to the current theoretical framework (Chomsky 1986, 1989) the suggestion made in Chomsky (1970) that lexical elements may not be categorially marked in the lexicon.

Picallo attributes the difference in argument distribution between result nominals and event/process nominals in Catalan to the ambiguity of the nominalization suffixes: they are either inflectional elements or derivational ones. When the nominalization suffix is analyzed as an inflectional element, the DP will receive the event/process interpretation, and will have the structure in (27):

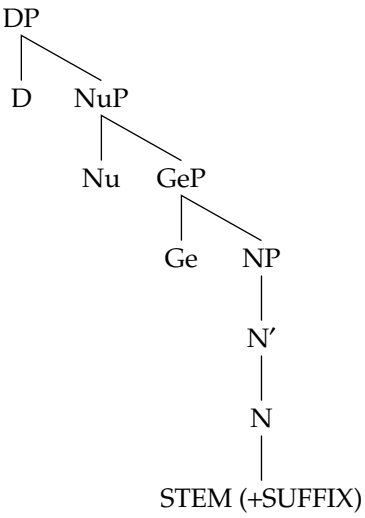
(27)



(DP = Determiner Phrase, NuP = Number Phrase, GeP = Gender Phrase)

The nominalization suffix can complementarily be analyzed as a derivational morpheme. The DP will then have the result interpretation with the structure in (28):

(28)



Non-deverbal nominals, which designate only objects and do not have the nominalization suffix, will be assigned structure (28), like result nominals. According to Picallo, the analysis of the nominalization affix as a functional category is what allows the event/process reading to obtain. Then she shows that in Catalan among monadic nominals, the intransitive unergative nominals (in contrast to the ergative ones) have only the result interpretation, as they do not take temporal modifiers. Picallo points out that a great number of intransitive nominals in Catalan do not take any of the Catalan nominalization suffixes (i.e., *-acio*, *-ada*, *-iment*, etc.). Therefore, she concludes that there are no syntactic nominalizations of intransitives in Catalan, and consequently, adjunct-subjects (i.e., *by* phrases) are impossible with intransitives:

(29) a. *el salt per part de l'atleta
'the jump on the part of the athlete'
b. *la lluita per part del gladiador
'the fight on the part of the gladiator'
c. *el xiscle per part del nen
'the scream on the part of the child'

The nominalization suffix is analyzed as a functional element which has the property of absorbing the external role. Consequently the external argument cannot be realized in argument position and its appearance as an adjunct is licensed.

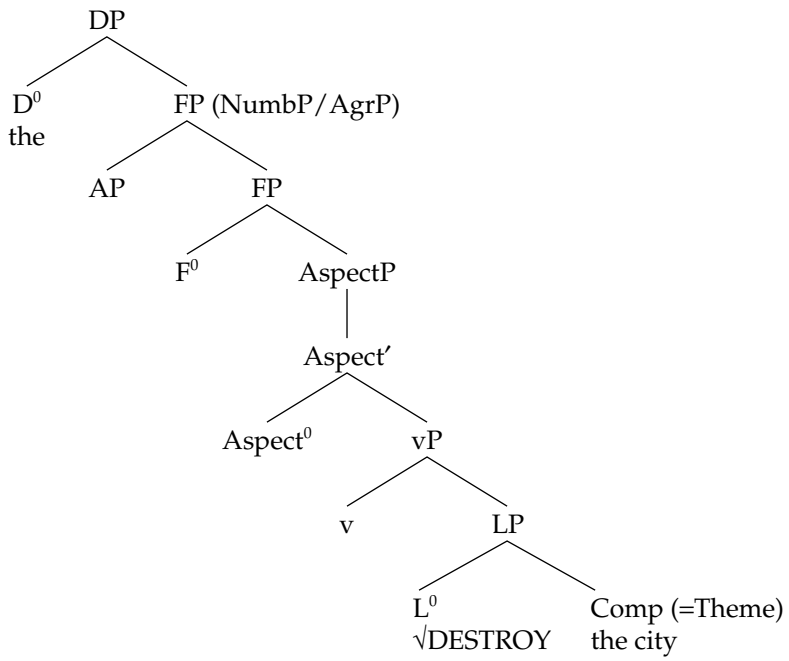
Borer explicitly states that her approach is in opposition to the lexicalist position and refers to it as the syntactic one. On the other hand, Picallo's proposal, similar in spirit to Borer's theory, though articulated in a different way, emerged as the continuation of the configurational approach advocated by Giorgi and

Longobardi (1991). Borer's and Picallo's theories converge and share the spirit of the neo-transformational approach in advocating the lexical–syntactic distinction, the presence of the syntactic projection in the syntactic nominal, and the V-raising (or theta-raising) operation allowing the creation of the nominal after D-structure. The difference between them is such that Picallo adheres to the category-neutral approach to lexical entries, while Borer assumes a category-changing morphological process.

5.3 Alexiadou's ergativity patterns of derived nominals

Another version of the structural account of the ambiguities attested in the domain of derived nominals is offered by Alexiadou (1999b). Alexiadou proposes that the differences between the two types of nominals should be explained in terms of different functional projections under which the respective nominals are embedded. She argues (like Borer 1993; Fu 1994; Schoorlemmer 1995, 1998a, 1998b; Van Hout and Roeper 1998) that result nominals are inserted directly under nominal projections, whereas the structure of process nominals includes (i) an Aspect Phrase (AspP) and (ii) a 'deficient' light v/Voice Phrase (vP) that does not license an external argument. Only vP and AspectP are present within process nominals (there is no Tense projection). The presence of AspP explains the aspectual properties of process nominals, whereas the presence of vP accounts for the eventive reading of these nominals. The structure for process nominals is presented in (30):

(30)



According to Alexiadou (1999b: 89), result nominals and process nominals are similar in the sense that both include the lexical node as their basic component, and hence both can take arguments. Process nominals are like verbs in the sense that their internal structure involves a Lexical Phrase embedded under vP and AspP. The difference between result and process nominals results from the absence of functional layers in the former, and does not reduce to a difference in the base (category neutral vs. nominal). Another important ingredient of Alexiadou's approach is that there is no process of passivization within nominals (contra Picallo, Borer, and Bottari). Schoorlemmer (1998b) argues for lack of passivization within nominals on the basis of Russian. Alexiadou claims that nominals are generally intransitive, i.e., they are ergative constructions. Furthermore, Alexiadou distinguishes between process and event nominals (i.e., those with durative and terminative interpretation respectively), whereas in previous accounts either those two labels were used interchangeably or the difference was unimportant.

All the current theories of derived nominals are concerned with the result/process ambiguity in the domain of action nominals. The debate cannot be reduced to the simple lexicalist–transformationalist controversy. First, drastically different accounts are advocated within what can be roughly referred to as the lexicalist position, and second, theories which essentially share the basic ideas (e.g., Borer's and Picallo's accounts) have been developed from different underlying assumptions with respect to the lexicalist–transformationalist controversy. All the theories presented above cover the same range of linguistic facts; namely, they account for the result/process ambiguity within the domain of action nominalizations. Moreover, only transitive actions are easily accommodated in all the above solutions. Intransitive derived nominals (i.e., nominals derived from unergative verbs) turn out to be non-existent.

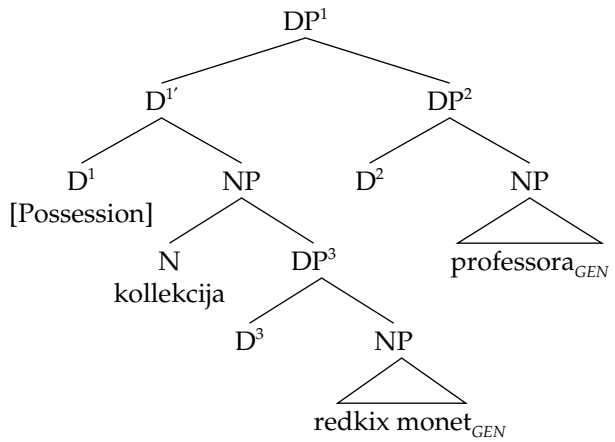
5.4 *Configurational accounts of the result/process distinctions in Slavic languages*

Purely syntactic accounts for the different syntax of action nominals and result nominals have also been attempted for Slavic languages such as Russian or Polish (Engelhardt and Trugman 1998a, 1998b; Rappaport 1998; Schoorlemmer 1998a, 1998b; Willim 2000). All these accounts are configurational, though often mutually incompatible. As mentioned above, the main difference between result nominals and process (action) nominals in Russian and Polish consists in the possibility of two adnominal genitives with result nominals and lack of the second genitive with process nominals. As reported in Engelhardt and Trugman (1998b), the common trend in the analyses of Russian NPs has been to view only the lexical head N as a possible source of Case for genitive DPs (cf. Babby 1992; Rappaport 1992; Schoorlemmer 1995). Under the standard assumptions those analyses were forced to treat all possessor elements as adjuncts, and did not explain why possessor adjuncts are ruled out in process nominals. Engelhardt

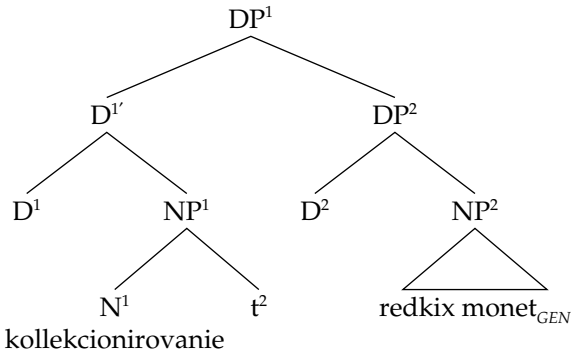
and Trugman (1998a) exploit the idea that genitive subjects in Russian are licensed by the functional head D. This is an extension of the account of subjects of nominal projections proposed for other languages (Abney 1987 for English; Szabolcsi 1987, 1994 for Hungarian; Engelhardt 1997 for Hebrew; Grosu 1988, 1994 for Rumanian). In addition to adopting the assumptions of parallel morphology, Engelhardt and Trugman assume that the Case licensed by functional and lexical heads in NPs is of a different nature (structural and inherent respectively). Inherent case is licensed by the lexical head N to its complement, whereas the structural case is licensed by the functional head D to the syntactic subject of the NP, i.e., the genitive DP occupying the specifier position. This mechanism, together with the assumption that all process nominals in Russian contain a passive VP-projection, rules out the possibility of double adnominal genitives in process nominals.

Rappaport (1998), following Engelhardt and Trugman (1998a), assumes the DP analysis and claims that the NP is selected by a functional category of Determiner. However, he proposes a different Case-system. He distinguishes the internal geometry of material NPs (equivalent to Grimshaw's results) and action nominal NPs, and elaborates a mechanism of licensing NP-internal case assignment. Assuming the distinction between inherent case licensed by selection (and accompanied by the assignment of a thematic role) and structural case licensed by the need to check uninterpretable features (and divorced from thematic role assignment), Rappaport distinguishes two Determiners. The content of one is the feature [possession]. This Determiner can select a material noun and assign inherent case to its external argument together with a thematic role of Possessor by the mechanism of selection. The other Determiner has no semantic content and an uninterpretable case feature, which entails that it assigns structural case, unrelated to thematic role assignment. This uninterpretable feature [~genitive] needs to be checked, and DP^2 can do so by permitting its case feature to raise to the position of D^1. The relevant configurations are presented in (31) and (32):

(31)



(32)



Rappaport's analysis does not require the assumption that all process nominals in Russian contain a passive VP-projection. Neither does it distinguish between lexical and syntactic derivations.

Willim (1999, 2000) deals with the syntax of Polish NPs and the mechanism of genitive Case-checking. She suggests that in object-denoting nominals involving two lexical genitives, the Possessor is an adjunct rather than an argument of the noun and that it is adjoined to the lexical projection of the noun. The genitive Case of the Possessor is not supported by the noun and consequently, the subject or object can surface in the genitive. Otherwise, Polish, Czech, and Russian disallow two lexical genitives. Assuming that in these languages only one genitive argument can occur in the nominal complex, Willim claims that the second relevant head is missing, i.e., there is no Determiner.

5.5 *Gerunds as nominalizations*

The binary distinction between syntactic and lexical nominalizations becomes even more complicated when confronted with gerunds (chapter 30). English *-ing* constructions pose a well-known problem in being three-way ambiguous and in exhibiting both verbal and nominal properties. The standard, traditional treatment recognizes three types of *-ing* structures: action nominals, gerunds, and *acc-ing* constructions, illustrated below (after Adger and Rhys 2000) in (33 a, b, and c) respectively:

(33) a. Jo's devouring of cakes
b. Jo's devouring cakes
c. Jo devouring cakes

Adger and Rhys (2000) argue that the constructions in (33b) and (33c) differ crucially from the construction in (33a). They propose a binary division between NGs (33a) and VGs (33b, c) and claim that the two classes could be distinguished by the representation of their argument structures: NGs have no argument

structure while VGs have argument structure. Then, following Borer (1984a) and assuming a modularized architecture for the morphology and syntax, they postulate a lexical combination for the affix and the root to derive NGs, but a syntactic combination of the root and the functional head *-ing* via head movement to derive VGs. As a result, there is a single lexical entry for the affix *-ing*, and different licensing conditions for complements depending on the presence vs. absence of argument structure. Such an account is incompatible with the approaches presented above, because it leaves no room for the explanation of the result/process ambiguity of derived nominals in terms of argument structure and the level of derivation (lexical vs. syntactic). Adger and Rhys's proposal presupposes that NGs are like derived nominals in having no argument structure.

6 Intransitive nominals

By intransitive nominals we will understand here nominals derived from intransitive verbs. (Note, however, that a different understanding of intransitivity is assumed in Alexiadou 1999b.) Basically, all the theories reported above cannot accommodate them in a consistent way. Grimshaw's *by*-phrase licensing rule in (23) predicts that if there are nominalizations from intransitive unergative verbs (that is, those that have an external argument available for suppression), then that suppressed external argument should appear in the *by* phrase.

Contrary to the predictions of the theories reported above, there are languages where complex event nominals derived from unergative intransitive verbs do exist (cf. Rozwadowska 1995b, 1997 for Polish, or Schoorlemmer 1995, 1998a, 1998b for Russian). As discussed in Rozwadowska (1995b, 1997), Polish intransitive nominals qualify as CENs, since they may take aspectual modifiers, allow control into purpose clauses (another test employed by Grimshaw to check the complex event status of a nominal), and exhibit the familiar event/result distinction. Moreover, Polish intransitive nominals appear in aspectual pairs. Polish one-participant events must have their only argument expressed as a possessive modifier, irrespective of the type of semantic predicate (whether unergative or unaccusative).

Schoorlemmer (1995: 297–300) recognizes the existence of intransitive complex event nominals in Russian and thus provides further evidence for their existence cross-linguistically. Schoorlemmer (1998a) demonstrates that Russian intransitive CENs, like the Polish ones, occur in eventive contexts, can take aspectual modification, and allow control into purpose clauses (if unergative). Both in Polish and in Russian, Agents of complex event nominals derived from intransitive verbs must appear as possessives and not in an Agentive phrase equivalent to the English *by* phrase. An example of a Polish intransitive nominal is presented in (34), whereas Russian intransitive nominals are illustrated (after Schoorlemmer 1998a) in (35):

(34) a. pływanie Janka w swoim własnym basenie przez godzinę
'John's swimming in his own swimming pool for an hour'

(35) a. My prisutstvovali pri Irinoj igre na skripke.
we were-present at Ira's play on violin
'We witnessed Ira playing the violin.'
b. My prisutstvovali pri ego izč eznovenii.
we were-present at his disappearance
'We witnessed his disappearance.'

The existence of intransitive CENs constitutes a challenge to the theories that do not admit them. The obligatory realization of their single participant as the possessor is a counter-argument to the suppression theories. While predicting the difference in argument distribution between non-argument-taking and argument-taking nominals in the domain of transitive actions, Grimshaw's (1990) theory (like Zubizarreta's 1987) fails to predict the failure of single participants of intransitive complex events to surface in the *przez/by* phrase. Borer's (1993) and Picallo's (1991) accounts do not admit intransitive complex event nominals either. Borer treats all syntactic nominalizations (corresponding to Grimshaw's CENs) as derived from passive verbs, so automatically intransitives are not considered at all. Picallo claims that among monadic nominals in Catalan only ergative nominals can designate events/processes, whereas the intransitives (i.e., unergatives) appear to be only able to have the result interpretation. Picallo observes that with respect to their morphological characteristics, ergative nominals, without exception, appear with a nominalization suffix (i.e., *-acio*, *-ada*, *-iment*, etc.), whereas a great number of intransitives consist of an NP stem with features for Gender and Number only, without a nominalization morpheme. Its lack accounts for the absence of the event/process reading. Similar implications can be found in Alexiadou (1999b) and Markantonatou (1995). Polish and Russian are different from English, Catalan, or Modern Greek in admitting complex event reading (i.e., abstract, non-concrete event/process interpretation) in the domain of intransitives. This is a challenge for all the available accounts referred to so far, which, despite significant theory-internal differences, all fail to accommodate single participants of unergative eventualities.

7 Psych nominals

Psych nominals are nominals derived from the so called Experiencer verbs, divided into Subject Experiencer verbs and Object Experiencer verbs. They are illustrated for English in (36) and (37):

(36) a. John's enjoyment of the film
b. *the film's enjoyment (by/of John)
c. John enjoys the film

(37) a. John's amusement at the books
b. *the book's amusement of John
c. The books amused John.

The contrast in the distribution of nominal satellites between the pattern in (36) and the pattern typical of action nominals illustrated in (1) was already noticed by Anderson (1984). Anderson accounts for this contrast in terms of a constraint on movement of "non-affected" objects inside NPs (chapter 5). Nominals such as those in (37) must then be treated as derived from adjectival passives rather than from verbs and are irrelevant for Anderson's constraint. For a critique of such an account see Amritavalli (1980) and Rozwadowska (1988).

Rappaport (1983) and Rozwadowska (1988) independently formulate different versions of thematic constraints responsible for the distribution of satellites in derived nominals. Rappaport introduces the thematic label *Experienced* and suggests within the framework of Lexical-Functional Grammar that Experienced is restricted from being assigned the Poss function. Then, quite separately, she mentions nominals such as those in (38) and refers to Anderson's (1984) constraint on the movement of non-affected objects to account for their ungrammaticality:

(38) a. *history's knowledge
b. *John's sight by Mary
c. *the event's recollection
d. *the problem's perception
e. *the picture's observation
f. *the novel's understanding

Rozwadowska (1988) introduces the feature-decomposition approach to thematic relations and formulates various thematic constraints on the distribution of satellites in deverbal nominals in terms of features. She argues that they are more consistent than all the previous theories, that they account for a wider range of facts, and that they capture the overlap among thematic relations. The relevant constraints are presented in (39):

(39) a. A [−change, −sentient] argument cannot appear in the specifier position of an English nominal.
b. If one of the two arguments of a transitive nominal is [+change], then this argument must be expressed in a single argument nominal.
c. Only [+change] arguments can be expressed as genitive complements of Polish transitive nominals.

Note that single-argument nominals are understood here as nominals taking one satellite but derived from transitive verbs:

(40) a. Rome's destruction
b. John's love
c. John's surprise

The constraint in (39b) is motivated by the contrast between (40) and (41):

(41) a. *the barbarians' destruction (where *the barbarians* = Agent)
b. *the books' love (cf. *John loves books*)
c. *her behavior's surprise (cf. *Her behavior surprises John*)

The constraint in (39c) is illustrated with the Polish data in (42–43):

(42) a. Jan podziwia Marię.
John-nom admires Mary-acc
'John admires Mary.'
b. podziw Jana dla Marii
admiration-nom John-gen for Mary-gen
'John's admiration for Mary'
c. *podziw Marii przez Jana
Admiration-nom Mary-gen by John-gen

(43) a. Dzieci zdumiewają rodziców.
children-nom amaze parents-acc
'Children amaze parents.'
b. zdumienie rodziców dziećmi
amazement-nom parents-gen children-instr
'parents' amazement at the children'
c. *zdumienie dzieci (przez) rodziców
amazement-nom children-gen (by) parents-gen
*'children's amazement of/by the parents'

All the above thematic constraints work consistently for both Object Experiencer and Subject Experiencer predicates, which is an argument in favor of the thematic constraints rather than syntactic solutions, since the two classes of predicates share thematic properties but differ in syntax.

As discussed in section 4, under Grimshaw's analysis psych nominals derived from Subject Experiencer verbs are stipulated to have both argument and aspectual structures, and the lack of the *by* phrase in them is attributed to the semantic restriction on the *by* phrase in nominals. Psych nominals derived from Object Experiencer verbs are claimed to be results with no argument structure.

In opposition to this view, Pesetsky (1995: 72) maintains that nouns derived from Object Experiencer verbs like *agitation*, *annoyance*, *amusement*, etc. are not result nominals but argument-taking nouns, hence true nominalizations, some of which have uses that refer to objects, but not results. Rozwadowska (1997), on the basis of Polish, develops further the idea that nominals related to both Subject Experiencer verbs and Object Experiencer verbs show all the ambiguities recognized in the action domain. Rozwadowska (1997: 44–48, 85–97) demonstrates that psych nominals display the same pattern as action nominalizations. The examination of the cluster of properties standardly assumed to be tests for

argumenthood reveals that psych nominals in general can be both argument-taking and non-argument-taking. In other words, they qualify as CENs. The predictions of the suppression theory, however, are not met then.

Markantonatou (1995) provides evidence from Modern Greek that many psychological predicates are related to some nominal. She shows that they take as many syntactic arguments as do the verbs they are related to and that they can be modified by the same durative adverbials:

(44) a. I agapi *(tu Yiani) *(yia tin Maria) dio hronia sto telos ton trelane.
the love the-gen Yianis-gen for the Maria for two years in-the end him made-crazy
'Yianis' love for Mary for two years made him crazy in the end.'
b. (O Yianis) agapuse *(tin Maria) epi dio hronia.
the Yianis loved the Maria for two years
'Yianis loved Maria for two years.'

Markantonatou concludes that nothing is suppressed here, contra to Grimshaw's claim. Markantonatou proposes a mechanism for the derivation of Modern Greek deverbal nominals which requires the existence of an 'internal' ([–r]) argument, i.e., the argument bearing a semantically unrestricted grammatical function. She claims that a small set of simple, unification-based operations within the framework of the Lexical Mapping Theory of LFG (Lexical Functional Grammar) provides a broader coverage than the suppression theory.

Rozwadowska (1997) suggests that the lack of the *by* phrase in intransitive and psych nominals can be related to their intransitivity at the event-structure level, where the number of event participants is crucial. Borrowing from Van Hout (1996) the idea that the number of event participants is a primitive at the level of event structure, Rozwadowska divides the domain of eventualities into external (i.e., non-psych) eventualities and internal (i.e., psych) eventualities. External eventualities can be either one-participant or two-participant eventualities, whereas internal eventualities are necessarily one-participant eventualities. Such division groups together intransitive actions and all psychological events. Then the distribution of the *by* phrase in derived nominals can be explained in terms of some version of Williams's (1987a) ergativity rule operating at the level of event structure.

8 More on aspectual properties of derived nominals

8.1 English derived nominals

The relevance of aspectual dimension for the analysis of derived nominals was recognized by Grimshaw (1990). Aspect is understood there in the sense of Vendlerian disctinctions, i.e., lexical differences between different types of predicates

(activities, accomplishments, achievements, and states). The fact that derived nominals co-occur with the same temporal adverbials as do the corresponding verbs, as well as their co-occurence with the adjectives *frequent* and *constant*, is taken as evidence for the presence of aspect in them.

Further studies of aspectual distinctions in derived nominals (e.g., Schoorlemmer 1998a, 1998b; Snyder 1998; Alexiadou 1999b; Rozwadowska 2000) show that the problem of the presence of aspect in derived nominals is much more complex and needs more attention. Snyder (1998) maintains that in English, active CENs derived from accomplishment verbs denote either the "development" (i.e., an "on-going process") or the "culmination" of an underlying event. The compatibility of the nominal with the verb *continue* is taken by Snyder as evidence for the "on-going process" reading, illustrated in (45a). On the other hand, Grimshaw's example in (45b) illustrates the "culmination" reading (though not labelled in this way by her). That this is not an isolated phenomenon is further illustrated (after Snyder) in (46):

(45) a. If the barbarians' destruction of the city continues for another week, little will remain.
b. The total destruction of the city in only two days appalled everyone.

(46) a. If the reorganization of the filing system continues, I'll never be able to find anything.
b. If the consumption of our food continues at this rate, we'll exhaust our supplies in a week.

Snyder's examples with *continue* are supposed to prove that on top of the accomplishment reading standardly recognized with CENs derived from accomplishment verbs, active CENs allow also a "development" reading, which passive nominals resist, as illustrated in (47):

(47) a. ??If the city's destruction (by the barbarians) continues for another week, little will remain.

Snyder claims that compatibility with *frequent* and *constant* is characteristic of propositional nominals and plural SENs, but not CENs or singular SENs. Passive nominals are incompatible with such modifiers, which suggests that they resist a propositional reading. However, Snyder claims that they receive a clear complex-event reading and can serve as the subject of *occur*. They are incompatible with *continue*, which leads to the conclusion that the passive nominalization of an accomplishment denotes the culmination of an underlying accomplishment event. Similar views are presented in Alexiadou (1999b). Alexiadou presents arguments against the result analysis of passive nominals. She introduces the distinction between events and processes, arguing that English passive nominals are generally event nominals, i.e., have a terminative interpretation.

8.2 Polish derived nominals

As shown in Rozwadowska (1995a, 1997), in Polish there are two types of derived nominals that qualify as CENs: derived nominals similar to those attested in other languages and the so-called verbal nouns. Polish verbal nouns are derived by means of the productive suffix *-nie/-cie* and appear in aspectual pairs (perfective vs. imperfective) distinguished morphologically in the same way as the corresponding aspectual pairs of verbs. Verbal nouns in Polish have more verbal properties than other derived nominals. However, they are unlike verbal gerunds or nominal infinitives (chapter 30) in not admitting accusative case on the object. It is also worth noticing that Polish is exceptional even when compared to other Slavic languages (e.g., Russian). The existence of the two types of CENs in Polish as contrasted to Russian led Schoorlemmer (1995) to emphasize that Russian derived nominals are sensitive to aspectuality and not aspect. Also it inspired Schoorlemmer's proposal that Polish verbal nouns contain an embedded IP whereas Russian and Polish derived nominals contain only an embedded VP. Such a proposal is consistent with the approaches presented in the preceding sections, most of which relate different types of derived nominals to different functional projections or different levels at which the morphological operation takes place. Rozwadowska (1997, 2000) presents more evidence that all the three types of derived nominals (i.e., object nominals and two kinds of CENs) exist in Polish both in the action domain and in the psych domain. Polish derived nominals (as opposed to verbal nouns) are aspectually neutral, i.e., they are ambiguous between the perfective and the imperfective reading or their aspectual interpretation is idiosyncratic. On the other hand, Polish verbal nouns in all semantic domains seem to appear in aspectual pairs.

The following facts should thus be highlighted:

(i) In Polish there are two types of nominals that meet the criteria for CENs: aspectually neutral derived nominals with argument structure on one hand, and *-nie/-cie* nominals which have grammatical aspect in addition to argument structure on the other hand.
(ii) Polish derived nominals (but not verbal nouns) and English derived nominals share essential properties, including the aspectual ambiguity, which in fact suggests the absence of aspect rather than its presence in them.
(iii) The ambiguity of the derived nominals coincides with the internal complexity of the event denoted by the nominal (i.e., it is possible only with accomplishment verbs).

8.3 Russian derived nominals

Engelhardt (1998) and Engelhardt and Trugman (1998b) propose a correlation between the level of nominalization and the aspectual properties of the derived nominal. They observe that Russian *-nie* nominals are syntactic and claim that the syntactic derivation triggers an imperfective viewpoint of the event, in the

sense of Smith (1991). They do not claim that syntactic derivation of process nominals preserves aspectual features of a base verb, but that, irrespective of the aspect of the verbal base, syntactic derivation will always result in an imperfective nominal. According to this view syntactic nominalization is thus an imperfective operator. As one piece of evidence for their hypothesis Engelhardt and Trugman (1998b) provide the distribution of modifiers such as Russian equivalents of *frequent* and *constant*, which have been found to be restricted to process nominals across languages. It turns out that in Russian the nominal derived from the imperfective base functions predominantly as a process nominal, whereas the one formed from the perfective base is preferred in the result interpretation. They also point out that perfective verbal bases stop giving rise to new *-nie* derivations.

9 Conclusion

Concluding this overview we can say that the current research agenda in the area of derived nominals goes in the direction of finding correlations between aspectual interpretation and syntax.

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20 Double Nominatives in Japanese

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1 Introduction

The existence of the Double Nominative Construction as in (1) is one of the peculiarities that linguists working on the Japanese language have always paid attention to:

(1) Nihon -ga kokumin -no heikin jumyoo -ga mijika -i.
Japan NOM citizen GEN average lifespan NOM short PRES
'It is Japan whose citizen's average lifespan is short.'

This construction is taken to be peculiar because it has been considered that the subject position and the Nominative Case assignment which usually comes with it are unique per clause. Sometimes the non-uniqueness of the subject/Nominative has been taken as evidence that Japanese lacks the notion *subject* in formal terms, and, at other times, the existence of such a construction has been regarded as the basis of parametrization on the function of the syntactic categories *INFL/Tense/Agr/C(K)ase*, as they are all said to be relevant to the Nominative Case assignment/checking. Some people notice the focal characteristic of the 'outer' subject and investigate where it comes from. Because the Double Nominative Construction does not fit into the ordinary scheme of the clausal structure [S NP [VP V NP]] with a unique subject per clause, the analysis of this construction has enough power to affect the theory of the clausal structure per se.

This case study presents and reviews some previous work on this peculiar construction and sees what issue is at stake and what the construction can tell us about the theory of the clausal structure. Section 2 introduces types of Double Nominative/Subject Constructions that exist in a single language called Japanese. As Japanese has another topic/subject marker *-wa* alongside the ordinary Nominative *-ga*, we cannot avoid mentioning how *-wa* and *-ga* interact with each other. Section 3 discusses the focal characteristic of some Double Nominative sentences. In this context, the rule 'Subjectivization' as a kind of focalization rule will be introduced. Section 4 overviews analyses of other types of Double Subject sentences not derived by Subjectivization. Section 5 introduces views on Case assignment/checking in relation to the Double Nominative Construction. The non-uniqueness of the Nominative Assignment in this particular construction has been and is an important issue for the theory of grammatical Case. Section 6 reviews what kind of typology is possible to allow for Double-Nominative languages and Unique-Nominative languages. Section 7 summarizes the article.

2 Double Subject/Nominative Constructions

2.1 *The Double Nominative Double Subject Construction*

In a language like English, on the basis of which the theory of generative grammar has mainly developed, the position of the subject and the assignment/checking of the Nominative Case have been taken to be unique for a clause:

(2) a. John's uncle is a doctor.
b. *John uncle is a doctor.[1]

This is not the case in Japanese. In Japanese, having two or more Nominative Subjects is possible:

(3) a. Jon -ga isha -da.
John NOM doctor is
'John is a doctor.'
b. Jon -ga oji -ga isha -da.
John NOM uncle NOM doctor is
'It is John whose uncle is a doctor.'
c. Jon -ga oji -ga me -ga chikai.
John NOM uncle NOM eye NOM near
'It is John whose uncle is nearsighted.'

In the classical treatment of the Nominative Case, as in Chomsky (1981, 1986a), the Nominative Case of the subject is assigned by the subject's being governed by a category INFL(+ Tense/Agr), in the following structure:

(4) [IP NP [I' INFL(+Tense,AGR) VP]]
(NP assigned Nominative)

Due to the convention of the X-bar theory at that time, the number of the specifier (SPEC) of the phrase has been considered to be one, so the number of NPs with the Nominative Case is also considered to be one. Thus, the position of the subject has been regarded as unique. The existence of the Double Nominative Construction is peculiar in this context. Even though the position of the subject and the position of the Nominative Case (regarded as identical at that time) are taken to be unique, why do Japanese and some other languages allow for having two or more Nominative phrases per clause? We have five choices (or maybe more) to answer the question:

(5) a. The uniqueness requirement on the Nominative Case assignment is under parametrization, and, for languages like Japanese, **multiple** assignment of the Nominative Case feature is allowed.
b. The Nominative Case in languages like Japanese is **not assigned**. The existence of the Case particle (*-ga* in the case of Japanese) guarantees the Case feature. There is a requirement of uniqueness on Case assignment, but not on Case particles. This type of analysis is often connected with the fact that the Nominative in Japanese often expresses the discoursal focus.
c. The Nominative Case in Japanese and other double subject languages is not assigned by the functional category INFL(+Tense/Agr). It is **assigned to a particular lexical position**, such as Spec(VP). Because the lexical projection does not need to be and is not unique in any respect, we can have multiple subjects.
d. The Nominative Case in languages like Japanese is always licensed by some semantic relation, which is usually called **'aboutness'**. For example, the Nominative Case in (3b) is licensed by the fact that the uncle's being a doctor is 'about' John.

e. The Nominative Case Assignment and the requirement that the clause have a subject (the Extended Projection Principle (EPP)) can be satisfied by **separate structural relations**. For example, the EPP can be satisfied by the existence of Spec(IP), while the Nominative Case assignment can be satisfied by some other structural relations, allowing for seemingly double subjects.

These possible analyses do not necessarily contradict each other and researchers often take two or more positions at the same time. We will return to the previous analyses in later sections.

2.2 Topic and subject

The subject is not always with the Nominative Case in Japanese. In the following example, the Nominative Subject is preceded by the topic of the sentence:

(6) Hanako -wa Taroo -ga tazune -ta.
Hanako TOPIC Taro NOM visit PAST
Hanako, Taro visited.

In many such cases, we can easily find the non-topicalized version, in which the topic is with a grammatical relation other than the subject (object in the case of (6)):

(7) Taroo -ga Hanako -o tazune -ta.
Taro NOM Hanako ACC visit PAST
Taro visited Hanako.

However, there are cases where the topic cannot find the 'source':

(8) a. [NP Shinbun -o yomi -tai hito] -wa Asahi -ga koko -ni ari -masu.
newspaper OBJ read want person TOPIC The Asahi NOM here LOC exist PRES
'As for those who want to read newspapers, we have The Asahi here.'
b. *[NP Shinbun -o yomi -tai hito] -ga$_{NOM}$ Asahi -ga koko -ni ari -masu.
c. *[NP Shinbun -o yomi -tai hito] -o$_{ACC}$ Asahi -ga koko -ni ari -masu.
etc.

These 'pure' topics are associated with the sentence by some sort of 'aboutness' relation, as I indicate in the gloss. Once we take a view that the Double Nominative Construction is licensed by the semantic/pragmatic 'aboutness' relation, we need to distinguish the Double Nominative Construction and topics as in (8), and find the source(s) of the differences between the two constructions.

2.3 The Nominative Object Construction

The Nominative case is not always assigned to the semantic subject. In the following examples, the Nominative Case is assigned to those phrases which are regarded as objects in English and other languages:

(9) a. Taroo -ga eigo -ga hanas -e -ru.
Taro NOM English NOM speak can PRES
'Taro can speak English.'
b. Taroo -ga Hanako -ga suki -da.
Taro NOM Hanako NOM fond of PRES
'Taro likes Hanako.'
c. Watashi -ga mizu -ga hoshi -i.
I NOM water NOM want -PRES
'I want water.'

The fact that the Nominative Case can be given to the object in some constructions is often regarded as evidence that the Nominative Case assignment in Japanese is not structural. On the other hand, some researchers say that this is evidence that the Case assignment in Japanese is not unique, and that multiple Case assignment/checking is possible.

In sum, the existence of the Double Nominative Construction in Japanese is still under various interpretations. This is partly because the notions 'Double Subjects' and 'Double Nominatives' are not necessarily identical, as we have seen in the preceding two subsections.

3 Focus/exhaustive listing and Subjectivization

Kuno (1973c) points out that the main distinctive feature of the two seemingly subject-marking particles *-wa* and *-ga* in Japanese is in the discoursal informational status of noun phrases marked with them:

(10) a. ***-Wa***
-Wa is either *thematic* or *contrastive*.
i. Thematic
Jon -wa gakusei desu.
John TOPIC student PRES
'John is a student.'
ii. Contrastive
Ame -wa hut -tei -masu -ga . . .
rain CONTRAST fall PROG PRES but
'It is raining, but . . .'
b. ***-Ga***
-Ga marks the subject of the sentence in either *neutral description* or *exhaustive listing*.

i. Neutral description (only occurs with predicates representing an action, existence, or temporary state)
Jon -ga ki -ta.
John NOM come PAST
'John came.'

ii. Exhaustive listing (obligatory with predicates representing a stable state)
Jon -ga gakusei -desu.
John NOM student PRES
'John and only John is a student.'

(Kuno 1973c: 59–60; my arrangement)

Even though Kuno uses completely different terms for them, neutral description and exhaustive listing are both representations of the discoursal focus. The exhaustive listing *-ga* focalizes only the noun phrase marked with it, while the neutral description *-ga* focalizes a larger domain. What is important here is that *-ga* is not a mere Nominative marking particle, but also can mark a discoursal focus.[2] With a predicate representing a stable state, the *-ga*-marked phrase is interpreted as exhaustive listing.

This generalization about the distribution of exhaustive-listing *-ga* collapses in the following examples:

(11) a. Kono kurasu -wa dansei -ga yoku deki -ru.
this class TOP male NOM well able PRES
'Speaking of this class, the boys do well.'

b. Kono kurasu -wa Jon -ga yoku deki -ru.
John
'Speaking of this class, John does well.' (Kuno 1973c: 64 (10))

In (11a), even though the predicate *deki* 'able' expresses a permanent state, the noun phrase marked with *-ga*, namely *dansei-ga*, is ambiguous between neutral description and exhaustive listing. *Ga* with a stative predicate is not always interpreted as exhaustive listing. On the other hand, the noun phrase *Jon-ga* in (11b) is always interpreted as exhaustive listing.

To account for this fact, Kuno cites two other facts. First, (11a) has a corresponding non-topical sentence, where the sentence-initial phrase *kono kurasu-wa* is not topicalized but marked with the Nominative Case. On the other hand, (11b) does not have such a corresponding sentence:

(12) a. Kono kurasu -ga dansei -ga yoku deki -ru.
this class NOM male NOM well able PRES
'It is this class in which the boys do well.' (Kuno 1973c: 67 (16b))

b. *Kono kurasu -ga Jon -ga yoku deki -ru.
John
'It is this class in which John does well.' (Kuno 1973c: 68 (18b))

In (12a), it is *Kono kurasu-ga* but not *dansei-ga* which is interpreted as exhaustive listing. Thus, we can obtain the following generalization:

(13) The leftmost noun phrase marked with *-ga* in a sentence with a predicate which expresses permanent state must be interpreted as exhaustive listing.

In (12a), *kono kurasu-ga* must be an exhaustive-listing noun phrase because it is the leftmost phrase marked with *-ga*. As for (11a), there are two possibilities. First, (11a) can be (12a) with the first Nominative phrase *kono kurasu-ga* topicalized. In this case, the interpretation of *-ga*-marked phrases goes as in (12a), and *dansei-ga* is a neutral description phrase. The second possibility is that (11a) be (14) with the genitive phrase topicalized:

(14) Kono kurasu -no dansei -ga yoku deki -ru.
this class GEN male NOM well able PRES
'The boys in this class do well.' (Kuno 1973c: 68 (21))

In that case, it is the noun phrase *kono kurasu-no dansei-ga* which must be interpreted as exhaustive listing, because it is the only Nominative phrase in the sentence. The ambiguity of (11a) is thus accounted for.

Then the question is: why is such ambiguity impossible for (11b)? To account for this, Kuno cites another fact. It is possible to have a genitive source for (11b), as we show (14) corresponding to (11a), but the semantics of the genitive relations is different, according to Kuno:

(15) Kono kurasu -no Jon -ga yoku deki -ru.
this class GEN John NOM well able PRES
'John, who is in this class, does well.' (Kuno 1973c: 73 (33b))

In (14), the genitive relation is restrictive, while in (15), it is non-restrictive. Kuno suggests that this difference may be the reason why we cannot have (12b) (see Kuno 1973c: 73, fn. 8). On the basis of these observations, Kuno formalizes the following Subjectivization Rule:

(16) **Subjectivization:**
Change the sentence-initial NP-*no* (with some semantic relation; see the above observation (K.T.)) to NP-*ga*, and make it the new subject of the sentence.
(Kuno 1973c: 71 (28a))

Subjectivization, for example, shifts the structure (17a) to (17b):

(17) a. [S [NP [NP kono kurasu -no] dansei -ga] yoku deki -ru.] (= (14))
b. [S [NP kono kurasu -ga] [S [NP dansei -ga] yoku deki -ru.]] (= (12a))

(15) cannot undergo Subjectivization because the genitive relation in it, being non-restrictive, is not one of those semantic relation that can trigger Subjectivization. Thus, Kuno (1973c) has established the basis for the later works on the Double Nominative Construction.

4 After Subjectivization: analyses on Double (Nominative) Subjects

Kuno's Subjectivization approach to the Double Nominative Construction is certainly one example of a fine pure syntactic analysis of previously unknown grammatical facts. However, it gives rise to the following two problems:

(18) a. Is the genitive–head relation the only source of Subjectivization or the Double Nominative/Subject Construction? In other words, is the Double Nominative/Subject Construction always 'derived' by movement/adjunction?
b. How can we assign the Nominative Case to the 'derived' subjects?

(18b) will be dealt with in sections 5 and 6, where the mechanism of Nominative assignment is directly dealt with. This section will introduce approaches to (18a). It will be pointed out that derivation from the genitive position is not the only source of the Double Nominative Construction, but the Double Nominative Construction can also be licensed by what we call 'aboutness'. There are even scholars who say that 'aboutness' is the only distinctive feature of the Double Nominative Construction, and that there is no such rule as Subjectivization.

4.1 Kuroda on Major Subject

Taking up Kuno's ingenious analysis of the Double Nominative Construction, Kuroda (1986) points out that all Double Nominative sentences cannot be derived by 'Subjectivization':

(19) Tokyoo wan -no sakana -ga koozyoo haisui -ni -yoru
Tokyo bay GEN fish NOM factory drained water DAT by
kaisui -no osen -de moo sudeni sisha -ga san
sea water GEN pollution by already already dead person NOM three
-mei de -tei -ru.
persons come out PROG PRES
'It is fish of Tokyo Bay that due to the pollution of sea water by water drained from factories the death of three persons has already happened.'
(Kuroda 1986: (129))

(19) does not have the genitive source which Subjectivized sentences do:

(20) Tokyoo wan -no sakana -no koozyoo haisui -ni -yoru
Tokyo bay GEN fish GEN factory drained water DAT by
kaisui -no osen -de moo sudeni sisha -ga san
sea water GEN pollution by already already dead person NOM three
-mei de -tei -ru.
persons come out PROG PRES

Kuroda calls such an extra subject *Major Subject*.

Kuroda, on the basis of this and other examples, claims that the extra Nominatives (and topics) are licensed in the following structure:

(21) [S **NP** [S . . .]]

That is, provided that NP can hold a proper predication relation with the rest of the sentence, the extra subject can be semantically licensed.

In addition, Kuroda in his earlier work (1978) notes that there are two types in the predication relations held in the Double Nominative sentences derived by Subjectivization. Consider (22) and (23):

(22) [S Zoo -ga [S hana -ga naga -i]]
elephant NOM trunk NOM long -PRES
'It is elephants that have long trunks.' (Kuroda 1978: (64))

(23) [S kono hana -ga iro -ga kirei -da]
this flower NOM color NOM beautiful PRES
'It is this flower whose color is beautiful.' (Kuroda 1978: (65))

(22) is derived by Subjectivization from a sentence *zoo-no hana-ga naga-i* and the derived subject is Chomsky-adjoined to an S node. However, in (23), the extra subject is sister-adjoined. Kuroda distinguished between the two because, in (23), the predicate *kirei-da* is involved in two predication relations, namely that the color is beautiful and the flower is beautiful, but, in (22), the extra subject holds a predication relation with the rest of the sentence as a whole (the sentence does not imply that elephants are long). This type of distinction still must be reflected in the structural analysis of Double Nominative sentences.

Moreover, Kuroda (1986) points out that there are apparent topics which cannot alternate with *-ga*:

(24) Shinbun -o yomi -tai hito -wa koko -ni ari -masu.
newspaper ACC read want people TOP here LOC exist PRES
'Those who want to read newspapers, (you find) them here.'
(Kuroda 1986: (145))

(25) *Shinbun -o yomi -tai hito -ga koko -ni ari -masu.

Kuroda correctly points out *shinbun-o yomi-tai hito-wa* is not even a topic of the sentence in (24), because the sentence is not about those who want to read newspapers but about newspapers. Kuroda claims that this is the reason why (25) is impossible. The 'topic' phrase in (24) cannot hold any predication relation with the rest of the sentence.[3] So far, we need to distinguish at least four kinds of topics and subjects in Japanese structurally or semantically.

4.2 Pure Topic

Tateishi (1994) points out that, in addition to examples like (24) which Kuroda uses, there is a group of real topics which cannot alternate with *-ga*:

(26) a. Taroo$_i$ -wa Jiroo -ga Hanako -ni kare$_i$ -no musuko -o
Taro TOP Jiro NOM Hanako DAT he GEN son ACC
shookai -shi -ta.
introduce do PAST
'As for Taro, Jiro introduced his son to Hanako.'
b. Hannin -wa Saburoo -ga ayashi -i.
perpetrator TOP Saburo NOM suspicious
'As for the perpetrator, I suspect Saburo might be.'

As the glosses show, the two *-wa* phrases are topics of the sentence, and, in this sense, they can hold proper predication relations with the rest of the sentences. According to Kuroda's statement in the previous section, this may be enough for licensing the Nominative Case on such topics. However, topics in (26) cannot alternate with *-ga*:

(27) a. *Taroo$_i$ -ga Jiroo -ga Hanako -ni kare$_i$ -no musuko -o shookai -shi -ta.
b. *Hannin -ga Saburoo -ga ayashi -i.

These examples show that the domain of predication relations and the domain of Nominative assignment are not identical. We need to distinguish at least five types of Double/Multiple Subject Constructions:

(28) a. Subjectivization I: The derived subject holds a predication relation with the main predicate. (= (23))
b. Subjectivization II: The derived subject holds a predication relation with the rest of the sentence as a whole. (= (22))
c. Major Subject: No genitive origin. The extra subject holds a predication relation with the rest of the sentence as a whole. (= (19))
d. Pure Topic: No Nominative alternation. The extra topic holds a predication relation with the rest of the sentence as a whole. (= (26))

e. Non-Topical 'Topic': No Nominative alternation. No predication relation. (= (24))

If these distinctions must be stated in terms of structural distinctions, we need to have four clausal domains at least:

(29) a. The domain in which the subject can hold a predication relation with the main predicate. (*v*P?)
b. The domain in which the Nominative Case is assigned. (IP or TP)
c. The domain in which the predication relation is possible. (Somewhere between IP and CP)
d. The whole clausal domain. (CP)

4.3 Mihara on 'aboutness'

Mihara (1994), in his book on Japanese syntax, claims that all Double Nominative sentences are licensed in terms of the notion 'aboutness'. He claims that, provided that the sentence is 'about' the subject/topic, the Nominative assignment is licensed. Take the example in (19) from Kuroda (1986), which is repeated in what follows:

(30) Tokyoo wan -no sakana -ga koozyoo haisui -ni -yoru
Tokyo bay GEN fish NOM factory drained water DAT by
kaisui -no osen -de moo sudeni sisha -ga san
sea water GEN pollution by already already dead person NOM three
-mei de -tei -ru.
persons PROG PRES come out
'It is fish of Tokyo Bay that due to the pollution of sea water by water drained from factories the death of three persons has already happened.'
(Kuroda 1986: (129))

The meaning of (30) can be paraphrased as in (31):

(31) Fish of Tokyo Bay are such that the death of three persons by eating them has already come out due to the pollution of sea water by water drained from factories.

According to Mihara it is this "such that" relation which allows for the generation of an extra subject.

However, Mihara's claim cannot stand as is when we look at the Pure Topic. The Pure Topic sentence is also connected with the rest of the sentence by what Mihara calls an 'aboutness' relation, but the Pure Topic cannot be Nominative-marked. 'Aboutness' cannot explain everything about Double Nominatives, though it may be that Double Subjects/Topics are licensed by 'aboutness' or predication relations.[4]

4.4 Tateishi's non-movement analysis

Tateishi (1988) proposes an analysis of Subjectivization from a different point of view. He notices the fact that Subjectivization has a genitive origin. For Tateishi, for example, example (1), repeated here as (32), has the structure of (33):

(32) Nihon -ga kokumin -no heikin jumyoo -ga mijika -i.
Japan NOM citizen GEN average lifespan NOM short PRES
'It is Japan whose citizen's average lifespan is short.'

(33) [IP [NP Nihon -ga [NP kokumin -no heikin jumyoo -ga]] [VP mijika] -i]

For Tateishi, the extra Nominatives stays in situ in a Genitive position. The Nominative Case is assigned to the Genitive position by a kind of Case feature percolation. Thus, there is no movement involved in Subjectivization, according to Tateishi (1988).

Heycock (1993) criticizes Tateishi's analysis on the basis that an adverb can be inserted between the two Nominative phrases, casting doubt on the constituency of the two Nominative phrases as a whole:

(34) Nihon -ga zannen-nagara kokumin -no heikin jumyoo -ga
Japan NOM unfortunately citizen GEN average lifespan NOM
mijika -i.
short PRES
'It is Japan whose citizen's average lifespan is unfortunately short.'

However, we must say that it is still conceivable that movement seemingly involved in Subjectivization is a kind of Scrambling and that, if so, the Nominative assignment in situ is still a possibility. Independently of this, Tateishi (1994) points out that Scrambling of subjects in the Double Nominative Construction is possible. For example, (33) can undergo Scrambling and have the following word order:

(35) Kokumin -no heikin jumyoo -ga nihon -ga mijika -i.

Tateishi (1994) has refuted Tateishi's (1988) analysis on the basis of this fact on Scrambling, because it appears that, if (32) is the correct structure, (35) involves movement of a non-maximal constituent. However, once Scrambling of the subject is possible, we can derive (35) by moving the Nominative phrases twice:

(36) [NP t_j Kokumin -no heikin jumyoo -ga]$_i$ NP nihon -ga]$_j$ t_i mijika -i.

Thus, Tateishi's (1988) analysis still remains as a formal possibility.

5 Nominative assignment

This section and the next introduce studies trying to answer (18b), repeated here as (37):

(37) How can we assign the Nominative Case to the 'derived' subjects?

This section introduces those which propose mechanisms of Nominative assignment, and section 6 introduces studies which try to explain the existence of the Double Nominative Construction by parametrization of a part of language faculty.

5.1 Saito's analysis of Nominatives

Saito (1982, 1985) proposes that the Nominative Case *-ga* in Japanese is a kind of inherent Case. In Saito (1982), he appears to identify the trigger of this inherent Case to be a focus. As *-ga* is an inherent Case triggered to be generated by some kind of thematic or semantic relations, *-ga* phrases can be generated more than once, Saito states.

The most serious trouble with Saito's approach is that it is actually very hard to identify the triggering semantic relation for the Case particle *-ga*. As we have mentioned in section 3, it is true that *-ga* in the root context expresses a kind of focus, neutral description, or exhaustive listing. However, as Kuroda (1986) correctly points out, *-ga* is not always focal in the non-root context:

(38) [Moshi zoo -ga hana -ga mijika -kereba] dono yoo -ni
if elephant NOM trunk NOM short if how way DAT
shi -te banana -o tabe -ru -daroo.
do and banana ACC eat PRES Q
'If elephants had short trunks, how would they eat bananas?'
(Kuroda 1986: (106))

There is no indication of focus in the conditional clause in (38), as the focus of questioning here is on how elephants eat bananas. Thus, it is not clear what *-ga* expresses, except that *-ga* may be Nominative. There is no strong evidence which shows that *-ga* is inherent.

5.2 Multiple Nominative assignment

Takezawa (1987; Takezawa and Whitman 1998) proposes that the existence of the Double Nominative Construction in Japanese is due to the lexical characteristic of the category INFL in Japanese. In English, the number of Nominative-marked phrases in a tensed clause is one, because INFL requires a strictly one-to-one Case-assignment/checking relation with a noun phrase. On the other hand, according to Takezawa, Japanese allows for a single INFL assigning/checking

the Nominative Case with two or more noun phrases, allowing for Double Nominatives.

Such an analysis of Case assignment/checking works, and it may be advantageous given the fact that there is a distinction between a Double Subject Double Nominative construction and a Double Subject Topic construction (see section 4). Such a distinction may well be described in terms of the domain of Nominative assignment/checking. In fact, Ura (2000) recently proposes a view that Case feature checking may be parametrized between one-to-one and multiple for his analysis of Double Subject Constructions. The only flaw in this kind of account is that it is speculative and 'parametrization' of the lexical item INFL/Tense comes from nothing else. This is what the studies introduced in section 6 are exploring.

6 Functional categories and Double Nominatives

As we have seen in the previous section, there is a possibility that some kind of parametrization is involved in the existence/absence of the Double Nominative Construction. However, is it just a simple direct description of the fact? For example, is the parametrization in question of the form [+/− unique Nominative assignment/checking], as Takezawa (1987) and perhaps Ura (2000) argues for? Studies introduced in this section try to answer this question. They all claim that the peculiarity of the Double Nominative Construction comes from something deeper.

6.1 Kuroda and Fukui's parametrization approach

Fukui (1995) and Kuroda (1988) both try to derive a set of differences between languages like English and those like Japanese from a simple parametric difference which covers the very basic of clausal construction. For example:

(39)

Japanese	**English**
Lack of surface *wh*-movement	Obligatory *wh*-movement
Scrambling	No Scrambling
Stacks of Determiner-like elements	Unique Determiner per Noun Phrase
No grammatical plural form which triggers agreement	Number agreement required
Multiple Nominatives allowed	Unique Nominative per clause

Though they differ in the details of their formulation of the parameter in question, it can be stated as follows:

(40) English forces agreement, while Japanese does not force agreement or lacks agreement at all.

As agreement in the current syntactic theory is basically a feature-checking relation between the head and the Spec in the projection of functional categories

(Chomsky 1995c), the lack of agreement means the lack or inertness of functional projections. Thus, languages like Japanese must generate virtually everything in lexical projections, according to Fukui and Kuroda. The lexical projections are not under the control of feature checking and there are basically no bounds to the number of levels of projections in terms of X-bar theory or whatever replaces it (e.g., there are no bounds to the number of adjectives preceding and modifying a noun). Thus, in a language like Japanese where the subject is in the lexical projection on the surface, the multiple subjects are possible, so far as there can be a proper semantic relation between the subject and the rest of the sentence:

(41) [I′ [VP NP-ga [VP NP-ga [VP NP-ga . . .]]]]

Thus, the multiple Nominatives are possible, according to Fukui and Kuroda.

Then what is the Nominative Case? On this issue, Kuroda and Fukui differ. Kuroda claims that *-ga* is marked and licensed whenever a noun phrase is clause-initial. Kuroda views Case in Japanese as something assigned based on linear positions, not on structural relations. Fukui, on the other hand, claims that *-ga* and other Case particles are of a special syntactic category K(ase), and K is generated to Case-mark an NP in languages like Japanese where structural Case assignment/checking is not possible.

The major weak point of Fukui's and Kuroda's approach is that they cannot distinguish the types of Topics/Subjects introduced in section 4. However, their approach to Japanese grammar is worth exploring in that they try to derive numbers of differences in two types of languages from a single, simple parametric difference, which possibly simplifies the form of Universal Grammar drastically.

6.2 Case particles as functional heads

Whitman in Takezawa and Whitman (1998) shows a unique view on Japanese Case marking. He agrees with Fukui that the case particles in Japanese constitute independent syntactic categories and are not simply a marking on NP. He differs from Fukui in that Whitman considers case particles as fully projecting functional categories. For example, for Whitman, a simple transitive sentence in Japanese has the following structure:

(42) [IP Taroo [I′ [I -ga] [TrP Hanako [Tr′ [Tr -o] [VP shikatta]]]]]
Taro NOM Hanako ACC scolded
'Taro scolded Hanako.'

For Whitman, the Nominative Case particle *-ga* is an instance of a functional head INFL and the Accusative Case particle *-o* is an instance of another functional head Tr(ansitive) (or *v* or AgrO or whatever we call it), and the clausal structure in Japanese has full projections, just like English. Case marking/checking is done by the Spec–Head relations just as in English. Japanese is different

from English in that INFL lacks Tense/Agr features, basically following Fukui's and Kuroda's claims. Because Japanese INFL *-ga* lacks features, it can be multiplied in a single clause, according to Whitman:

(43) [IP Zoo [I′ [I -ga] [IP hana [I′ [I -ga] [AdjP nagai]]]]]
elephants NOM trunk NOM long
'It is elephants whose trunk is long.'

The two INFL *-ga*s are responsible for the two occasions of Nominative marking/checking.

The problem which immediately arises from Whitman's treatment of Japanese grammar is that we cannot conceive of a way to derive a sentence to which Scrambling of a noun phrase has applied, where a noun and a case particle appear to move together as if they constitute a constituent, as in (42):

(44) Hanako -o Taroo -ga shikatta.

A noun and a case particle following it always move together, and Whitman's grammar does not have a way to guarantee this. However, his way of analyzing Japanese clauses is worth exploring, because it may show another direction the theory of Universal Grammar may head in once parametrization of the characteristic of functional heads, as proposed by Fukui and Kuroda, can be accepted as something real.

7 Conclusion

This article has introduced theories and analyses of Japanese Double Subject/Nominative Constructions. It has been shown that this peculiar construction may be a guiding light for various branches of syntax, such as focus, the basic clausal structure, topic/subject distinction, and the role of functional heads in grammar. So far, there has not been any theory of this construction which covers all of the characteristics/distinctions that are introduced and reviewed in this article. Future studies on the Double Nominative Construction must be both theoretically intriguing and descriptively accurate, as almost all issues relating to this peculiar construction have been presented.

NOTES

1 Note that this is different from the Left-Dislocation Construction, as in (i):

(i) John, his uncle is a doctor.

2 Perhaps because it is non-topical.

3 Tateishi (1990, 1994) claims that the topic in (24) is base-generated in Spec(CP), on the basis that a sentence with this type of topic cannot allow for LF *wh*-extraction. Whether Tateishi's approach is correct or not, it is certain that this type of topic must be generated outside of ordinary domains of predication, S or IP(TP).
4 See also Fujii (2000), which argues that Subjectivization and Major Subject Construction must be distinguished, on the basis of other sets of data.

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21 Double Object Constructions

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1 Introduction: empirical boundaries of the construction

1.1 Double objects in dative alternations

The representational status and proper derivation of double object constructions have long been a subject of debate in generative grammar. Most of the controversies stem from the fact that many languages from different families display a 'dative alternation', although complements to verbs in these languages normally follow a relatively fixed word order. That is, an indirect object may appear either as the object of a preposition or as one of two noun phrase objects of the verb, the other being the direct object. In the latter configuration, neither has any indication of oblique case or PP status.

Many studies have analyzed the English double object construction and its close relatives in other languages. This review will summarize and evaluate a number of these, beginning with Fillmore's (1965) classic study, continuing through some Relational Grammar studies and Government and Binding analyses such as those by Kayne (1981c) and Larson (1988b). Our comparative presentation and integrated conclusions crucially depend on accounts of dative and applicative alternations in several non-Indo-European languages. We terminate by covering some later analyses such as Den Dikken (1995c) and Pesetsky (1995).

However, our review of the massive literature on double objects doesn't pretend to be exhaustive. We regret that we could not include the most recent materials on the topic or a number of unpublished works. Nor do our short summaries really do justice to the many long and detailed studies. Rather we give a taste of each proposal, focusing as often as not on what we perceive as weaknesses rather than strengths, and try to extract certain cross-linguistic descriptive generalizations.

The sentences in (1) exemplify Fillmore's (1965) TO-dative alternation and those of (2) his FOR-dative pattern:[1]

(1) a. Mary sent a present to each family member.
b. Mary sent each family member a present.

(2) a. Carolyn baked that cake for my children.
b. Carolyn baked my children that cake.

It is important to observe that double object constructions encompass only patterns where neither of two NPs in a verb's complement system is a predicate nominal. That is, each object must stand in a different semantic relation with the verb (or be assigned different theta-roles). In traditional terms, the two NPs are direct object and indirect object (DO and IO). In contrast, the example in (3) does not contain double objects. Rather, it exemplifies secondary predication, where a predicate nominal follows and modifies the direct object. The syntax of predicate nominals differs greatly from object NPs; cf. Emonds (1985: ch. 6) for a discussion of seven differences:

(3) The Jets {called, considered, declared, judged, named} Officer Krupke a fink.

It has been often observed that head-initial SVO languages that lack a dative alternation, such as some well-studied Romance languages, nonetheless contain exact counterparts of (3). Oehrle (1976) proposes that the same phrase structure rule can generate both secondary predication and double objects. However, following the demise of language-particular phrase structure rules, most analysts agree that these two kinds of double NP constructions are related neither empirically nor theoretically. Consequently, we will not further analyze secondary predication or predicate nominals.

We will often crucially use some well-known studies published in English for double object constructions in head-initial languages other than English: Chung (1976) for Bahasa Indonesian; Kimenyi (1980) for Kinyarwanda (in the Bantu family); Aissen (1983) for Tzotzil (in the Mayan family); Haegeman (1985) for West Flemish; Baker (1988a) for many non-Indo-European languages; Baker (1988b) and Alsina and Mchombo (1990) for Chicheŵa (Bantu); Zhang (1990) and Den Dikken (1995c) for Chinese;[2] Den Dikken (1995c) for all the modern Germanic languages; and Holmberg and Platzack (1995) for Scandinavian languages.

The following typical examples of double object constructions alternating with DO-PP are respectively from Baker (1988a: ch. 5) and Chung (1976):

(4) **Chicheŵa:**
a. Mbidzi zi-na-perek-a msampha kwa nkhandwe.
zebras SP-PAST-hand-ASP trap to fox
'The zebras handed the trap to the fox.'
b. Mbidzi zi-na-perek-er-a nkhandwe msampha.
zebras SP-PAST-hand-APPL-ASP fox trap
'The zebras handed the fox the trap.'

(5) **Indonesian:**
a. Ali mem-beli telefisi untuk ibu- nja.
Ali TRN-buy television for mother-his
'Ali bought a television for his mother.'

b. Ali mem-beli- kan ibu- nja telefisi.
Ali TRN-buy- APPL mother- his television
'Ali bought his mother a television.'

In the (b), or double object, examples, the verb carries what is called an 'applicative suffix', a term borrowed from anthropological linguistics. This suffix marks the 'promotion' of an ordinarily oblique NP complement of an unmarked transitive verb to the direct object of that verb. Extending the terminology, it can be proposed that even verbs that are not overtly marked (English, Dutch, Mainland Scandinavian) can have null applicative inflections for indirect objects (section 2.5). Depending on whether the applicative suffix seems closer to a TO or a FOR dative, the literature usually refers to 'dative applicatives' (4) or 'benefactive applicatives' (5) respectively. We return briefly in section 3.4 to the structural position of this affix.

A dative alternation often occurs in SVO systems, but it can occur in V-final systems. Korean, a thoroughgoing head-final language, has speakers who accept a double accusative construction with an applicative auxiliary verb (Choe 1986). It thereby contrasts with its close syntactic cousin Japanese, also head-final, whose indirect objects must appear with a dative case marker. But with the exception of Korean and Dutch, it appears that almost all languages whose dative alternations have been scrutinized in widely available work are head-initial. Caseless double objects may thus have some affinity with head-initial systems, but we have not investigated this intriguing possibility.

Before turning to the more common SVO dative alternations, we summarize some results of two enlightening studies of double objects in the V-final system of Dutch, Haegeman (1985) for the West Flemish dialect and Den Dikken and Mulder (1991) for Standard Dutch. According to Haegeman, West Flemish treats double objects differently with two distinct verb classes, which are reminiscent of TO vs. FOR datives.[3] Unlike English and the many head-initial languages reviewed below, the indirect object of the TO dative can lack an overt P *aan* 'to' only if VP-internal (as one of two objects). Such an NP can neither passivize nor topicalize without P resurfacing. Consequently, she concludes "that the indirect object is a PP in all positions and that the prepositional head of the PP can be non-overt, . . . if and only if governed by a case-assigning verb" (1985: 285). If correct, this reinforces our suspicion that double objects involving truly bare indirect object NPs are limited to head-initial systems.

Den Dikken and Mulder's (1991) empirical arguments focus more on parasitic gaps and whether object scrambling in Dutch is an 'A movement' or an 'A' movement' (read 'A'' as 'A-bar'). Nonetheless, their structural conclusions about Dutch double objects are similar to Haegeman's. They argue that Dutch 'bare' indirect objects (those lacking an overt preposition) have the form $[_{PP}\ [_{P}\ \emptyset]$ – DP] and are syntactically related to preverbal phrases $[_{PP}\ [_{P}$ *aan*] – DP]. This 'covert prepositional dative' structure then accounts for why bare indirect objects do not freely bind parasitic gaps. Moreover, they echo Haegeman in noting that such PP

structure also accounts for an inability to passivize, in clear contrast to the bare indirect objects of verb-initial systems.[4]

Haegeman (1985) also examines an intriguing (though inexact) West Flemish counterpart to a FOR dative (with verbs such as *trekken* 'pull' and *beloven* 'promise'), which seems to involve a bare NP adjunct similar to what traditional grammar often calls a "dative of interest." She shows that these West Flemish NPs do clearly become nominative subjects of passive verbs, in contrast to Fillmore's observation about English FOR datives (see note 1). But she also argues that they originate outside the lowest verb phrase, that is, they are adjuncts of V'. If so, they again do not constitute an 'object' (i.e. a complement) in the sense focused on in this study.

As a review of existing treatments in the literature, the bulk of this chapter will necessarily concentrate on comparing those VO(O) systems which fail to distinguish their double objects either by case-marking or by an overt P. Our conclusions may or may not apply to double object constructions in head-final systems such as Dutch.

One descriptive generalization about such head-initial double object languages that has received little attention is that in every such language, the indirect object precedes the direct object if and only if subjects precede predicates. Typically, in well-studied SVO constructions, the indirect object must be first. But in Tzotzil, widely described as subject-final, the indirect object follows the direct (Aissen 1983: 286). This generalization suggests that, at some level, the indirect object may have a subject-like property. And although several analyses of double objects reviewed in section 4 treat indirect objects as deep subjects, it is not clear whether any of them can naturally express the apparent predicate–subject word order of Tzotzil double objects. For in order to do so, any subject-final word order would have to reflect a single factor, such as SPECIFIER position relative to a head. But concepts such as phrase-final specifiers are not discussed in these works.

1.2 Double objects not in dative alternations

A different sort of double object construction consists of co-occurring direct and oblique objects in languages with overt oblique morphological case(s), or 'm-case'. Holmberg and Platzack (1995) show that Icelandic has m-case. The largest class of Icelandic triadic verbs, including *give*, *send*, and *tell*, takes a direct object marked with accusative case ('A') and an indirect object marked with dative ('D'):

(6) Jón gaf Ólafi bókna.
John gave Olaf (D) a-book (A)
'John gave Olaf a book.'

Holmberg and Platzack carefully contrast double objects in Icelandic to double objects in Mainland Scandinavian, which lacks m-case. For example, Icelandic

give-type verbs cannot take dative *to*-constructions, they allow DO–IO order under some circumstances, and either object may be passivized as a nominative ('N'). These properties are almost the opposite of those found in Mainland Scandinavian and other systems that lack m-case, such as English:

(7) a. *Eg gaf bók til Jóns.
I gave book to John
'I gave a book to John.'
b. Jóns mun gefa bókina einhverju bókasafni.
John will give the-book some library
'John will give the book to some library.'
c. Jóni var gefin bókin.
John (D) was given the-book (N)
'John was given the book.'
d. Bókin var gefin Jóni.
the-book (N) was given John (D)
'The book was given to John.'

In our view, Holmberg and Platzack make a methodological error at the outset: they assume that Icelandic's m-case provides a key for determining how to assign abstract case in double object constructions without m-case. In particular, they assume that IOs rather than DOs must receive structural case by some extra mechanism. It seems more likely that both morphological case and the other properties of Icelandic double objects (e.g., freer word order, restrictions on benefactives, at least partial complementary distribution with overt P constructions, differences in passivization and impersonal passives) result from some deeper structural difference between Icelandic and Mainland Scandinavian. In fact, several of these properties suggest that IOs with m-case are structurally PPs.[5]

Taking this 'fault line' as crucial, we accordingly set empirical boundaries on this study as follows: except for subject and direct object argument NPs with so-called quirky case, we propose that object NPs with oblique case are generally PPs with null P. That is, the oblique m-cases of Icelandic, German, Latin, Slavic languages, and so on are morphological reflections of structural adpositions rather than reflexes of the dative alternation of section 1.1.

However, we do not claim that oblique m-case is an infallible indicator of PP status.[6] Obliquely case-marked object NPs that are not deep direct objects sometimes (but not typically) 'advance' to surface direct object position and hence may not be PPs in surface structure. According to Holmberg (1991b) such advancement occurs in Icelandic. In some languages an oblique case-marked NP may even be a deep direct object; for example, Faltz (1978) suggests that Walbiri dative-marked NPs can be structural direct objects. We thus claim only that NP arguments of Vs are base-generated as PPs, subjects or direct objects; there are no 'bare NP' indirect objects.

Reorderings and advancements of direct and oblique objects that are morphologically invariant – that is, that retain their m-cases or their overt Ps – are more

likely due to scrambling than to a dative alternation. Scrambling typically (but not only) operates in languages that overtly mark NP case. For example, Den Dikken (1995c: section 4.6), building on Müller's (1992) discussion of German, argues that the latter "features no genuine Dative Shift. What appears to be Dative Shift is actually A'-scrambling of a zero-headed dative PP."[7] We tentatively agree with this conclusion, although we cannot fully exclude that languages with overtly case-marked NPs could, upon investigation, reveal a non-scrambling dative alternation.

Den Dikken's argument is based on one line of thought in traditional grammar, to the effect that oblique cases other than genitive are alternative forms of PPs. We can state this as follows:

(8) **Structure-Dependent Case:**
Double object constructions in which one object is marked with productive, overt oblique case always involve at least one structural PP.[8]

An alternative view of case assignment, espoused for example by Zaenen et al. (1985, henceforth 'ZMT'), is that "Case can be assigned in (at least) three different ways": case can be semantic, idiosyncratic, or structural ('functional'). We might give this approach the name of 'autonomous case theory'.[9] Such a theory would be less restrictive in the types of underlying structures that could be proposed for double object constructions. In particular, no underlying PP would have to be present for case assignment.

In this chaper, we reject any source of case other than the four structural case-assigners V, P, I, and D. Moreover we hold that any category that can assign case can do so only once. We offer six arguments for preferring this structure-dependent case theory to autonomous case theory:

(i) Overt and null P parallelism. In 'four-case' languages such as Classical Greek, German, and Icelandic, structure-dependent case (8) predicts correctly that the case of a bare second object in double object constructions – what is usually called 'dative' – should be whichever case is ordinarily assigned by overt P.[10] An autonomous case theory, by simply defining the indirect object's case as 'dative', makes no prediction as to what case is expected with overt Ps.

(ii) Oblique case complements of nouns and adjectives. Indo-European case systems suggest the following generalizations: V regularly assigns accusative case and P regularly assigns oblique case; N and A do not assign case but receive case (Stowell, 1981); and when an NP does not receive case from its expected case-assigner, some P often assigns case to NP by default. These observations almost certainly hold independently even in autonomous case theory. Structure-dependent case consists simply of maintaining that these statements are exceptionless. Since bare oblique case NPs among multiple complements are exactly those lacking 'expected case-assigners', we hypothesize null Ps to assign them. They should occur with essentially the same distribution as other PPs.

Consequently, since Ns and As have PP complements but not direct objects in a wide range of languages, we expect that Ns and As can also have oblique but not accusative complements. This general asymmetric pattern, a mystery in a framework of autonomous case, is confirmed in many languages; for example, German in Van Riemsdijk (1983a).

(iii) Restrictions on combining oblique cases. Because the Icelandic dative can appear either as a (specially marked) direct object or as an empty-headed PP, Icelandic can have 'double datives', so this combination does not decide between structure-dependent and autonomous case theories. But in unstipulated constructions, structure-dependent case (8) defines accusative as the unique case assigned by V to a direct object and associates bare oblique case with PP structures. Consequently, it predicts the cross-linguistic absence of both double accusatives (outside of predicate nominal agreement) and double genitive complements. A theory of autonomous case cannot make any such prediction, as in fact its proponents admit: "Some other gaps remain unexplained, however; for example, nothing in our account of case would prevent Icelandic from having GEN GEN or ACC ACC combinations in postverbal position" (ZMT: 480).[11]

(iv) Syntactic patterning. If some syntactic restriction distinguishes between NP and PP, autonomous case theory predicts that any oblique case phrases should act as NPs. Under structure-dependent case, oblique NPs (except those arguably in unique subject and object positions) should pattern rather with PPs. Here are two examples:

(a) The French relative pronoun *qui* as an object of P refers only to animate antecedents, but otherwise is indifferent to the value of this feature. When *qui* follows the dative marker *à* 'to', it is animate, i.e., the oblique phrase *à qui* acts like a PP (C. Piera, p.c.).

(b) A small class of discourse markers such as *wa* 'topic' and *mo* 'too' in Japanese immediately follow maximal phrases of any type (Kuroda 1965). Phrase-final nominative and accusative case markers *ga* and *o* on NP must delete in the presence of these discourse markers, but head P such as *e* 'to' or *kara* 'from' do not. The dative case marker *ni*, like Ps but unlike NP case-markers, appears with these discourse markers.

In both these examples, a structure-dependent case theory makes correct predictions, but autonomous case theory does not.

(v) Quantifier floating. We are not aware of a systematic cross-linguistic study, but the literature variously indicates that quantifier floating off obliquely case-marked NPs is less acceptable. In our view, this tendency is explained because oblique NPs are embedded in PPs. Hence they do not c-command a modifying quantifier located outside the PP. See section 3.2.6.[12]

(vi) Undergoing NP movement. Structure-dependent case holds that an oblique case NP complement is usually a PP with an empty head. It then follows that except for direct objects with a 'quirky case' (as in Icelandic), oblique object NPs should not be able to structurally substitute for subject NPs; they should only topicalize like a deep PP. In confirmation of our hypothesis for oblique

objects, ZMT (sections 3–5) observes precisely this contrast: "Thus the same type of tests that show that oblique NPs can be grammatical subjects in Icelandic show that the German analogues cannot be analyzed as such" (ZMT: 478).

We thus take structure-dependent case as established in the rest of this study. Each V and P can assign only one case, whether or not the case is morphologically overt. V usually assigns accusative but sometimes can assign an oblique 'quirky' morphological case. Conversely, P assigns oblique case, but in marked situations P may assign a quirky morphological accusative (German *für* 'for' etc.). As we will see, this pairing of case assigners and NPs rules out a number of somewhat ad hoc analyses of dative alternations in double object constructions.

2 The first debate: lexical alternation vs. transformational 'promotion'

2.1 The dative movement rule

Much early transformational work assumed that the dative alternation resulted from a movement rule, based on the degree of regularity of its operation and the synonymy of the two alternating structures. Versions of the rule generally built the presence of a V into the structural description, since double object constructions exemplify a certain kind of verb complementation. Double object constructions appear only in those phrases which also permit prepositionless (= accusative) direct objects, suggesting that the V and perhaps also the direct object have an important role in licensing a double object construction.[13]

Herriman (1995: ch. 2) surveys earlier traditional and generative analyses of indirect objects. A typical treatment (in the introductory text of Akmajian and Heny 1975: 183–186, 220) proposes the following rule of Dative Movement:

(9)

Structural Description:	V	NP	{to, for}	NP	
	1	2	3	4	
Structural Change:	1+4	2	Ø	Ø	

However, compared with similar early transformational rules such as Passive Formation, the range of conditions on English Dative Movement suggests to many that it cannot be a regular syntactic formation. The dative alternation seems to display to some extent both the features of a transformational alternation and those of a non-productive lexical alternation. Under predominant assumptions in generative thinking, it does not lend itself straightforwardly to either type of analysis. Sentences (10a–b) illustrate one example of a lexical alternation. (Lexical alternations per se are not treated in this study.)

(10) a. Mary {supplied/donated/*positioned} a weapon to each member.
Mary {supplied/*donated/positioned} each member with a weapon.

b. Carolyn {fed/distributed/*nourished} that cake to my children.
Carolyn {fed/*distributed/nourished} my children with that cake.

As with a lexical alternation, the dative alternation does not apply across the board to all verb phrases meeting the structural description in (9). TO-datives are compatible with certain classes of 'transfer' verbs, for example those in (11), and only some of these can undergo the alternation:

(11) a. Dr. Smith {gave/sent/showed} the library his collection.
b. *Dr. Smith {donated/transferred/showed off} the library his collection.

Similarly, FOR-datives appear with characteristic verbs of preparation and creation, and again, only some of the latter permit the prepositionless variant:[14]

(12) a. Luisa {baked/fashioned/bought} the children some gingerbread houses.
b. *Luisa {invented/devised/dispatched} the children some new toys.

Moreover, while most English verb phrases containing a double NP complement are closely paraphrased by verb phrases containing NP and a *to* or *for* phrase, a disparate collection of verbs taking double objects does not permit such paraphrases {e.g. *allow*, *ask*, *bet*, *charge*, *cost*, *deny*, *envy*, *fine*, *forgive*, *pardon*, *spare*}:

(13) a. This watch cost Mary fifty dollars.
The manager denied the students a chance to explain.
b. *This watch cost fifty dollars {to/for} Mary.
*The manager denied a chance to explain {to/for} the students.

Additionally, several authors, such as Green (1974), Oehrle (1976), Pinker (1989), and Jackendoff (1990a), feel that the dative alternations, at least in English, are not really paraphrases. That is, they need not share truth values. Green (1974: 157) claims that learning necessarily occurs for using (14a) felicitously, but not for (14b). Similarly, Pinker (1989) claims that possession must change in (14c) but not in (14d):

(14) a. Mary taught John linguistics.
b. Mary taught linguistics to John.
c. John threw Bill the book.
d. John threw the book to Bill.

Emonds (1993: 227–228), in contrast, claims that such examples don't actually differ in truth values.[15] Rather, according to Anderson's (1971) study on constant semantic properties of direct objects, truth conditions are preserved in dative alternation pairs as in (1), (2), and (14), while meanings can contrast in pairs of lexical alternations such as (10); one member of some pairs can be true while the other is false.

Other authors have tried to distinguish the two versions of the dative alternation on pragmatic grounds. Erteschik-Shir (1979) claims that the indirect object in double object constructions tends to be definite (for her, "non-dominant") and Thompson (1995) that it is 'more topicworthy'. However, such claims seem concerned at most with language use rather than syntax. For example, if a speaker wishes to contest *That professor teaches in a sexist way*, a perfectly well-formed response can be *But nonetheless he always teaches girls the hardest parts of his theories*. Here the previously unmentioned indirect object is indefinite and the direct object definite. Syntactically, dative alternations are equally well-formed with definite or indefinite objects in either position.

In the longer perspective, what has finally offset doubts about the synonymy of the English dative alternation and strengthened the hand of transformationalists is a number of carefully argued analyses of double object constructions in a range of non-Indo-European languages. In many such languages, a semantic indirect object alternates freely between a PP and a direct object position; when in the latter position, the verb is regularly inflected as an applicative. Most generativist analyses of applicatives have claimed that this dative alternation is productive. For Chung (1976: 54–55), the only restriction in Indonesian is that "for a handful of verbs whose indirect objects have undergone Dative, the applicative affix may be irregular or covert." Baker (1988b) contrasts Chicheŵa's somewhat sporadically formed locative applicatives with the productivity of its benefactive applicatives. The advancement of indirect to direct object in Tzotzil, a Mayan language, also marked by a regular dative applicative verbal prefix, is not only productive but obligatory: Aissen (1983) concludes that "there are no sentences in which the indirect object has not advanced to direct object." Moreover she gives empirical arguments that the Tzotzil indirect object is not an 'initial 2' of RG (= a base direct object).

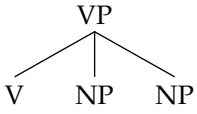
While productive relations involving applicative morphemes support a transformational account of dative alternations, they have been studied during a period when construction-specific transformations such as Dative Movement are seen as failing to capture generalizations. Thus, later proposals that the dative alternation derives from movement attempt to subsume it under Move α. These analyses, which will be reviewed in section 4, have tried to derive double object constructions from some combination of language-particular parameters and universal grammatical principles, rather than returning to a specific transformation such as (9).

2.2 *Lexicalist approaches to double object structures*

Some linguists have argued that the English double object structure is not derived by transformation because of its uncertain productivity in that language. Rather, double object structures are directly selected by lexical entries of verbs. The two NPs are then differently interpreted in a semantic component. Oehrle's (1976) dissertation is the first detailed argumentation that dative pairs result from a lexical alternation. Verbs like *give* and *send* subcategorize for two sets of

complements, NP PP and NP NP. The two sets are related through a 'lexical redundancy rule', a less narrowly defined mechanism than movement rules. He proposes that double objects have the 'flat' structure in (15), where both NPs are sisters to the verb:

(15)



Oehrle additionally argues that certain movement restrictions on dative NPs, which we review in section 3.1, arise from a general constraint on the accessibility of 'inner' NPs (those closest to the verb).

The theory of Lexical Functional Grammar (Kaplan and Bresnan 1982) proposes a similar 'surface' analysis for double object verbs. Two distinct sets of grammatical functions are assigned to the unified predicate argument structure of Agent, Theme, and Goal:

(16) a. V (SUBJ) (OBJ2) (OBJ)
b. V (SUBJ) (OBJ) (to OBJ)

These functions then map directly onto surface strings where OBJ2 is Oehrle's 'inner object' and the direct object is labelled OBJ. Thus, any systematic pairings of meanings in the double object construction are expressed directly only in predicate argument structures. As for any syntactic correspondences, the LFG system also "captures the systematic connection between NP–NP and NP-to-NP constructions by means of a lexical redundancy rule" (Kaplan and Bresnan 1982: 180).

Although Green's (1974) framework includes transformational relations, she bases her analysis of indirect objects rather on the semantic properties of relevant verbs. She groups verbs that license Dative Movement into different semantic classes, and relates these classes to different underlying structures, associating several verbs with the base structure (15) rather than a structure including a PP. For example, *pass* and *take* are in the '*bring*' category, *feed* is in the '*give*' category, *buy* and *save* in the '*selection*' group, and so on. She concludes that 'Dative Movement' should actually be divided into a series of interrelated processes that relate double object constructions and NP–PP sequences in either direction – from NP PP to NP NP or from NP NP to NP PP – according to those combinations of semantic features available for the verb in question. This approach is actually reminiscent of Harris's (1957) notion of transformational relations between sets of surface paradigms.

Pinker (1989) formulates a theory of lexicosemantic representation that attempts to make the semantic characteristics of 'dativizable' verbs more precise. His main concern is how children are able to learn the dative alternation without access to negative evidence. That is, the child must learn without being told which verbs are unavailable for the double object construction. For example,

how does the learner realize that *give* is acceptable in this context, but *donate* is (usually) not, although the two verbs have very similar meanings? (For a full discussion of this issue, see Pinker 1989: ch. 1.)

Pinker proposes a 'Grammatically Relevant Subsystem' hypothesis, arguing that "there is a set of semantic elements and relations that is much smaller than the set of cognitively available and culturally salient distinctions, and verb meanings are organized around them" (Pinker 1989: 166). Linguistic processes, including lexical alternations, are sensitive only to members of this set. He then develops a set of relevant verbal features and uses linking rules to map certain groupings of features onto certain syntactic structures. These features are detailed enough to distinguish between dativizable verbs and similar verbs that do not display the dative alternation. (See Pinker 1989: ch. 5.) Although Pinker's analysis is lexicalist in the sense that he assumes without argument that 'Dative Movement' is a lexical alternation, nothing in his theory precludes applying it to a transformational theory of datives. In fact, it might serve to weaken one of the main arguments against Dative Movement, that its application is not predictable.

Jackendoff (1990a) is another theorist who believes, like Oehrle, that a lack of full productivity in the dative alternation supports a purely lexical account of double objects. He reserves transformations for more transparently regular alternations such as passive. He elaborates on some of Green's ideas for verb classes, claiming that the semantic facts of double objects and their verbs militate against a transformational analysis, at least for English. For Jackendoff, generalizations about theta-roles do not explain the difference between verbs that allow double objects and those that do not. Unlike Pinker, he finds no plausible contrast between the roles assigned by *give* and *donate*, which both appear to assign 'beneficiary' and 'goal' roles to their complements. He feels rather that the inherent meanings of verbs determine whether there is a dative alternation.

For example, verbs of creation or preparation such as *sing* or *bake* allow double objects, while benefactive NPs with other verbs such as *copy* or *eat* occur only in *for*-phrases:

(17) a. Enrico {sang/copied} an aria for Luisa.
b. Enrico {sang/*copied} Luisa an aria.
c. Susan {baked/ate} some vegetables for her mother.
d. Susan {baked/*ate} her mother some vegetables.

But Jackendoff's analysis of this paradigm actually undermines his argument that dative alternations are lexical. He suggests that creation/preparation verbs take a *for*-phrase complement, whereas *for*-phrases with verbs like *eat* and *copy* are adjuncts. But if so, Move α cannot 'lower' an adjunct, presumably base-generated outside V^1, into direct object position. A transformational account therefore seems to explain precisely the contrast Jackendoff brings to bear against it.[16]

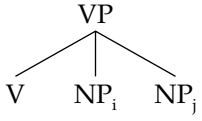
Along similar lines, Jackendoff (1990a: 449) favors a lexicalist account for a generalization of Pinker (1989), whereby motion verbs that "imply influence of

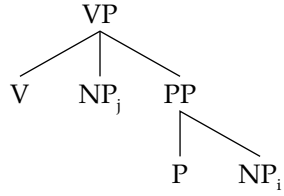
the Agent continuing throughout the Theme's trajectory" do not appear with double objects:

(18) a. He {dragged/moved/pushed} the material to Bill.
*He {dragged/moved/pushed} Bill the material.
b. He {dropped/kicked/threw} the material to Bill.
He {dropped/kicked/threw} Bill the material.

An adequate analysis should probably relate this distinction to whether the P indicates an actual spatial trajectory, as in (18a), or whether it simply introduces a third NP argument, as in (18b). We return to this distinction in section 2.5.

Lexical explanations for the dative alternation among Chomskyan theorists received a theory-internal boost in 1981. Chomsky's *Lectures on Government and Binding* does not argue against a movement derivation for double objects. However, his Projection Principle, a central tenet of Government-Binding theory, requires that the argument structure and thematic roles of complement phrases remain constant throughout a derivation. As it is used in that work, this principle rules out the possibility of a surface structure configuration like (19a) (where the complement phrase consists of two NPs) being transformationally derived from a deep structure (19b) (where the complement phrase consists of an NP and a PP):

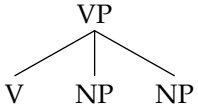
(19) a.


b.


Thus, we understand why Czepluch (1982: 1) introduces a contemporaneous discussion of the dative alternation with the comment: "Nowadays it is widely held that the alternation between the prepositional IO and the prepositionless IO represents a lexical rather than a transformational relationship."

2.3 *Transformationalist objections to lexicalist approaches*

Generativists (e.g., Czepluch 1982: note 5) could nonetheless see that assuming Oehrle's (20) as the deep structure for double objects creates many problems for Government-Binding theory:

(20)


We enumerate five such problems with flat double object structures here:

(i) A flat deep structure for double objects precludes any straightforward syntactic account of the synonymous pairs in the dative alternation, including the pairings in the fairly transparent productive applicative systems of the Bantu languages, Indonesian, etc.[17]

(ii) A simple and hence optimal case theory states that case assigners (such as V and P) assign exactly one grammatical case to a single, adjacent NP (cf. Pesetsky 1995: 124). This is our Structure-Dependent Case theory in (8). In a flat structure, the assignment of case to the second NP of the double object construction in (20) becomes problematic. Chomsky (1981: ch. 3) assumes that the V in this situation assigns an additional 'inherent Case' to one of the objects and the usual structural case to the other. Thus one or the other type of case assignment applies over an adjacent NP only in this exceptional instance. As explained in a cross-linguistic study of passives (Åfarli 1992: section 3.1), such double assignment of case undercuts attempts at coherently characterizing 'case-absorption' in passives.

(iii) Work on double object applicative constructions in non-Indo-European languages, first in the framework of Relational Grammar (Chung 1976; Kimenyi 1980; Aissen 1983) and later in Government-Binding under the impetus of Marantz (1984) and Baker (1985a, 1988a), revealed many syntactic properties which demonstrate that prepositionless indirect objects function cross-linguistically as surface direct objects, while the deep direct objects they occur with do not. An additional paradigm using particles (Emonds 1972a) supports the same conclusion for English. This body of work taken together (see section 3.2) argues that the indirect object must be 'promoted' (using Relational Grammar terms) from a deep status of an 'initial 3' (a deep oblique complement) to a 'final 2' (a surface direct object) in the course of a derivation. Flat deep structures obscure this 'promotion'.

(iv) Whether or not one embeds a flat deep structure (20) into the Government-Binding framework, any explanation of the syntactic restrictions on double object constructions (discussed in section 3.2) based on some kind of structural 'inaccessibility' of an inner NP is too powerful. It incorrectly predicts that indirect object NPs cannot be passivized; see note 1. Whitney (1982, 1983) and Czepluch (1982) discuss in more detail the inadequacy of the structure (20) as a basis for explaining the grammatical relations and syntactic properties of double object constructions.

(v) The important and influential squib of Barss and Lasnik (1986) shows that several considerations based on binding of anaphors, weak crossover, quantifier-variable pairings, superiority, and negative polarity – the very cornerstones of Government-Binding theory – require that the indirect object in a double object construction, for example in (1b), (2b), and (14a, c), asymmetrically c-command the direct object to its right. (Cf. also Larson 1988b; Pesetsky 1995: 125–126.) As this influential piece is transparently written, easily accessible, and mercifully brief, we will not summarize it further, but simply accept their preliminary conclusion

as a basis for further discussion: "The problem now is to determine how it is that the first NP in a double-object VP asymmetrically c-commands the second NP, and this requires discussion of the phrase structure of these VPs" (Barss and Lasnik 1986: 350).[18]

A final logical weakness of lexicalist accounts of datives is the nature of their argument that, since non-alternating double objects (double object sentences without a *to-* or *for*-phrase paraphrase) occur anyway, a rule of dative movement is redundant. This reasoning is curious, since prosaic sentences resembling passive transforms (*John was killed by the riverside*) are never taken to argue for the redundancy of the passive transformation.[19]

Perhaps what is lacking from the lexicalist perspective is the ability to imagine a plausible derivation for these non-alternating sentences. Suppose that a double object verb such as *cost* or *deny* is lexically specified for two NP complements, as in *This watch cost Mary fifty dollars*. An obvious consequence of an optimal case theory such as (8) is that a V cannot have two object NP sisters, so that the most economical base structure that satisfies such a lexical specification is (21):

(21) This watch cost NP $[_{PP}\ [_{P}\ \emptyset]$ NP]

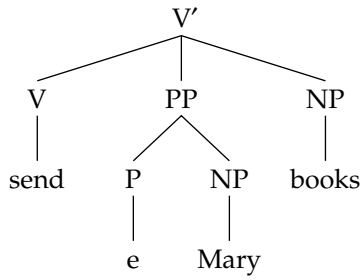
Herriman (1995: 204), citing several traditional grammarians, observes that the second complements of many non-alternating double objects are indeed akin to "NP adverbials." They are thus possibly PPs whose P is idiomatically zeroed either optionally (*envy, forgive*) or obligatorily (*fine*, *spare*). Other verbs with non-alternating double objects may fall under one of the analyses in section 2.5.

We conclude that non-alternating double objects, as in (13), do not bear on the issue of whether English or any other language exhibits transformational raising of indirect to direct objects.

2.4 Government-Binding attempts to save a lexicalist analysis

The tension resulting from the requirements of Government-Binding theory[20] and the need for a cross-linguistically convincing analysis for double objects stimulated a "datives industry" throughout the 1980s and early 1990s. Some linguists first attempted to reconcile a theory of base-generated double objects with Chomsky's Case theory by building in covert syntactic structure. In particular, Czepluch (1982) and Kayne (1984b) analyze the indirect object NP as a 'covert' PP with a P that remains empty throughout the derivation, as in (22). In both analyses, the direct object is case-marked by the verb, although not under the adjacency to V^0 required by Stowell (1981):

(22)



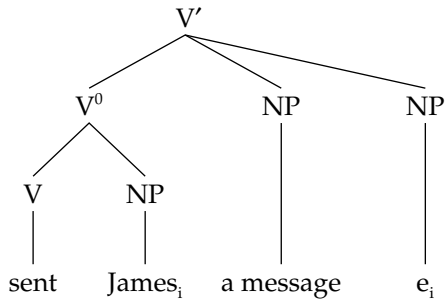
Czepluch (1982) proposes that ordering of the PP before the NP in (22) is determined by the requirements of case assignment and Chomsky's Empty Category Principle, which forces the dummy P to be properly governed. The empty P attaches to the verb through Reanalysis, allowing the verb to indirectly transmit case to the indirect object NP.

For Kayne (1984b: 195–196), "an empty preposition cannot be the source of Case," but can "transmit to its object an objective case received by percolation only if prepositions in that language normally assign objective case. Then objective case transmission by P_e is available in English, but not in French." Kayne's proposal is then that P assigns case differently in the two languages, although neither language has overt case morphology outside the pronoun system.[21] This treatment of the dative also "leads one to conclude that the [dative passive] is an instance of preposition stranding, . . . except that the stranded preposition is empty" (1984b: 196).

While we share with Zhang some uncertainty over exactly what Kayne and also Larson (1988b) actually imply in this regard, we agree that "under one possible interpretation, Kayne's and Larson's theory makes the following claim: Languages that do not permit P-stranding also do not permit Dative Shift" (Zhang 1990). Hoekstra (1995: 122) makes this explicit: "the English pattern of indirect object passivization is limited to languages allowing preposition stranding." Zhang's squib shows that Chinese contradicts any such claim, as do Indonesian and other non-Indo-European languages with dative applicatives. As observed in Van Riemsdijk (1978a), P-stranding is rare and probably limited to a subset of Germanic languages; hence it cannot be a precondition of a dative alternation.

Stowell (1981) analyzes the dative alternation in terms of movement, but upon closer inspection it is more a lexicalist than a 'Move α' solution. In his view, indirect object NPs incorporate into the verb (V^0) by means of a 'word formation rule', one which creates words of unlimited complexity, such as the bold sequence in *The girl* ***sent the man who had won huge sums of money at Monte Carlo*** *flowers*. The complex verb assigns case to the direct object NP and, rather problematically, the prepositionless indirect object also receives or 'absorbs' case from the adjacent verb. An indirect object is thus realized either as a lexical NP or an empty NP co-indexed with the incorporated NP, as in (23):

(23)



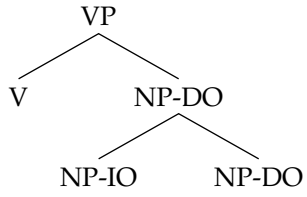
If a lexical indirect object NP is realized outside V^0, the P *to* is inserted adjacent to it as its case-assigner.

Stowell's solution to the non-productivity issue incorporates aspects of earlier lexicalist semantic proposals. He notes that obligatory double object verbs such as *cost* indicate a kind of possession of the direct object by the indirect. Presumably, the indirect object has a Possessor theta-role in these cases, but not the role of Goal. On the other hand, some indirect object NPs receive the role of Goal but not that of Possessor, as exemplified in *David sent a package to England*. Stowell proposes to attribute the dative alternation to an indirect object having the double role of Goal/Possessor (or Goal/Beneficiary in the case of FOR-datives). When a V allows a dual interpretation, the indirect object NP may incorporate into the V or not. If V assigns only the Possessor role, NP must incorporate; if V assigns only the role of Goal, incorporation is disallowed.

For Stowell, indirect objects receive theta-roles differently according to their structural position after Dative Movement. That is, if Possessor is something like a 'principal' theta-role, the NP must be inside V^0, while a Goal as a principal theta-role is incompatible with such an NP. However one formalizes this relation between word formation and theta-roles, it is the output of his Dative Movement that is playing the classical role of deep structure. That is, (23) represents the level relevant for theta-role interpretation, which is in turn input to a transformational derivation. But any rule that applies prior to deep structure in a Government-Binding framework is not a transformation but a lexical relation. Finally, then, Stowell's is a lexicalist solution.

Hellan (1991b) proposes the following covert structure to solve the case-marking problem (ii) of section 2.3. He adopts a right-branching base structure, as shown in (24):

(24)



The verb marks the topmost NP-DO for case, in accordance with Stowell's (1981) adjacency requirement. Case-marking then percolates down to the lower NP-DO. The indirect object is inherently case-marked by virtue of its position in the structure, similar to Chomsky's (1981) proposal for how an English possessive NP receives its case. Like the 'small clause' analyses we review later, one can say that Hellan's (24) straightforwardly expresses Stowell's idea that the indirect object 'possesses' the direct object in the double object construction. On the other hand, the notion of case being assigned without a case assigner contravenes the original concept of abstract case, which pairs case assigners with case-marked NPs. Moreover, as will be seen in section 4.4, the existence of a single constituent uniting both double objects is problematic.

The above four Government-Binding variants of base-generated double objects (Czepluch, Hellan, Kayne 1984b, and Stowell) do not provide an appropriate underlying structure for the asymmetrical c-command required by Barss and Lasnik (1986), or for explaining the derived direct object properties (iii) and (iv) of section 2.3. In addition, beyond one or two considerations that each author brings up in support of his idea, their modifications away from an optimal version of case theory, where case assigners assign only one kind of case to a single sister NP along the lines of Structure-Dependent Case (8), don't simplify or explain other areas of grammar.

Our conclusion is that, taken together, the arguments (i)–(v) against flat structures enumerated in section 2.3 settle the first debate. Lexicalist analyses, especially in the Government-Binding framework, have not solved the double case problem (ii). They do not address the compelling cross-linguistic regularities of applicative constructions (iii), summarized below in section 3.2. And they fail to provide the badly needed asymmetric c-command of the deep direct object by the bare indirect object (v). We thus take the position that a double object construction results from transformationally promoting to direct object a deep indirect object of a P, whose untransformed English spell-out is a *to* or *for* phrase. The still debated nature of this transformational process will occupy us in section 4.

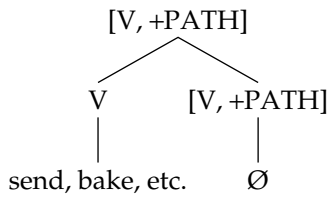
2.5 *Solving non-productivity*

The transformationalist accounts of productive non-Indo-European dative and benefactive applicative constructions have emboldened advocates of dative movement, but a more satisfactory account of its non-productivity in English is still needed. Some variant of Pesetsky's (1995: section 5.1.3) proposal to extend a type of applicative suffix to English (and perhaps other Germanic languages) may solve this problem.

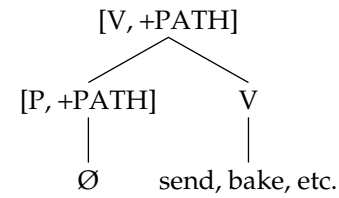
Suppose that English verbs in either TO-dative or FOR-dative alternations occur with a null affix of derivational morphology as in either (25a) or (25b). We leave aside discussion of its features and its role in licensing double objects until section 3.4. For the moment, we take this derivational formation to be 'right-hand headed' in the sense of Williams (1981b), as in either (25a) or (25b), and we

assume that this null affix shares a feature PATH with the directional P that it appears to replace:

(25) a.



b.



Under this analysis, English now conforms to a cross-linguistic generalization, which Den Dikken (1995c: ch. 5) refers to as the "systematic homophony of so-called applicative and causative affixes." He fully illustrates this phenomenon, based on parallel verb affixations in Indonesian, Nahuatl (Tuggy 1987), and Sanuma (Borgman 1989). Using Pesetsky's zero morpheme, we can say that English applicatives and English causatives for many base adjectives are also homophonous: they share a (non-productive) zero affix.[22]

On one level, this proposal just displaces the problem of non-productivity into the lexicon, but this is where both morpheme lists and null morphs are known to play a role (Pesetsky 1995: 128–129). For example, it allows for natural expression of a generalization about word formation that must haunt even the most devoted partisans of lexical unpredictability: namely, general classes of 'short' verbs in English enter into dative alternations productively.

In this regard, Fraser's (1974: 13–15) discussion of which verbs combine with postverbal particles is pertinent, for the same class of English verbs productively exhibits TO-dative and FOR-dative alternations. "Surprisingly enough, it is the phonological shape of a verb that determines to a large extent whether or not it can combine with a particle. . . . the majority of verbs occurring with particles are monosyllabic and the remainder are made up primarily of bi-syllabic words which are initially stressed." The English lexicon must thus contain the following restriction on 'null applicatives':

(26) **Restricted style:**
Verb stems whose only stress is initial combine productively with a null applicative affix.[23]

Once (26) is properly expressed as derivational morphology, relatively few double object verbs have to be listed separately as appearing either optionally or obligatorily with the null applicative affix. For the TO-dative alternation, the following verbs with some non-initial stress are listed in Herriman (1995: 61, 104): *accord*, *administer*, *advance*, *afford*, *allocate*, *allot*, *allow*, *apportion*, *assign*, *assure*, *award*, *begrudge*, *bequeath*, *concede*, *deliver*, *deny*, *extend*, *forbid*, *permit*, *prohibit*, *recommend*, *refund*, *refuse*, *reimburse*, *remit*, *repay*, *return*, *telegraph*, *telephone*, and *vouchsafe*. For the FOR-dative she lists (1995: 124, 146) *design*, *embroider*, *ensure*, *furnish*, *guarantee*, *occasion*, *prepare*, *prescribe*, *procure*, *provide*, *purchase*, *reserve*, and *secure*.

However, most of these 'exceptions' can be analyzed as containing a prefix and an initially stressed stem.[24]

In standard American speech, verbs that carry secondary or non-initial stress are usually incompatible with a dative alternation. However, (26) may be relaxed to a style (27) in which any singly stressed English verb can take double objects. This accounts for examples like the following, although they are still excluded in the restricted style: *We delivered Mary the package*; *Bill embroidered her a blouse*:

(27) **Relaxed style:**
Verb stems lacking secondary stress combine productively with a null applicative affix.

This change of style drastically shortens Herriman's list of exceptional double object verbs. In the other direction, some of the non-alternating double object verbs discussed in section 2.3 (e.g., *ask*, *bet*, *charge*, *cost*, *deny*) may be lexically listed as obligatorily requiring the null applicative affix; little would seem to turn on this.

Gropen et al. (1989: 243–245) list some verb classes that don't occur with double NPs even though they satisfy (26). Two types are "manner of speaking" verbs (*scream*, *whisper*, *yell*) and verbs of continuously caused motion (*drag*, *move*, *push*), exemplified in (18) in section 2.2. Indirect objects of such verbs are always expressed in *to*-phrases. In these cases, following Larson (1988b: section 5), it may well be that the P's independent theta-role assigning content causes it to be present throughout the derivation. In the terms of Emonds (1993), reviewed here in section 4.5, such Ps are lexicalized in deep structure, which blocks their object NP from advancing to direct object. Pesetsky (1995) and Den Dikken (1995c) propose a similar account in terms of a lexical P that assigns a theta-role characterized by "continuous imparting of force." As a reviewer notes, perhaps the term 'indirect object' is simply not appropriate for objects of these contentful Ps.

3 An emerging consensus: transformational raising of the indirect object to direct object position

3.1 Restrictions on promoted indirect objects

3.1.1 The Restriction on A'-extraction

In section 2.4, we concluded that a double object construction results from transformationally promoting to direct object a deep indirect object of a P, whose untransformed English spell-out is *to* or *for*. An anti-transformationalist counter might claim that the apparently 'promoted' italicized objects in (1b–2b) are simply parallel to the italicized deep objects with 'Goal' theta-roles in (28b):

(1) b. Mary sent *each family member* a present.

(2) b. Carolyn baked *my children* that cake.

(28) a. Mary provided a present to each family member.
Carolyn supplied that material to my children.
b. Mary provided *each family member* with a present.
Carolyn supplied *my children* with that material.

In addition to the telling semantic arguments of Anderson (1971) against this view, a cross-linguistic syntactic property also suggests that the surface objects in (1b–2b) have a different syntactic status from those in (28b). Generally, Goal direct objects can move freely, exactly like other direct objects, to any peripheral position (e.g., by *wh*-fronting or rightward Complex NP Shift). However:

(29) **Restriction on A′-extraction:**
Movement of a 'promoted' indirect object NP unmarked by a P or dative case to a non-argument position is ungrammatical.

This restriction on what Government and Binding calls 'A′-movements' holds for both Goals (*to*-datives) and Beneficiaries (*for*-datives):[25]

(30) a. ??Which sister$_i$ shall we send t_i a present?
??Who$_i$ did Carolyn bake t_i that cake?
b. *This is the friend$_i$ (that) {Mary sent t_i a present/Carolyn baked t_i that cake}.
c. *Kids$_i$ are always easy to {tell t_i a story/buy t_i presents}.
d. *Charlie {sent t_i a book/baked t_i that cake} [the girl who lives next door]$_i$.

For English, this restriction on *wh*-movement is first noted in Fillmore (1965). Ross (1986) observes that indirect objects without P cannot undergo rightward Complex NP Shift (30d) either. Further examples of (29) are presented and discussed in Oehrle (1976), Ziv and Sheintuch (1979), Hornstein and Weinberg (1981), Whitney (1982, 1983), Czepluch (1982), Barss and Lasnik (1986), Baker (1988a: section 5.4), and Hellan (1991b).

As Whitney (1982, 1984) observes for English, the restriction (29) generalizes to all Government and Binding 'A′-movements', that is, movements to non-argument positions, whether to the left or right, as in (30d).[26] This bi-directionality in itself excludes any account of (29) that depends on a left–right asymmetry, such as many theories of parsing and some syntactic theories. These movement restrictions apply even though the dative NP behaves like a direct object in other ways (see section 3.2) and is in a position (next to the verb) in which a base-generated direct object would be movable.

This descriptive generalization is no artifact of English. It holds cross-linguistically for applicative languages such as Chicheŵa (31) and Chamorro (32) (data reproduced from Baker 1988a: 291–292):[27]

(31) a. Atsikana a-na-perek-er-a mfumu chitseko.
girl SP-PAST-hand-APPL-ASP chief door
'The girl handed the chief the door.'
b. *Iyi ndi mfumu imene ndi-na-nen-a kuti atsikana
This is chief which 1sS-PAST-say-ASP that girl
a-na-perek-er-a chitseko
SP-PAST-hand-APPL-ASP door
'This is the chief which I said that the girl handed the door.'

(32) a. Hu tugi'-i i che'lu-hu ni kätta.
1sS-write-APPL the sibling-my OBL letter
'I wrote my brother the letter.'
b. *Hayi t-in-igi'-i-n-ñiha ni kätta?
who NOM-write-APPL-LK-their OBL letter
'Who did they write the letter (to)?'

(31b) contrasts with the permitted relativization of an ordinary direct object (Baker 1988a: 289):

(33) Iyi ndi mfumu imene ndi-ku-ganiz-a kuti a-na-on-a.
this is chief which 1sS-PRES-think-ASP that 3sS-PAST-see-ASP
'This is the chief that I think she saw.'

Before reviewing how authors have treated restriction (29) theoretically, it is important to appreciate that this kind of syntactic property strongly suggests that a promoted Goal phrase, even though it has the position and many other properties of a direct object, is not simply that. Even without a fully satisfactory account of the cross-linguistic paradigm (29), a promotion analysis at least distinguishes between (1–2) and (28b). Simply considering double object constructions to be base-generated provides no reason at all to expect different behavior under A'-movement.

3.1.2 Accounts of the Restriction on A'-extraction

Oehrle's (1976) base analysis includes the statement that inner NPs, that is, those followed by a direct object, are inaccessible to movement rules, but this basically only rephrases the problem posed by restriction (29). Moreover, Baker (1988a: 295) points out that explanations based on the inaccessibility of an inner NP (as defined by the simultaneous presence of an 'outer NP') encounter a further difficulty. In Chicheŵa and Chamorro, morphologically identifiable applicatives with promoted oblique NPs can be formed with certain classes of intransitive verbs. Extraction of the applied object in these cases is just as bad as extraction

of the inner object of a transitive verb. Accounts of (29) that depend on the presence of two NPs, rather than on the derivational status of the promoted NP, are thus inadequate.

Stowell's (1981) solution for the Restriction on A'-extraction (29) is somewhat more attractive. Recall that in his analysis (23), a bare English indirect object (of whatever length) is incorporated under the V by a 'word formation rule'. It then follows that the inner NP cannot be further moved, as syntactic rules never apply to parts of words. Larson (1988a) also invokes some type of inaccessibility restriction based on a verb forming a deep constituent with an indirect object.[28] Both Stowell and Larson circumvent the problem of the bare dative NPs' seeming ability to move (only) to A-positions by claiming that 'dative passives' (34) involve movement from an outer, non-promoted position directly to the subject position. Since the deep indirect objects then receive case after passivization, there is no need for an oblique *to* or *for* with a trace t_k:

(34) We_k might be given a book t_k.
A $woman_k$ was offered the job t_k.
The $guests_k$ were finally fixed an appropriate lunch t_k.

Once English dative passives are not derived directly from double object constructions, however, an important generalization is lost. Early generative analyses observed that English verbs which do not permit prepositionless double objects prohibit dative passives as well:

(35) *Our club might be {distributed/donated/suggested} some books.
*A woman was {demonstrated/outlined/revealed} the procedure.
*The guests were finally {concocted/designed/reordered} an appropriate lunch.

That is, dative passives appear to derive, in English at least, from double object constructions. Hoekstra (1995: section 3) provides two further arguments against passivizing indirect objects in their base position. Along the same lines, Romance languages lack dative passives because they lack bare double objects. Thus, the following descriptive generalization encompasses both English and Romance:

(36) **Dative passive Restriction:**
Passivization of indirect objects (unmarked by any dative case) results from moving NPs already promoted to direct object.

The Stowell and Larson accounts of dative passives contravene (36) and thus fail to predict data such as (35) naturally.

Czepluch (1982) takes a different approach to the restriction in (29). As seen in section 2.4, he analyzes bare datives in terms of a base-generated PP headed by an empty P. He rules out extraction of the bare dative NP through a constraint

on movement out of empty-headed phrases, which would leave a presumably unacceptable 'layered trace' under a PP. In order to nonetheless allow dative passives, Czepluch must extend case theory so that these layered traces are unacceptable only under the conditions of A'-movement. That is, a sentence like **Who did John give the book?* is ruled out because the trace of *who* cannot be either directly or indirectly case-marked.

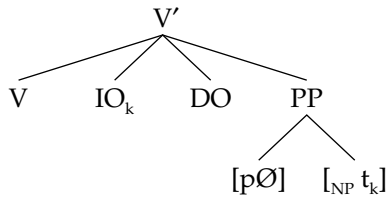
Den Dikken (1995c: section 4.2) provides a somewhat similar account of (29) that also involves the structure of a PP. Summarizing relevant data from a range of authors, he concludes that only "short" (clause-bound) *wh*-movement of promoted IOs can be grammatical, as in (30a), and this only in some languages, such as Dutch, Norwegian, and certain dialects of English. For these systems with grammatical "short" overt *wh*-movement of indirect objects, i.e., which seems to contravene (29), Den Dikken argues that an entire PP headed by an empty dative-assigning P is fronted.[29] In contrast, he claims that many A'-extractions, including at least those in (30b–c), involve Empty Operator Movement or more generally simple movement of an NP, and these are always excluded (1995: 188). Our formulation of (29) does not require P to be overt, and hence countenances Den Dikken's analysis or others which permit a fronting of an empty-headed PP.

Baker (1988a: 299) proposes a different refinement of Czepluch's approach, which he calls the Non-Oblique Trace Filter. This filter blocks any trace of an A'-operator lacking oblique case if its non-verbal governor incorporates into a higher verb. By stipulating the presence of an operator in the filter, he automatically exempts passive traces from it while still blocking A'-movements, or in other words the restriction stated as (29). It is doubtful whether this ad hoc device works empirically, since it also appears to wrongly rule out A'-movement of a passivized bare indirect object, which is cross-linguistically permitted (Alsina and Mchombo 1990: section 2).

Hellan (1991b) illustrates (29) for Mainland Scandinavian, arguing that the trace of an A'-movement of a bare indirect object is ill-formed, rather than movement itself. In his structure (24) for double objects, the verb governs just the direct object; the bare indirect object is licensed and receives a theta-role only by virtue of its structural position (akin to a possessive NP). Moreover, he claims that such lexical NPs do not need to receive an abstract case, whereas traces of *wh*-movement uniformly do require case. Hence, those NPs licensed by virtue of their structural position, and not by a lexical licenser, are precisely those which cannot undergo A'-movement (29). A virtue of this proposal is that it can account for why possessive NPs in English, for example, are not available for A'-movement either. However, it must be observed that extracting possessive NPs (the Left Branch Constraint of Ross 1986) is significantly less acceptable than violating (29).

Whitney (1982, 1983) proposes an account of (29) that does not require extending case theory or special restrictions on movement of the inner NP. Like Czepluch and Baker, she assumes that indirect objects are generated under a PP. They then move to their surface position next to the verb, leaving a trace in the usual way:

(37)



All further movements to an A′-position, including Complex NP Shift and other A′-movements (Whitney 1983, 1984), leave a trace that serves as a variable in LF. Further movement of indirect objects is then blocked by Chomsky's (1982: 31) principle that a variable "must be A-free in the domain of the operator that binds it." The variable in the position of IO_k is under the first branching node V′ over the original indirect object trace, therefore not A-free.[30]

This analysis correctly predicts that *wh*-movement, Complex NP Shift, and other movements of bare indirect objects to A′-positions are ruled out, while movements to an A-position, like passive, are acceptable. It also distinguishes base-generated NPs next to the verb, which are extractable, from indirect objects that have been promoted to direct object position, which are not.

Whatever the ultimate fate of these competing proposals for explaining the restriction (29), this robust cross-linguistic paradigm itself strongly suggests that bare indirect objects are not generated in the base as direct objects but rather move to their surface position. The restriction on their further movement, which base-generated direct objects are not subject to, can be satisfactorily accounted for only if their transformational history is distinct from that of direct objects.

3.1.3 Scope Freezing: confirmation of indirect object promotion

Some double object studies whose structural proposals we will review in section 4, e.g., Aoun and Li (1989) and Larson (1990), have brought out a property of double objects that confirms their status as a derived, non-base construction. In English at least, many quantified NP arguments may optionally take 'wide scope' over a higher one in base constructions:

(38) a. *Two new topics* might reinvigorate **every girl in the class**.
b. He assigned *two new topics* to **every girl in the class**.
c. It seemed to *every girl in the class* that **two new topics** were needed.

In (38a–b), the topics may vary as a function of the girls, i.e., the lower bold NPs may take wide scope over the higher italic NPs. In the other interpretation, the topics are fixed independent of every girl (i.e., the higher italic NPs take wide scope). Similarly in (38c), the lower bold NP may take either wide scope (the topics are fixed) or narrow scope (the topics vary with the girls).

But as Aoun and Li (1989, 1993b) point out, a prepositionless indirect object as in (39) seems to tolerate only wide scope. That is, (39) does not typically mean

that every girl had the same topics. Rather, the girl is fixed first (wide scope) and then the topics:

(39) He assigned *every girl in the class* **two new topics**.

What is of interest in this regard is that wide-scope readings of the higher italic NPs are also strongly favoured in structures derived by subject raising (40a), passive (40b), and, as pointed out by a reviewer, locative inversion (40c):

(40) a. *Two new topics* seemed to **every girl** to be unfair.
b. *Every girl in the class* might be reinvigorated by **two new topics**.
c. *On two big billboards* were (painted) **every party's slogans**.

The property illustrated in (39)–(40) is called 'Scope Freezing'. A plausible initial description of what is at stake involves movements into argument positions, which in a range of cases are apparently subject to (41):

(41) **English Scope Freezing:**
NPs moved into A-positions must take wide scope over NPs that they c-command.

We are often somewhat sceptical of the relevant acceptability judgments, and consequently find it difficult to use Scope Freezing to evaluate the merits of the rather complex structures and derivations proposed by various authors. What seems clearer and actually more to the point for our purposes is the fact that this phenomenon pretty clearly groups together promoted prepositionless indirect objects with other 'moved NPs' such as those raised to SPEC(IP) in (40). Thus, while it is easy to interpret the base-generated example *He talked with every girl in the class about two new topics* with wide scope on topics (there are only two), a parallel interpretation of (39) seems at best forced and unnatural.

From this perspective, whatever its ultimate structural analysis, it is plausible to conclude that Scope Freezing (41) constitutes a second diagnostic for the derived rather than base-generated status of bare indirect object NPs.

3.2 Direct object properties of promoted indirect objects (Relational Grammar 3 → 2)

Section 3.1.1 has highlighted an important syntactic property (29) of prepositionless indirect objects that 'betrays their origins': these objects differ from direct objects in resisting A'-movements. Deep direct objects with a Goal role are not subject to this restriction: *What did you spray with paint? Who did you approach on the street?* Provided promoted indirect objects leave a trace of some sort, an account of (29) in terms of a general condition on variable binding is in principle available.

A second restriction on promoted indirect objects is 'Scope Freezing', i.e., their inability to house (English) quantifiers with narrow scope, as discussed in section 3.1.3. Finally, a third restriction, observed in Baker (1988a: 278–279, 1988b), is that the head indirect object noun in benefactive applicatives cannot 'incorporate' into a governing verb (in contrast to a deep direct object noun). We thus have three independent reasons to believe that bare indirect objects are not simply structural deep objects with Goal theta-roles, but are somehow transformationally derived.

With respect to most other properties, however, dative shifted NPs behave like direct objects, whether or not a language has an overt applicative affix. In Relational Grammar (RG) studies such as Perlmutter and Postal (1983b), this change is described as '3 to 2 advancement', where 2 indicates a direct object. As a result of advancement, a deep or initial indirect object behaves like a direct object with respect to a whole battery of syntactic and morphological diagnostics for direct objects. A side effect of this advancement is that a deep or initial direct object NP is demoted to what RG calls 'chômeur' status. That is, a chômeur NP fails a number of these same diagnostic tests for surface direct object status.

In many languages with productive dative alternations, an overt 'applicative' verbal affix accompanies the advancement to direct object. Marantz (1982) proposes that this situation is typical: when verbs have supplementary overt morphology corresponding to an oblique argument NP, that NP and not the usual direct object behaves like a surface direct object. Baker (1988a: section 5.3.1) refers to this remarkable cross-linguistic pattern as Marantz's Generalization. However, as we see below, advancement is not invariably accompanied by an overt applicative suffix.

3.2.1 Indonesian

Chung (1976) is a thorough RG study of indirect objects in Indonesian (= Bahasa Indonesia), whose basic word order is S-V-O-(PP). "Dative permutes a direct object with an indirect object or benefactive, and deprives the indirect object/benefactive of its preposition. . . . Some form of the benefactive suffix . . . is typically added to the verb" (1976: 41). She emphasizes that P is omitted if and only if "the IO is moved between the DO and the verb," exactly as specified in the early transformational rule (9) for English:

(5) a. Ali mem-beli telefisi untuk ibu-nja.
Ali TRN-buy television for mother-his
'Ali bought a television for his mother.'

b. Ali mem-beli-kan ibu-nja telefisi.
Ali TRN-buy-APPL mother-his television
'Ali bought his mother a television.'

Chung then goes on to provide extensive and convincing arguments that an indirect object promoted by Dative behaves as a direct object in Indonesian. "The IO can, for instance, be passivized. . . . It can be replaced by the true reflexive, *diri* 'self'. . . . It can undergo Object Preposing, if the subject of the sentence is a

pronoun [the normal condition on this rule]. . . . And the original IO is subject to the major [deletion] strategy, with *jang*, for Relative Clause Formation . . . In contrast, [for any of these diagnostics] the underlying DO no longer behaves like a direct object after Dative has applied" (1976: 58–60).

3.2.2 Kinyarwanda

Kimenyi's (1980) analysis of Kinyarwanda advancement is another detailed RG study of double objects. We have used the succinct summary of this work in Poser (1982).

Kimenyi finds evidence for several transformational alternations of complement phrases in the language, and the various rules promoting oblique objects introduce applicative inflections on the verb. One of these rules promotes indirect objects to direct object status. His study enumerates an impressive number of corresponding operations distinguishing Kinyarwanda direct from oblique objects, which he refers to under the rubrics of Passive, Stativization, Object–Subject Reversal, Pronoun Incorporation, Reflexivization, Clefting, Pseudo-Clefting, Exclusive Insertion, and Existential Insertion. Using the same logic as Chung's study, he then shows that Kinyarwanda prepositionless indirect objects invariably act like direct objects with respect to these operations.

3.2.3 Tzotzil

Aissen's (1983) RG study of indirect objects in Tzotzil shows that arguments for advancement to direct object can be constructed even in the absence of a dative alternation. She specifically couches her analysis in terms of derivations: "While my conception of sentence structure follows that of relational grammar in its essentials, I assume that these levels of relational structure do constitute a derivation, roughly in the spirit of transformational grammar" (1983: 274).

A special characteristic of Tzotzil is that its lexicon lacks P morphemes whereby indirect objects can surface in PPs. "Two facts about Tzotzil obscure the existence of Indirect Object Advancement. First is the fact that [42] is the only way to say 'I sold pigs to Sun'. . . . Second, *čitom* 'pig' in [42] is, it will be claimed, the initial direct object, but not final direct object, this relation being held by *li Sune*. *Citom* is a final direct object chômeur" (1983: 272–273):

(42) ʔI-h-čon-be čitom li Sune.
ASP-ERG1-sell-APPL pig the Sun
'I sold the pigs to Sun.'

Aissen makes the case for advancement by isolating three tests for direct objecthood: direct objects agree with a verb in person and animate number (43a), and they are the only passivizable complements:

(43) a. Mič-a-mah-on?
Q ASP-ERG2-hit-ABS1
'Are you going to hit me?'

b. Mi mu š-a-čon-b-on l-a-čitome?
Q-NEG ASP-ERG2-sell-APPL-ABS1 the-your-pig
'Won't you sell me your pigs?'

She observes that in the double object construction "the verb agrees in person with the indirect object and not the direct object" (1983: 281), as exemplified by the obligatory first person object agreement in (43b). Similarly, the Tzotzil verb agrees in animate number with promoted indirect objects but not demoted direct objects. She concludes, "There are three kinds of evidence that the initial indirect object is the final subject of the passive sentence: evidence from person agreement, number agreement, and word order" (1983: 282–283).

A lexicalist response to Aissen might be to view Tzotzil Goal phrases as simple variants of direct objects. We reproduce two of her arguments against this position: (i) The verbal suffix *-be* in (42–43), which we gloss as applicative, may not occur with simple transitives. (ii) A different verbal suffixation with *-van*, which indicates a discourse-specified human direct object, "is quite regular and . . . there appear to be no lexical exceptions" (1983: 292). However, this *-van* apparently marks only *deep* direct objects, since it cannot replace a subject of an intransitive complement to a causative (44b). The fact that (fully productive) *-van* is equally ungrammatical with an indirect object signaled by *-be* (44c) confirms that the latter cannot be a deep structure direct object either:

(44) a. (causative with overt first person lower subject)
L-i-y-ak' lok'-ik-on.
ASP-ABS1-ERG3-let leave-INTR-ABS1
'He let me leave.'
b. (causative with discourse-specified human object)
*ʔI-ʔak'-van lok'-uk.
ASP-let-OBJ leave-INTR
'He let people leave.'
c. *Tas-čon-be-van čitom.
ASP-sell-APPL-OBJ pig
'He is selling people pigs.'

That is, while the bare indirect objects of Tzotzil are indeed surface direct objects, they are not deep direct objects but rather advance to that position in a derivation.

3.2.4 Chicheŵa

On the basis of his work with Sam Mchombo, Baker (1988b) describes a range of double object properties of the Bantu language Chicheŵa according to which bare indirect objects behave like direct objects, while the deep direct objects which follow them do not. Only the bare indirect object in Chicheŵa (i) must be adjacent to the verb (1988b: 370); (ii) undergoes passivization in all dialects (1988b: 386); (iii) "can be expressed by the object prefix on the verb" (1998b: 354); and (iv) cannot be relativized in accord with the restriction (29):

(31) a. Atsikana a-na-perek-er-a mfumu chitseko.
girl SP-PAST-hand-APPL-ASP chief door
b. *Iyi ndi mfumu imene ndi-na-nen-a kuti atsikana
This is chief which 1sS-PAST-say-ASP that girl
a-na-perek-er-a chitseko
SP-PAST-hand-APPL-ASP door

An additional property confirming the derived nature of the Chicheŵa bare indirect object is the fact that it may not undergo Baker's 'noun incorporation'; this possibility is reserved for nouns governed by the verb in deep structure (reminiscent of the Tzotzil suffix *-van*). Baker's structural explanation for these facts, while transformational, does not sanction any phrasal movement of NP within the VP, but rather employs 'P-incorporation' into the V; this incorporated P is the source of the Chicheŵa applicative suffix. We return to his analysis in section 4.1.

3.2.5 Scandinavian

Mainland Scandinavian languages, lacking overt oblique case, have a fairly productive dative alternation similar to English, described in Holmberg and Platzack (1995). The bare indirect objects act like their English counterparts: they must precede and asymmetrically c-command the deep direct object and they freely passivize in either periphrastic or synthetic passives, as seen in (45b–d). As in all Germanic languages, there is no overt applicative morphology on the verb. The following examples are Swedish:

(45) a. Johan visade mej en intressant bild
Johan showed me an interesting picture
b. (periphrastic passive)
Jag blev visad en intressant bild
I was shown an interesting picture
c. (synthetic passive)
Jag visades en intressant bild
I showed-PASS an interesting picture
d. Johan {blev förärad/ förärades} en medalj
Johan {was presented/ presented-PASS} a medal

The passive formed by moving the deep DO is apparently marginal in Swedish, but allowed with some verbs:

(46) a. (periphrastic passive)
?Bilden blev visad mej tre gånger
the-picture was shown me three times
b. (synthetic passive)
?Bilden visades mej tre gånger
the-picture showed-PASS me three times
c. Medaljen {förärades/ blev förärad} Johan
the-medal {presented-PASS/ was presented} Johan

An informant reports that in Norwegian, IO and DO passives are apparently equally good, while Danish is said not to accept passivising the deep direct object in a double object construction. The analysis of Holmberg and Platzack (1995) is reviewed here in section 4.3.4.

3.2.6 English

This language is poor in diagnostics that syntactically distinguish a surface direct object among bare NPs. However, some can be constructed; cf. note 1. Emonds (1972a) tests the PP-like nature of the direct object in a double object construction by its interaction with intransitive prepositions (particles). Intransitive prepositions can follow a direct object, as shown in (47a), but not a PP, as shown in (47b):

(47) a. The secretary sent a memo out to the committee.
Bill fixed a drink up for John at the party.
b. *The secretary sent a memo to the committee out.
*Bill fixed a drink for John up at the party.

For speakers who allow a particle at all within a double object construction (e.g., the authors), the first or promoted NP behaves like a direct object in (48a) while the second NP behaves like a PP, as seen by the ungrammaticality of the particles in (48b):

(48) a. The secretary sent the committee out a memo.
Bill fixed John up a drink at the party.
b. *The secretary sent the committee a memo out.
*Bill fixed John a drink up at the party.

The pattern is considered to have quite different implications in analyses that group double objects into small clauses, such as Kayne (1984c) and Den Dikken (1995c: ch. 3). We return to their reinterpretations of (47b) and (48b) in section 4.2.[31]

A second test distinguishing English derived direct objects from chômeur NPs involves shifted quantifiers. Chung (1976: 81–82) observes that in Indonesian, non-adjacent 'floated' quantifiers are fully acceptable as modifiers of subjects and direct objects, but not as modifiers of PPs or chômeurs. The same (admittedly rather weak) contrast holds in English, where the test concerns not quantifiers at the end of the clause as in Indonesian, but rather quantifiers shifted just to the right of the NP they modify. These NPs with floating modifiers can be either direct objects (49a) or promoted indirect objects (49b), but they cannot be PPs, as seen in (49c–d):

(49) a. We sent the books all {by mail/to that man}.
I fixed those drinks both {with ice/for Sue}.
b. Mary {brought/sent} the boys {each/both} a present.
c. We sent a refund to those men (??all) by mail.
d. I fixed those drinks for the girls (??both) with ice.

In certain analyses of section 4, a demoted or chômeur NP is embedded inside an additional surface XP. Hence, like an object of a P, such an NP fails to properly c-command shifted quantifiers, which seems to be the correct empirical result:

(50) We sent that man [$_{XP}$ [$_{NP}$ the books]] (??all) by mail.
I fixed Sue [$_{XP}$ [$_{NP}$ those drinks]] (??both) with ice.[32]

Summarizing, since an English quantifier can only shift to the right of an NP in direct object position, only the promoted NPs and not the chômeurs resulting from indirect object movement properly c-command these Q.

The diagnostics for surface objecthood from diverse languages, as reviewed throughout this section, seem to lead to an inescapable conclusion, reflecting Marantz's Generalization, that double object constructions (that is, those where neither object exhibits an overt oblique case) involve repositioning a deep indirect object in a derived direct object position:

(51) **Consensus on promotion:**
Where a language systematically allows two surface NP objects indistinct from accusatives to have different theta-roles, the thematic or deep indirect object is structurally the surface direct object.

3.3 The Barss and Lasnik Binding paradigms

As observed in section 2.3, Barss and Lasnik (1986) discuss six different paradigms, widely thought to be best accounted for in terms of Chomsky's (1981: ch. 3) Binding Theory and c-command at LF. These paradigms require that the English promoted indirect object in a double object construction asymmetrically c-command the demoted or chômeur NP. The constructions include antecedent/bound anaphor pairings (e.g., *send the two managers each other's foreman* vs. **send each other's manager the two foremen*), quantifier/bound singular pronoun pairing (e.g., *every man*, *his*), weak crossover paradigms, superiority restrictions on *wh*-extraction, and negative polarity pairings. It suffices to summarize here by observing that they are widely taken to establish the conclusion (52):

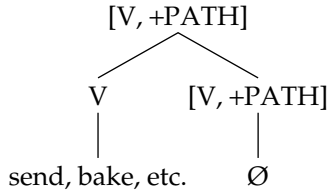
(52) **Consensus on superiority:**
A promoted indirect object surfaces as asymmetrically 'higher' than a deep direct object.

Thus, there has also emerged a consensus concerning whether double object constructions are transformationally derived. Many authors now agree that they are, and the indirect or applied object surfaces in a direct object position asymmetrically higher than the deep direct object, which is somehow 'demoted'. However, there is currently almost total disagreement as to how to best represent that demotion.

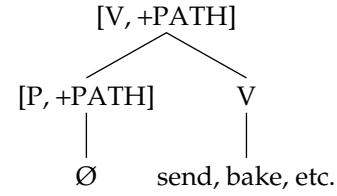
3.4 The position of the applicative affix

Provided we retain the right-hand headedness of English (and most other) morphology, there are only two possible structures (cf. section 2.5) for a null applicative affix on English double object verbs: a null grammatical head V, as proposed in Marantz (1993), or an incorporated P:

(25) a.



b.



We have seen throughout sections 1 and 3 that overt applicative affixes are generally suffixes across languages. Unsurprisingly then, Baker's (1988a–b), which derives them by head movement of P into V (cf. section 4.1), represents the incorporated applicative P as a suffix. However, in a clear majority of well-motivated head movements that give rise to single words, such as noun incorporation and V-raising, a moved head becomes a prefix. This discrepancy in morpheme order within a V then suggests the correctness of (25a) for representing applicatives.

Indeed, the morphemes for the benefactive applicatives in head-final Korean VPs (Choe 1986) and the dative applicatives in complement-final Chinese VPs (Huang 1991) can both alternatively appear as independent V glossed as 'give' in those languages. Moreover, the Korean applicative verb *cwu-* takes the full range of the morphology associated with that language's verbs. Thus, we do not hesitate to hypothesize that applicative suffixes, both overt and covert, are uniformly of category V, in accord with the expectations of Lieber's (1980) and Williams's (1981b) word-internal Right Hand Head Rules.

Assigning applicative suffixes to the category V additionally explains why languages fail to have parallel constructions in other types of phrasal projections; the complex V structure of (25a) but not the P-incorporation of (25b) accounts for the cross-linguistic impossibility of applicative nouns or applicative adjectives, for example.[33]

4 The ongoing debate: the position of the direct object in the presence of promotion

4.1 Double objects result from incorporation of a null Case-marker

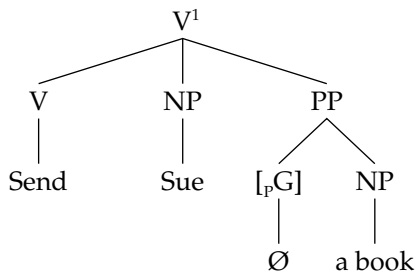
Most Relational Grammar analyses have consistently argued that an indirect object ('an initial 3') in applicative constructions simply replaces the direct object ('becomes a final 2'). From this it correctly follows that promoted indirect objects

act as direct objects with respect to later processes that depend on the final grammatical status of an NP, exactly as required by the considerations of section 3.2. Under this view, the (optional) fate of a deep or initial direct object in RG is to be demoted into the 'chômeur' (unemployed) status of Perlmutter and Postal (1983b), though still remaining vaguely associated with the main verb. In phrase structural terms, the demoted deep object NP remains somewhere in the deep VP.

However, both promotion and demotion within VP contravene Chomsky's (1981) Projection Principle, at least as it has been widely understood. Thus, the Relational Grammar conception of '3 to 2 advancement', translated into Government-Binding terms, violates the usual formulation of the Projection Principle twice.

One way to ensure that a promoted indirect object both acts as a direct object for several syntactic processes and at the same time asymmetrically c-commands an RG chômeur is to claim that the required surface relation of the double objects is simply their deep relation. That is, no NP movement or promotion occurs. This can be implemented by postulating that some empty (surface) P introduces the thematic direct object, as in (53):

(53)



This is Pesetsky's (1995: 125) proposal: "The second object of a double object construction . . . is [an NP] introduced by a null Case-assigning element G." This empty G selects an NP with a 'Theme' semantic role (i.e., a direct object) and "must move from its base position [in (53)] and affix . . . to the governing verb" (1995: 127). Pesetsky goes on to discuss various possibilities for fixing the category of G, and tentatively concludes that the best candidate is P.[34]

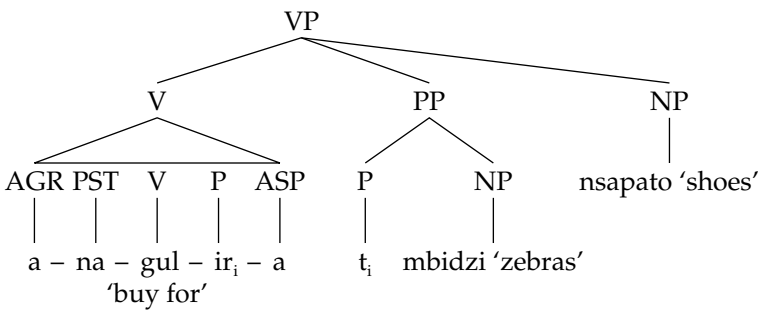
Pesetsky's hypothesis provides a simple theory of structure-dependent case-assignment (one case-assigner for each NP; section 1.2) as well as an explanation for the non-productivity of the English double object construction (section 2.5). Nonetheless, it reduces to a latter-day version of lexicalism, since the incorporation of P plays no structural role in either the syntax or the interpretation of the two NPs. Its disadvantages are consequently due to the fact that the bare indirect object has no transformationally derived character: (i) Anderson's (1971) general semantic properties of direct objects, which promoted indirect objects lack, become stipulated aspects of the item G (Pesetsky 1995: 179–180); (ii) the base structure (53) cannot explain the Restriction on A'-extraction (29); (iii) Aissen's

(1983) arguments against deep representations like (53) for Tzotzil go unanswered (section 3.2.3); (iv) there is no explanation for why promoted indirect object nouns exhibit 'Scope Freezing' (section 3.1.3) or cannot undergo the further step of incorporation in a language with that option (Baker 1988b).

In addition, overt applicative realizations of incorporated Ps are generally homophonous with Goal rather than Theme prepositions (e.g., Chinese *gei* 'to'; Zhang 1990); this tendency creates awkwardness for the structure (53).

Pesetsky's proposal is structurally similar to, but derivationally distinct from, an earlier, extremely influential proposal of Baker's (1988a, 1988b). Baker accounts for Marantz's Generalization by a variant of (53) in which a null surface P introduces the first (indirect) rather than the second (direct) object. Unlike Kayne's earlier proposal for an empty P which remains in situ, discussed above in section 2.4, Baker claims that a deep P transformationally incorporates into V, leaving a trace and surfacing as overt dative and benefactive applicative morphemes, as in the Chicheŵa illustration (54):

(54)



(Baker 1988a: 263)

According to Baker, an empty P cannot govern or assign case to its object, so this NP must receive case from some other source. He achieves this and explains many other derived direct object properties of RG's promoted indirect objects by utilizing his quite convincing and general Government Transparency Corollary (Baker 1988a: 64). According to this proposal, if a head Y (here P) adjoins to a higher head Z (here V), then a phrase otherwise governed by Y becomes governed by Z. Since the complex V (V + P) in (54) then governs the stranded NP, the latter is assigned accusative and treated as a direct object. Incorporation and Government Transparency thus together account for the fact that deep oblique NPs can behave as surface direct objects. To further ground this system empirically, Baker (1988a: ch. 5) surveys in detail several properties of applicative systems rather schematically reviewed in section 3.2 above.[35]

Baker's and Pesetsky's analyses of double object constructions have in common that they respect the standard interpretation of Chomsky's (1981) Projection Principle: neither analysis modifies the position of any complement NP in the course of a derivation, and consequently no single VP contains multiple links in a single argument chain. A further merit of Baker's framework is that

transformational P-incorporation (a subcase of head movement) accounts for the difference between the deep and surface status of the bare indirect object; this 'inner NP' is governed by P in deep structure and hence lacks properties of deep direct objects, but by V in surface structure, whereby it acquires direct object properties through Government Transparency.

Baker's 'transformationalist incorporation' (54) is supported by several intricate properties of the applicative systems he examines, and it escapes the criticisms we levelled against Pesetsky's 'lexicalist incorporation' analysis (53). Nonetheless, (54) appears to have two serious weaknesses. First, the asymmetric c-command required for the paradigms of Barss and Lasnik (1986) is exactly the opposite of that in (54), as observed in Emonds (1993), Marantz (1993), and Pesetsky (1995). Since the deep direct object asymmetrically c-commands the indirect object at the end of the derivation, the binding properties holding between double objects should be the opposite of what holds for English double objects, or at least the second 'outer' NP should act like it c-commands the first.

Second, Baker is left without a general device by which the deep or 'demoted' direct objects in (54) can acquire case, or at least pass the Case Filter. Consequently, he develops two alternatives in his section 5.3.4, one in terms of a highly stipulative extension of case theory and a second in terms of a rather abstract 'LF incorporation' of the thematic direct object (thus exempting it from the Case Filter in his system). The revised case theory not only subscribes to a non-explanatory notion of autonomous case (cf. section 1.2), but also extends the inherent vs. structural case dichotomy in several directions.[36] Pesetsky's (1995) variant on Baker's incorporation is in fact principally motivated by his explicitly less baroque view of case assignment.

Baker's second alternative for satisfying the Case Filter abandons assigning case to the second NP in a double object construction. Rather, he proposes 'N-incorporation in LF' for the chômeur of the dative alternation which would otherwise violate case theory. This sidestepping of the Case Filter seems to be pretty much an untestable hypothesis, though he tries to turn the obligatory incorporation of second objects in Southern Tiwa applicatives to his advantage.[37] It is hard not to conclude that such purely abstract use of incorporation has no effect other than rendering the incorporated constituents essentially exempt from any claims of grammatical theory.

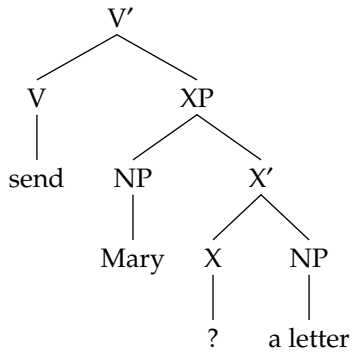
Finally, although Baker's structure (54) provides a means for formulating a 'Non-Oblique Trace Filter' to explain the Restriction on A'-extraction (29), the actual formulation and workings of his filter seem ad hoc (cf. section 3.1.2).

4.2 *Double objects are two arguments in small clauses*

Several Government and Binding authors have proposed that double object structures in Germanic languages are in fact grouped into single constituents. The indirect object and the direct object are then respectively taken to be the surface subject (or 'Specifier') and the object (or 'Complement') inside this constituent. Disputes concern the exact categorical nature of this putative phrase

and its head, which we can here call neutrally 'XP', as well as the issue of whether the surface position of the IO in (55) is base-generated or derived by movement:

(55)



Provided that the 'subject' IO is higher than the 'complement' DO in the surface form of XP, all these analyses can account for the consensus on superiority (52), i.e., the paradigms in Barss and Lasnik (1986), whether or not they predate that article. If an analysis utilizes the XP structure so as to move the indirect object to its surface position in (55), presumably into SPEC(XP), the analysis also has a good chance of capturing the ways the IO doesn't act like a deep direct object (51), as well as the further Restriction on A'-movement (29).

However, in all these analyses, the internal structures attributed to each author's categorial choice for the XP remain fairly problematic. It should be kept in mind that overt 'internal NP subjects' of categories other than IP and DP are actually never attested in English in diagnostic positions such as a focus in clefts or pseudo-clefts. These 'object phrase' analyses moreover typically require that V govern across the XP boundary into the SPEC position, not only for assigning case to the IO but also for the several other surface object properties brought out especially in Relational Grammar studies (cf. section 3.2). Few of these analyses make any attempt to either broadly justify or precisely define this kind of governance, exceptions being Kayne (1981c) and Den Dikken (1995c).

Especially when XP in a structure like (55) is not some projection of V, it is customary to refer to it as a 'small clause' (i.e., a clause-like structure lacking many – or nearly all – clausal properties). The choices for XP can be IP (formerly S) or PP, reviewed in this section, or NP/DP, reviewed in section 4.4. The choice of VP for XP ('Larsonian shells') is reviewed in section 4.3.

4.2.1 Some doubts about small clauses

Kayne (1981c) proposes that trees must be binary branching, which leads him to conclude that double objects form a constituent rather than each being a sister to V. As the binary branching hypothesis has been so influential, practically blinding the field in our opinion to any approach inconsistent with it, it is worth looking into the justifications given for it.

Kayne's (1981c) initial justification for binary branching is a purely formal exercise. A type of tree relation between antecedents and traces alluringly named an 'unambiguous path' is shown to be compatible only with binary branching trees.[38] However, as the article's first section indicates, there is nothing 'unambiguous' in binary trees about the actual location of an antecedent; in order to find an anaphor's antecedent, the direction 'up or down' in the tree must be specified independently at each dominating node. That is, specifying unambiguous paths to an antecedent is simply a formal equivalent to specifying c-command over strings of variable length.

Subsequently, Kayne (1984c) presents theoretical and empirical arguments to motivate binary branching and hence small clause structures for English double objects. We first treat in turn four considerations that seem to have impressed subsequent analysts: (i) an argument based on learnability, (ii) the relation of binary branching to Kayne's theory of 'connectedness', (iii) the way Kayne insulates small clause theory from disconfirmation, and (iv) argumentation based on coordinations. We delay until the next subsection his proposal for English paradigms with particles, (47–48) above, which bear more directly on double objects.[39]

(i) Learnability. Kayne (1984c: ix) remarks that binary branching "constitutes a step towards a solution to the learnability problem for phrase structure (How does the language learner know what tree representation, of all those available in theory, to associate with a given sentence?)." This remark has impressed later researchers, being echoed for example in Den Dikken (1995c: 27). But in fact binary branching does not reduce the set of grammars, since learned parts of grammars, probably the lexical entries of functional categories, actually contain no information about branching. Rather, as Kayne's cited rhetorical question indicates, binary branching can facilitate not acquisition but *processing*. It can (only) help associate *given sentences* with certain trees rather than others.

But to our knowledge, procedures that have been implemented for processing models invariably use the argument-taking devices of heads in a central way, whether these be thought of as argument structures, theta-grids, lexical conceptual structures, event structures, or subcategorization frames. In these procedures, an indispensable step in either producing or comprehending a sentence of any complexity is always (56):

(56) **Economy of representation:**
Match the lexical argument information of a head with a syntactic tree, using as little structure as possible.

If no structural economy were built into using argument information, arguments could be located anywhere – not even near the head in question.

Now binary branching suggests no way to eliminate or supplant (56). But given (56), there is no processing reason for associating arguments with a head by any means other than sisterhood; sisterhood is required whenever it is possible.

Of course, research has revealed many grammatical reasons for positing a non-sister relation between heads and their subjects, so-called 'external arguments', independently of any concerns here with double objects. However, has it found comparable reasons for any non-sister relation for 'internal arguments', which should be similarly justified? Our evaluations below of many proposals for such non-sister complement structures suggest rather that binary branching results in convoluted and inadequate analyses.

Consequently, not only is binary branching unrelated to language acquisition, in models of sentence processing it at best supplements economy of representation (56). We thus cannot agree with Den Dikken (1995c: 28), who claims that small clauses "are available at no cost whatsoever." We rather feel that their additional structure must be empirically justified by improved characterizations of paradigms involving double complements.[40]

(ii) Connectedness. In an impressive series of detailed analyses of extraction and movement phenomena, Kayne (1981a, 1981c, 1983) develops a theory of "connectedness" in trees which is designed to account for a number of paradigms involving extractions, parasitic gaps, multiple questions, etc. These papers do not discuss binary branching (or double objects), but it is true enough that researchers such as Den Dikken (1995c: 28) often conceptualize or explicate this theory in terms of binary branching trees.

Nonetheless, the connectedness results can be recast without binary branching, although to demonstrate this in detail would require a paper in itself. Informally, Kayne's final statement of connectedness (1983) requires the deepest variables bound by operators to be terminal right branches; nothing mentions a left branch, i.e., a subject of a small clause. An alternative formulation that Kayne (1981c: note 36) himself cites is the analysis of Koster (1978b: ch. 2); we are more familiar with a slightly different version in Koster (1978a), called there the Nesting Hypothesis.[41] We would reformulate the latter in terms of prohibiting material to the right of the most embedded bound category it applies to; such an approach to the material treated under the rubric of connectedness does not refer to branching at all. Thus, binary branching is not an intrinsic ingredient of connectedness or more generally of successful theories of movement and extraction.

(iii) Insulation. Binary branching depends very much on small clause ('SC') analyses for many double complement structures. Yet the following assumptions largely 'insulate' small clause theory from disconfirmation: "Taking small clauses to be maximal projections . . . , [they are] transparent to government only when the governor and the maximal projection are sisters" (Kayne 1984c: x) and "N cannot govern across a boundary" (1981c: section 3.2). Thus, if a small clause in its base position is a sister to V, it acts as though it isn't there (due to transparency). If it is anywhere else (moved or a sister to N or base-generated in some ungoverned position), it also acts as if it isn't there, because its subjects (at least those Kayne discusses) are in need of case, which they cannot get in any of these positions. Consequently, the general way to test for presence of a constituent in generative grammar, namely movement (Ross 1986), is rendered

inoperative. Even strong supporters of small clause structures agree with this observation (Den Dikken 1995c: 47, 61). So finally, a small clause ends up acting syntactically as if it isn't there; it plays no role in movement or in limiting movement.[42]

On this point, a referee correctly observes that normal clauses (IPs) also often act "as if they aren't there"; they don't move away from their introductory C and, when non-finite, are not barriers to case-marking from the outside. But these observations simply underscore the tenuous status of IP itself (as a binary branching daughter of a projection of C). This weakness doesn't argue for small clauses, but rather undercuts even Bresnan's (1970) binary division between C and IP. Nonetheless, she supported her division by noting that parentheticals can divide C and IP. *The Board will declare {that/whether}, during the past year, the company has been profitable*. Such parentheticals are unacceptable with small clauses: *??The Board will declare, during the past year, the company profitable*. This difference implies that there are no positive diagnostics for small clause constituency.

Of course, the question remains: is insulation from disconfirmation, achieved for SCs by Kayne's two cited theoretical stipulations, a good thing or a bad one? Several researchers seem to feel that it provides a kind of license for ubiquitous small clause structures. But insulation from disconfirmation cannot in itself constitute a reason to reject alternatives using ternary branching for representing double objects, which after all accords with a straightforward interpretation of economy of representation (56).

(iv) Coordination. Small clauses might be motivated by paradigms based on coordinations (or deletions) rather than movement. For example, authors sometimes cite coordinations as in (57) as support for small clause constituents:

(57) John [$_{VP}$ turned [$_{SC}$ [$_{SC}$ the heat up] and [$_{SC}$ the air conditioning down]]].

But these sequences are arguably reductions of coordinate VP or IP with an empty second V as in (58), parallel to similar coordinate sequences as in (59):

(58) John [$_{VP}$ [$_{VP}$ [$_{V}$ turned] [$_{NP}$ the heat] up] and [$_{VP}$ [$_{V}$ Ø] [$_{NP}$ the air conditioning] down]].

(59) He [$_{VP}$ [$_{VP}$ [$_{V}$ misses] [$_{NP}$ his wife] on Saturday] and [$_{VP}$ [$_{V}$ Ø] [$_{NP}$ his friends] on Sunday]].
John [$_{VP}$ [$_{VP}$ [$_{V}$ thought] of [$_{NP}$ Mary] mornings] and [$_{VP}$ [$_{V}$ Ø] of [$_{NP}$ Sara] at midnight]].

These latter can't be small clauses since the combinations *his wife on Saturday, Mary mornings*, etc. are not predications.

The possibility of replacing *and* in both (58) and (59) with *but*, as in (60a), is also telling. This is a possible clausal coordination pattern for root predications, as

in the structures in (58–59). However, a coordination of clausal complements as in (60b), whether they be SCs or of any other type, would require a *not* after *but*:

(60) a. John turned the heat up but the air conditioning down.
He avoids his wife on Saturday but his friends on Sunday.
John thought of Mary mornings but of Sara at midnight.
Mary should come inside but keep a coat on.
b. They should avoid coming inside {and/*but} keeping a coat on.
Permission to come inside {and/*but} to keep a coat on is rarely given.

Thus, more complete coordination paradigms reveal the inadequacy of SC analyses such as (57) and support rather an alternative in terms of coordinated VPs with an empty second V, as in (58).[43]

4.2.2 Sentence-based small clauses

Whatever one's theoretical predispositions with respect to small clauses, analyses using them must still be evaluated on their empirical merits. So let us now turn to the argumentation in Kayne (1981c, 1984c) for grouping English indirect and direct objects together as small clauses.

In Kayne's (1981c: sections 2.2–2.3) first proposal, the small clause XP over English IOs and DOs is an S. It neither is endocentric nor places the IO higher than the DO. In a second proposal (Kayne 1984b) (inferred from his note 5, "it now seems preferable to follow Stowell," and from his page xi), XP is apparently NP; the bold sequence in *send* $[_{NP}[_{PP}$ ***Mary]*** $[_{NP}$ ***Bill's book]]*** presumably has the curious form $[_{NP}[_{PP}[_{P}$ Ø] NP] – NP].

Kayne (1981c) makes a detailed argument for these SCs based on their being impossible in English nominalizations, crucially using his postulate that "N cannot govern across a boundary." Consequently, a prepositionless indirect object cannot properly receive case inside a nominalization because the small clause boundary insulates it from government. This argument could extend to other small clause analyses of double objects, as their proponents are doubtless aware. But in competing transformational accounts, any promotion of indirect objects in an NP domain will necessarily place them in a PP so that they can receive case. But then they will not c-command their base position, i.e., their traces will be improperly bound. Such considerations equally well explain the absence of double object constructions in NPs. So Kayne's influential nominalization argument in favor of double object small clauses is not definitive.[44]

As another argument for analyzing double objects as small clauses, Kayne (1983c) uses the ordering restriction illustrated in (61), according to which English intransitive $[_{PP}$ P] must precede $[_{PP}$ P – XP] (Emonds 1972a):

(61) a. The secretary sent a memo out to the committee.
They are trying to make John out a liar.
b. *The secretary sent a memo to the committee out.
*They are trying to make John a liar out.

Kayne excludes (61b) by means of 'recursive small clauses' as in *make* $[_{YP}\,[_{XP}\,[_{NP}$ *John]* $[_{X'}$ *a liar]]* $[_{Y}$ *out]]*. Since *make* is not a sister of XP, the latter's subject is ungoverned, hence not assigned case, hence ungrammatical. However, his discussion provides no indication of how this small clause structure contributes to meaning. Thus, the sharply different SCs for the synonymous pair (62) would apparently have no effect on meaning:

(62) a. send $[_{SC}$ a memo out] to the committee
b. send $[_{SC}\,[_{SC}$ the committee out] a memo]

Additionally, the fact that (62b) is good for many speakers, including the authors, disconfirms Kayne's account of (61b), since his proposal rules out (62b) on exactly the same grounds as (61b). Moreover, the very fact that these small clause structures seem scattered about with no specification of their distribution is highly suspect.

Finally, consider the secondary predication *bring John his food cold*. While recursive small clause structures (AP inside YP) might accommodate *bring* $[_{YP}$ *[John]* $[_{Y}$ *Ø]* $[_{AP}$ *[his food]* $[_{A}$ *cold]]]*, an identical bracketing could also tolerate **make John a liar out*. A solution might consist of imposing an ordering restriction on intransitive P as heads of SCs, thereby bringing us back to the starting point of Emonds (1972a). Consequently, the restriction evidenced in (61b) ends up providing no evidence of small clause structure.

There thus seem to be no real arguments for double object small clauses in Kayne (1984c), nor do the theoretical acquisition or connectedness considerations often advanced in their favor have any force. The structures themselves have significant drawbacks, as mentioned in the discussions of the SCs in (61) and (62). To these can be added the oddity of their internal structure, as seen in (62). The only consideration that remains in their favor is Kayne's (1981c) account of why they do not occur in English nominalizations, an account that we feel could be challenged along the lines indicated above.

4.2.3 PP-based small clauses

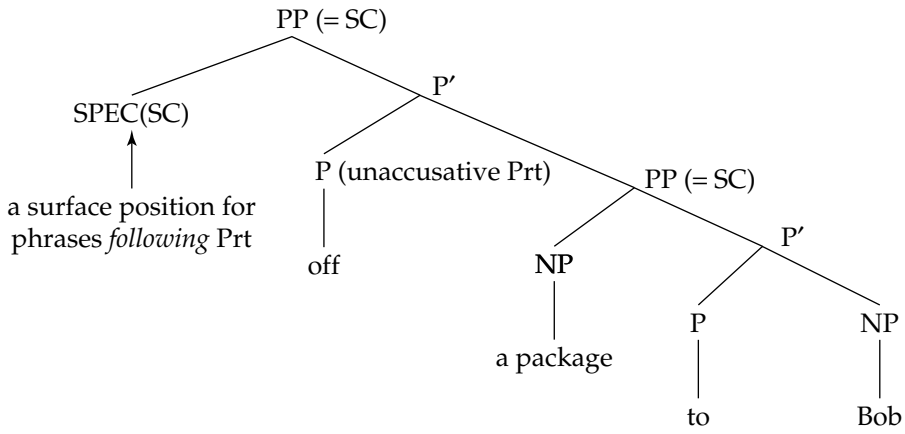
Den Dikken (1995c: ch. 3) provides a more carefully designed and defended SC analysis of English double objects as complex PPs, with special attention to their properties when they occur with particles ('Prt'), as in *John sent Bob off a package*.[45] By applying Baker's (1988a) Uniformity of Theta Assignment Hypothesis ('UTAH'), he defends his cross-linguistic proposals with argumentation based on Dutch and Chinese double object constructions as well. While the author explicitly bases his SC framework on the dubious theoretical motivations for small clauses (learnability, connectedness, and binary branching), his extensive argumentation does not entirely rest on them, and hence must be independently evaluated.

Aspects of Den Dikken's analysis derive from his assumptions that SCs (i) "are available at no cost whatsoever," (ii) "are the sole incarnation of subject predicate relationships," and hence (iii) "all share the semantic aspect of property

ascription"[46] (1995c: 24–25, 28). His resulting SC structures, which he considers costless, are in our view somewhat arbitrary, as per our section 4.2.1. That is, they don't satisfy movement diagnostics for PPs, and moreover the mechanisms for how predicates select them are not specified.

The center of his analysis is that English postverbal particles are 'unaccusative' P heads of SCs. Deep structure PPs for double objects with particles therefore contain two small clauses, as in (63):[47]

(63)

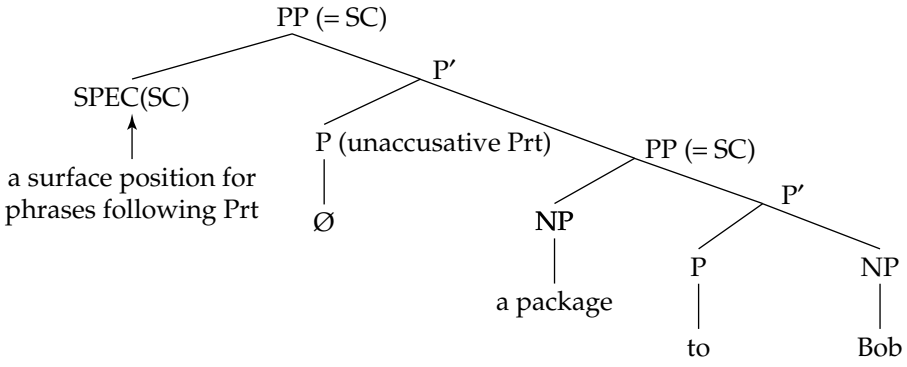


Den Dikken (1995c: sections 3.7–3.8) further claims that a third empty headed verbal small clause SC′ above (63) provides additional surface housing for a sequence NP + Prt, for theoretical reasons related to PPs but extraneous to the double object NPs.

By the time Den Dikken provides some motivation for all three of these small clauses and for the various mechanisms that finally ensure word orders and case-marking, his analysis becomes baroque; the biggest questions then concern whether all the various steps in his undeniably careful analysis really have independent justification or plausibility on the basis of other constructions. Two examples: (i) The direct object in *To Mary was given a book* receives nominative case through a sort of extended chain that involves a case-marked PP in subject position, its trace, and SPEC–HEAD agreement with this trace inside one of the small clauses (1995c: 119). (ii) Postverbal particles in structures such as *send off Bill a package* obligatorily incorporate into otherwise empty small clause verbal heads that follow the main verb.

Nonetheless, parts of Den Dikken's analysis seem convincing. For instance, he constructs some arguments based on Dutch and Chinese for an empty P even in deep structures for double objects without particles (1995c: sections 3.11–3.13). By cross-linguistic similarity (i.e., using Baker's Uniformity of Theta Asssignment Hypothesis), he concludes that a lexical Prt can also be null and thus that (64) (cf. his tree (63)) must be part of the general deep structure for English double object constructions:[48]

(64)



Let us examine his proposal that the top SC should be embedded in a third SC′ (actually a bare VP) which mediates between the lexical V and the Prt heads. A central motivation for this empty V head above SC in (63–64) is its role as a target for incorporating the lowest (case-assigning) Goal P, which then assigns case to the Theme NP in *send Bob off a package*, as illustrated in Den Dikken's (1995c: 133) final labeled bracketing for (63).[49] While the author's argument may be a legitimate use of Baker's (1988a) Government Transparency Corollary, if we stand back a bit the consequences seem bizarre. The implication is that a P heading a complement (the lower SC) *within* a clause (the upper SC) can, with enough gymnastics, move into the very head that selects that clause, analogous to operations on a sequence *make Bill blame the accident on Harry* by which the P *on* would finally incorporate into *make*, skipping over *blame*, and then assign case to *Bill*.

To us, these machinations bring up the following overriding issue: if Principles and Parameters systems permit such an analysis, with its extra abstract V predicate and attendant complex case-marking and chains of co-indexing, it seems likely that the systems themselves are underconstrained. Alternatively, one could set out to show that such incorporations (i.e., sidestepping of 'head to head' movement) are really needed in a range of other, possibly similar constructions – or that such incorporations are excluded in principle save in just the case under discussion. But only such wider justifications can dispel doubts about proposals as internally complex as Den Dikken's intricate case-marking for the Theme NP in a double object construction. We therefore are critical of the additional SC′ above the double object deep structure PP in (64).

One might try to eliminate this higher abstract V and retain only two SCs in Den Dikken's (63–64) by reworking his case assignment, perhaps by making particles 'optionally' unaccusative. Two reasons for not doing this is that the bolded *up the number* and *the number up* will then both be PPs in such classic examples as (65), and they must both be insulated against PP movement, which seems difficult. Small clauses are generally insulated from movement because their subject NP would lack a case-assigner, as discussed earlier; but the sequence *up the number* should be able to move if it were analyzed as a PP:

(65) John looked **up the number**.
John looked **the number up**.

A final doubt about an SC account of double objects concerns economy of representation as expressed in (56). If indeed a single PP small clause can encompass both a DO in its specifier, case-marked by a higher head, and an IO complement to its head (e.g., *to*), why should these two NP arguments of a V ever be realized inside some more complex structure which licenses bare IOs? This question seems to loom over Den Dikken's – and other – small clause analyses of double objects; any such structure that is more complex than a transitive verb with an indirect object marked by a P should be ruled out by Economy.

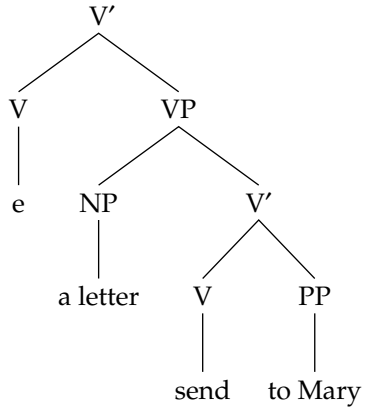
4.3 Double objects are two arguments in lower verb phrases

4.3.1 Larsonian shells

Working in a Government-Binding framework, Larson (1988b, 1990) makes a proposal for double object constructions now known as a 'Larsonian shell'. He agrees with Relational Grammar in promoting indirect objects to direct object status and demoting the original direct object, thereby expressing the asymmetric c-command required by the paradigms of Barss and Lasnik (1986).

The particularity of Larson's analysis is its deep structure; the double object construction is a deep VP complement to a higher empty V as in (66). In this complement (i) only the indirect object PP has complement status, (ii) a direct object begins in a deep VP Specifier position, and (iii) the empty head of a postulated higher VP is a landing site for an eventual V-raising. Larson considers the direct object of the double object construction the 'deep subject' of a lower VP. The latter cannot receive case in this position unless the lexical V raises to a position outside the lower VP where it governs and hence can case-mark the NP in this Specifier position:

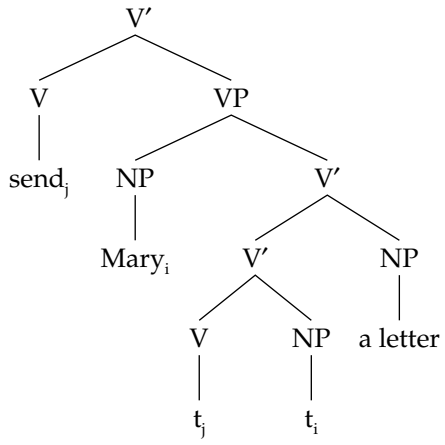
(66)



Larson derives the double object construction by what he claims to be a passive-like movement of the indirect object. A different execution of this basic idea is proposed in Aoun and Li (1989, 1993b), as reviewed in the next subsection.

In Government and Binding terms, the dative operation absorbs or withdraws case from the 'object' of the verb in (66) (that is, the indirect object) and suppresses the theta-role of the 'subject' (the direct object).[50] The deep direct object simultaneously becomes an adjunct of the V', partly parallel to the *by* phrase of passives. The indirect object can then move to the 'VP subject' position, analogous to a passivized subject:

(67)



When the indirect object moves up to the inner subject position, it asymmetrically c-commands the second NP, and receives case from the raised verb. The adjunct direct object is assigned case by the lowest V', which is curiously reanalyzed as a V even though it contains a phrasal trace. Den Dikken (1995c: section 3.2) scrutinizes the possible effects of Larson's reanalysis, and concludes that it especially faces problems with respect to the English paradigms in which particles combine with double objects.

A number of other oddities result from analyzing a direct object as an adjunct: (i) unlike other adjuncts, the direct object is often obligatory; (ii) it receives case from the head of its phrasal sister (unlike adjunct agent phrases in the standard passive, which require a P); (iii) it freely undergoes successive cyclic A'-movement, counter to a usual restriction on adjuncts (e.g., *What did Mary know how to send John?*). In contrast, Larson's derived position for a promoted indirect object is exactly that of a true deep direct object. Consequently, the IO in a double object construction should undergo A'-movement, contrary to the descriptive generalization (29). Larson does discuss some of these problems (1988b: section 3.3), but to our mind unpersuasively.

The widespread adoption of Larson's complex analysis may be largely due to its compatibility with other influential contemporary ideas. As observed above, Kayne (1981c, 1984c) has convinced most syntacticians to limit trees to binary

branching, yet his initial recasting of head-initial double object constructions in binary trees led to his rather problematic category labels for double object small clause structures (see section 4.2.2). Alternative binary structures like [[V – NP] – {NP/PP}], in which the surface direct object follows and asymmetrically c-commands the indirect object, would wreak havoc with the Barss and Lasnik (1986) paradigms.

Larson's structure (66) seems to remove these problems, thus clearing the way for binary structures via his structural 'Single Complement Condition'. This basis for binary branching seems like an independent advantage, although its proponents have not seriously addressed a host of other double complement constructions for which the Barss and Lasnik arguments would demand similar treatment. Their properties continue to challenge proponents of binary branching, whatever the correct analysis of double objects.[51]

Shell structures raise other questions not yet adequately addressed.[52] For example, why can't the lower VP complement of the empty V in (66) be replaced by an NP such as *good ideas*, deriving (via head movement of N substituting for the empty V) a word salad something like **John did(n't)*$[_{VP}$ *ideas*$_i$ $[_{NP}$ *good* $t_i]$]? Perhaps Larson (1990: 597–598) intends to answer this by the claim that if a V's arguments "can't be fitted into the minimal VP that it heads, this forces an upward branching of X-bar structure to secure an argument position for the agent." But then this stipulation, to the effect that a shell over an XP 'can be' of the same category XP, should be strengthened to 'must be'. Indeed, rather late in the presentation, Larson (1988b: sections 7.1–7.2) claims that an argument of α must always be realized within some (possibly higher but presumably adjacent) projection of α.

Additionally, one wonders if these are the only shells possible. That is, are there also cases of empty-headed APs over APs, etc? Along the same lines, nothing prevents lexical entries from multiplying the number of shells for single items. The Larsonian framework, far from limiting the number of a verb's complements (as is often inferred from his Single Complement Hypothesis), makes no claim about the maximal number of arguments for a single predicate.[53]

If *send* is truly an intransitive verb with an inanimate subject (Larson 1988b: 342), we should be seriously rethinking the nature of lexical entries, since apparently the frames of verbs are nothing like what they appear to be. But in fact, is there independent support for treating an indirect object as the sole deep complement of apparent di-transitive verbs? Larson's (1988b: 340–341) two arguments for such a V' constituent, based on idioms and a suggested closer semantic link between verbs and their indirect objects, are impressionistic and unconvincing (Emonds 1993: 220–221).[54]

Larson (1990: section 5.3) further argues for his constituent structure with a claim that both gapping and pseudo-gapping can delete a V' constituent which unites verbs and indirect objects in (66). However, finding contrasts in pairs like (68) that would support this claim is difficult; the (a) examples, in which V' deletes, don't seem to contrast with those in (b), in which V' is supposedly not available:

(68) a. ??He sends love letters to Mary and she $[_{V'}$ Ø] dessert recipes.
Bill fixes martinis for us more often than he {did/would}$[_{V'}$ Ø] manhattans.

b. ??He sends love letters to Mary and she to Bill.
Bill fixes martinis more often for us than he {did/would} for you.[55]

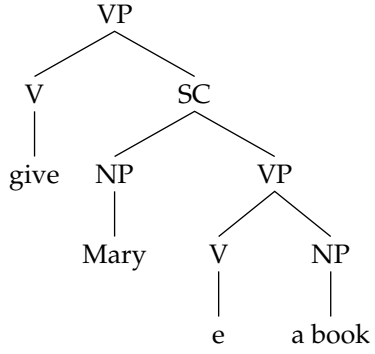
Finally, Larson's case theory is sui generis. He tacitly assumes that the demoted deep object cannot be within a PP, perhaps in deference to the widely shared view that the Projection Principle forbids lowering. Consequently, to explain how a single verb essentially assigns case twice, he assumes that a V assigns both an inherent and a structural objective case. A typical transitive verb is taken to assign both inherent and structural case to its direct object, in contrast to standard variants of case theory. Then, when a double object construction is present, the cases can be split: the indirect object receives structural objective case and the direct object inherent objective case. Within this rather elaborate framework, both cases are suppressed for passive formation, but only structural case for dative shift. Larson also claims that Infl (I) is required for the assignment of objective case, although participles and restructuring verbs (which can be transitive) can be argued to lack I (cf. note 53).

On the positive side, Larson's analysis accounts for the Barss-Lasnik paradigms in both the base and permuted versions of double object constructions. Moreover, in spite of the marginal role assigned to PP structures, Larson (1988b: section 5) provides a valuable discussion of the complementary roles of the contentful English Ps *to*, *of*, *from* vs. the applicative suffixes in other languages (the former typically blocking dative interchange and the latter licensing it). The virtues aside, we have not concealed the fact that we find much to question in this influential account. What seems strange is not the author's proposal, but the way in which, in spite of their many problematic aspects, Larsonian shells quickly became the standard basis for treating double objects.

4.3.2 Reversing Larson's order of arguments

As discussed in section 2.1, several authors claim that the double object construction indicates a kind of possession of the direct object by the indirect object, even though verbs such as *offer*, *sing*, and *read* make this doubtful. Partly to express this putative property, Aoun and Li (1989) propose that double object constructions are small clauses (SC) of indeterminate category, headed by an empty V of possession, as in (69):

(69)



How to determine the category label and distribution of this small clause structure is left vague; apparently all and only lexical entries for double object verbs stipulate this type of clausal complement with an SC subcategorization frame. However, the many verbs of transfer that do not allow double objects (section 2.5) will either have quite different complement structures, or the argument interchange in their SC complement (a counterpart to Larson's 'passive' account of dative movement) must be obligatory for such verbs.

Another problem with (69), which is base-generated for Aoun and Li, is that we would expect the indirect object to freely undergo A'-movement just as subjects of other supposed small clauses do (e.g., in *consider John foolish*, etc.). But as observed in the discussion of the Restriction on A'-extraction in section 3.1, this is not the case.

Further questions must be asked in order to evaluate the structure in (69). Why should an empty V be restricted to small clauses, when verbs generally occur in all types of clausal structures?[56] As with Larson's account, what restricts the number of shells contained within each other? Why does the passive form of $[_V$ e] mark its postposed subject with *to* or *for*, while other passive verbs induce *by*, and why is there no passive auxiliary in only this new type of passive?

In spite of these problems, the main proposal that Aoun and Li (1989) are arguing for is a theory of quantifiers that depends only on the configuration of dominance relations. Our many questions about the labels and provenance of their structures may therefore not seriously undermine their principal hypotheses, which concern the interpretation of quantifiers.

4.3.3 Lexical alternation in Larsonian shells

Bowers (1993: section 4) presents a critique of Larson's proposal to assimilate the dative alternation to that of passives, as well as a revised analysis that circumvents some of the attendant problems. This revised proposal uses a variant of shell structures to account for both the double object and the prepositional dative constructions, but considers the relation between them to be akin to a lexical causative alternation; that is, *give* with double objects realizes the structure of *make IO* ***own/have*** *DO*, with *give* raising from a lower to a higher V position. In comparison, the prepositional construction with *give* realizes *make IO* ***belong*** *to DO*, with the double object verb again raising to the V head of the higher VP shell.

Bowers's main innovation is to revise – in fact, expand – shell structures in terms of his study's general theory of predication, which posits (for small clause constructions as well) an alternating sequence of Pr(edicate)P and VP shells. This alternation is achieved by some phrase structure conditions (1993: 595), which force a sequence of dominance relations (70) in which each phrase's Specifier position houses an NP argument of the deep lexical verb. The lexical V starts from the lower V position and raises to the higher one, so as to provide case for the 'inner NP' whose surface position is the Spec of the higher VP. According to Bowers, NPs in the double object construction are positioned in the surface as follows, with their roles as subscripts:

(70) $[_{PrP}\ \mathbf{NP_{SUBJ}}\ \mathbf{Pr}\ [_{VP}\ \mathbf{NP_{IO}}\ V\ [_{PrP}\ t_{IO}\ Pr\ [_{VP}\ \mathbf{NP_{DO}}\ V]]]]$

The four bold nodes in (70) indicate overt morphemes for a simple sentence such as *We sent Mary books*.

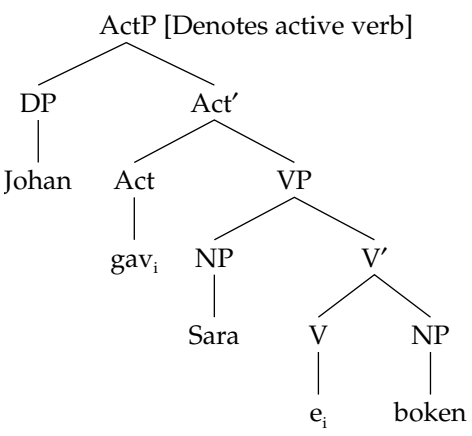
Bowers is naturally concerned to show that his analysis improves on that of Larson. Thus, he criticizes aspects of Larson's case-assignment mechanisms and the proposal that the DO in a double object construction is in a transformationally adjoined position; our criticisms of Larson concerning (67) above in this respect recapitulate his. For Bowers (1993: 598), Larson doesn't propose enough structure; rather, all three arguments in a double object construction have properties of underlying subjects (uniformly identified with SPEC positions), as expressed in (70). This structure permits all three to c-command (non-final) floating quantifiers (including crucially *We sent the boys all a book*; *?we sent John the books all in nice packages*; *we sent the books all to John*); but see note 32. It also permits the 'outer object' to be modified by secondary predication (*We sent John the food cold*), which is not ordinarily allowed for adjunct NPs.

While it does not come across as the author's main point, a lexicalist approach to double objects under any guise seems to us to fly in the face of the accumulated cross-linguistic arguments reviewed in section 3 in favor of accounting for the dative alternation transformationally. Moreover, while *give* may well paraphrase both *make own* and *make belong to*, we cannot carry the analogy much further: what pairs of causatives are paraphrased by double object verbs like *promise*, *sing*, *write*, *butter*, *carve*, *cook*, and *fix*? That is, in spite of its rather elaborate transformational raising and phrase structure, including a novel head category Pr uninstantiated in the lexicon, Bowers's analysis is lexicalist, by his own account (1993: 643–644).[57] Perhaps it is not inherently so, but as it stands it is.

4.3.4 Presence or absence of morphological case

For double objects in Mainland Scandinavian, Holmberg and Platzack (1995: 191) posit a deep structure similar to Larson's (1988b), raising the V during the derivation as follows:

(71)



They suggest (1995: 194) that double object constructions are base-generated and are unrelated to what they call '*to*-constructions'. This recourse to treating the alternation lexically would in itself seem to be a drawback.

Holmberg and Platzack's main purpose in discussing double objects is to demonstrate the effects of the presence or absence of 'm-case' (morphological case) in a language. They note that in Icelandic, which has m-case, double objects behave differently from those in Danish, Norwegian, Swedish, and English, languages that don't have m-case. Icelandic direct objects receive accusative case and indirect objects dative, while in the other languages, both NPs have the same ('accusative') case. They take the Icelandic facts as evidence that the case on indirect objects is generally not assigned structurally; a conclusion radically at odds with Baker's (1988a, 1988b) assimilating of promoted indirect objects to object position in applicative constructions. In their view, the fact that in Danish, Norwegian, and Swedish, the indirect object retains the same case even in passive and expletive sentences suggests that it is behaving in this respect like a PP.

The authors propose that dative case assignment in Icelandic is the result of a lexical selection feature on the verb. In Mainland Scandinavian, it is achieved by a structural case-licensing rule: "Accusative is licit in Spec-VP" (1995: section 7.4), which recalls a number of Government and Binding analyses which assign accusative case in a lower specifier. Their approach correctly predicts several differences between Icelandic and other Scandinavian languages, based on the presence or absence of this structural case-licensing, and their structures also account for the Barss and Lasnik paradigms. At the cost of an additional special projection 'ACTP' for agents, they in fact remove some of the uncertainty concerning multiple Larsonian shells brought out above. They further argue for their structure by proposing that the indirect object exhibits some specifier properties: for example it cannot be deleted or extracted to an A'-position, as expressed earlier in the Restriction in (29).[58]

The fact is, most of Holmberg and Platzack (1995) focuses on Icelandic double objects rather than on double objects without m-case. With respect to this contrast, we have been following Den Dikken's (1995c) conclusion, cited here in section 1.2, about the difference between German, with m-case, and English, without it; namely, double objects in an m-case system may require fundamentally different treatment from dative alternations in English and other languages. The largest class of Icelandic double objects, those that occur with *give*-type verbs, do not alternate with a *to*-construction, unlike English and Mainland Scandinavian. Moreover, the paradigms for movement with Icelandic double objects are almost the opposite of those in other languages. The two Icelandic objects may invert if the indirect object is a heavy NP (cf. notes 17 and 26 for the exclusion of this in Indonesian and English respectively), and either object may passivize under the same conditions. (Holmberg and Platzack suggest that the heavy NP's status as sentence focus substitutes for the lack of case marker in these sentences.) Any complete theory of indirect objects will, of course, have to account for these contrasts with m-case languages. But the point we developed in section 1.2 is that

the paradigms with m-case are so different from 'bare' double objects that they are unreliable as a basis for an adequate theory of double objects in languages that lack it.

Holmberg and Platzack's treatment is thus problematic because it is not so much an analysis of the dative alternation in Mainland Scandinavian (which they take to be lexical) as an argumentation for particular types of VP structures and case assignment. In their framework, the double object construction, which they assume does not include an underlying P, is an apparent problem for their claims. Like Larson, they use case assignment in lower Specifiers to explain the grammaticality of double objects in their framework. This contrasts with analyses that assign case to IOs structurally, by an overt or covert underlying P.

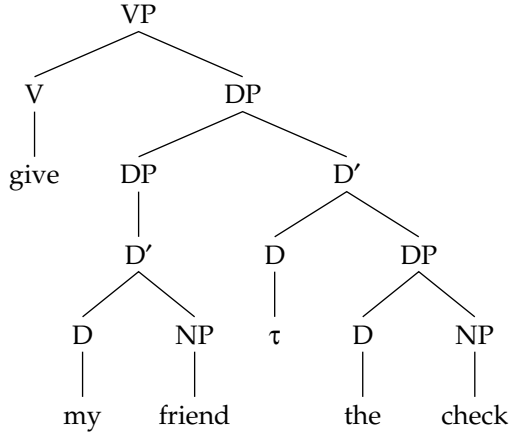
4.4 Double objects are two arguments in lower NP/DPs

Johnson (1991) proposes that double object constructions are a type of small clause, following Kayne (1984c), with the indirect object acting as the subject of the clause and the direct object acting as a complement. However, the housing of the small clause is a nominal projection, a DP. At least superficially, his structure for double objects and that of Hellan (1991b) are the same.

Johnson's analysis highlights an 'NP first' condition on complements, the requirement that complement NPs appear in English, with very few exceptions, immediately following the verb. He explains this requirement by claiming that main verbs in English move out of the VP they head. NP complements are forced to 'Object Shift' to a specifier of VP to receive accusative case. They must therefore come before PPs or other non-nominals in the VP complement.

The double object construction poses an apparent counter-example to Johnson's explanation of the 'NP first' rule because it does not explain how the second NP can receive case. To avoid this problem, he therefore suggests that the underlying complement structure for double objects contains a single DP, crucially invoking Abney's (1987) 'DP Hypothesis' for the structure of noun phrases:

(72)

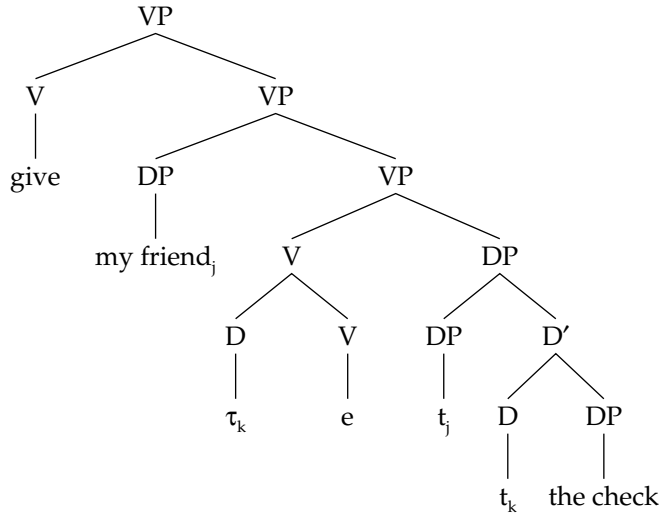


He further proposes that an abstract head τ of the encompassing DP is a case assigner, and thereby able to provide case to its complement (the seeming direct object *the check*).[59] The V then moves out of VP and the first (indirect) object moves to [Spec, VP] to receive case, as in (73) below, both typical moves in later Government and Binding analyses. This analysis predicts correctly that the first DP in a double object construction will have the position and behavior of a direct object. The structure (72) is also compatible with the Barss and Lasnik paradigms.

Johnson argues that his structure can also explain certain properties of Object Shift in Danish, noted in Vikner (1989): both objects may be shifted together or the first object may move, but the second may not. These movement possibilities are expected if both DP objects are part of a larger DP and if the higher inner DP is accessible to movement, much as a subject of a clause.

However, the structure (72) then incorrectly predicts that both objects may move together in English, yielding ungrammatical sentences like **Whom the check did you give?* and **My friend the check was given*. Den Dikken and Mulder (1991: section 5) carefully critique Johnson's analysis, enumerating paradigms they feel it fails to handle properly. Johnson's own approach to avoiding "double object movement" uses a variant of Baker's (1988a) argument that Noun Incorporation can sometimes substitute for case assignment. He incorporates the case assigner τ into the verb's D-structure position and then Object Shifts the first DP into [Spec, VP], as before. When this incorporation is blocked, the 'big DP' in (73), a simplified version of Johnson's proposed derived structure, must stay in its base position:

(73)



The larger DP cannot move in this situation because it contains the trace of τ and cannot move outside its scope without violating Chomsky's (1981: ch. 3) Empty Category Principle. This alternative correctly blocks the movement of both DPs in English, but it would incorrectly block it in Danish. Johnson's system then has to make τ-incorporation obligatory in English but not in Danish.[60]

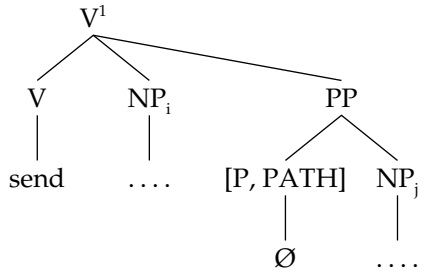
This analysis of double objects has a number of problems, besides the ad hoc properties of the D-head τ in an otherwise unattested type of deep structure DP. For example, it does not address the Restriction (29) on movement of dative NPs to A'-positions, though scenarios for banning A'-bound traces in SPEC might be invoked as in Holmberg and Platzack (1995). It is unclear how to relate Johnson's (72) to the applicative constructions of non-Indo-European languages surveyed in section 3, which share so many properties with English and Scandinavian double object constructions. Nor does (72) tell us why the latter are (close to) synonymous with constructions with overt *to*-phrases, whose head is unquestionably P (modification by *right*, stranding behavior, etc.). These problems taken together with those outlined in Den Dikken and Mulder (1991) seem to us to render this 'DP as small clause' approach at least in need of serious modification.

4.5 Double objects exchange positions

Given the twin needs imposed by the Relational Grammar arguments for indirect object advancement (section 3.2) and the Barss-Lasnik asymmetry requirements, Emonds (1993) reworks his (1972a) proposal that 'Dative Movement' is a structure-preserving transformational interchange of a direct and indirect object (i.e., '3 to 2 advancement' accompanied by demotion of the direct object). An appropriate Principles and Parameters reformulation of the original construction-specific rule requires that the interchange be sanctioned by UG, but licensed only in languages with some specific lexical property. His analysis uses a somewhat idiosyncratic understanding of the Projection Principle to predict that dative movement is the only possible type of argument interchange.

The proposed lexical property concerns licensing the empty Ps that are 'deleted' in classical dative shift (9), such as English *to* and *for*. Emonds (1993) claims that these lexical items enter derivations only in PF, and then only in the absence of any dative shift.[61] That is, in both the shifted and unshifted variants (1) and (2), the entire derivation of LF from Deep Structure contains an empty node [P, +PATH] as in (74), needed only for assigning case to the second NP:

(74)



The deep complement structure in (74) is selected by a frame +___NP^NP or +___NP (^NP). The Projection Principle is satisfied whenever a subcategorized YP 'constitutes' (= dominates all the lexical material under) a sister of X^0 at each

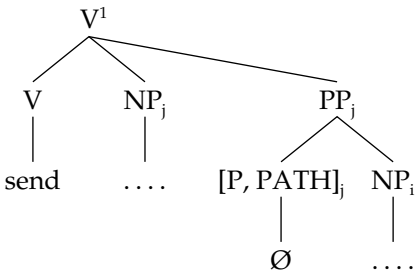
relevant level.[62] Like all variants of this Principle, this formulation excludes interchanging any complement with a subject or adjunct or introducing any new ZP under an X′, but it permits interchanging complement NPs (only) around an empty P. Emonds claims this is exactly the formulation that can capture the observed cross-linguistic variation in applicative constructions, which is due to how lexicons license this P.

This structure-preserving interchange of objects satisfies criteria (i)–(v) in section 2.3 for promoted indirect objects in a transformationalist analysis: (i) It accounts for the synonymy of the dative alternations and the cross-linguistic similarity between these alternations and applicative constructions. (ii) While the analysis doesn't decide issues about proper levels for case assignment, it provides two case assigners for two adjacent NPs. (iii) The analysis promotes indirect objects and thus constitutes a basis for explaining their direct object behavior in applicative constructions (section 3.2). (iv) Regarding the unavailability of the promoted NP for A′-movements (29), see below. (v) Finally, the PP structure in (74) provides asymmetric c-command of the second NP by the first, in both shifted and unshifted sequences, and thus accounts for the Barss and Lasnik (1986) paradigms.[63]

The underlying PP configuration in (74) is taken to universally define an indirect object, independently of a direct object and the category of the head. If grammatical relations and theta-roles are represented in LF, as is generally assumed, then Emonds's analysis requires that both deep direct and indirect objecthood and/or the corresponding theta-roles be somehow carried through a derivation. Depending on the design of the transformational computation, carrying such information through a derivation may be problematic.[64]

A late or PF insertion of Ps such as *to* and *for* in the unshifted version of (74) is obligatory because of a general prohibition against unlicensed empty categories.[65] Less straightforward is the obligatory licensing of an empty P in (74) in (only) a shifted or 'interchanged' derivation. Emonds suggests that an empty head, for example P in (74), is co-indexed with its sister in underlying structure. The structure-preserving *interchange* of NPs, while respecting his Projection Principle, then yields the derived configuration (75), where i is the index of the deep direct object and j of the deep indirect object. His claim is that no preposition can be inserted 'late' in this shifted derivation because a general condition on PF-insertion of a head requires non-distinct indices between heads and complements:[66]

(75)



The resulting co-indexed structure (75) then accounts for the crucial cross-linguistic Restriction on A'-extraction (29) of promoted indirect objects as follows. If the NP_j in (75) subsequently moves to an A'-position, *both* its trace *and* the empty-headed PP_j are bound by the same operator. This configuration violates Koopman and Sportiche's (1983) Bijection Principle prohibiting an A'-constituent from locally binding two empty categories (here NP_j and $[P, PATH]_j$).

A reviewer has observed that a structure-preserving interchange of double objects does not predict (i) the Scope Freezing of section 3.1.3, (ii) why some English speakers accept immediately postverbal particles with transitive V but not with ditransitive V, or (iii) why second or 'chômeur' NPs passivize in some but not all double object systems. However, it is our impression that, aside from ad hoc stipulations, the competing analyses reviewed here do no better in accounting for these three properties. In particular, as pointed out in section 3.1.3, English Scope Freezing seems to be a property of all 'A-movements', and is hence irrelevant for choosing among the various A-movement accounts.

Finally, the object interchange in (75), while a necessary condition in this analysis for licensing an empty P, must still not be *sufficient* to license it, for if it were, every language – including Romance languages – would allow dative movement. In order for $P = \alpha$ to be empty, Emonds proposes that the feature of P (here PATH) must additionally be 'alternatively realized' on a (possibly null) applicative affix β, as in Marantz's (1993) structure (25a). This possibility is allowed by what he claims is a general principle extending at least to morphology:

(76) **Alternative realization:**
Language-particular lexicons can alternatively realize a feature F of α on β only (i) when projections of α and β are sisters and (ii) when β is a closed class item, that is, one whose lexical entry includes no (open-class) semantic features.

Since V and PP are sisters in (75), a closed class affixal head of V (β) is a potential language-specific locus for an alternatively realized PATH feature of a P (α). Alternative realization by applicative affixes, as in Bantu languages, Chinese, Indonesian, etc., is thus a necessary part of this analysis of dative alternations. And as also proposed in Pesetsky (1995), Emonds's analysis requires further that the lexicons of Germanic languages without morphological case furnish null, non-productive applicative affixes for their dative-shift verbs.[67]

5 Conclusion: what we think we know

In this chapter, we have proceeded through a labyrinth of hypotheses which attempt to explicate an indirect object's transformationally regular 'promotion to object' in many languages without productive Case-marking, including English, Dutch, Mainland Scandinavian, and several non-Indo-European VO(O) languages. The generative market place, spanning three decades of debate on the

resulting 'double objects', indeed offers a rich choice of highly refined products for treating this challenging raw material. In our tour of this bazaar, we have not been sparing in our criticisms, just as the authors reviewed did not spare their predecessors. (In fact, we only barely mentioned some of these critiques, which can be quite telling.)

At the end, we venture to hold strong opinions about certain – we dare say established – cross-linguistic hypotheses, which would defy disconfirmation within even the broadest transformationalist framework. In particular, we are convinced that (i) a structure-dependent theory of abstract case-marking (8) provides superior accounts of double object constructions, and (ii) a null PATH affix akin to overt applicative affixes found outside Indo-European is a good basis for an account of English and Mainland Scandinavian 'double accusative objects'.[68]

We further agree with what we feel are presently four consensus positions:

(51) **Consensus on promotion:**
Where a language systematically allows two surface NP objects indistinct from accusatives to have different theta-roles, the thematic or deep indirect object is structurally the surface direct object.

(52) **Consensus on superiority:**
A promoted indirect object surfaces as asymmetrically 'higher' than a deep direct object.

(29) **Restriction on A′-extraction:**
Further movement of a 'promoted' indirect object NP unmarked by a P or dative case to a non-argument position is ungrammatical.

(36) **Dative passive Restriction:**
Passivization of indirect objects (unmarked by any dative case) results from moving NPs already promoted to direct object.

There is still some debate over whether indirect object 'promotion' results from transformational movement, but properties of promoted objects discussed in section 3.1, such as the restriction (29) and Scope Freezing, strongly suggest that it does. On the other hand, we have seen in section 4 that the field has not convincingly demonstrated the superiority of any particular account of how the direct object in a double object construction comes to be 'demoted'. That is, it has not been able to agree on a formal and yet non-ad hoc characterization of what Perlmutter and Postal (1983b) term in Relational Grammar a 'chômeur'.

NOTES

We thank two referees for close readings and careful commentaries and suggestions, which we have in almost all cases tried to incorporate. We also appreciate very much the computational expertise and assistance of Rob Goedemans.

1 Fillmore (1965) judges that both objects in the TO-dative double object construction can passivize, while in the FOR-dative neither can:

(i) I was given a book.

(ii) A book was given me.

(iii) *I was bought a hat.

(iv) *A hat was bought me.

Judgments vary widely on (ii) through (iv), especially when wider classes of verbs are considered. Langendoen et al. (1977), advocating the value of questionnaires for settling such disputes, conclude that (ii) is grammatical in some area dialects but ungrammatical in others. Similarly, Holmberg and Platzack (1995: 189) claim that the Norwegian counterpart of (ii) is acceptable but that the Danish is not. Our judgments suggest a generalization of the latter pattern, namely, the deep direct object can't be easily passivized in either type of dative:

(v) A woman was offered the job.

(vi) ?The job was offered a woman.

(vii) The guests were finally fixed a lunch.

(viii) ?A lunch was finally fixed the guests.

Because these facts are murky, theoretical studies have not progressed much in differentiating properties of TO- vs. FOR-datives in English.

The analyses of non-Indo-European double object "applicative" constructions discussed in this chapter all make it clear that indirect objects in double object constructions regularly undergo passivization.

2 Chinese resembles the other languages listed in that its Vs precede their NP complements, although in other ways the language is head-final. Since this study concerns V and its objects, we include Chinese.

3 Haegeman does not use these terms. Her main theoretical point is to motivate a specific reformulation of 'Burzio's Generalization', with which we take no issue.

4 For Den Dikken and Mulder (1991), Dutch indirect objects are not always related to PPs. They argue that only base-generated bare indirect objects can properly license certain *immediately adjacent* parasitic gap and secondary predication constructions. However, since the rather robust cross-linguistic results of section 3 here suggest PP sources for all indirect objects, they make us wonder whether this adjacency might license predications and parasitic gaps in some other way.

5 We return to Holmberg and Platzack's treatment of mainland Scandinavian in section 4.3.4. We note that they consider an Icelandic "inverted" double object construction (with IO in final position) to be "a *to*-construction without a preposition but with m-case and focus instead" (1995: 207); we agree. Our doubts are limited to their structural parallels between Icelandic and Mainland Scandinavian for the order IO–DO.

6 Zaenen et al. (1985: section 4) claim that certain Icelandic dative-marked objects that undergo the passive are likely to be direct objects. To account for this, they propose

a language-particular characterization for Icelandic direct objects: "an argument that either immediately follows the verb or is an accusative object." It would be preferable to maintain a universal definition, that a direct object is an NP sister to V. We can then say that this V characteristically assigns accusative but, in Icelandic, V can also assign quirky case to certain direct objects.

7 Den Dikken accepts Müller's claim that German indirect objects undergo A'-fronting but argues, contra Müller, that this movement should be considered Scrambling and not Dative Movement per se.

8 Structure-Dependent Case (8) does not imply that every NP complement overtly marked for oblique case must be in a PP. Single NP objects may be obliquely case-marked without any PP being present (so-called quirky case).

9 ZMT (note 13) attributes this trichotomy of case assignment to Hjelmslev and, within Government and Binding, to Babby (1980). Some traditional Latin grammar handbooks also reflect this line of thought.

10 The statement holds also for Latin's five-case system if its ablatives and datives, whose forms are in fact always identical in plurals, are analyzed as a single oblique case assigned by P. A theory of autonomous case lacks any basis for explaining this sort of pervasive case syncretism.

Under this view, the distinct dative singular suffixes in Latin are then oblique case allomorphs required when a governing P is both null and unmarked for the feature SOURCE. (Null Ps which are +SOURCE predictably take the ablative.) It then comes as no surprise that (i) overt Latin Ps can require any case *except* the dative, and (ii) locative DPs mysteriously surface as dative in a Latin poetic style in which locative Ps can 'drop'. Such consequences are accidental in a scheme of autonomous case.

11 Even more restrictively, when a language has no quirky dative direct objects, as in German for example, "there should be no DAT–DAT, DAT–GEN or GEN–GEN verbs in that language." ZMT (479) credits Czepluch (1982) with making this correct prediction within the GB framework.

12 As pointed out by a reviewer, Romance dative clitics on V are not clitics for PPs or Ps. They correspond rather to the DP or D object of an empty P located in an argument or adjunct position. Hence such clitics can have a floating quantifier, as in this French example: *Jean leur a tous donné des livres* 'John them has all given some books'.

13 Jackendoff (1973) argues that P may take two complements (NP + PP), as in the bold PP in *It was* ***down the street to Mary*** *that he tossed the ball*. It is doubtful that a double object of the type studied here could ever appear in a PP, for example, as **It was down Mary the street that he tossed the ball*. That is, the double objects under scrutiny in this study appear only inside XPs headed by V.

14 There seem to be competing styles with respect to the productivity of the English dative alternation. This study and most of the literature focuses on a more conservative style. However, several observers note a less standard style which allows a dative alternation for any verbs consistent with that style:

(i) Somebody with more sense better recommend those girls some different make-up.
He went and designed his parents a real nice family room.

By mixing a verb from academic style with the less standard style in (i), one can create sentences acceptable to no one:

(ii) *Could you reiterate the judge your story, please?
*She caramelized her parents a crème brûlée.

Advocates of treating the English dative alternation as an unpredictable lexical phenomenon sometimes contrast examples like (i), perhaps culled from some observed corpus, with unacceptable examples from the conservative style (ii). This confused methodology proves nothing, since the data are not from a single style of speech.

15 Den Dikken (1995c: 158–159) accepts the logical non-equivalence of pairs as in (14) but argues that this does not preclude a transformational relation between them; he suggests that the difference between members of a dative alternation concerns aspect, not theta-roles. Similarly, Hoekstra (1995: note 5) maintains that 'affectedness' rather than thematic role distinctions differentiates the pairs.

16 Larson (1990) notes that in examples like *Enrico sang Luisa an aria* the theme is "for the benefit of the beneficiary." Thus, this example implies a predication that the aria was for Luisa, but *Susan ate vegetables for her mother* does not imply that any vegetables were for her mother. Since a direct object NP c-commands a PP complement but not an adjunct, it is plausible that LF c-command of one complement by another directly represents a predication, while the non-c-command relation between an object and an adjunct is meaningless.

17 Chung (1976: 54–56) enumerates many properties of the Indonesian 'Dative' rule (i.e., empirical properties of that language's double object construction) which exactly mirror the English double object construction. Lexical accounts have not addressed the issue of expressing these cross-linguistic generalizations.

18 Jackendoff (1990a: 435), in supporting Oehrle's flat structure for English double objects, ascribes many properties of double object sequences simply to their surface order: "An account appealing to linear order generalizes with the greatest of ease."

But at least some Barss–Lasnik paradigms involve asymmetric c-command of the second object by the first independently of linear order, as shown in more detail in Emonds (1993). In (i), direct object antecedents correctly c-command anaphors, but in (ii) objects of a P fail to c-command the anaphor and hence don't qualify as antecedents:

(i) Mary described Bill and John to each other/themselves.
She told Bill and John about each other/themselves.
The company reimburses my brothers for each other's expenses.

(ii) *Mary talked about Bill and John to each other/themselves.
*He argued about John and Mary with each other/themselves.
*He argued with John and Mary about each other/themselves.
*Mary spoke of Bill and John to each other/themselves.
*The company relies on my brothers for each other's expenses.

Unlike the objects of P in (ii), objects of *to* and *from* can bind anaphors, perhaps because these latter PP structures are deleted in LF.

19 Logically, non-alternating double objects as in English (13) are a base construction or they are not. If they are, then dative movement can simply be a structure-preserving subcase of Move α, using the double NP structure as landing sites. If they are not a base construction, then their only plausible underlying source is indeed an NP–PP sequence, that is, exactly as in a transformational analysis of the dative alternation.

Consequently, in spite of their hold on lexicalist advocates, unpaired double object sentences are irrelevant to the whole debate.

20 These are the Projection Principle and the exclusion of complement positions as landing sites.

21 Hoekstra (1995: section 2) first broadly supports and then (sections 5–7) modifies Kayne's empty P proposal. He develops a system in which the empty P can have a different status in different Germanic languages, sometimes being only a sort of case-mark on the NP itself.

22 This null applicative affix effects what derivational morphology calls 'conversion', whereby a class of morphemes in one lexical category appears to occur in another (Walinska de Hackbeil 1983). For example, English lexical adjectives such as *brown*, *correct*, *erect*, *mature*, *narrow*, *obscure*, *open*, *quiet*, *round*, *secure*, *slow*, *smooth*, *steady*, and *sour* can "convert" to derived verbs by virtue of a null causative affix, akin to the overt causative suffixes *-en*, *-ify*, and *-ize*. (None of these affixes is productive.) Unlike these causativizers, applicative affixes do not change the stem category, but then adjectival *-ish* and many non-productive diminutive or gender suffixes on N do not change categories either.

23 Pesetsky (1995: 129) points out that "morphophonological restrictions on affixation are familiar, ranging . . . to syllable-counting restrictions like those on the English comparative." Thus (26) is formally akin to prosaic observations such as: the nominalization suffix *-al* combines only with final-stressed verbs (*arrive*, *betray*, *confer*, *construe*, *dismiss*, etc.); the causativization suffix *-en* combines only with monosyllables; and the comparative suffix *-er* is incompatible with non-initial stress or tri-syllabic A. The proposed applicative affix for English also recalls Keyser and Roeper's (1992) proposal that double objects involve a 'null abstract clitic'.

24 As pointed out by a reviewer, the null affix may combine with lexically 'inseparable' unstressed prefixes, which perhaps in Modern English have come to include *a(d)-*, *be-*, *con-*, *de-*, *en-*, *ex-*, *for-*, *per-*, *pro-*, and *ex-*. In other Germanic languages including Old English, such prefixes generally do not interfere with patterns of uniform initial stress. With this proviso, Herriman's lists of exceptions reduce to a handful of problematic cases: ??*telephone your friends an answer*, ??*guarantee that customer a year of service*, ??*secure the general the base perimeter*.

25 As seen in note 1, passivized indirect objects that are beneficiaries (i.e., Fillmore's *for*-datives under a movement analysis) are also marginally ungrammatical in some dialects (?*Mary was baked a cake*). This rarely discussed and poorly understood restriction plays no role in the following discussion.

26 Even though the unacceptabilities are not dramatic, many researchers, including those without commitments to a transformational component, repeatedly reproduce the relevant data in a wide range of English A'-constructions (e.g., Ziv and Sheintuch 1979; Herriman 1995). Herriman's massive empirical study refers to rightward extraposition as 'Position 3' and to fronting as 'Position 4' and concludes for indirect objects of her Class 1 verbs: "only two examples [of Position 3, extraposition] were found . . . preceded by the . . . object *it*" (1995: 87); "initial position in the clauses, is . . . of even more doubtful acceptability than position 3, discussed above. Many grammarians . . . exclude this position altogether, while others . . . note that it is highly unusual" (1995: 89). Then: "No examples were found of class 2 indirect objects in these positions [extraposition and fronted] in the corpora" (1995: 118); "none of the corpus examples of class 3 indirect objects occur in positions 3 and 4" (1995: 140); "No examples were found of class 4 indirect objects in positions 3 and 4 in the corpora" (1995: 157).

27 Nonetheless, the weak acceptability judgments supporting the generalization (29) are sometimes disputed for some languages or dialects. For example, Tuller (1984) indicates that the pattern of (32b) is grammatical in Hausa dative applicative constructions. Thus, the accounts proposed for (29) may have to contain a language-particular dimension.

28 Larson (1988b: section 2.3) argues that what Ross (1986) terms Complex NP Shift (blocked for prepositionless indirect objects) is not rightward movement of a heavy NP, but leftward movement of a V′ called 'Light Predicate Raising'. This term is misleading, as the V′ in these cases has no 'lightness' requirement: *John [repeatedly sent to the girl who had called] expensive gifts from Selfridge's.* The unanswered question is why unstressed direct objects block raising of V′, however light V′ may be: **John sent to her his.*

29 Den Dikken further argues that A′-extraction of PP with an empty P is always clause-bound.

30 Whitney's account assumes an early construction-specific formulation of dative movement, so that when the indirect object moves, the deep P of the indirect object in (37) also deletes. The first branching node over the deepest NP trace is then V′; consequently, this trace c-commands any 'intermediate trace' in the promoted IO position. Her account perhaps does not spell out clearly enough this role of the loss of P.

If movement of the indirect object does not lead to loss of a branching PP, perhaps the explanation for (29) is rather that *intermediate* traces always contravene Chomsky's cited principle, by binding potential LF variables in their base position. In fact, this eventuality may account for the exclusion of successive cyclic movement in many languages. Ever since Lasnik and Saito (1984), it seems likely that the only intermediate traces permitted are those that for special reasons delete in the derivation of LF.

31 As noted in Oehrle (1976), the order in (48b) can occur in two circumstances: if the IO is a pronoun or if the particle is *back*. Den Dikken (1995c: section 3.15.2) suggests that such a use of *back* is part of the DO Theme NP, rather than a head of a complement.

32 We do not agree with Bowers (1993), for whom it is acceptable to float quantifiers off second objects, as in ??*We sent John books all in nice packages*. See the discussion in section 4.3.3.

33 Although we adopt Marantz's (1993) structural representation (25a) of overt and covert applicative suffixes, his syntactic claims about the structure of double objects strike us as largely arbitrary. Despite the truth-value equivalence of the double object and 'oblique goal' constructions V-NP-PP, he derives them from entirely distinct base structures: "the double object constructions will contain two VPs while the oblique constructions contain only one" (1993: 120). His justification for distinct base structures in terms of two different 'event structures' is basically discursive rather than evidential. Such a proposal is undermined by the arguments in section 3.1 for the derived nature of the double object construction.

Marantz's different structures, in which the first NP asymmetrically c-commands the second, do account for the paradigms of Barss and Lasnik (1986). But does his analysis achieve anything beyond this? According to his own commentary (1993: 130–131), neither of these two distinct structures with the V between the two objects accounts for the surface word orders; rather, "the linear ordering of constituents is part of the S-structure (SS) to PF interface and not a property of SS." Nor is any explanation provided for the differing syntax of second objects in two groups of double object

languages; applicative verbs are said to govern the second NP differently in the two types, but no independent evidence is given for this stipulation other than the point of departure: when the second NPs passivize and undergo object agreement, the applicative verb governs in one way (as in Koopman 1984), and when they do not, the structurally identical applicative verb governs in another (as in Baker 1988a).

34 As he develops his treatment in his chapter 6, Pesetsky finds it advisable to thoroughly recast more familiar conceptions of phrase structure ('layered syntax') in terms of his general theory of 'Cascades', which lies outside the scope of this work. This development affects his conception of how to properly revise (53).

35 As further support for his approach, Baker points out that applicative constructions are impossible with verbs that cannot assign case, that is, with true intransitives. The only class of apparent Chicheŵa intransitives allowing applicative formation includes verbs like *sing* and *dance.* Verbs in this group often take 'cognate' objects, so presumably they can assign case. Rather than being truly intransitive, they may simply not require a direct object. For further discussion, see Alsina and Mchombo (1990).

36 Note 28 of Emonds (1993) claims that Baker's final version of case theory has eight stipulative properties. Even if two or three such properties succeed in accounting for cross-linguistic variation (e.g., with respect to when demoted direct objects may be passivized), the residue remains unattractive.

37 Overt syntactic incorporation of an argument N does indeed exempt it from the Case Filter, as Baker notes, since the latter is a requirement on surface NPs. Hence the obligatory overt incorporation of otherwise caseless second object in Southern Tiwa would actually seem to confirm the operation of the Case Filter, rather than supporting some kind of exemption from it.

38 Principle (3) from Kayne (1981c): "An anaphor that falls under the binding principles must be connected to an antecedent by an unambiguous path." To the extent that c-command mimics linear order, as is frequent in analyses using binary trees, imposing a requirement that antecedents are found on 'unambiguous paths' amounts simply to saying that an anaphor's antecedent 'precedes it' somewhere in the string.

39 Kayne (1984c) also suggests that Stowell's (perhaps English-particular) adjacency requirement on V-object case assignment can be derived from binary branching. He claims that '[V Adv] NP' is not possible if NP is to receive a theta-role and that "V [Adv NP] is impossible" as well. But such structures should then equally well be excluded for the PP complement in the idiomatic (and grammatical) *decide quickly on the boat.* This grammatical VP then requires either ternary branching or some other stipulation about theta-roles equivalent to (or less general than) Stowell's adjacency on case-marking. Clearly nothing has been gained; the adjacency condition has *not* been derived from binary branching.

40 Binary branching may well be a serviceable processing principle for projecting adjuncts, coordination structures, external arguments, or the X^0-internal structure of compounds. That is, it might function as a kind of 'Elsewhere Condition' for tree construction, whenever (56) is not available. But this review concerns precisely those structures for which (56) *is* available.

41 After briefly mentioning some facts of P stranding in Dutch, Koster (1978b) formulates his Nesting Hypothesis in terms of forbidding certain material on both the left and right of empty categories. The hypothesis can be better compared to Kayne's system by limiting it to forbidding material on the right of empty categories.

42 Small clauses are not needed for defining LF binding domains or for LF subjecthood. The locality imposed by Chomsky's (1981: ch. 3) Binding Principle A involves the

presence of a subject in LF. But subjects are generally defined by means of some c-command relation with a phrasal predicate, and make no reference to whether the node immediately dominating them is clausal or not; for example, a direct object c-commands a secondary predication and hence can be its LF subject.

43 Arguments against SC analyses of (57) can also be constructed in terms of gapping. The many studies of this construction in the 15 years following the initial generative study of Ross (1986 [original dissertation 1967]) came to a consensus: well-formed gapping constructions contain two remnant phrases as in (i), but not three as in (ii):

(i) Mary turned on the heat, and John [$_V$ Ø] the two TVs.
Mary turned on the heat in the morning, and John a bit later.
One thief stole [the TV upstairs] and another [a CD player in the hallway].

(ii) ??Mary turned on the heat in the morning, and John the two TVs a bit later.
??One mover put [the TV] upstairs, and another [a CD player] in the hallway.

Consequently, if SC constituents united direct objects and postverbal particles (or double object sequences), the following gapped clauses would have only two remnant phrases and should hence be well-formed:

(iii) ??Mary turned the heat {on/up}, and John the air conditioning {off/down}.
??Mary sent John *Hamlet*, and Sue Bill *Julius Caesar.*

From the marginal status of (iii), one can then only conclude that neither (57) nor double object constructions are best analyzed with single small clause complements.

44 The version of Koster's (1978a) Nesting Hypothesis noted in section 4.2.1 can account for the ungrammatical extractions from objects inside nominalizations that Kayne attributes to their status as small clause subjects. Unfortunately, a full comparison of possible alternative analyses of nominalizations is well outside the scope of this review.

45 From the perspective of small clause advocacy, Den Dikken (1995c: section 2.3) also provides a different sort of critique of Kayne's double object structures, especially those containing particles.

46 This requirement of Den Dikken's on small clauses, that they are actually interpreted as predications, seems to us minimal. Yet many small clause structures proposed by Kayne and other advocates, such as SC analyses proposed for the double complement constructions listed in note 51 below, do not fulfil even this basic criterion of semantic compositionality.

47 Cf. tree (52a) in Den Dikken (1995c: 132). For explicitness, we replace his SC and XP with PP and P′ in accord with his standard view that particles are P. Our use of P′ rather than PP is only for making clear the pairings between heads and projections.

48 We observe that the existence of an extra empty P in dative constructions, essentially teasing apart PATH P and PLACE P positions in Dutch, does not in itself justify an SC structure encompassing the two NPs.

49 The lower P travels further up to the head of SC′ after moving from inside the lowest P′ in (63). Den Dikken is careful to show how each step conforms to the theory of movement he adopts. He also offers a critique of Larson's (1988b) analysis for not conforming to restrictions on movement.

50 Larson treats the preposition *to* in (66) as a 'pure' Case marker without extra semantic content, which renders it susceptible to absorption. His account does not explain why overt P absorption after indirect object movement is obligatory (**They sent$_k$ John$_i$ [$_{VP}$ t$_k$ to t$_i$ a letter]*), even though a stranded P can remain after NP preposing in English passives (*John$_i$ was [$_{VP}$ spoken to t$_i$ by Bill]*).

51 The wide gamut of double complement structures, many already familiar from Chomsky (1965: ch. 2), includes those of *promise (Mary to behave yourself)*, *persuade (Bill it's raining)*, *strike (the children$_i$ as dangerous to them$_i$)*, *prevent (the girls from seeing each other)*, *say (to every student that he's brilliant)*, *speak (two languages to everybody)*, *seem (to John {that/like} it is raining)*, *remind (Mary of her duties)*, *rob (John of money)*, *take (3 hours to eat lunch)*, *taste (spoiled to John)*, etc. In light of the Barss-Lasnik paradigms, the binary branching hypothesis leads to the conclusion that all the preceding parenthesized strings are constituents, presumably small clauses. This conclusion strikes us as a reductio ad absurdum, but seems not to have deterred proponents of binary branching complementation.

52 One of the few discussions of some of these issues is Larson's (1990) response to Jackendoff (1990a); many authors assume shells as in (66) with no attempt to independently justify them.

53 The proposal of Roberts (1985) to the effect that any V must keep on raising until it gets to an I doesn't limit the number of shells; cf. Larson (1988b: 343). Moreover, in some fairly well-supported analyses, e.g., of English participles (Emonds 1985: ch. 2), no Is are paired with V heads.

54 Larson in both articles pursues a rather ingenious account of Heavy NP Shift, claiming the latter doesn't move; instead, his deep V' constituents, in (66) for example, substitute for a higher empty V *([$_{V'}$ send to John] any book you can find*). This V'-raising prima facie violates Chomsky's (1986) restriction against substituting phrases for heads; to avoid this Larson claims it involves 'reanalysis'.

His exclusion of a shifted indirect object (**send a book any woman who will accept one*) is at bottom a stipulation (1988b: 348). Moreover, other instances of Heavy NP Shift (*send John tomorrow any book you can find*) are unnaccounted for, as pointed out by Den Dikken (1995c: note 4).

55 Larson claims that pseudo-gapping can derive from a "V' constituent that is elided or replaced with *do*" (1990: 629). This seems inadequate, since the *do* of pseudo-gapping is in an I position, not a V position, as seen in (68).

56 It would be strange if a particular grammatical verb, say *get*, occurred only in one type of clause, say infinitives.

57 While Bowers does provide an account of the Restriction (29) on A'-extraction of the IO in a double object construction (and criticizes Larson's analysis on this count), he must nonetheless stipulate a condition on traces to do so.

58 This argument is actually double-edged, since if the authors use the same VP structure with a *to*-construction, the direct object will be a specifier of VP. But the latter does not exhibit the same specifier properties in the corresponding sentences; that is, it can be extracted to an A'-position. This problem leads Holmberg and Platzack to redefine the direct object so that it is actually a specialized kind of complement. Their proposal is that the direct object can be a complement of V if it is a sister of V' and V has not licensed case in V' (1995: 195). This rule works only if a P is present to assign case to the indirect object.

59 One has to hesitate about a D which assigns case to a DP complement. For example, definite articles and demonstratives never seem to assign case. While various authors

have proposed that quantifiers such as *all* and *both* have DP complements, such structures are unlike (72) because their specifiers cannot be overt DPs.

60 We must observe that determiners do not typically incorporate into V in the structures studied in Baker (1988a). One may wonder if Johnson's ideas might not be better served with P rather than D as the head of his single complement, along the lines of Den Dikken (1995c).

61 Emonds (1985: chs. 4 and 5, 1993) develops a theory of late or PF lexical insertion for both bound and free morphemes that do not contribute to LF.

62 The late insertion of *to* and *for* as heads of complements crucially uses the fact that the Projection Principle does not hold at the level of PF. These two P must differ by some feature, of course; plausibly, it is ±LOCATION.

63 Since a structure-preserving alternation is a permutation, it necessarily involves two NPs. This may explain why studies of dative and benefactive applicatives (Chung 1976; Aissen 1983: section 5.1; Baker 1988a: section 5.3.2) repeatedly find that indirect object advancement is allowed only with transitive verbs. Analyses such as Hellan's (1991b) and Den Dikken's (1995c), in which bare indirect objects appear only as 'part of' the following direct object, correctly predict this in a different way. Alsina and Mchombo (1990: section 3) dispute this generalization on the basis of examples like the following, in which (passivizable) benefactive applicatives seem based on intransitives:

(i) Yêsu a-ná-f-ér-a anthu ônse.
1-Jesus 1-PST-die-APPL-Ø 2-people 2-all
'Jesus died for all people.'

The examples given by these authors involve verbs that are plausibly 'unaccusative', *die* and *run*. If the construction (i) somehow involves an NP-trace in object position, the generalization can perhaps be maintained.

64 Emonds (1993) implicitly rejects the inevitability of a trace with every movement. His analysis is more compatible with theta-roles being assigned to complements 'phase by phase', as they are merged with a selecting head. Such interpreted complements are then present within X^1 throughout a derivation, including by traces if extracted from X^1. No additional restriction immobilizes them within X^1.

65 We can conclude from Aissen's (1983) treatment that the Tzotzil lexicon lacks an appropriate directional P, thus ruling out the unshifted version: "*ta* is the only preposition in Tzotzil and functions variously to introduce locative, temporal, and instrumental phrases" (1983: 287). And: "Any derivation in which the final level of structure contains an indirect object [i.e., an object of P] is ill-formed" (1983: 298).

66 It would be perhaps less stipulative to assimilate the empty co-indexed P_j in (75) to a sort of trace, in the sense that movement generally leaves behind co-indexed covert categories.

67 Another possible locus β for alternatively realizing PATH (α) is on a closed-class object of P. Certain grammatical Ds may be 'inherent dative pronouns' with an optional PATH feature, as in the dialectal *John gave it me* and *The book was sent me* (Cf. **The book was sent close friends*.) Such Ds could stand alone as bare IOs without undergoing dative movement. This may also explain the dialectal possibility allowing "short" *wh*-fronting of datives contravening (29), reported in Den Dikken (1995c: section 4.2).

68 As V-final languages, Standard Dutch and West Flemish may or may not fall under generalization (ii) in the text. Cf. section 1.1.

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22 Ellipsis in DP

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1 Introduction

The study of ellipsis in noun phrases originates as part of a broader investigation of ellipsis as *null anaphora*, where missing material is interpreted under identity with an antecedent in much the same way as a lexical pronoun. Some examples are given in (1–3) below, where in each, the ellipsis site is interpreted under identity with an antecedent in the previous discourse:

(1) The committee endorses every bill the president proposes but the advisors approve only a few [e].

(2) I really liked this book and I know you'll like these [e].

(3) The students went to the bookstore and each [e] bought a book by Chomsky.

Early analyses of ellipsis explore the hypothesis that null and lexical anaphors are constrained by the same universal principles. Indeed, in early work in generative syntax, ellipsis in English noun phrases (typically referred to as N' anaphora or

N' ellipsis) is analyzed as resulting from a deletion transformation, *one's* deletion, in which ellipsis results from deletion of a lexical proform. The status of the *one's* deletion transformation figures prominently in early debates between proponents of the 'deletion' approach to null anaphora and advocates of the 'interpretation' approach, where empty categories are base-generated and subject to rules of interpretation. Ellipis in noun phrases is subsequently analyzed within the Principles and Parameters framework as involving proper government of *pro*, an empty pronominal category, licensed by what is ultimately argued to be a functional category DET, the head of DP. This approach leads to in-depth, cross-linguistic analyses of the properties of the determiner and quantifier systems to determine the feature specifications of different functional heads, and the role those features play in licensing and identification. This research also explores connections between ellipsis in DP and substantive adjective and partitive constructions, in particular partitives which involve clitic *en* (French) and *ne* (Italian).

2 Ellipsis as null anaphora

Ross (1986; original dissertation 1967) is the first to investigate the parallels between ellipsis and lexical pronouns. His crucial insight is that ellipsis phenomena in general (VP ellipsis, sluicing, and ellipsis in NP) appear to violate the same cluster of constraints also violated by pronouns, that is, constraints respected by movement rules. Moreover, other phenomena involving 'missing' constituents, such as gapping and comparative deletion, do not exhibit this behavior, and thus appear to be distinct from ellipsis. Specifically, Ross observes that both pronouns and ellipsis obey the Backwards Anaphora Constraint (BAC) (see also Langacker 1966), but violate both the Complex NP Constraint (CNPC) and the Coordinate Structure Constraint (CSC). (See also Hankamer 1971.)

That ellipsis sites, like pronouns, obey the BAC is illustrated in (4–7), which show that both pronouns and ellipsis sites can precede their antecedents, but only when contained in subordinate but not coordinate clauses:

(4) a. John enjoys waking up early, and *he* likes to see the sunrise.
    b. **He* enjoys waking up early and *John* likes to see the sunrise.

(5) a. John enjoys waking up early because *he* likes to see the sunrise.
    b. Because *he* likes to see the sunrise, John enjoys waking up early.

(6) a. Each student woke up early and all [e] saw the sunrise.
    b. *All [e] saw the sunrise, and each student woke up early.

(7) a. Each student woke up early because all [e] wanted to see the sunrise.
    b. Because all [e] wanted to see the sunrise, each student woke up early.

(8) illustrates that both pronouns and ellipsis can be contained in NPs that do not also contain their antecedents. In Ross's terms, pronouns and ellipsis thus violate the CNPC:

(8) a. We heard that *Mary* likes [$_{NP}$ the man who talked to *her* at the party].
b. Most people liked Mary's *presentation*, but I also talked to [$_{NP}$ a number of people who didn't like Sue's [e]].

That pronouns and ellipsis violate the CSC is illustrated in (9), where the pronoun and ellipsis site are contained in coordinate clauses that do not also contain their antecedents:

(9) a. [John saw Mary] and [*she* said hello to *him*].
b. [John read Mary's book] and [she read his [e]].

In current terms, what we might view as null anaphors in ellipsis contexts seem to obey Principle B of the Binding Theory in (10), just like lexical pronouns. That is, like pronouns, ellipsis sites are free in their binding domain, which we can informally define here as the clause containing them. (This does not apply to Antecedent-Contained Ellipsis, which will not be discussed here.)

(10) **Binding Theory:**
A An anaphor must be bound in its binding domain.
B A pronoun must be free in its binding domain.
C An R-expression must be free.

Ross exploits this connection between ellipsis and pronominalization, proposing that the source of ellipsis in noun phrases is in fact the pronoun *one*, which is deleted by a transformational rule.

2.1 One's *deletion*

Ross proposes that *one's* deletion involves replacement of part of NP at deep structure by the pronoun *one*, as in (11b), and subsequent deletion of this pronoun by transformational rule, to derive the surface structure in (11c):

(11) a. Mary bought two books on astronomy, and she read [both books on astronomy] last night. (deep structure)
b. Mary bought two books on astronomy, and she read [both *ones*] last night. (*one* pronominalization)
c. Mary bought two books on astronomy, and she read [both] last night. (*one's* deletion)

Deriving ellipsis in noun phrases by *one's* deletion raises a number of questions that suggest that it can be the source of ellipsis only at a certain cost to the grammar. Investigation of the strengths and weaknesses of *one's* deletion lays important groundwork for discussions of *deletion* vs. *interpretation*, and whether it is in fact explanatory to derive elliptical constructions from deletion of lexical pronominal counterparts. *One's* deletion also raises questions about the internal structure of the noun phrase, and highlights the different distribution of pre-nominal elements that can successfully introduce the ellipted category in NP in English.

One immediate issue that arises in a *one's*-deletion approach to ellipsis is that it requires certain cases of ellipsis in noun phrases to derive from ungrammatical sources. Jackendoff (1971) points out, for example, that the sentence in (12a) must derive from the ungrammatical sentence in (12b) (see also Perlmutter 1970a; Sommerstein 1972). A *one's*-deletion analysis is therefore particularly problematic for deriving ellipsis in mass noun phrases:

(12) a. Max's wine was good but Bill's [e] was even better.
b. *Max's wine was good but Bill's *one* was even better.

Jackendoff (1977) circumvents the problem of *one's* deletion by proposing that ellipsis in noun phrases derives not from deletion, but rather from noun phrases with base-generated, empty pronominal (PRO) heads. Determiners preceding PRO undergo a 'substantivization' rule, given in (13):

(13) ART − PRO ⇒ 1 + substantive − 2
OBLIGATORY

This rule derives the ellipsis constructions in (14):

(14) John wanted to read the dossiers of famous linguists, and/but he succeeded in reading [Morris's/some/many/one/mine/three/none/these/every one PRO] NP

Substantivization has the additional effect of converting certain determiners into the appropriate phonological forms before PRO, as illustrated in (15):

(15) a. every + PRO = every one + PRO
b. no + PRO = none + PRO
c. my + PRO = mine + PRO

Jackendoff (see also Selkirk 1977) explicitly connects the syntax of ellipsis in noun phrases to that of partitive noun phrases, arguing that both dominate PRO heads, and that as a result, both undergo substantivization of a determiner or quantifier. The partitive noun phrase *each of the trees*, for example, has the internal structure in (16), and the ellipsis construction *each [e]* has the structure in (17):

(16) $[_{N'''}$ each $[_{N''}$ $[_{N'}$ PRO of $[_{N'''}$ the trees]]]]

(17) a. $[_{N'''}$ each $[_{N''}$ tree]]
b. $[_{N'''}$ each $[_{N''}$ PRO]]

In both (16) and (17b), PRO triggers substantivization of the quantifier *each*. Jackendoff predicts that both elliptical and partitive noun phrases will exhibit the same changes in phonological shape of the quantifier or determiner that precedes PRO. He therefore predicts that in ellipsis constructions, the quantifiers *every* and *no* are realized as *every one* and *none* before PRO, just as they are in partitives:

(18) a. every one of the men/*every PRO of the men
b. every one PRO/*every PRO

(19) a. none PRO/*no of the men
b. none PRO/*no PRO

Perlmutter (1970a) notes further problems with *one's* deletion, observing that although prenominal adjectives can introduce the N' pronominalized by *one*, *one's* deletion in these contexts is nevertheless ungrammatical. (See Baker 1978 and Hornstein and Lightfoot 1981 for arguments that *one* pronominalization replaces N'.)

(20) a. Svetlana has two red masks and Guido has a green ***(one)**.
b. Svetlana has two red masks and Guido has one too.
c. *Svetlana has two red masks and Guido has a one too.

Perlmutter explains these facts by proposing that there exist in English both a pronoun *one* and a numeral *one*, and further, that the English indefinite article is the unstressed counterpart of the numeral *one*. (See also Jackendoff 1977 for discussion of two possible derivations of *one*.) This proposal explains a set of recalcitrant ellipsis facts, in addition to those illustrated in (20).

Perlmutter argues that the phrase *a green one* in (20a) actually derives from the grammatical source in (21), where the numeral *one* is unstressed, and thus can reduce to *a*:

(21) one green one ⇒ a green one

To block the ungrammatical (20c), Perlmutter proposes that unstressed pronominal *one* is obligatorily deleted after a numeral. The source of (20c) is thus (22):

(22) Svetlana has two red masks and Guido has one one too.

Unstressed pronominal *one* in (22) will obligatorily delete, deriving the grammatical (23):

(23) Svetlana has two red masks and Guido has one too.

Further evidence for this claim is given in (24–25), where we see that pronominal *one* deletes only after numerals, but not after adjectives:

(24) Svetlana sells red masks and Guido sells green ones

(25) a. *Svetlana sold three masks and Guido sold four ones.
b. Svetlana sold three masks and Guido sold four.

An account in which *a* is the unstressed counterpart of the stressed full numeral *one* also explains the contrast illustrated in (26):

(26) a. *a village in Greece and a (an) in Yugoslavia.
b. a village in Greece and one in Yugoslavia.

According to Perlmutter, (26a) is ruled out because *a* is a proclitic with no host to which to attach. Under such conditions only the stressed full form of the article, namely the numeral *one*, can appear.

Though Perlmutter's analysis makes certain correct predictions about ellipsis in indefinite noun phrases (and a variety of other data involving the distribution of the indefinite article *a*), the analysis is unavoidably ad hoc, as it must stipulate that *one* obligatorily deletes after numerals, but not after adjectives. We are thus left without an explanation for the ungrammaticality of the (b) sentences in (27–28). In these sentences, unstressed *a* can cliticize to *new*, but ellipsis is nevertheless ungrammatical:

(27) a. Svetlana sells old masks and Guido sells new ones.
b. *Svetlana sells old masks and Guido sells new.

(28) a. Svetlana wants to sell an old mask and Guido wants to sell a new one.
b. *Svetlana wants to sell an old mask and Guido wants to sell a new.

In addition, as Perlmutter himself points out (fn. 6), it appears that certain determiners other than numerals trigger obligatory deletion of *one*:

(29) a. *my flag and hers one
b. my flag and hers

Again, it remains to explain why *one's* deletion is obligatory in (29b), but blocked after adjectives.

Other early approaches to *one's* deletion address the status of personal pronouns, such as *we*, *you*, *she*, etc. Postal (1969) argues that personal pronouns are

definite articles that derive from noun phrases in which they are followed by the pronoun *one. One* deletes by a late (and, Postal admits, ad hoc) rule deriving the forms in (30b) from the sources in (30a). The status of pronouns as determiners thus emerges early on in discussions of ellipsis in noun phrases:

(30) a. we ones/you one/she one
b. we/you/she

Sommerstein (1972) takes the opposite approach, claiming that the definite article *the* is a pronoun, replacing a full NP. He gives a number of arguments against Postal's analysis of pronouns as determiners, based on evidence from Greek, a language which allows constructions analogous to English *the in London* and *the loved by Rebecca*. He argues that in English count-noun phrases, *one* must be inserted after *the* in order to derive *the one in London* and *the one loved by Rebecca*. Thus, his approach includes an obligatory rule of *one* insertion, which inserts *one* in count-noun phrases to replace a deleted N-head. *One* insertion is similar in spirit to *do* support, inserting a dummy element to realize features, in this case, number. As for ellipsis in noun phrases, he provides only an account of the ungrammatical (31):

(31) *The cheese in this package is fresher than **the** in that package.

He proposes that *the* must be altered to the stronger form *that* in order to derive the grammatical sentence in (32):

(32) *The cheese in this package is fresher than **that** in that package.

For related discussion of personal pronouns as determiners, and whether or not they are followed by empty categories, see Corblin (1990), Hewson (1991), and Luján (2000).

2.2 *Deletion vs. interpretation*

Researchers in the 1960s and 1970s generally concur with Ross that ellipsis is a type of null anaphora, but not all agree with his claim that both pronouns and ellipsis are derived by the same (in early frameworks, transformational) rules. There is extensive debate concerning whether ellipsis phenomena (in particular, VP ellipsis and sluicing) are derived by deletion of a copy of an antecedent (with or without the intermediate step of pronominalization as Ross proposes), or whether ellipses are base-generated empty structures, whose content is supplied by rules of interpretation (the 'interpretive' approach, an early illustration of which is Jackendoff's analysis of empty N as PRO). Of central concern in these debates is the definition of 'identity' between null anaphors and their antecedents,

and more specifically, whether null anaphors have internal structure, and if so, which grammatical model best expresses how such structure is derived and interpreted. Work toward resolving these issues leads researchers to sharpen the distinction between ellipsis and other phenomena involving missing material, such as gapping, comparative deletion, stripping, and null complement anaphora, and to move toward a grammatical model which requires a distinct level of Logical Form.

In general, early arguments that ellipsis is derived by deletion under identity hinge on the evidence that an ellipsis site must, at some level of the derivation, have internal syntactic structure in order for the missing phrase to be properly interpreted. Such arguments are raised partially in response to Akmajian's (1968) 'non-expansion hypothesis', in which null anaphors are base-generated as empty, unexpanded non-terminals, associated with their antecedents through rules of interpretation. (Proponents of the strict transformational position on the derivation of anaphora include Postal 1972; Hankamer 1973a; Morgan 1973; Ross 1986; and most of the pre-*Aspects* literature (Chomsky 1965). Defenders of the interpretive approach include Dougherty 1969; Jackendoff 1969, 1971, 1977; Shopen 1972; Wasow 1972; Fiengo 1974; Williams 1977.)

How the notion of 'syntactic identity' is articulated, however, depends on the model of grammar defended. For instance, Wasow (1972) proposes an interpretive theory in which null anaphors are base-generated empty categories with internal structure to which interpretive rules apply. Lexical pronouns, on the other hand, have no internal structure, and are also subject to interpretive rules. Williams (1977) defines syntactic identity in terms of identity of Logical Form, rather than strict surface structure identity, arguing that an ellipsis and its antecedent are related by interpretive rules that apply at LF (in his model, Discourse Grammar). Deletion rules, on the other hand, are restricted to applying to surface structures (Sentence Grammar), to operations that obey Ross's Constraints, such as gapping and comparative deletion. In Williams's model ellipsis (including sluicing, ellipsis in NP, and VP ellipsis) is distinct from gapping and comparative deletion. In Sag's (1980) model, ellipsis, comparative deletion, and gapping are all derived by deletion, an operation that in the case of ellipsis applies to logical forms, in a model of grammar quite different from Williams's. Hankamer and Sag (1976) further elucidate this deletion approach, arguing that ellipsis patterns with stripping and gapping as an instance of "surface" rather than "deep" anaphora, based on, for example, the claim that surface but not deep anaphors require linguistic antecedents. (See Schachter 1977 and Chao 1988 for arguments that ellipsis can have pragmatic antecedents, and Lobeck 1995 for specific arguments that this holds of ellipsis in noun phrases. See also Williams 1977, who suggests (fn. 6) that anaphoric elements dominated by N and NP can be pragmatically controlled, and that all others require linguistic control. There is thus, in his view, no difference between deep and surface anaphora, and no implicit argument for deletion based on the presence or absence of pragmatic control.)

3 The phrase structure of ellipsis in NP

Much of the early research on ellipsis in NP assumes without argument that ellipsis operates on a projection of N, but other work on Germanic and Romance languages explores the phrase structure of ellipsis in more detail, providing important evidence for bar-level distinctions in NP, and sharpening structural distinctions among the different prenominal elements that introduce those projections. This early research on the phrase structure of ellipsis in noun phrases lays important groundwork for arguments that noun phrases are projections of the category Determiner, and for analyzing ellipsis in such phrases as ellipsis in DP.

Jackendoff (1971, 1977) examines certain crucial differences between gapping and ellipsis in NP and VP first noted by Ross (1986), and concludes that gapping and ellipsis in these categories are different operations, (for him, gapping, but not ellipsis, involves deletion), but that both operate on N′, the lowest projection of N. He bases this conclusion on evidence that prenominal adjectives must be included in both operations. An example of ellipsis is given in (33), based on evidence in Jackendoff (1971). (The example is constructed with the ellipsis in a subordinate clause, to distinguish ellipsis from gapping, which cannot occur in subordinate clauses, as pointed out early on by both Ross 1986 and Jackendoff 1971, among others.)

(33) Tureck's performance of Bach on the piano doesn't please me as much as
  a. *[$_{NP}$ Glenn Gould's [$_{N'}$ fabulous [e]].
  b. [$_{NP}$ Glenn Gould's [$_{N'}$ e]]

Ellipsis must also include N and its complements, as illustrated in (34), with an example based on the discussion in Jackendoff (1977):

(34) ***Although** [$_{NP}$ Max's [$_{N'}$ [e] about Sue]] was amazing, Bill's story about her was virtually incredible.

Ronat (1977) comes to the opposite conclusion for French, claiming that in contrast to English, in French N′ *cannot* be empty. Her arguments hinge on evidence that only elements that are dominated by N′ can introduce an ellipted (for her, deleted) noun. Ellipsis of N is impossible with other adjectives or relative clauses dominated by higher projections of N, as ellipsis in this case would leave N′ empty. The relevant contrasts are given below. (See also Milner 1973, 1974 and Kayne 1975 for arguments regarding the distribution of adjectival modifiers and quantifiers in French, and Barbaud 1976 for the distribution of adjectives in French noun phrases.)

(35) a. [$_{NP}$ les [$_{N'}$ deux [$_{N}$ e]]]
  the two [e]
  'the two'

b. [$_{NP}$ la [[$_{N'}$ e] verte]]
the green
'the green (one)'

(36) *[$_{NP}$ le [$_{N'}$ e]]
the [e]
'the one'

(37) *[$_{NP}$ le [$_{N'}$ e] qui est susceptible de te plaire]
the that is susceptible of you please
'the (one) that pleases you'

(38) *[$_{NP}$ le [$_{N'}$ e] susceptible de te plaire]
susceptible of you please
'the (one) that pleases you'

(39) *[$_{NP}$ les [$_{N'}$ e] magnifiques]
the magnificent(s)
'the magnificent (ones)'

In an alternative approach to substantive adjective constructions in French, Herschensohn (1978) argues that, contrary to the analysis proposed by Gouet (1976), certain substantive adjectives are deep anaphors, rather than derived by deletion of a noun, as Gouet proposes. Herschensohn bases her claim on evidence that such constructions can take pragmatic antecedents, a criterion for identification as a deep anaphor, according to Hankamer and Sag (1976). Other, superficially similar constructions require syntactic control, and are thus surface anaphors, involving deleted nouns.

For example, the contrast between (40) and (41) suggests that the substantive adjective *petits* requires a linguistic antecedent and is thus a surface anaphor, derived by deletion of a noun:

(40) Il y avait de grands garçons et de petits aussi.
there were of big boys and of little too
'There were big boys and little (ones) too.'

(41) [Two individuals are looking out a window at (among other things) boys playing]
#Il y avait de petits aussi.
there were of little too
'There were little (ones) too.'

Herschensohn contrasts the substantive adjectival constructions with those discussed by Gouet, which involve regional and brand names. These adjectives appear to be pragmatically controlled:

(42) [Individual standing at a bar]
Un bourgogne blanc, s'il vous plaît.
a burgundy white if you please
'A (glass of) white Burgundy (wine) please.'

In Herschensohn's view, certain substantive adjectives, namely those involving brand names, do not involve deletion of a noun, while others, which require syntactic control, do.

Ronat's work shifts the focus of ellipsis in noun phrases from deletion vs. interpretation to the elements that introduce the ellipted category, and explicitly connects ellipsis with constructions involving partitive *en*. Ronat adopts Kayne's (1975) claim that quantifiers and numerals are dominated by N', and argues that in (43), the empty noun is therefore sister to a numeral in N'. Ronat analyzes such constructions as involving ellipsis, and claims that ellipsis is grammatical because only N, but not N', is empty:

(43) J' en ai mangé [$_{NP}$ [$_{N'}$ un [e]].
I of-them have eaten one
'I have eaten one of them.'

See 4.3 for further discussion of connections between ellipsis in noun phrases and partitive *en* constructions.

4 Ellipsis, proper government, and the Empty Category Principle

Within the Principles and Parameters framework of the early 1980s, empty categories are argued to be base-generated, with their syntactic distribution constrained by various interacting principles of government (in particular 'proper' government) and binding. Within this framework, the focus on ellipsis shifts from deletion vs. interpretation to whether empty categories in ellipsis constructions can be argued to fit into a larger typology of empty [+/−pronominal, +/−anaphor] elements, based on the syntactic conditions under which they are licit.

Zagona (1982, 1988a, 1988b) is first to analyze empty VP in ellipsis constructions as typologically *pro*, an empty pronominal category, constrained by principles of proper government and the Empty Category Principle or ECP of Chomsky (1981). Her analysis captures the earlier generalization that ellipses, like pronouns, seem exempt from Ross's Constraints, and in terms of the Principles and Parameters framework, subject to Principle B of the Binding Theory. (Recall that for Jackendoff 1972, 1977, ellipsis in noun phrases involves an empty PRO, which one might argue is another early precursor of *pro*. Wasow 1972 also suggests that ellipted constituents are base-generated empty proforms.) Zagona argues that

empty *pro* VP in English and Spanish must be properly governed by a head specified for 'rich' agreement, on a par with empty subjects in Romance (Rizzi 1982a). Zagona argues that empty VP satisfies the ECP when properly governed by INFL, and that INFL is only a proper governor when specified for rich agreement features (in this case, Tense features). (See also Chao 1988, who argues that *pro* in VP ellipsis and sluicing constructions is constrained by the ECP.)

The following sections outline the progression of ECP analyses of ellipsis in noun phrases, from 'specifier' government to proper government by the functional categories DET, Q, and NUM. This research sharpens the distinction between ellipsis and substantive adjective constructions, and clarifies connections between empty N in ellipsis constructions and partitives in which ellipted N alternates with the trace of partitive *en/ne*.

4.1 Specifier government in NP

In a first attempt at analyzing ellipsis in NP in the Principles and Parameters framework, Lobeck (1987) extends Zagona's approach to VP ellipsis to both sluicing and ellipsis in noun phrases in English (with a short discussion of French), in an attempt to provide a unified, ECP approach to the distribution of empty categories in ellipsis constructions across categories. She argues that *pro* in ellipsis constructions must be properly governed by a specifier (and thus subject to 'specifier government'), and that SPEC–HEAD agreement features of tense, possession, number, etc. suffice to designate certain specifiers as proper governors. In her framework ellipted projections of N must be properly governed by SPEC(N) specified as [+number] or [+poss], as illustrated in (44). Quantifiers are specified as [+number] in her approach even when singular, accounting for the grammaticality of (44e):

(44) a. The committee endorses every bill the president proposes but the advisors approve only [$_{NP}$ a [few [e]].
b. I really liked those books and I know you'll like [$_{NP}$ these [e]].
c. Sally discussed the committee's decision to vote yes before she mentioned [$_{NP}$ the president's [e]].
d. Even though she already has [$_{NP}$ two [e]], Mary bought three more dogs yesterday.
e. The students went to the bookstore and [$_{NP}$ each [e]] bought a book by Chomsky.

Lobeck adopts Emonds's (1985) arguments that certain grammatical formatives are inserted late in the derivation, and thus unavailable as surface structure proper governors. Possessive NPs, demonstratives, and certain quantifiers are, for example, deep structure SPEC(N), but definite and indefinite articles and the quantifier *every* are inserted into the derivation at PF. In this way, Lobeck explains the ungrammaticality of ellipsis in (45), where SPEC(N) is not filled, and fails to properly govern *pro*:

(45) a. *I really liked this book and I know you'll like [$_{NP}$ the [e]] too.
b. *I'd love to spend a few weeks in Hawaii and I know you'd like to spend at least [$_{NP}$ a [e]] there too.
c. *The committee endorses every bill the president proposes and the advisors approve just about [$_{NP}$ every [e]] too.

Lobeck remarks briefly on the failure of ellipsis in noun phrases in French, illustrated in (46–47):

(46) *Jean a goûté du vin mais il n'a pas goûté [beaucoup[e]].
John tasted some wines, but he didn't taste many [e].

(47) Jean a goûté du vin mais il n'en a pas goûté beaucoup [e].
John tasted some wines but he of-them didn't like many [e].

Lobeck follows Milner (1978b) in analyzing the empty category in (47) as the N' trace of *en*, adopting also Kayne's (1981b) and Hendrick's (1983) arguments that the trace of *en* is licensed by lexical government. This accounts for the subject/object asymmetry illustrated by comparing (47) with (48) (see also Haik 1982):

(48) *Beaucoup [e] en ont goûté.
Many [e] of-them have tasted.

In (48), the trace of *en* is not lexically governed by the verb, and the derivation violates the ECP. Lobeck takes this as evidence that empty categories in NP are not licensed by specifier government in French; rather, the language relies on a different (clitic *en*) strategy to license empty categories. (46) is ungrammatical where the *en* strategy is not employed.

In a comprehensive study of a range of phenomena in English NP, including ellipsis, Olsen (1987) proposes an analysis of ellipsis which crucially involves specifiers and an empty category, but which is not explicitly stated in terms of proper government and the ECP. Olsen's approach also distinguishes between ellipsis in noun phrases and substantive adjectival constructions, arguing for two types of empty N: empty anaphoric N (ellipsis) and empty N specified as [+human, +generic].

Olsen argues that ellipsis in noun phrases involves an empty anaphoric head N (distinct from *pro*), whose content is recoverable from a discourse antecedent. She proposes that only specifiers that can combine with empty N (and that do not interfere with its anaphoricity) can introduce empty N in ellipsis contexts. This situation holds in (49), but not (50), where, in the latter case, anaphoric N has attempted to combine with an attributive adjective, specified for incompatible features. N must be realized here as *one*, or be ruled out:

(49) John's car and Bill's [e]

(50) John's new car and Bill's old one/*[e]

Certain adjectives with appropriate features can combine with empty N that is not anaphoric, but specified as [+human, +generic], in 'substantive' adjectival constructions:

(51) the able [e]

For Olsen, then, there are two types of empty N, neither of which can be analyzed as *pro*, a designation reserved for empty pronominal noun phrases rather than empty heads. Though Olsen does not explicitly state the constraints on ellipsis in terms of 'specifier government', her analysis parallels Lobeck's in relying on feature specification of specifiers to explain the distribution of ellipted nominal projections in English.

The early work on ellipsis and the ECP re-emerges in later work in a Principles and Parameters framework in which proper government is analyzed in more detail as involving licensing and identification. At the same time, researchers are exploring the role of functional categories in X-Bar Theory, including the status of DET as a functional head of DP. Within this framework, ellipsis in noun phrases is reanalyzed as involving licensing and identification by a functional X-0 rather than a specifier.

4.2 Ellipsis in DP

One immediate problem with the notion of 'specifier government' is that it assumes that specifiers, rather than heads, can properly govern their sisters, namely intermediate projections of N (as noted by Contreras 1989). Possessive NPs in SPEC(N) are a good case in point, and fall outside of the typical definition of 'proper governor'. The 'DP Hypothesis' (proposed originally by Brame 1982 and elaborated by Abney 1987 and others) provides an alternative framework within which to analyze licensing and identification in ellipsis constructions, as prenominal elements are analyzed as heads, rather than specifiers. The empty category in ellipsis constructions can therefore be analyzed as properly governed in most cases by the functional head DET, rather than by a (possibly phrasal) SPEC(N).

Torrego (1987) is the first to provide an ECP account of what can now be referred to as ellipsis in DP, arguing that certain determiners in Spanish, Catalan, and Portuguese license empty pronominal N heads in noun phrases. Torrego analyzes this empty category as *pro*, and extends Borer's (1986) argument that *pro* must be licensed by person features (AGR). Torrego's argument hinges on the contrastive distribution of elliptical noun phrases headed by the definite determiner *el* and the demonstrative *este*, and the types of modifiers required in NP when N is empty. In order to claim that *el* governs and thus properly governs (licenses) *pro*, Torrego adopts the DP hypothesis, assuming that determiners head DP, with *pro* in this case as the empty head of the NP complement of DET (as proposed by Hellan 1985 for headless nominals in Norwegian).

Torrego observes that *el* can apparently license empty N when N is modified by *de* + XP, as illustrated in (52a). (Torrego presents a few arguments that *el* is not a clitic, and hence that such constructions involve ellipsis. Suñer 1986 gives an opposing view.) Empty N modified by a 'semantically contentful' PP is ungrammatical, as illustrated in (52b):

(52) a. El [e] de las Meninas no está en este museo.
'The (one) of the Meninas is not in this museum.'
b. Presenciaron los *(asaltos) a las zonas urbanas.
'They witnessed the (assaults) in the urban areas.'

Adjectival modifiers seem to have the same properties as *de* + XP modifiers with respect to ellipsis; empty N in such constructions is apparently licensed, as in (53). (54) illustrates further that such adjectival modifiers can 'save' ellipsis constructions that include semantically contentful PP modifiers:

(53) Los [e] verdes son bonitos.
'The green (ones) are nice.'

(54) a. *Leí los [e] sobre política.
'I read the (ones) about politics.'
b. Leí los [e] cortos sobre política.
'I read the short (ones) about politics.'

From these and other data Torrego concludes that the definite determiner in Spanish is too 'weak' to license empty N alone; the relevant person features for licensing are contributed by *de* + XP. 'Stronger' determiners, such as *este/ese/aquel*, are specified for person. Consequently, they license *pro* without the additional required *de* PP, as illustrated in (55):

(55) a. También acaban de salir estos [e] sobre anatomía.
b. *También acaban de salir los [e] sobre anatomía.
'There also just appear these/the (ones) about anatomy.'

Torrego concludes that *de* + XP modifiers, like adjectives, are [+N], and contribute the relevant AGR features to license empty N that are not contributed by the weak definite determiner. Demonstratives are specified for sufficient features to license *pro*, and thus empty N can occur without the additional presence of *de* + XP. (See also Schroten 1992, Brucart 1987, and Brucart and Gràcia 1986 for related discussion.)

As mentioned above, Contreras (1989) observes that an approach to ellipsis in terms of specifier government is ad hoc, as it extends the ECP to apply to both empty intermediate and maximal projections, and includes specifiers as well as heads in the class of proper governors. Aside from these theoretical considerations he shows that specifier government fails to account for certain empirical distinctions between English and Spanish, and thus must be rejected.

He critiques two parallel analyses of specifier government involving ellipsis in NP, Lobeck (1987) for English and Bosque (1986) for Spanish. Bosque argues that the relevant difference between Spanish and English is that in the former, the article agrees with the head noun in gender and number. Specifiers with this 'rich agreement' properly govern empty N or N'. This rich SPEC–HEAD agreement relation fails to hold between English articles and N, and specifier government fails. (Examples are from Contreras 1989.)

(56) Vi al estudiante de física y al [e] de química.
'I saw the student of physics and the (one) of chemistry.'

(57) Dame este libro de física y ese [e] de química.
'Give me this book on physics and that [book] on chemistry.'

Bosque attributes the ungrammaticality of (58) to the feature specification of Spanish possessives; unlike definite articles and demonstratives, possessives are not specified for gender and number, and hence fail as proper governors:

(58) *Su libro sobre Borges es mejor que su [e] sobre Cortázar
'His/her book on Borges is better than his/her [e] on Cortázar.'

As Contreras points out, Bosque's analysis fails to account for the failure of ellipsis in French, where in possessives, the head N agrees in gender and number with the specifier:

(59) *mon livre de logique et ton [e] de littérature
'my book on logic and yours [e] on literature'

Bosque also fails to explain the fact that in both English and Spanish, numerals (which are not also specified for gender) apparently specifier-govern empty nominal categories, as illustrated in (60):

(60) María compró tres libros de fisica y Juan compró dos [e].
'Mary bought three books on physics and John bought two [e].'

And finally, an approach restricted to gender as a "rich" agreement feature fails to explain why certain, but not all, quantifiers appear to properly govern empty nominals in both English and Spanish:

(61) a. Si bien algunos estudiantes quieren reformas, muchos [e] no la quieren.
b. Although some students want reforms, many [e] don't want them.
c. A propósito de estudiantes, varios [e] quieren verte.
d. Speaking about students, several [e] want to see you.

(62) a. *Aunque no todo politico miente todo [e] es vanidoso.
b. *Although not every politician lies-every [e] is vain.
c. *Si cada [e] tiene una solucion diferente, nunca resolvere todos estos problemas.
'If each has a different solution, I'll never solve all these problems.'

To resolve the various problems with specifier government, Contreras adopts Fukui and Speas's (1986) theory of phrase structure (adapted from Brame's 1981, 1982 original proposal), in which functional categories (DET, COMP, and INFL) head phrases and project to X". Lexical categories N, V, A, and P project to X' as maximal. This distinction in what is analyzed as maximal is predicated on the assumption that only functional categories 'discharge' Kase features to a specifier position, and hence project beyond X'. Kase features include tense and agreement in INFL, [+poss] in DET, and [+WH] in COMP. Contreras proposes that only functional categories can properly govern ellipted nominal projections; hence, only DET specified for certain features that are appropriately "rich" can do so. The article in Spanish is so specified, but the English article is not. He suggests further that the evidence that DET specified as [+poss] can properly govern an ellipted complement suggests that the feature [+poss] qualifies as an appropriately "rich" agreement feature, and DET properly governs N' (a maximal projection, according to Fukui and Speas):

(63) John's book was good, but [$_{DP}$ Mary [$_{D}$'s [$_{N'}$ e]] was even better.

Most of Contreras's arguments concern the status of quantifiers as functional heads. He analyzes certain quantifiers as members of the category Q, heading QP. He supports this hypothesis with evidence that just those quantifiers that properly govern empty nominals select either DP or partitive PP complements. *Todo/all* thus contrasts with *cada/every* in this way, as illustrated in (64–65). (See Giusti 1991a and Löbel 1989 for arguments that Q is a functional head, and Karimi 1989 and Rothstein 1988 for discussion of the phrase structure of quantified NPs in English. See also Van Riemsdijk 1989a for discussion of the distribution of a somewhat different type of empty category in German DP, introduced by a determiner specified for certain features.)

(64) a. todo los problemas/todo del trabajo
b. all the problems/all of the work

(65) a. *cada los problemas/*cada de los estudiantes
b. *every the problems/*every of the students

Contreras suggests that *cada* and *every* are specifiers, and sisters to N'. *Todo* and *all*, on the other hand, are quantifiers that can head QP, and select maximal projections as complements. In such configurations, the functional category Q, an X-0 rather than a specifier, properly governs [e]. In this way he predicts not only

the distribution of ellipted nominal categories in (64–65), but also the contrast between (62a) above, and (66):

(66) Estoy dispuesto a haver una parte del trabajo, pero no todo [e].
'I'm willing to do part of the work, but not all.'

In (66), *todo* selects a DP complement, which can be empty. In contrast, in (62a) *todo* is a sister to N' and thus a specifier rather than a head. Proper government fails, and ellipsis is ruled out.

Contreras claims that quantifiers can occupy SPEC(N), in which case they do not properly govern [e], or they fill Q, and are proper governors of DP. Yet a third option is for quantifiers to head QP and to select an N' complement, a maximal projection in Fukui and Speas's framework. Thus he accounts for the grammaticality of ellipsis in (61a) above, though *muchos/many* does not select DP. These facts are illustrated in (67):

(67) a. muchos de los estudiantes
b. *muchos los estudiantes
c. many of the students
d. *many the students

Contreras argues, contra previous accounts in which ellipted categories are analyzed as *pro*, that [e] in DP is [–anaphor, –pronominal], though it is not bound by an operator (as are other such categories, namely *wh*-trace). The empty category is thus a contextually defined variable, consistent with proposals such as that of Koopman and Sportiche (1982). In the framework he adopts, the ellipted category in noun phrases in Spanish is also analyzed as either N or N', a claim also made by Torrego (1987), and by Ronat (1977) for French. (For discussion of N' ellipsis in Japanese, and how it supports the DP hypothesis, see Saito and Murasugi 1990.)

4.3 Licensing and identification in DP

In a number of articles throughout the 1990s Lobeck refines the licensing and identification conditions on ellipted categories in DP, focusing on how to best formulate the feature specifications of DET and Q that appear to designate these heads with agreement 'strong' enough to license and identify NP *pro* complements of these heads (Lobeck 1990, 1991a, 1991b, 1993). One central issue is that while both the singular numeral *one* and the singular quantifier *each* license empty NP, singular *every* does not.

Lobeck originally argues that numerals and quantifiers, including singular *one* and *each*, are [+number], and specified for strong agreement. She adopts Contreras's proposal that *every*, on the other hand, though [+number] in her framework, fills SPEC(N) rather than Q, and is thus not a possible licensing head for an

empty nominal projection. Lobeck (1995) later revises this approach, ultimately arguing that the relevant feature specification of quantifiers and numerals is not [+number], but [+partitive]. In this way Lobeck includes both singular *one* and *each*, both of which can occur in partitive constructions in English, in the set of potential licensing heads for ellipsis without the stipulation that these singular heads are [+number], and without requiring *every* to occur in a structural position different from *each*. In her framework, DET must be specified as [+poss], [+number] (more specifically, [+plural]), and/or [+partitive] to license and identify *pro* in DP. *Every* is therefore excluded as a licenser of ellipsis because it is both [–number] and [–partitive].

Lobeck also argues, following Ritter (1991), that numerals head NUMP, proposing that NUM specified for strong agreement can also license and identify *pro* in NUMP. In addition, Lobeck attempts a cross-linguistic analysis of ellipsis in DP based on evidence from German and French, proposing a parameter whereby the number of strong agreement features in DET or NUM that is required to identify an empty pronominal NP is proportional to the number of possible strong agreement features in the language. English, a language with relatively poor agreement, requires fewer strong agreement features to license ellipsis (at least one). French, with a somewhat more complex agreement system, requires more features than English (namely at least two), and German, with an even richer system, requires that DET, NUM, or Q be specified for three features. (For a critique of Lobeck's analysis of ellipsis in German DP, see Sleeman 1996, discussed below, and Winkler 1997, who argues that ellipsis is in part predictable based on pitch accent and focus.)

Kester's (1992, 1993, 1994, and other work, notably 1996a, 1996b) central insight is that, in a range of Germanic and Romance languages, a functional head in a SPEC–HEAD agreement relation with an adjective with morphological inflection is specified for "strong" agreement, and licenses empty N. (See also Delsing 1992 for discussion of the role of adjectival inflection in Scandinavian languages, and Olsen 1989 for German.) The empty non-anaphoric N in substantive adjective constructions and empty anaphoric N in ellipsis constructions are licensed in this way. They differ, however, in how empty N is identified. Non-anaphoric N is identified through special adjectival morphology, or by the grammatical gender features of the determiner. Anaphoric N, on the other hand, is identified with a lexical antecedent in the discourse. In Kester's approach, empty N is licensed by an adjective lacking strong agreement only in the default case, namely when N is specified as [+human, +generic, +plural]. (Kester adopts Lobeck's claim that empty N is *pro*, noting that in Dutch, for example, *pro* = N, while in English, *pro* = N'.)

To see how this analysis works, consider (68) (from Lobeck 1993, analyzed in Kester 1996b):

(68) Ich möchte das alte Buch kaufen aber Sie möchten das neue [e].
I wanted the old book to buy but you wanted the New [e].
'I wanted to buy the old book but you wanted to buy the new one.'

Lobeck argues that in (68), the adjective *neue* is a head specified for strong agreement features, based on evidence that adjectives in German express gender, case, number, etc. Adjectives in English lack these features, and thus are not specified for strong agreement and fail to license and identify *pro* in DP. Kester adopts Cinque's (1993) proposal that adjectives are specifiers of functional projections in DP, arguing that it is instead the functional head (F), in a SPEC–HEAD agreement relation with A specified for strong agreement, that licenses *pro* in (68). This situation is illustrated in (69):

(69) $[_{DP}\ [_{D'}$ das $[_{FP}$ neue $[_{F'}\ [_{NP}$ e]]]

Empty N in (69) is identified with its discourse antecedent, and is grammatical.

In (70), empty N is allowed in English, though A lacks features. Kester argues that this is because in English, empty N that is not identified by strong agreement can only survive if it is specified for and identified through its default features [+human, +generic, +plural]. Licensing conditions are also in this default case relaxed, and *pro* is licensed under government by the functional head F:

(70) a. the sick
b. $[_{DP}\ [_{D'}$ the $[_{FP}$ sick $[_{F'}\ [_{NP}$ e]]]]]

In Dutch, on the other hand, non-anaphoric *pro* is [+human, +generic] but can be [+/−plural]. Empty N in this case is therefore not specified for default features, and thus falls under more stringent licensing and identification conditions. Ellipsis in Dutch DP also differs from English, in that empty anaphoric N can be licensed by an adjective. These facts are illustrated in (71–72) and (73), respectively:

(71) [Rijken *pro*] worden alleen maar rijker.
rich *pro* become all more rich
'The rich only become richer.'

(72) [Een zieke *pro*] heeft recht op een goede verzorging.
a sick *pro* has a right to a good care
'A sick person has a right to good care.'

(73) Jan kocht de rode auto en [de groene *pro*].
Jan bought the red car and the green *pro*
'John bought the red car and the green (one).'

Kester accounts for this difference between English and Dutch in terms of the presence or absence of adjectival inflectional morphology. In Dutch, adjectives in both substantive adjective and ellipsis constructions are inflected with *-e* (*schwa*). She argues that in these cases *pro* is licensed by this adjectival inflection, and in ellipsis constructions such as (73), *pro* is interpreted under identity with an antecedent (identification). In the substantive adjective constructions in (71–72), non-anaphoric *pro* is identified by grammatical gender features on the determiner.

Kester extends her analysis to a number of other languages (including German, Swedish, Spanish, and Finnish), concluding that adjectival inflection plays a crucial role in licensing both elliptical and non-elliptical empty N, and that the crucial difference between such constructions lies in the means by which identification conditions are met.

Bernstein's work (1991, 1993a, 1993b) concerns the distribution of the indefinite article in construction with empty N in Spanish and Italian (and also extends to French and Catalan). She argues that terminal vowels on nouns are functional heads, generated independently of their N stems. These functional heads can in turn license null projections of N. Because they are affixes, they must also raise to D, deriving the various orders of determiners, adjectives, and empty N in elliptical constructions in these languages. Her analysis thus provides yet another approach to 'strong' agreement in licensing empty N.

One central distributional difference that Bernstein observes is that in Spanish and Italian, the indefinite article occurs in ellipsis constructions only when affixed with *-o*. Other numerals and quantifiers are not so constrained:

(74) Uno rojo está encima de la mesa
'a red one is on the table'

(75) *Quiero un (grande)
'I want a (big)'

(76) Quiero dos.
'I want two.'

(77) Tengo muchos.
'I have many.'

(78) Ne voglio due.
'CL (I) want two.'

(79) Ne ho molti.
'CL (I) have many.'

She captures this distinction by arguing that in Spanish and Italian, DP dominates another functional category, Word Marker Phrase (WMP), headed by *-o*. The affix *-o* undergoes head-to-head movement, raising from WM to NUM to D. In D, *-o* adjoins to *un-*, the head of a QP in SPEC(NUMP) that has raised to D. In general, then, *uno* derives from head-to-head movement of two separate heads, the Q *un* and the WM *-o*. WM is a functional head that governs and licenses empty N in ellipsis constructions, accounting for the contrast between (74) and (75) above.

To explain the distribution of substantive adjectival constructions in (80), Bernstein proposes two different positions for adjectives (following Cinque 1993).

Pobre occurs below WM, and *mero* above it. In the former case, raising of WM to D is not blocked, but in the latter case movement is blocked by *mero*, and the derivation is ruled out:

(80) a. uno pobre (an impoverished one)
b. *uno mero (a mere one)

Bernstein generalizes her analysis to French, arguing that in this language WM is abstract, but present to govern and license an empty nominal projection. Consider, for example, (81–82), examples of empty nouns in French:

(81) Un très gros chien vit dans cette maison. Un petit vit dans celle d'à côté.
'A very big dog lives in this house. A small [e] lives in that one next door.'

(82) un rouge
'a red [e]'

She bases the grammaticality of (81–82) on the evidence that gender is reflected on some French nouns by an affix, *-e*, as illustrated in (83), suggesting that the final vowels in masculine nouns in French are deleted by a PF rule, but that they are present abstractly. French nouns thus are dominated by a WM projection just as in Spanish, and as a result, the invariable form *un* in French licenses empty N:

(83) a. voisin/voisine
b. cousin/cousine

Bernstein also derives the difference between *un*/*uno* in partitive *ne* constructions from licensing by WM:

(84) Ne ho visto uno/*un rosso
CL I have seen a red (one)
'I have seen a red (one).'

Bernstein assumes, following Cinque (1991) and Cardinaletti and Giusti (1992), that *ne* is basically a clitic NP that raises to cliticize to the finite verb. This raising, she argues, is possible only when WM is present (as reflected by *-o*) to license the trace of *ne*.

In Bernstein's analysis then, ellipsis in Spanish, French, and Italian DP depends on licensing by a lexical or abstract functional category WM, the locus of gender affixes in Romance.

In a comprehensive study of ellipsis in French DP, Sleeman (1996) proposes a unified approach to licensing of empty N, or *pro* (in ellipsis, partitive, and substantive adjective constructions), defining 'strong agreement' for licensing in terms of a single, semantic feature, [+partitive]. Central to her analysis is the

distribution of adjectives that can introduce empty N in French and other languages. Basically, she argues that adjectives are functional projections in DP, following Cinque (1993), but proposes that the relevant feature specification of the licensing head of such projections is [+partitive], rather than overt inflectional morphology. Only adjectives with this feature will be able to introduce ellipsis, as it is only in these contexts that the functional head with which the adjective agrees will be [+partitive], and able to license empty N. (For other approaches to French DP upon which Sleeman draws, see Corblin 1990; Valois 1991a, 1991b; Corver and Delfitto 1993.) Sleeman argues that this approach accounts for a number of contrasts first pointed out by Ronat (1977) and Barbaud (1976) for French, and also for certain cross-linguistic differences between French and Dutch, Spanish, Italian, and English.

Sleeman notes that while overt morphological inflection may be relevant to licensing empty N in Dutch and Spanish (as argued by Kester and Bernstein, respectively), morphological inflection does not seem relevant to licensing empty N in French. For example, the adjectives *intéressante* and *grande*, in (85) and (87) respectively, are both morphologically inflected for gender, but only *grande* licenses ellipsis. The adjectives *vert foncé* in (86) and *facile* in (88), on the other hand, both lack morphological inflection, but only the former licenses ellipsis:

(85) *Malheureusement je n'ai pas entendu l' intéressante.
unfortunately I neg have neg heard the interesting
'Unfortunately, I have not heard the interesting one.'

(86) De ces robes, je préfère la vert foncé.
of these dresses, I prefer the green deep
'Of these dresses, I prefer the deep green one.'

(87) Je prendrai la grande.
I will-take the big
'I will take the big one.'

(88) *Le facile se trouve à la page quarante.
the easy itself finds at the page forty.
'The easy one is on page forty.'

To account for these and other contrasts, Sleeman proposes that only the functional head in a SPEC–HEAD agreement relation with a [+partitive] adjective licenses empty N. She distinguishes two classes of partitive words: D-partitives include cardinals, superlatives, ordinals, and words such as *seul*, *autre*, *prochain*, *suivant*. N-partitives include color adjectives and certain others including *grand*, *petit*, etc., all of which license empty N. Other adjectives do not license ellipsis (adjectives of quality, such as *intéressante* and *facile*).

Sleeman also derives the distribution of quantitative *-en* in French from licensing by a [+partitive] functional head. She argues that *-en* is inherently [+partitive],

but that its empty counterpart, *pro*, is not, and must therefore be licensed by a [+partitive] head to be grammatical. It is not enough, however, that *pro* be licensed; it must also be identified by a [+specific] local element in order to be connected with an antecedent. (See Enç 1991 and Diesing 1992b for relevant discussion of specificity. For discussion of *en/ne* see Milner 1978b; Belletti and Rizzi 1981; Hulk 1982; Kayne 1984a; Cardinaletti and Giusti 1992.)

To illustrate, consider the data below:

(89) Trois *pro* arriveront demain.
three will arrive tomorrow.
'Three will arrive tomorrow.'

(90) *J'ai lu trois. *pro*
I have read three *pro*
'I have read three.'

(91) J'en ai lu trois. *pro*
I of it/them have read three
'I have read three.'

Sleeman explains the contrast between (89) and (90) by proposing that although *pro* is licensed by NUM (*trois*) specified as [+partitive], *pro* in (90) is in an indefinite object, and non-specific. The derivation is ruled out because *pro* is not identified. Sleeman assumes that subject DPs are specific, and thus that *pro* in (89) is licensed by a head specified as [+partitive], and is also specific, and thus identified. (91) is the counterpart of (90) where [+partitive, +specific] *en* is inserted, thus saving the derivation.

In (92), *pro* is identified by the [+partitive] PP, which also makes *pro* [+specific] (as noted by Cardinaletti and Giusti 1992). In (93), *pro* is specific because it is in a definite rather than indefinite DP (cf. (90)):

(92) J'ai lu trois *pro* de ses livres.
I have read three of his books
'I have read three of his books.'

(93) Je préfère le troisième *pro*.
I prefer the third
'I prefer the third.'

Sleeman extends her analysis to predict that only [+partitive] adjectives will introduce empty N in *en* constructions. This prediction seems to be borne out, as illustrated by the contrast between (94) and (95):

(94) J'en ai acheté un rouge.
I of it have bought a red
'I have bought a red one.'

(95) *J'en ai rencontré un fâché.
I of it have met an angry
'I have met an angry one.'

In Sleeman's account, only *rouge*, not *fâché*, is [+partitive] and licenses empty N.

Sleeman's analysis makes a number of interesting cross-linguistic predictions, one of which is that partitive adjectives, in contrast to other types of adjectives, should in fact license ellipsis in DP, contrary to Lobeck's claim that adjectives lack strong agreement and fail to license *pro* in English. Sleeman presents the data in (96) in support of this claim (examples are from Halliday and Hasan 1976):

(96) a. Of the boys, I prefer the eldest *pro.*
b. I like your dress. I will buy the same *pro* as you.
c. Take this piece. I will take the other *pro.*
d. The green *pro* suits you very well.

The grammaticality of ellipsis in (96) suggests for Sleeman that *D*-partitive adjectives license *pro* in English. That (97) is ungrammatical is explained by claiming that in contrast to French, *N*-partitive adjectives do not license ellipsis in English, the color adjective in (96) being an exception:

(97) I will take the small *(one).

Sleeman extends her approach to substantive adjectives, arguing that in French, such constructions do not involve a syntactic empty N, though empty N is present at a lexical level. She again diverges from other analyses that argue that substantive adjective constructions involve *pro* licensed by morphological inflection.

5 Conclusion: current research directions

As we can see from the studies discussed here, research on what can now be analyzed as ellipsis in DP has made important contributions to our understanding of the nature of empty categories, the internal structure of the noun phrase, the properties of morphological inflection and semantic features of functional categories in licensing and identification, and the relationships between ellipsis and other phenomena, including partitive constructions (with clitic *ne*/*en*) and substantive adjective constructions.

Some subsequent work on ellipsis in DP, based on the foundations outlined here, includes Coene (1999) on ellipsis in DP in Romanian and Spanish, Giannakidou and Stavrou (1999) on object ellipsis in Greek, Martí Girbau (1999) on partitives and ellipsis in Catalan, López (2000) on ellipsis in DP and D-linking, Luján (2000) and Kester and Sleeman (2002) on an alternative analysis to ellipsis in Spanish, Pollock (1998) and Kupferman (1999) on noun ellipsis and the clitic *en*, and Panagiotidis (2002, 2003a, 2003b) on the status of the empty noun and *one.*

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23 Embedded Root Phenomena

CAROLINE HEYCOCK

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1 Introduction: background

Within modern syntactic theory, focus on the importance of a fundamental distinction between root and non-root clauses is primarily associated with Emonds (1970). In this work, Emonds drew a crucial distinction between two types of transformations: structure-preserving and root transformations. The basic idea was that in the general case transformations could only move a node into a position in which a node of that category could be 'base-generated' (an insight that has remained part of syntactic theory). In this sense, transformations are constrained to be 'structure preserving'. However, Emonds maintained that certain transformations did not obey this constraint; these transformations were, however, limited in their application: they could only apply in a 'root sentence', defined as "either the highest S in a tree, an S immediately dominated by the highest S or the reported S in direct discourse" (Emonds 1970: 6).

Three further developments are crucial to defining the question of 'embedded root phenomena' as a current issue in syntactic theory. The first is the observation, first discussed in detail in Hooper and Thompson (1973), that Emonds was factually incorrect in his characterization of the distribution of the phenomena he attributed to root transformations. As discussed below, these phenomena occur also in a subset of embedded contexts. One strand of the literature on embedded root phenomena – beginning with the Hooper and Thompson article itself – is an attempt to define this subset of embedded contexts, and to explain the principle underlying the definition (in particular, whether these contexts are to be defined in functional/pragmatic, semantic, or syntactic terms).

The second crucial development is the proposal, associated above all with the work of Hans den Besten (Den Besten 1983), but also suggested to a greater or lesser extent in Higgins (1973), Williams (1974), Koster (1975), and Emonds (1976), that there is in fact no need for a stipulative distinction between root and non-root transformations. An important subset of Emonds's root transformations is analyzed as involving movement of some element to the Comp[lementizer] position (or to the specifier of CP; the distinction between these two positions was not made in the early work); such movement is blocked by the presence of a lexical complementizer. In this perspective, the root/non-root distinction is only an artifact of the typical, but not entirely general, correlation of lexical complementizers and embedded clauses. The particular phenomenon most famously reanalyzed as a case of movement to Comp is the Germanic Verb Second (V2) phenomenon, in particular as evidenced in German and Dutch; the empirical strength of the analysis is the immediate explanation for the complementarity of V2 and the presence of a lexical complementizer.

The third advance in the research into embedded root phenomena was the determination that Hooper and Thompson's observations concerning the availability of root transformations in embedded clauses in English in fact extended in some cases at least to the other Germanic languages. In particular, in some of the Germanic languages V2 can co-occur with an overt complementizer, at least in a

subset of contexts. Given the syntactic analysis of V2 just mentioned, the question of defining these contexts is now complicated by the question of the syntactic analysis of these cases of 'embedded V2'.

The structure of this chapter is as follows:

- Section 2 first sets out briefly the question of what constitutes a root clause.
- Section 3 gives a characterization of some important 'root phenomena' that have been discussed in the literature.
- Section 4 reviews proposals to explain the distribution of embedded root phenomena in semantic/pragmatic terms.
- Section 5 presents in more detail the phenomenon most prominent in the literature: that of embedded V2.
- Section 6 draws some general conclusions and suggests directions for future research.

2 What constitutes a root clause?

This section presents clear and less clear cases of 'root' or non-embedded clauses:

- the most straightforward cases of the highest matrix clause;
- coordinations of such clauses;
- other 'paratactic' constructions;
- non-restrictive relatives.

Then, in section 3, some root phenomena are presented.

2.1 The canonical case: highest matrix clause

In the simplest case, a root clause is the highest clausal node in a tree (leaving vague precisely which extended projection is at issue). Importantly, given the proposals mentioned in section 1 that the root/embedded distinction is typically an epiphenomenon, the crucial distinction being the presence or absence of a lexical complementizer, instances of root clauses introduced by a complementizer have been pointed out in the literature. (1a, b) are examples from Frisian (De Haan and Weerman 1986: 98); (2) is an example from Dutch (Den Besten 1983: 62), and (3) examples from Swedish (Andersson 1975: 53):

(1) a. Dat it nou altyd sa moast.
that it now always so must
'Why does it always have to be this way?'
b. Wat oft ik drinke woe.
what whether I drink would
'What would I like to drink?'

(2) Gelachen dat we hebben!
laughed that we have
'How we laughed!'

(3) a. Att du aldrig kan lära dig knipa käft.
that you never can teach REFL keep quiet
'[It's annoying that] you can never learn to keep quiet.'
b. Om du bara kunde lära dig knipa käft.
if you only could teach REFL keep quiet
'If you could only learn to keep quiet!'

2.2 Coordination

Coordinately conjoined sentences that are not embedded are also typically taken to be root clauses, where at least 'and', 'or', and 'but' and their translation equivalents are the canonical conjunctions:

(4) a. This book I read, and/but that one I didn't.
b. Up it goes, or down he comes.

Coordination is too large an issue to discuss here, although many aspects of it are clearly relevant. In particular, there is an extensive literature on various aspects of 'asymmetric coordination' in the Germanic V2 languages, one class of which involves V2 (a 'root phenomenon') occurring in the non-initial conjunct of an embedded coordination, as in (5a) from Höhle (1990: 222) (compare with the expected verb-final order in (5b)):

(5) a. Wenn jemand nach Hause kommt, und da steht der
when someone to home comes and there stands the
Gerichtsvollzieher vor der Tür . . .
bailiff at the door
'When someone comes home, and the bailiff is standing there at the door . . .'
b. Wenn jemand nach Hause kommt, und da der Gerichtsvollzieher
when someone to home comes and there the bailiff
vor der Tür steht . . .
at the door stands
'When someone comes home, and the bailiff is standing there at the door . . .'

Conversely, it has been stated that non-initial conjunct matrix clauses in Old English show some features of embedded clauses: in particular, that they are more likely to be verb/Infl-final (see, e.g., Traugott 1972). However, Pintzuk (1991: 321–344) argues that second conjunct matrix clauses in Old English only show an increased rate of Infl-final order when the first conjunct is clearly Infl-final, and hence that the effect is due to parallelism.

2.3 Other types of 'parataxis'

Coordination is the canonical case of 'parataxis': a combination of clauses neither of which is subordinate to the other. There are, however, other cases that have been analysed in this way, even though they lack the symmetry that coordination (sometimes) displays. Three possible cases are adverbial clauses expressing causation, 'so' clauses in English, and free *dass* clauses in German.

2.3.1 Adverbial clauses expressing causation

It has been observed that a number of languages have (at least) a pair of elements expressing a causal link, one of which is followed by a subordinate clause, the other of which is followed by what appears to be a root clause. Among others, this has been argued to be the case for *parce que* and *car* in French, *because* and *for* in English, *weil* and *denn* in German, *därför att* and *ty* in Swedish. The following discussion focuses particularly on German, because in this language the syntactic contrast between root and subordinate clauses is particularly striking; as will be discussed in more detail in section 5, root clauses are associated with V2 word order (the finite verb follows the first constituent in the clause), while in subordinate clauses the verb is final. While the manifestations of subordinate status are different in the other languages, however, the general pattern described below appears to be the same.

Most obviously a clause introduced by *denn* obligatorily shows V2 word order – the order characteristic of complementizerless root clauses:

(6) a. Er ist böse, denn er ist zu früh aufgestanden.
he is angry for he is too early arisen
'He is angry, for he got up too early.'
b. *Er ist böse, denn er zu früh aufgestanden ist.
he is angry for he too early arisen is
'He is angry, for he got up too early.'

Further, a quantifier in the main clause can only very marginally bind a pronoun in the clause introduced by *denn* (7a); this is in contrast to an adverbial clause introduced by *weil* (because) (7b), but like the pattern found in clausal conjunction (7c):

(7) a. *Niemand$_i$ war böse, denn er$_i$ ist zu früh aufgestanden.
No one was angry for he is too early arisen
'No one$_i$ was angry, for he$_i$ got up too early.'
b. Niemand$_i$ war böse, weil er$_i$ zu früh aufgestanden ist.
No one was angry because he too early arisen is
'No one$_i$ was angry because he$_i$ got up too early.'
c. *Niemand$_i$ war böse, und er$_i$ ist spät aufgestanden.
No one was angry and he is late arisen
'No one$_i$ was angry, and he$_i$ got up late.'

Another fact that distinguishes *denn* and its equivalents in other languages from a subordinator like *weil* and its equivalents is that a clause introduced by *denn* cannot appear in initial position:

(8) a. Julia war glücklich, denn alles war gut gegangen.
Julia was happy for everything was well gone
'Julia was happy, for everything had gone well.'
b. *Denn alles war gut gegangen, war Julia glücklich.
for everything was well gone was Julia happy
'For everything had gone well, Julia was happy.'

(9) a. Julia war glücklich, weil alles gut gegangen war.
Julia was happy because everything well gone was
'Julia was happy because everything had gone well.'
b. Weil alles gut gegangen war, war Julia glücklich.
because everything well gone gone was Julia happy
'Because everything had gone well, Julia was happy.'

Elements like *denn* are sometimes classified as conjunctions on the basis of the above patterns. However, there are strong reasons for drawing a distinction between the two cases (essentially this point is made in De Haan 2001, and see also the comments on some English cases in Huddleston and Pullum 2002: 1319ff). The construction with *denn* shows some features which distinguish it both from coordination and from subordination. In particular, *und* (and) can not only coordinate constituents of different syntactic types, it can also coordinate subordinated clauses. In the following example, note both the V-final word order of both conjuncts and the binding of the pronouns by the quantifier *keiner* (no one):

(10) Keiner$_i$ hat gesagt, dass er$_i$ fertig sei, und dass er$_i$ nach Haus
no one has said that he ready is(SBJ) and that he to home
wolle.
wants(SBJ)
'No one$_i$ said that he$_i$ was ready and that he$_i$ wanted to go home.'

In contrast, it appears that *denn* clauses cannot be associated with subordinate clauses. Not only do clauses introduced by *denn* obligatorily show V2 order, as already discussed, but binding of a pronoun in the *denn* clause is never possible from outside the clause, suggesting that the *denn* clause is obligatorily attached at the highest level of the highest clause:

(11) *Keiner$_i$ hat gesagt, dass er$_i$ fertig sei, denn er$_i$ habe die
no one has said that he ready is(SBJ) for he has(SBJ) the
Arbeit rechtzeitig angefangen.
work on time begun
'No one$_i$ said that he$_i$ was ready, for he$_i$ had begun the work on time.'

Note again the contrast with the behavior of a clause introduced by *weil* (because):

(12) Keiner$_i$ hat gesagt, dass er$_i$ fertig sei, weil er$_i$ die Arbeit
no one$_i$ has said that he$_i$ ready is(SBJ) because he$_i$ the work
rechtzeitig angefangen habe.
on time begun has(SBJ)
'No one$_i$ said that he$_i$ was ready because he$_i$ had begun the work on time.'

Correlated with this is the fact that a *denn* clause, unlike for example an adverbial clause introduced by *weil* (because), cannot form part of the same phonological phrase (or 'focus domain') as the clause to which it attaches, but constitutes an independent phonological phrase, as shown by the contrast between (13a) and (14a):

(13) a. Ich bin FROH, weil er gekommen ist.
I am happy because he come is
'I am HAPpy because he came.'
b. Ich bin FROH, weil er geKOMmen ist.
I am happy because he come is
'I am HAPpy, because he CAME.'

(14) a. *Ich bin FROH, denn er ist gekommen
I am happy for he is come
'I am HAPpy for he came.'
b. Ich bin FROH, denn er ist geKOMmen.
I am happy because he is come
'I am HAPpy, for he CAME.'

Although here we see a contrast between *weil* and *denn*, it has been observed that at least in current speech, *weil* may also be followed by a clause with V2 order. Strikingly, when it does, it patterns just like *denn*: the clause it introduces cannot appear in initial position, pronouns it contains can only very marginally be bound from any other clause, and it constitutes an independent phonological phrase (Wegener 1993).

As can be seen from the glosses, the contrasts between *denn* and *weil* clauses hold also for English clauses introduced by 'for' and 'because', modulo the lack of general V2 in English; similar facts in Swedish are observed in the corpus study of Teleman (1967), cited in Andersson (1975).[1]

Although this section focuses on adverbials expressing causation, similar phenomena have been observed with concessives; thus in spoken German V2 word order is also possible after *obwohl* (although) (Wegener 1993). For discussion and analysis of the different interpretations of these cases, and the interaction with phonological phrasing, see Verstraete (1998, 2002) and references therein.

2.3.2 So *clauses in English*

Parataxis is explicitly invoked in Hoeksema and Napoli (1993) to characterize the relation between the clauses in sentences like (15a) ('Para-So'), which they contrast crucially with the subordinative type in (15b) ('Sub-So'):

(15) a. I fainted, the sun was so hot.
b. The sun was so hot that I fainted

Hoeksema and Napoli point out various ways in which the Para-So construction of (15a) behaves like coordination rather than subordination. Among others, these include the possibility of inversion in either or both clauses (contrast (16a, c) with (16b)) and the failure of an "any" quantified noun phrase in the first clause to bind a pronoun in the second (contrast (17a, c) with (17b)):[2]

(16) a. Down fell Mary, so hot was the sun.
b. *The sun was so hot that down fell Mary.
c. Out went Mary and in came John.

(17) a. *Fred didn't hire anyone$_i$ that day, he was so fed up with him$_i$.
b. Fred didn't need anyone$_i$ so badly that he would hire him$_i$ without an interview.
c. *I don't like anyone$_i$ and I certainly don't need him$_i$.

As discussed below, locative inversion is a typical 'root phenomenon', and so is expected in coordinated root clause, but not in a subordinate clause.[3] The failure of binding can also be explained on the assumption that such binding requires c-command, and that nothing within the first conjunct of a coordination c-commands into the second.

On the other hand, the Para-So construction is argued to differ from ordinary coordination in a number of ways, including the fixed order of the two clauses,[4] and the unacceptability of across-the-board movement. The latter point is illustrated in the contrast between (18a) and (18b):

(18) a. *Who$_i$ did you marry t_i, you loved t_i so much?
b. What$_i$ did John buy t_i and Mary borrow t_i?

This construction therefore looks rather more like the constellation we have seen in the last section. As noted there, clauses with *denn/for* or *weil*+V2 order cannot precede their associated clause, and they also do not allow across-the-board movement:

(19) *Who$_i$ did you marry t_i, for you loved t_i so much?

As will be discussed in section 5.2.3.1, however, even the second clause in the 'subordinative' version of this construction (e.g., 16b) shows some evidence of root phenomena.

2.3.3 Free dass *clauses in German*

One further case that might fall under the general rubric of parataxis is that of 'free *dass*' clauses in German, as described in Reis (1997). This construction is illustrated in (20a, b); note, however, that in contrast to the *denn* clauses discussed above, these clauses are obligatorily verb-final:

(20) a. Ist denn etwas los, dass Max so schreit?
is then something up that Max so shouts
'Is something up, that Max is shouting so much?'
b. Er muss im Garten sein, dass er nicht aufmacht.
he must in-the garden be that he not opens
'He must be in the garden, since he's not opening the door.'

Although these clauses are introduced by the complementizer *dass* (that), Reis demonstrates that they do not behave like adverbial adjunct clauses. The following are only two of the various behaviors that she discusses. First, just as in the paratactic *so* construction and *denn*/'for' clauses, the order is fixed. Here the *dass* clause cannot occupy the clause-initial position:

(21) a. Du bist blöd, dass du kommst.
you are stupid that you come
'You are stupid to come.'
b. *Dass du kommst, bist du blöd.
that you come are you stupid
'You are stupid to come.'

Second, free *dass* clauses cannot appear as sentence fragments in question–answer pairs (20a). This is in contrast to clauses introduced by, e.g., *weil* (22b), but similar to clauses introduced by *denn* (22c):

(22) Wieso/Warum ist Fritz blöd?
why is Fritz stupid?
'Why is Fritz stupid?'
a. *Dass er Ernas Nerzmantel bezahlt.
that he Erna's mink coat pays for
'That he's paying for Erna's mink coat.'
b. Weil er Ernas Nerzmantel bezahlt
because he Erna's mink coat pays for
'Because he's paying for Erna's mink coat.'
c. *Denn er bezahlt Ernas Nerzmantel.
for he pays Erna's mink coat
'For he's paying for Erna's mink coat.'

On the other hand, Reis characterizes these clauses as 'relatively' rather than 'absolutely' unintegrated clauses for three reasons. First, free *dass* clauses do not

necessarily form a separate focus domain/phonological phrase; second, they occur before, rather than after, adverbial clauses introduced by *weil* (because); and third – perhaps most strikingly – they can contain a pronoun that is bound by a quantifier in the matrix clause, even in contexts that do not favor the extension of the binding domain of the quantifier (the 'telescoping' phenomenon (Fodor and Sag 1982; Roberts 1987, 1989; Groenendijk and Stokhof 1990; Poesio and Zucchi 1992)):

(23) a. Jeder$_i$ war blöd, dass er$_i$ darauf eingegangen ist.
Everyone$_i$ was stupid that he$_i$ on it went in is
'Everyone was stupid to go along with it.'
b. Keiner$_i$ ist blöd, dass er$_i$ sich um die Zukunft seiner$_i$
no one$_i$ is stupid that he REFL about the future his$_i$
Kinder Sorgen macht.
children worries makes
'No one$_i$ is stupid to worry about the future of his$_i$ children.'

2.4 Non-restrictive relatives

One final environment whose root/non-root status is hard to determine is that of non-restrictive or appositive relatives. Various ways in which non-restrictive relatives behave like coordinated root clauses are discussed in Ross (1986) and subsequently in Emonds (1979); some of these are taken up in Fabb (1990). Again, one might seek to appeal to the possibility of variable binding as a diagnostic for hierarchical position. Emonds pointed out the contrast between the availability of such binding in a restrictive but not in a non-restrictive relative:

(24) a. *I gave every assistant$_i$, who loved his$_i$ uniform, a new one.
b. I gave every assistant$_i$ who loved his$_i$ uniform a new one.

However, Emonds's examples do not make the necessary point, since they instantiate a more general fact: QPs headed by 'every' cannot be the antecedents of non-restrictive relatives at all, irrespective of binding:

(25) *I gave every assistant, who was working for very little pay, a new uniform.

Fabb avoids this problem by looking instead at the distribution of the negative quantifier 'any', which can be licensed by being c-commanded by 'only' (Linebarger 1987). If 'only' appears in the noun phrase, 'any' can appear in a restrictive but not a non-restrictive relative:

(26) a. *Only the tourists, who have any imagination, go to visit Sicily.
b. Only the tourists who have any imagination go to visit Sicily.

Fabb concludes from (26) that the non-restrictive relative cannot be an adjunct within the noun phrase, in contrast to the restrictive relative. However, the same data also make the further point that the non-restrictive relative cannot be in a position c-commanded by the noun phrase "only the tourists," given that (26a) contrasts also with (27):

(27) Only the tourists visited any sites of interest.

This seems to rule out even a structure in which the restricted relative clause is adjoined to the full noun phrase. This conclusion is strengthened by cases of restrictive relatives that seem necessarily to be in this position, and in which 'any' is licensed:[5]

(28) Only [[a man] and [a woman]] who have had any experience of life together will be able to relate to this film.

Further, a pronoun in a non-restrictive relative cannot be bound by a quantified noun phrase that clearly c-commands the modified noun phrase:[6]

(29) Every student$_i$ sent the professor who had helped her$_i$ a card.
*Every student$_i$ sent Professor Smith, who had helped her$_i$, a card.

Fabb's own conclusion is that the relative clause is not in fact syntactically related to the surrounding clause at all, but is only interpreted with it at a level of discourse structure (a conclusion reached also in Sells 1985 and Haegeman 1988; see also Emonds 1979; McCawley 1982; Safir 1986; Napoli 1989). It should, however, be noted that non-restrictive relatives in V2 languages do not show V2 (thus in German, for example, they are verb-final, as noted in Emonds 1979: 216).

3 Some root phenomena

Section 3.1 provides a selective summary of some of the structural root phenomena that have been discussed in the literature:

- structural phenomena in English:
  - VP preposing;
  - negative constituent preposing;
  - topicalization;
  - left dislocation;
  - directional adverb preposing;
  - prepositional phrase substitution;
  - preposing around 'be' and participle preposing;
  - subject auxiliary inversion;

  - direct quote preposing;
  - complement preposing;
  - right dislocation;
  - 'if–then' conditionals;
- structural phenomena in other languages:
  - Verb Second in Germanic;
  - the distribution of the topic markers *-wa* and *-nun* in Japanese and Korean, respectively.

Section 3.2 gives some examples of non-structural root phenomena: speaker-oriented adverbials and interjections.

Then, in section 4, attempts to provide a semantic explanation for the distribution of these phenomena in embedded clauses are presented and discussed.

3.1 Structural phenomena

The phenomena discussed in Emonds (1970) and subsequently in Hooper and Thompson (1973) are primarily instances of movement to the left periphery of the clause. These include the following constructions:

(30) **VP preposing:**
Mary plans for John to marry her, and marry her he will.

(31) **Negative constituent preposing:**
Never in my life have I seen such a crowd.

(32) **Topicalization:**
This book you should read.

(33) **Left dislocation:**
This book, it has the recipe in it.

(34) **Directional adverb preposing and prepositional phrase substitution (also referred to in the literature as locative inversion):**
a. Up the street trotted the dog.
b. On the wall hangs a portrait of Mao.

(35) **Preposing around 'be' and participle preposing (also referred to as predicate fronting):**
a. More significant would be the development of a semantic theory.
b. Standing next to me was the president of the company.

(36) **Subject auxiliary inversion:**
Will James ever finish reading that book?

(37) **Direct quote preposing:**[7]
"I won first prize," Bill exclaimed.

(38) **Complement preposing:**
Syntax and semantics are related, I think.

(39) **Right dislocation:**
You should go to see it, that movie.

Emonds (1970) and Hooper and Thompson (1973) also discuss some other phenomena, for which the reader is referred to the original works.

More recently, Iatridou (1991) has argued that 'if–then' conditionals (as distinct from conditionals where the consequent is not introduced by 'then') are also a root phenomenon. In her analysis, 'then' occupies the Comp position in the consequent clause, and the 'if' clause the Spec[CP] position. Thus, although no movement is involved, under most analyses this case is predicted to fall together with, e.g., left dislocation or Negative Inversion, since the Spec[CP] position is necessarily filled.

The best-studied 'root phenomenon' is not, however, from English at all, but is the V2 construction found in the other Germanic languages. In languages such as German, Dutch, and Frisian the asymmetry between the position of the verb in main and subordinate clause is particularly striking, as illustrated by the German examples in (40):

(40) a. Er weiß nichts davon.
he knows nothing of it
'He knows nothing about it.'
b. . . . dass er nichts davon weiß.
. . . that he nothing of it knows
'. . . that he knows nothing about it.'

Since Den Besten (1983), the most widely accepted account of this contrast is that German and Dutch are OV and Infl-final but Comp-initial, and that when the complementizer position is not filled by an overt element, the finite verb moves to occupy it; further, some other constituent moves to Spec[CP].

The mainland Scandinavian languages (Danish, Norwegian, and Swedish) show a less dramatic asymmetry, since they are not only Comp-initial, but also VO and Infl-medial (though it is not clear whether the verb moves out of the VP in finite clauses unless it continues to move to Comp). However, given these differences, the same assumptions about movement of the finite verb to Comp and of some other element to Spec[CP] can account elegantly for the difference in the order of the negative element and the verb in matrix and subordinate clauses ((41a, b) and (42a, b)), and also for the restriction of non-subject-initial clauses to root position (see in particular Vikner 1995 for analysis and a detailed description of the data). These examples are from Swedish:

(41) a. Lena köpte inte en ny bok igår.
Lena bought not a new book yesterday
'Lena didn't buy a new book yesterday.'
b. *Lena inte köpte en ny bok igår.
Lena not bought a new book yesterday
'Lena didn't buy a new book yesterday.'

(42) a. *Han beklagade att Lena köpte inte en ny bok igår.
he complained that Lena bought not a new book yesterday
'He complained that Lena didn't buy a new book yesterday.'
b. Han beklagade att Lena inte köpte en ny bok igår.
he complained that Lena not bought a new book yesterday
'He complained that Lena didn't buy a new book yesterday.'

(43) a. Dom betvivlar att vi tycker IFK är bäst.
They doubt that we think IFK is best
'They doubt that we think IFK is best.'
b. ?Dom betvivlar att IFK tycker vi är bäst.
They doubt that IFK think we is best
'They doubt that we think IFK is best.'

English allows only very limited V2; the most uncontroversial cases are negative preposing and matrix questions with subject–aux inversion. In Standard English both are root phenomena; subject–aux inversion in embedded questions is, however, found in a number of Hiberno-English dialects: see Henry (1995) for Belfast English, and McCloskey (1992) for other varieties.

Finally, the analysis of V2 in Germanic has inspired similar analyses in other unrelated languages. It has been observed that in Japanese and Korean, topic phrases marked with *-wa* and *nun* respectively, and interpreted non-contrastively, are disallowed in most embedded contexts, and are thus often taken to be root phenomena. Whitman (1989) argues that the distribution of these topic markers is paralleled exactly by the distribution of clause-final modal particles, although this correlation is not completely uncontroversial. He uses this fact to argue that in these languages topics appear in Spec[MoodP]. Whitman further notes that these non-contrastive topics do in fact occur in a number of embedded contexts, and argues for an analysis along the lines of that proposed for Yiddish in Diesing (1990b) (see sections 5.1.3, 5.2.1). His data and analysis are, however, disputed in Choi (2000).

3.2 Non-structural phenomena

To Emond's (1970) and Hooper and Thompson's (1973) list of root phenomena involving movement, Green 1976 adds some phenomena (again, only from English) which do not involve movement but rather the felicity of certain adverbial adjuncts and interjections, typically having to do with speaker attitude. The

following are some examples; again the reader should refer to the original article for additional cases not listed here:

(44) **Evidentiary 'indeed':**
[Assuming languages can have nasal assimilation rules, this is a natural analysis.]
Indeed, languages must have nasal assimilation rules

(45) **Flat 'indeed':**
[Do you have any children?]
Indeed I do.

(46) **'Lo and behold':**
Lo and behold, there was a unicorn among the roses.

(47) **'Frankly':**
Frankly, Bobby Riggs never had a chance.

As Green herself points out, the degree to which these expressions are really restricted to root clauses varies.

Further cases are given in Banfield (1982), and similar examples can be found for other languages. Reis (1997) gives examples with German *nämlich* (in fact), and Andersson (1975) discusses various adverbials and interjections in Swedish including *för guds skull* (for God's sake), *din idiot* (you idiot), *tyvärr* (unfortunately), and *härmed* (hereby).

4 Semantic/pragmatic explanations for the distribution of embedded root phenomena

As mentioned in the introduction, the issue that arises as soon as 'embedded root phenomena' are recognized is whether there is any systematicity to their distribution, and if so, how it can be characterized. In their work on embedded root phenomena, Hooper and Thompson propose a semantic characterization of the distribution of root phenomena: these occur only in clauses that are asserted (Hooper and Thompson 1973: 472). By their own admission, Hooper and Thompson do not give "an absolute definition" of what constitutes an asserted clause. They state that the assertion of a sentence is "its core meaning or main proposition," and that it "may be identified as that part which can be negated or questioned by the usual application of the processes of negation and interrogation." Sentences may contain more than one assertion (in the case of a coordination, for example); also (crucially), some subordinate clauses are asserted. Based on this notion of assertion, they provide a five-way division of predicates taking sentential complements or sentential subjects:

- Class A predicates (e.g., 'say', 'report', 'be true', 'be obvious'). The verbs in this group are all verbs of saying. Both the verbs and the adjectives in this group can function 'parenthetically', in which case the subordinate clause constitutes the main assertion of the sentence. It is claimed, however, that if the subordinate clause occurs in subject position (as in, e.g., *That German beer is better than American beer is true*) it is not asserted.
- Class B predicates (e.g., 'suppose', 'expect', 'it seems', 'it appears'). In this group also the predicates can function parenthetically, and in this case the subordinate clause is asserted. The distinction between this class and Class A is not made entirely clear, although it is noted that Class B predicates allow 'Neg raising' and tag questions based on the subordinate clause.
- Class C predicates (e.g., 'be (un)likely', 'be (im)possible', 'doubt', 'deny') have complements which are not asserted.
- Class D predicates (e.g., 'resent', 'regret', 'be odd', 'be strange'). These factive predicates have complements which are argued to be presupposed, and hence not asserted.
- Class E predicates (e.g., 'realize', 'know'). These semifactives (factives that lose their factivity in questions and conditionals) have a reading on which the subordinate clause is asserted.

Further, Hooper and Thompson claim that 'reduced' clauses (infinitives, gerunds, and subjunctive clauses) are never asserted, nor are noun complement clauses. Restrictive relative clauses on definite heads are argued to be presupposed (and therefore never asserted); non-restrictive relatives, and restrictive relatives on indefinite heads, are not presupposed (and may be asserted). Adverbial clauses may or may not be asserted (and in some cases may force the main clause itself to be read as presupposed, and hence not asserted (1973: 486–495)).

In addition to claiming that the environments allowing root phenomena must be characterized in terms of a semantic concept of 'assertion', Hooper and Thompson claim that there is a pragmatic explanation for the restriction of 'root transformations' to these environments: these transformations, it is claimed, all have the function of emphasizing a particular constituent (1973: 470), and "emphasis would be unacceptable in clauses that are not asserted" (1973: 472).

Hooper and Thompson's claim that root phenomena can occur in all and only asserted clauses is disputed in Green (1976). Green points out that in at least some cases their claim that a particular clause is asserted is backed up only by the grammaticality of some root transformation occurring in it – clearly a circular argument – and also that some root phenomena occur in the complements to the counterfactive 'pretend' and to the performatives, like 'bet', 'promise', and 'predict' (1973: 390–391). Green herself puts forward a pragmatic hypothesis – that embedded root phenomena are licensed "just in case the proposition they affect, and therefore emphasize, is one which the speaker supports" (1973: 386) – but she argues that this is only one constraint out of many affecting the acceptability of these phenomena.

It is a general problem for work in this area that definitions given are vague and independent evidence for the validity of the concepts used often weak. Subsequent researchers have proposed various modifications of Hooper and Thompson's proposal that "assertion" is a necessary and sufficient condition for the occurrence of root phenomena. Based on data from Swedish, Andersson (1975) argues that the relevant semantic distinction is between clauses that make a statement, ask a question, or give a command (his class of 'semantically main clauses') and those that perform none of these functions ('semantically subordinate clauses'). He also proposes that the non-negative predicates in Class C belong more properly in Class B, while negated Class B predicates belong in Class C. Later work on Germanic has sometimes included further variants of these proposals (see for example Iatridou and Kroch 1992), although typically such work is restricted to finding a basis for the classification of predicates that allow root phenomena in their complements, rather than finding a single semantic concept that will also extend to other syntactic environments ('reduced' clauses, relatives, clauses in subject position, etc.). This is because work on V2 in particular (including that of Andersson 1975) has led to the conclusion that there is an irreducibly syntactic aspect to the distribution of at least the structural root phenomena. A detailed discussion of the verbs in Danish and German that do and do not allow V2 in their complements can be found in Vikner (1995: 71f, and see references therein); Vikner's own conclusion is that there is no single semantic concept that can predict the patterns he reports.

The second aspect of Hooper and Thompson's analysis – that the failure of root transformations to occur in non-asserted clauses is due to the pragmatic incompatibility of emphasis with non-assertion – has not been pursued in subsequent literature. In fact there is counter-evidence to this claim in their own article. They point out that emphasis can be achieved by other means, including clefting (*It's this book that you should read*), and they further point out that clefting is a 'structure preserving transformation', so that Emonds's (1970) proposal would predict, correctly, that it can occur quite generally in embedded contexts. But their proposal appears to be precisely an attempt to to *derive* a (modified version of) Emonds's generalization about the limited distribution of 'non-structure preserving' transformations from an interaction of semantic and pragmatic considerations:

> [W]e can say that these transformations operate only on Ss that are asserted. R[oot] T[ransformation]s are not applicable in presupposed sentences because it is not appropriate to emphasize elements of a sentence whose proposition is already known, whose truth is presupposed, and whose content is relegated to the background.
>
> [. . . A] definition of root transformation in terms of its linguistic function rather than in terms of syntactic structures enables us to explain the otherwise mysterious facts about its applicability. (1973: 496)

If the explanation for the distribution of root transformations is really entirely semantic/functional, then it should apply equally to other constructions that have the same semantic/functional properties, regardless of their status as

'structure preserving'.[8] Hence the felicity of, e.g., clefting in presupposed clauses (e.g., *We regretted that it was precisely this book that had been destroyed*) does constitute evidence against this aspect of their analysis.

5 Embedded Verb Second

This section discusses in some detail the most-studied syntactic root phenomenon: Germanic V2:

- Section 5.1 sets out the main characteristics of embedded V2.
- Section 5.2 presents and discusses analyses that have been proposed.

Then, in section 6, some general conclusions are drawn, and directions for further research suggested.

5.1 The phenomena

This section discusses four main aspects of embedded V2:

- the original observation that the correct generalization about V2 is that it is in complementary distribution with complementizers;
- languages in which this complementarity does not hold in a restricted set of embedded clauses (Frisian, Mainland Scandinavian);
- languages in which this complementarity has been argued not to hold in general (Icelandic, Yiddish);
- the distribution of embedded V2 clauses in German.

5.1.1 The complementary distribution of overt complementizers and V2

The V2 phenomenon itself is sketched above in section 3.1. As mentioned in section 3.1, following the work of Den Besten, it has been generally accepted that the restriction of V2 to root sentences is in fact an epiphenomenon; the real asymmetry is between sentences with and without overt complementizers. V2 is analyzed as the effect of the tensed verb moving to the empty Comp position, and some XP moving to Spec[CP].

This analysis predicts straightforwardly the complementary distribution of an overt complementizer and verb-fronting found in German. However, there is a set of exceptions to this complementarity in a number of other Germanic languages, which have been grouped into two classes. Mainland Scandinavian and Frisian fall into one class, Yiddish and Icelandic into another.

5.1.2 Limited embedded V2: Frisian and Mainland Scandinavian

This section sets out the distribution of embedded V2 in Frisian and Mainland Scandinavian to the extent that it has been established to be similar or identical in these languages. Some possible points of difference will be discussed in section

5.2.3.3. For reasons that will become clear, this pattern is referred to by Vikner (1991, 1995) as 'limited embedded V2'.

In de Haan and Weerman (1986) it is pointed out that in Frisian, a verb-final West Germanic language, V2 can occur in subordinate clauses introduced by a complementizer:

(48) Ik leau dat hy kin him wol rêde.
I believe that he can himself surely save
'I believe that he can take care of himself.'

However, the occurrence of such clauses is restricted:

- First, they occur after verbs of saying and thinking, such as *sizze* (say), *roppe* (call), *tinke* (think), *leauwe* (believe), but not after *hoopje* (hope), *wite* (know), *ferwachtsje* (expect), or *spite* (regret).
- Further, they cannot follow even verbs in the first group if these are negated, modalized (de Haan and Weerman 1986) or questioned (de Haan 2001).
- They are not in general possible as adjuncts (with the exception of rationale clauses introduced by *om't*, *omdat*, or *omreden dat*, and extent clauses licensed by *sa*+degree phrase (de Haan 2001: 6))
- They cannot occur in subject position (Iatridou and Kroch 1992).
- Nor can they be moved into the initial 'topic' position from complement position (de Haan 2001: 10).

The last point is illustrated in (49); this example also illustrates a root phenomenon particular to Frisian: the subject pronoun in the subordinate clause is different in the two sentences, as the clitic *er* cannot appear in the position immediately following the complementizer in an embedded V2 clause, just as it cannot appear in the initial position of a root clause:

(49) a. Dat er it antwurd net witen hie, sei er.
that he the answer not known had said he
'He said that he hadn't known the answer.'
b. *Dat hy hie it antwurd net witten, sei er.
that he had the answer not known said he
'He said that he hadn't known the answer.'

In Mainland Scandinavian (Danish, Norwegian, and Swedish) the distribution of embedded V2 is very similar to that of Frisian. V2 clauses introduced by a complementizer can only appear as the complements of a restricted set of verbs (as in Frisian, these verbs are a subset of the 'bridge' verbs that allow extraction). This restriction is discussed in detail for Danish in Vikner (1991, 1995), where it is noted, however, that the exact list of verbs that allow embedded V2 is not identical from language to language (Vikner 1995: 70–72). In particular, as in Frisian, inherently negative verbs (such as *doubt*, *deny*, *regret*) or verbs taking irrealis complements do not license embedded V2; and again, even the subset of

bridge verbs that allow embedded V2 do not license it when negated or modalized. Whether or not questioning the verb in the matrix clause makes V2 impossible in its complement clause is not clear from the available literature. As in Frisian, V2 clauses are not possible as adjuncts, as sentential subjects (Iatridou and Kroch 1992), or as topicalized complements. Good exemplification of the data for Swedish can be found in Andersson (1975).

5.1.3 General embedded V2: Icelandic and Yiddish

In Icelandic and Yiddish it has been argued that V2 is found generally in subordinate clauses. There is no restriction to the complement position of a particular set of 'bridge verbs'; V2 clauses can also appear in a variety of non-complement clauses, including relative clauses, and clauses in adjunct and subject position (Diesing 1988b, 1990; Rögnvaldsson and Thráinsson 1990; Vikner 1991, 1995; Santorini 1989, 1992; Iatridou and Kroch 1992).

5.1.4 Embedded V2 with obligatorily absent complementizer: German and Frisian

The instances of embedded V2 mentioned in sections 5.1.2 and 5.1.3 are a challenge to the analysis of V2 as involving movement of the finite verb to an unfilled complementizer position, since in all the cases discussed there V2 takes place below an overt complementizer. German also allows embedded V2, but in this case it is only possible when the complementizer is absent, as predicted by the standard analysis outlined in sections 3.1 and 5.5.1 (Vikner 1995). In fact in Frisian also embedded V2 clauses are only optionally introduced by the complementizer *dat* (that); further, there are dialects of Frisian in which, like German, embedded V2 is only possible if the complementizer is absent (Sipma 1913; de Haan 2001). The following data are from German:

(50) a. Sie sagte, daß sie keine Bücher kaufen wolle.
she said that she no books buy wants(SBJ)
'She said that she didn't want to buy any books.'

b. Sie sagte, sie wolle keine Bücher kaufen.
she said she wants(SBJ) no books buy
'She said she didn't want to buy any books.'

c. *Sie sagte, daß sie wolle keine Bücher kaufen.
she said that she wants(SBJ) no books buy
'She said that she didn't want to buy any books.'

d. *Sie sagte, sie keine Bücher kaufen wolle.
she said she no book buy wants
'She said she didn't want to buy any books.'

In other respects, German is typically described as being more like the 'limited V2' languages discussed in section 5.1.2: embedded V2 only occurs in the complements of a subset of 'bridge' verbs (Vikner 1995; Reis 1997), and subordinate clauses with V2 order cannot appear in subject or topic position (Reis 1997).

There are, however, a number of exceptions to these generalizations (Beatrice Santorini, p.c.). Some nouns allow V2 complements:

(51) der Glaube, die Erde sei flach
the belief the earth is(SBJ) flat
'the belief that the earth is flat'

V2 clauses seem also to appear in topic position:

(52) Er habe nichts zu verlieren, sagte er mir.
he has(SBJ) nothing to lose said he me(DAT)
'He had nothing to lose, he told me.'

However, when a V2 clause does appear in the initial position as in (53b), it may not contain a pronoun bound by a quantifier in the other clause (Reis 1997: 139), unlike a V2 clause that has been extraposed to the right (53a) or a verb-final clause whether extraposed or in initial position (53c):

(53) a. Jeder$_i$ möchte gern glauben, er$_i$ sei unheimlich beliebt.
everyone would gladly believe he is(SBJ) very much popular
'Everyone$_i$ would like to believe he$_i$ is extremely popular.'
b. *Er$_i$ sei unheimlich beliebt, möchte jeder$_i$ gern glauben.
he is(SBJ) very much popular would everyone gladly believe
'He$_i$ is extremely popular, everyone$_i$ would like to believe.'
c. Dass er$_i$ unheimlich beliebt sei, möchte jeder$_i$ gern glauben.
that he very much popular is(SBJ) would everyone gladly believe
'That he$_i$ is extremely popular, everyone$_i$ would like to believe.'

Reis's conclusion is that examples like (52) and (53b) are not topicalizations of complement clauses, but that the V2 clauses are main clauses, with the verb of saying part of a V1 parenthetical (note that the subjunctive may appear in root clauses in German).

It should also be noted that in German V2 clauses may appear as the complements to verbs that are negated (54a), modalized (54b), and questioned (54c):

(54) a. Er sagte nicht, er sei fertig.
he said not he is(SBJ) ready
'He didn't say he was ready.'
b. Er würde sagen er sei fertig.
he would say he is(SBJ) ready
'He would say he was ready.'
c. Sagte er, er sei fertig?
said he he is(SBJ) ready
'Did he say he was ready?'

The similarity in distribution of German embedded V2 and the limited embedded V2 found in Frisian and Mainland Scandinavian, described in section 5.1.2, is therefore only partial.

The description of embedded V2 in Frisian that has been given so far is in fact an oversimplification: in addition to the pattern described in section 5.1.2, Frisian also displays the German pattern. That is, if the complementizer is absent, and if there is no intonation break, embedded V2 is possible even if the matrix verb is negated or modalized, and binding of a pronoun within the complement clause is also grammatical (De Haan 2001: 34).

Overall, the German pattern of embedded V2 appears to provide strong evidence for the idea that V2 is not a 'root' phenomenon, but derives instead from the absence of an overt complementizer, an absence which does not correlate perfectly with 'root' status. Rather surprisingly, in den Besten (1983) this conclusion is not drawn; instead den Besten claims that the type of sentence illustrated in (50b) and (54a–c) is not in fact a subordinate clause at all, but rather has essentially the syntax of a direct quotation, despite the occurrence of the subjunctive and the pronominalization pattern. There are, however, strong arguments against this conclusion, including the fact that some of the verbs that can be followed by V2 complements do not allow direct quotations (e.g., *annehmen* 'realize') (Reis 1997). Thus, alongside the examples in section 2.1 of 'non-root' phenomena occurring in 'root' clauses, just when these have an overt complementizer (or a *wh*-word), these German cases appear to be perfect examples of a root phenomenon occurring in embedded clauses just in cases where these lack an overt complementizer (or *wh*-word).

5.2 *Analyses and issues*

This section presents and discusses some of the important issues that have arisen in the analysis of the phenomena discussed in the last section:

- Does V2 under a complementizer always involve recursion of CP, or may it result from a topic position lower than [Spec,CP]?
- What licenses CP recursion?
- Three remaining theoretical questions:
  - How can the behaviour of the 'so . . . that' construction be reconciled with generalizations concerning the distribution of CP recursion?
  - How can an account of embedded V2 in terms of the licensing of CP recursion simultaneously explain the obligatory absence of a lexical complementizer in German and its obligatory presence in Mainland Scandinavian?
  - What is the attachment site of the V2 clause?

5.2.1 *Generalized CP recursion vs. different 'topic' positions*

There is widespread agreement in the literature that the type of embedded V2 found in Mainland Scandinavian and Frisian (limited embedded V2 below an

overt complementizer) is to be explained by the hypothesis that there can be recursion of CP: that is, that the overt complementizer takes as its complement another CP. This clearly allows for the retention of the idea that the finite verb in a V2 clause is in C (in this case, the head of the lower CP projection) and the initial XP in the Specifier of this lower CP. This hypothesis is defended in Holmberg (1986) and Platzack (1986) for Swedish; de Haan and Weerman (1986), Iatridou and Kroch (1992) for Frisian; and Vikner (1991, 1995) and Iatridou and Kroch (1992) for Danish.

More controversial is the correct analysis of the type of embedded V2 found in Icelandic and Yiddish (general embedded V2). Various analyses have been put forward, but they can be divided into two types of approach. In the approach defended most extensively by Vikner (1991, 1995), general and limited V2 should be given a unitary analysis: both types involve CP recursion. In all cases the finite verb is in C and the XP preceding it in the Specifier of this CP; the complementizer is the head of a higher CP. Vikner argues that general embedded V2 arises in a V2 language if and only if the language has both a right-branching IP (e.g., all Scandinavian languages and Yiddish, but not, for example, Dutch, Frisian, or German), and movement of the finite verb to I (e.g., Icelandic, Yiddish, but not Mainland Scandinavian). The reason for this correlation, Vikner proposes, is that a child exposed to such a language has no basis for postulating a difference between root and non-root clauses (Vikner 1995: 159–163).

In the second approach to general embedded V2, it is assumed that in these languages the domain of V2 is not CP, but some smaller clausal constituent. Thus Diesing (1988b, 1990) and Santorini (1989, 1992) have argued for Yiddish, and Rönvaldsson and Thráinsson (1990) for Icelandic, that in these languages the finite verb in a V2 sentence is in I, and the clause-initial XP in Spec[IP], the subject remaining in its VP-internal subject position. Given the explosion of I into a number of distinct functional heads, there are variants of this analysis according to which the subject does not remain within VP but moves into a higher specifier, and the finite verb occupies one of these functional head positions (see for example Thráinsson 1994); the crucial point here, however, is that the verb does not occupy the Comp position, so that no complementary distribution of V2 and overt complementizer is expected.

5.2.2 What limits/licenses CP recursion?

Although there has been considerable debate as to whether CP-recursion is the correct analysis for Yiddish and Icelandic, there has been much less discussion of the basis for the limitations on CP-recursion found in those languages for which it has become a relatively standard analysis for embedded V2 – that is, the languages with limited embedded V2. If CP is a possible complement for Comp, why are there language-internal restrictions on this recursion? Given the demonstrated similarity in these restrictions, what underlying principle could be responsible? Essentially this is a revised version of part of the question addressed in Hooper and Thompson (1973): what is the correct characterization of the contexts licensing CP recursion, and does this characterization lead to an explanation?

Both Authier (1992) and Iatridou (1991) point out that CP recursion in English declarative complements is only possible in environments that also allow 'that' deletion (i.e., environments where a declarative subordinate clause need not be introduced by an overt complementizer). Given prior arguments that 'that' deletion is only possible in CPs governed by a verb, they conclude that this is also a necessary condition for CP recursion. However, more must be said to explain the absence of CP recursion in, e.g., the complements to negative verbs. Basing themselves on the proposal in Laka (1990) that negative and negated verbs select a negative complementizer (and Hegarty's related 1992b proposal for certain factive verbs), Iatridou and Kroch (1992) propose that only semantically empty CPs – or at least, those whose content can be recovered from the lower CP – can be deleted at LF, and only when governed by a verb. If there are two CPs and the higher cannot delete (because there is material in its specifier, or because it has content that cannot be so recovered), then the lower CP is unlicensed.

5.2.3 Some remaining questions

5.2.3.1 The status of the 'so . . . that' construction

One known exception to the generalization that CP recursion is only possible in positions governed by a verb is a particular type of extent clause in Frisian (the following example is from de Haan and Weerman 1986):

(55) Hy is sa meager (dat) hy kin wol efter in reid skûlje.
he is so thin (that) he can well behind a cane hide
'He is so thin that he can hide behind a cane.'

Such examples clearly do not fall under Iatridou and Kroch's (and Authier's) generalization that CP recursion is possible only under government from a verb. Observing that this construction does not license CP recursion in Danish, Iatridou and Kroch conjecture that *dat* (that) in Frisian may have a second lexical entry as a 'coordinating particle'. However, it should be noted that the same construction in English also shows some signs of allowing CP recursion (contra the claims of Hoeksema and Napoli 1993, discussed in section 2.3.2, that this is a clear case of subordination):

(56) a. This kind of equation is so complex that if it has one solution, then it probably has several. ('if–then')
b. She was so happy that off she ran without looking behind her. (locative inversion)
c. Humphrey was so rich that in no circumstances would he use anything other than cash. (negative preposing)

When there is no evidence for CP recursion this construction does not require a complementizer in English, so at least that correlation is maintained (the putative restriction of complementizerless subordinate clauses in English to the

complements of bridge verbs is, however, known to admit relatively common counter-examples, and intuitions about, e.g., complement clauses to nouns are not strong). Thus the example in note 3, repeated here as (57), could potentially be taken to be either an 'inverted' case of the paratactic *so* construction or an instance of subordination plus 'complementizer drop':

(57) The sun was so hot she fainted.

Dutch also allows V2 in the extent clause when the complementizer is absent (Jack Hoeksema, p.c.):[9]

(58) a. Ik werd helemaal nat, zo hard regende het.
I became completely wet so hard rained it
'I got soaked, it rained so hard.'
b. Het regende zo hard, ik werd helemaal nat.
it rained so hard I became completely wet
'It rained so hard I got soaked.'

Van Kemenade (1997: 342) also cites in passing an example of embedded verb movement to C in early Middle English in an extent clause of this type:

(59) þat al is hare blisse se muchel þat ne mei hit munne na muð
that all is their bliss so great that not may it mention no mouth
'that all their bliss is so great that no mouth may mention it'

German, on the other hand, does not allow V2 in an extraposed extent clause (Beatrice Santorini, p.c.). Thus (60b) contrasts with its Frisian and Dutch counterparts in (55) and (58b) above:

(60) a. Er ist so mager, dass er sich hinter einem Schilfrohr verstecken kann.
he is so thin that he REFL behind a cane hide can
'He is so thin that he can hide behind a cane.'
b. *Er ist so mager, er kann sich hinter einem Schilfrohr verstecken.
he is so thin he can REFL behind a cane hide
'He is so thin he can hide behind a cane.'

However, the German counterpart of (58a), where the extent clause is initial, is fully grammatical:

(61) Er kann sich hinter einem Schilfrohr verstecken, so mager ist er.
He can REFL behind a cane hide so thin is he
'He can hide behind a cane, he is so thin.'

This construction then poses unresolved problems for attempts to provide a unified analysis of the distribution of CP recursion.

5.2.3.2 The presence and absence of the overt complementizer

As discussed in section 5.1.4, embedded V2 in German occurs only in the absence of a complementizer. Vikner (1995: 84) points out that there is therefore no reason to hypothesize any kind of CP recursion in this case. However, there is at least some degree of similarity in the distribution of embedded V2 in German and that found in the other 'limited embedded V2 languages' (section 5.1.2), although as noted in section 5.1.4 there are limits to the similarity. If we assume that the similarity needs to be accounted for, we have to ask how this is to be achieved. The proposal in Iatridou and Kroch (1992) suggests a possible analysis. As just discussed, this account adopts Laka's hypothesis of a distinct negative complementizer (and in addition also irrealis and factive complementizers); in contrast to Basque, however, where there is an overt morphological distinction, these complementizers in, e.g., Mainland Scandinavian must be homophonous with the 'unmarked' affirmative declarative one. If we assume that in German the phonetically empty Comp head that hosts the features inducing V2 also carries these affirmative declarative features, but that only the overt complementizer instantiates the negative, irrealis, or factive features, this could explain the lexical restriction on embedded V2.

What would still remain unexplained under this proposal is the unacceptability of embedded V2 in German in positions not governed by a verb. In Iatridou's and Kroch's account, the lack of CP recursion in, e.g., sentential subject position, or the Spec[CP] topic position, follows from the hypothesis that only government by a verb allows for the LF deletion of the topmost CP. But this proposal would not extend to the German case, if V2 in this language does not involve CP recursion at all. An alternative would be to assume instead that the affirmative declarative features in the lower Comp (in the CP recursion context) or on the null Comp (in the German case) have to be licensed under government by a verb.

The issue just raised for German was how to explain the similar distribution of embedded V2 in that language despite any evidence for a recursive CP. Conversely, it also remains to be explained why in the mainland Scandinavian languages and English (but not Frisian: see section 5.1.4) root phenomena in embedded CPs *require* the presence of an overt complementizer. (See Grimshaw 1997b for an explanation for the English case, and Vikner 1995: 84f. for a brief discussion of the Danish facts illustrated in (63), where the complementizer is obligatory only if V2 has applied. The situation is different in Swedish: the complementizer *att* may be omitted whether or not the following clause shows V2.)

(62) a. She believed (that) he would never let her down.
b. She believed *(that) never would he let her down.

(63) a. Hun sagde ??(at) vi skulle ikke købe denne bog.
she said (that) we should not buy this book
'She said that we shouldn't buy this book.'

b. Hun sagde (at) vi ikke skulle købe denne bog.
she said (that) we not should buy this book
'She said that we shouldn't buy this book.'

There are two aspects to this question: the first is why CP recursion is required (that is, why these languages do not behave like German (section 5.1.4)). Even if this is explained, however, a second question arises: why the higher C should delete only at LF and not at PF also, given that some kind of PF Comp deletion has been taken to be the explanation for the optional appearance of 'that' in sentences like (62a) above. A possible explanation for English might be that PF Comp deletion is not the right analysis for (62a), but rather that we need to assume the existence of a zero complementizer. As proposed in Rizzi (1990b), for quite different reasons, this complementizer has a rather richer feature content than its apparent overt counterpart 'that', since it can agree with its specifier (this is the basis for his account of the 'that-trace' phenomenon). If this richer feature content were enough to prevent LF-deletion, that would explain its failure to license CP recursion.

5.2.3.3 The position of the V2 constituent

Leaving aside Yiddish and Icelandic (the languages in which V2 appears in all types of subordinate clause, and which therefore does not appear to be a root phenomeonon), we have found the following examples of embedded V2:

(i) V2 in certain adverbial clauses (most commonly those expressing causation);
(ii) V2 after an optional complementizer (dat) in extent clauses in Frisian and possibly some other languages;
(iii) V2 after an (obligatory) (Danish, Norwegian(?)), or optional (Frisian, Swedish) complementizer in the complement of certain verbs;
(iv) V2 in the complement of certain verbs only when the complementizer is absent (German, Frisian).

We have seen that there is evidence that the type in (i) is attached at a very high point in the structure of the matrix clause (in fact all the evidence indicates that it must be high enough to be outside the scope of any element in the *root* clause). The same is true for the type in (ii).

With respect to the type in (iv) Reis (1997) argues for German (and de Haan 2001 duplicates most of the arguments for the corresponding cases in Frisian) that the attachment site is relatively low: in particular, such clauses obligatorily precede adverbial clauses. This is true even when the latter take scope lower than the subject. In (64), in addition to a reading where the rationale clause modifies the V2 complement clause, there is a grammatical reading where it modifies the matrix – but must still be attached low enough to allow the pronouns in it to be bound:

(64) Keiner$_i$ hat gesagt, er$_i$ komme, bloß weil er$_i$ seine$_i$ Mutter
no one has said he comes just because he his mother
glücklich machen wollte.
happy make wanted
'No one said he was coming just because he wanted to make his mother happy.'

Further, as (64) shows and as Reis also points out, a quantifier in the matrix can bind a pronoun in the V2 clause, again suggesting that the V2 clause attaches low (although it cannot topicalize with the VP, unlike a complement (1997: 140)). Reis's own conclusion is that embedded V2 clauses of this type have exactly the same status (and occupy the same hierarchical position) as the free *dass* clauses discussed above in section 2.3.3.

What about the cases in (iii): that is, embedded V2 in complement clauses in the Mainland Scandinavian languages and the subset of cases in Frisian where the complementizer can appear? De Haan 2001 argues that the Frisian cases should be assimilated to the types in (i) and (ii), and that in all cases the position of the 'embedded' V2 clauses is very high. In fact, he argues that the V2 clause has to attach at the same level as a root CP, to which it stands in a paratactic relation. Among other evidence, in Frisian a quantified subject in the matrix cannot bind a pronoun in the V2 clause, as shown by the contrast in (65):

(65) a. [Ider fan ús]$_i$ sei dat er$_i$ it net wist.
each of us said that he it not knew
'[Each of us]$_i$ said that he$_i$ didn't know it.'
b. *[Ider fan ús]$_i$ sei dat hy$_i$ wist it net.
each of us said that he knew it not
'[Each of us]$_i$ said that he$_i$ didn't know it.'

Further, the clause containing the verb selecting the recursive CP must itself be a V2 clause:

(66) a. Niis sei Teake (dat) hy hie it net witten.
a minute ago said Teake (that) he had it not known
'A minute ago Teake said that he hadn't know that.'
b. *Ik tocht dat Teake niis sei (dat) hy hie it net witten.
I thought that Teake a minute ago said (that) he had it not known
'I thought that Teake said a minute ago that he hadn't known that.'

Preliminary investigation suggests that Dutch embedded V2 is similar to Frisian in these respects. A matrix quantifier cannot bind a pronoun in a V2 extent clause in the 'so . . . that' construction (67b), or in a V2 complement to a verb of assertion (68b) (Jack Hoeksema, p.c.):[10]

(67) a. Iedereen$_i$/niemand$_i$ was zo blij, dat hij$_i$ een gat in de
everyone/no one was so happy that he a hole in the
lucht sprong.
sky jumped
'Everyone$_i$/No one$_i$ was so happy that he$_i$ jumped for joy.'
b. *Iedereen$_i$/niemand$_i$ was zo blij, hij$_i$ sprong een gat in
everyone/no one was so happy he jumped a hole in
de lucht.
the sky
'Everyone$_i$/no one$_i$ was so happy he$_i$ jumped for joy.'

(68) a. Niemand$_i$ zei dat hij$_i$ geen tijd had.
no one said that he no time had
'No one$_i$ said that he$_i$ didn't have time.'
b. *Niemand$_i$ zei hij$_i$ had geen tijd.
no one said he had no time
'No one$_i$ said he$_i$ didn't have time.'

The facts from Mainland Scandinavian remain to be fully explored.

6 Conclusion: directions

Some of the initial work on embedded root phenomena – in particular the article by Hooper and Thompson (1973) – was very ambitious in its scope, aiming to provide a single unified account both for the existence and for the exact distribution of these phenomena. On the other hand, initially the data were exclusively from English, a significant limitation. Some of the major advances in our understanding of these phenomena have come from the introduction of data from other languages, although detailed comparison with data from non-Germanic languages is still required. Despite the widening of the range of languages, the more recent syntactic work has tended to leave aside issues of interpretation.

There is, however, an irreducibly semantic/pragmatic component to the puzzle; although the initial analyses in terms of 'assertion' presented many problems of definition and explanation, no later work that has attempted to go beyond the stipulation of environments in which the various root phenomena obtain has been able to do without appeals to concepts such as factivity, assertion, presupposition, etc. A great deal of progress has been made in understanding the syntax of embedded root phenomena, in particular embedded V2: this progress has come through detailed empirical work on particular languages, and through advances in syntactic theory. However, some of the fundamental questions remain unanswered, and in fact practically unaddressed. In particular, what is the precise nature of the distinction between non-root and root clauses? As we have seen, work on V2 has overwhelmingly followed the proposal that the real distinction is between clauses with complementizers and those without. But while

this proposal has been extremely productive, in one sense it simply pushes the original question one level down: why should there be such a strong (but imperfect) correlation between root clauses and empty complementizer positions?

Progress on this question is likely to come from work on the syntactic encoding of discourse semantic concepts. One version of Hooper and Thompson's (1973) proposal about the association of root-clause phenomena with assertion is that root clauses have their own illocutionary force, while truly subordinated clauses do not. There is a strand of work in modern syntax that has begun to explore the syntactic encoding of such discourse semantic concepts as illocutionary force. Han (2000), citing Sadock and Zwicky (1985) and Palmer (1986), points out that imperatives (morphologically marked as such) are one root phenomenon that never occurs in an embedded context. She attributes this to the existence of an imperative operator located in Comp that includes a feature for the illocutionary feature 'directive', and the assumption that illocutionary force can only be expressed in unembedded clauses (2000: 150ff.). Haegeman (forthcoming), developing proposals about the detailed substructure of the left periphery due to Rizzi (1997), proposes that there is a distinct functional head associated with illocutionary force, and that some clauses are 'truncated' and therefore lack this projection, as well as others associated with, e.g., topicalization.

Much more work needs to be done in this area, on both the syntactic and the semantic side (and also on the correlated intonational distinctions). One obvious question on the semantic side is what it means for a verb complement clause (as opposed to an adverbial clause, where the question is perhaps less difficult) to be 'asserted'. After all, the speaker makes no commitment to the truth of the proposition expressed in the verb complement clause (in fact, as we have seen, factive verbs are typically excluded from this construction). In what sense then is it meaningful to say that these clauses express illocutionary acts of assertion? It seems that it might well be profitable to compare these cases to the 'style indirect libre'. There are some equally obvious questions on the syntactic side: what is the head instantiated by the complementizer that co-occurs with V2 in Mainland Scandinavian and Frisian? Is it really true that heads encoding illocutionary force cannot be embedded? If so, how can this be reconciled with the syntactic evidence for a low position for the kind of embedded V2 clauses found in German and Frisian? Answers to these and related questions have the potential for illuminating an important area in the interface between syntax and (discourse) semantics.

NOTES

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1 The distribution of *because* and *for* in English is not complementary; rather, *for* appears in a subset of the environments in which *because* is possible.

Although Wegener (1993) appears to claim that German *weil* + V2 and *weil* + V-final do not overlap in their interpretations, the native speakers whom I consulted found that *weil* + V-final allowed the interpretations possible for *weil* + V2, as well as the interpretations that are excluded for *weil* + V2, suggesting that the same is true for these variants in German.

In his discussion of Swedish, Andersson (1975) mentions that *därför att* 'because' can be followed by either V2 or non-V2 order. *Därför att* + V2 is necessarily outside the scope of, e.g., negation in the clause to which it attaches; but he is less clear about the status of *därför att* followed by subordinate word order, saying that a reading where it takes low scope is "the natural one and for some people I have asked, the only one" (1975: 24).

2 The paratactic *so* construction in English might be analyzable as a special case of complement preposing, given the following parallels:

- Backwards anaphora:

(i) a. John$_i$ thinks (that) he$_i$ will be promoted.
b. ?He$_i$ will be promoted, John$_i$ thinks.
c. John$_i$ will be promoted, he$_i$ thinks.

(ii) a. John$_i$ is so qualified (that) he$_i$ will be promoted.
b. ??He$_i$ will be promoted, John$_i$ is so qualified.
c. John$_i$ will be promoted, he$_i$ is so qualified.

- Failure of binding in either direction:

(iii) a. No one$_i$ thinks (that) he$_i$ will be promoted.
b. *He$_i$ will be promoted, no one$_i$ thinks.
c. *No one$_i$ will be promoted, he$_i$ thinks.

(iv) a. No one$_i$ is so qualified (that) he$_i$ will be promoted.
b. *He$_i$ will be promoted, no one$_i$ is so qualified.
c. *No one$_i$ will be promoted, he$_i$ is so qualified.

- Impossibility of negation in final clause:

(v) a. John didn't say (that) the boss is an idiot.
b. *The boss is an idiot, John didn't say.

(vi) a. John isn't so stupid (that) he would admit to that.
b. *He would admit to that, John isn't so stupid.

Whether such an analysis could be extended to what Hoeksema and Napoli (1993) take to be an essentially identical construction in Dutch is less clear. Further, in German a V2 extent clause can occur in initial position, as shown in (61), but when the extent clause is not initial, it must be verb-final, and introduced by a complementizer (60a, b). For some discussion of the Dutch and German facts, see section 5.2.3.1.

3 Hoeksema and Napoli also claim that the *so/such*-inversion in (16a) is a root phenomenon, and refer the reader to Hooper and Thompson (1973) and to Green (1976). However, there is no discussion in these earlier papers of this particular type of inversion, unless it is assumed to be an instance of "preposing around 'be'."

4 Hoeksema and Napoli do not discuss in any detail the claim that the order of the two clauses is fixed (1993: 296). In fact it is not at all obvious that this claim is correct, given the grammaticality of the following examples from English:

(i) a. She fainted, the sun was so hot.
b. The sun was so hot she fainted

Similar examples are also grammatical in Dutch (Jack Hoeksema, p.c.): see section 5.2.3.1.

5 The force of Fabb's (1990) examples with 'any' is somewhat weakened by the relative acceptability of some restrictive relatives with 'any' but without an overt licenser:

(i) The tourists who have any imagination go to visit Sicily.

The same point, however, can be made with 'ever' (Beatrice Santorini, p.c.):

(ii) a. Only tourists who have ever had luggage stolen take out enough travel insurance.
b. *Only tourists, who have ever had luggage stolen, take out enough travel insurance.

6 Apparent counter-examples like (ia) are presumably the result of the same 'telescoping' phenomenon as allows the binding in (ib):

(i) a. Every Italian man(i) thinks his mother, who has pampered him(i) since childhood, is a saint.
b. Every Italian man(i) thinks his mother is a saint. After all, she has pampered him(i) since childhood.

7 Although Hooper and Thompson do not give any examples, direct quote preposing may also co-occur with inversion as long as the subject is not a pronoun:

(i) "I won first prize," exclaimed Bill.

8 Of course, one could attempt to defend Hooper and Thompson's position by rejecting their own assumption that clefting and topicalization (or any other root transformation) are sufficiently similar to make a legitimate minimal pair.

9 In Dutch, when the extent clause is initial, it must be followed immediately by the *zo*+AP phrase unless the interpretation is simply one of 'asyndetic conjunction' (Hoeksema and Napoli 1993: 293); in German this order is also preferred, but does not appear to be obligatory (Beatrice Santorini, p.c.).

10 Dutch is also like Frisian and unlike German in that the acceptability of embedded V2 is affected by negation in the matrix:

(i) a. Hij zei (niet) dat hij tijd had.
he said not that he time had
He said/didn't say that he had time.

b. Hij zei (*niet) hij had tijd.
he said not that he time
He said/*didn't say he had time.

(ii) a. Hij was (niet) zo moe dat hij zitten ging.
he was not so tired that he sit went
He was (not) so tired that he sat down.

b. Hij was (*niet) zo moe hij ging zitten.
he was not so tired he went sit
He was (*not) so tired he sat down.

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24 Existential Sentences and Expletive *There*

ANDREA MORO

1 Introduction: what is an existential sentence?
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1 Introduction: what is an existential sentence?

The label 'existential sentence' can be misleading. On the one hand, it explicitly refers to a semantic property, i.e., to a sentence whose meaning is to predicate the (non-)existence of something; on the other, it really points to a specific syntactic structure: in fact, just to limit the observation to English, although one can express the existence of something by using a predicate of existence like 'to exist' as in *unicorns exist*, the standard terminology would not refer to this sentence as an existential sentence; an existential sentence would rather be a sentence like *there are unicorns* or *there exist unicorns*. Establishing the defining structure of an existential sentence, thus, has become a major goal of syntactic theory (and a logical preliminary step toward a semantic theory of them). In this chapter, I will try to illustrate some basic aspects of the syntax of existential sentences and the problems related to the current treatments for them.[1]

In his *Philosophy of Grammar*, by relying on the comparison of many different languages, Otto Jespersen arrived at a major generalization which one can consider as a good starting point in this field of research:

(1) **Jespersen's generalization:**
"whether or not a word like *there* is used to introduce them [i.e. existential sentences] the verb precedes the subject and the latter is hardly treated as a real subject" (Jespersen 1924: 155).

Of course, such a generalization does not exhaustively answer the questions raised by existential sentences; thus, for example one must still understand in which sense a subject of an existential sentence is "hardly treated as a real subject." Nevertheless, a first non-trivial syntactic property is singled out here: namely, that existential sentences involve (some kind of) subject–verb inversion. For example, we have the following cases in English, French, German, and Italian respectively:

(2) a. There are many girls.
b. Il-y-a beaucoup des filles.
c. Es gibt viele Mädchen.
d. Ci sono molte ragazze.

Moreover, it must be highlighted that the distribution of elements like English *there* or Italian *ci* has become a central issue of modern syntactic theory since at least the nineteenth century (cf. Graffi 2001 for comprehensive reference and extensive critical discussion). In particular, within transformational grammar the distribution of such an element has played a central role in the transition from rule-based grammars to principle-based grammars which characterized the field in the late 1970s, leading to Chomsky's (1981) landmark work. We will come back to these theoretical issues in section 3.1. As a preliminary, let us review some basic properties of existential sentences by referring to English.

2 Basic properties of existential sentences

As we just noted in the introduction, an existential sentence in English is a *there*-sentence with *be* (or *exist*) as a main verb:

(3) There are many girls.

In fact, existential sentences of this type are rare. Generally, existential sentences involve the so called 'coda', i.e., a PP/AP specifying the domain of existence of the individual or set of individuals whose existence is predicated, such as *in the garden* in the following sentence:

(4) There are many girls in the garden.

This more complex structure involving the coda has become the real test case upon which most theories have been shaped. In fact, the idea is that in a sentence

like (4) *many girls in the garden* is an uninflected clausal constituent, i.e., a small clause, of the kind that one can find in sentences like the one in (5):[2]

(5) John saw [$_{SC}$ many girls in the garden].

In other words, the idea is that the PP in the coda is the real predicate of a *there*-sentence while *there* plays the role of a dummy place holder for the structural subject position, technically an 'expletive'. By relying on similar considerations, practically all syntactic frameworks agree on this analysis. Moreover, the existence of copular sentences of the type in (6a) has been considered as an independent piece of evidence in favor of the small-clause analysis, since there are analogous cases involving subject raising from the lower uninflected clausal constituent in (5) yielding (6b):

(6) a. Many girls are [$_{SC}$ t in the garden].
b. Many girls are seen [$_{SC}$ t in the garden].

In other words, a *there*-sentence has been considered as the counterpart of a copular sentence (cf. chapter 18) with the occurrence of expletive *there* in the higher subject position as opposed to the raising of the subject of predication. Formally, the following simplified structures are standardly accepted:

(7) a. There are [$_{SC}$ many girls in the garden].
b. Many girls are [$_{SC}$ t in the garden].

Let us now take the standard structural representation in (7a–b) as correct and focus on some major properties of existential sentences. For the sake of simplicity, consider the following paradigm:

(8) a. *Which girls do you think that there are [t in the garden].
b. What do you think that there is [t in the garden].
c. Which girls do you think that there are [pictures of t] in the garden.
d. There aren't [many girls] in the garden.
e. There aren't [pictures of [many girls]] in the garden.
f. Ci sono [molte foto [delle ragazze]] nel giardino.
there are many pictures of the girls in the garden
g. *Ce le sono nel giardino.
there them are in garden
h. Ce ne sono [molte foto t] in giardino.
there of-them are many pictures in garden
i. To whom do you think that many girls are [indebted t]?
j. *To whom do you think that there are many girls [indebted t]?
k. There are many girls (in the garden).
l. Many girls are *(in the garden).
m. There are many girls angry with John/in the garden/* the cause of the riot.

n. Many girls are angry with John/in the garden/the cause of the riot.
o. There are [many girls impressed t by this theory].
p. *There are [impressed many girls by this theory].
q. John considers [there to be many girls].
r. *John considers [there many girls].
s. John considers [Mary to be the culprit].
t. John considers [Mary the culprit].

The facts illustrated here constitute a core cluster of empirical facts specific to existential sentences. We can briefly review them here referring the reader to Moro (1997: chapters 2, 3, appendix on the history of the notion of copula) and Moro (2000: appendix) for a detailed discussion and references to the original sources for each case.

Let us start by considering movement of and from the subject of an existential sentence: (8a) shows that there can be no *wh*-movement of the subject if the subject is headed by *which*, while (8b) shows that there can be *wh*-movement of the subject if the *wh*-phrase occurring is *what*; (8c) shows that in fact a phrase headed by *which* can be moved out of a *there*-sentence provided that it is extracted from within the subject (as opposed to extraction from within the coda, as in **which girls do you think that there are signatures in many pictures of t*); (8d) and (8e) show the very similar contrast concerning extraction with respect to Quantifier Raising (cf. (8a) vs. (8c)): a quantifier can be extracted across there only if it is moved from within the subject; equivalently the quantified subject cannot take scope over negation in (8d); (8f) and (8d) confirm the very same pattern observed in *wh*-movement and Quantifier Raising in the case of clitic movement in Italian: taking a sentence like (8f) as a baseline, one concludes that cliticization of the whole subject is impossible in (8g) while cliticization of a subpart of the subject is perfectly grammatical in (8h); (8i) and (8j) show that extraction from the XP (here an AP) constituting the coda of a *there*-sentence yields a degraded sentence if compared with extraction from an XP (here an AP) predicate of a copular sentence;[3] (8k) and (8l) let us conclude that while the PP in the copular sentence cannot be suppressed, the one in the coda of a *there*-sentence can; (8m) and (8n) constitute a further contrast between copular and *there*-sentences: (8m) shows that, unlike PPs and APs, DPs cannot play the role of a predicate in the coda of a *there*-sentence, while they can play such a role with copular sentences as in (8n);[4] (8o) and (8p) show that *there* cannot occur with passives, even if they also involve *be*; (8q) and (8r), finally, show that *there* cannot occur in infinitival contexts if *to be* is suppressed, unlike those cases of infinitival predication such as (8u) and (8v).

Before moving to the search for the derivation of these properties of existential sentences, we must also consider the type of subject that can occur in these constructions. In such a case, the situation becomes rather murky, especially since it involves semantic considerations which are presently under debate (for a general illustration and a source of references see Chierchia and McConnell-Ginet 2001). Consider now the following cases:

(9) a. There are [many girls] in the garden.
b. There are [three girls] in the garden.
c. There are [no girls] in the garden.
d. There are [girls] in the garden.
e. *There are [the girls] in the garden.
f. *There are [most girls] in the garden.
g. *There is [every girl] in the garden.

As far as I am aware, there is no undisputed theory which can exhaustively derive the types of determiner which can occur in the subject position of a *there*-sentence from a principled theory.[5] Superficially, however, one can capture the basic intuitive property emerging from (9) by adopting Higginbotham's (1987) terminology and say that only 'adjectival' determiners can head the subject of an existential sentence.[6] Although, as noted, we cannot go through this issue in detail, it could be useful to reproduce here the semantic interpretation of *there*-sentences developed in Moro (1997: chapter 3), which relies on Higginbotham's terminology. Maintaining the discussion at a rather informal level, one can consider a *there*-sentence as the minimal syntactic structure which can 'turn' a DP into a sentence. More explicitly, a noun phrase like *many girls* cannot per se be considered as a sentence; witness the ungrammaticality of **John says that many girls*; nevertheless, a sentence like *there are many girls* is in fact interpreted as if it were a sentence like *girls are many*. In other words, a *there*-sentence takes a DP and forces us to interpret it as equivalent to a copular sentence predicating D^0 of the NP contained in it. From this perspective, the reason why only certain D^0s, namely the adjectival D^0s, can occur in the subject of a *there*-sentence should be less mysterious. The role of *there* is to ensure the proper syntactic condition to force such a 'splitting' process of the DP (and to anticipate the restriction expressed in the coda as a pronoun, if there is any). To give a simple example, the sententence *there are many girls* is interpreted as *girls are many*: this *is* the existential meaning in a syntactic sense.[7] On the other hand, a sentence including a coda like *there are many girls in the room* is a simple extension of the first, i.e., it is interpreted as *girls in the room are many*. The reason why there is this double possibility is most arguably due to the independent reason that when the subject is postverbal it is necessarily focused (see Belletti 1999a and Longobardi 1999 for extensive discussion on postverbal focus in general; see also Quirk et al. 1985 for a discussion of focus as related to *there*-sentences). A simple example should clarify this hypothesis: a sentence like *there aren't many girls but boys* is grammatical whereas **girls aren't many but boys* is not, showing that *girls* is focused only in the *there*-sentence (unless of course preverbal *girls* is emphasized and moved to the proper slot in the left periphery, as in GIRLS *t are many, not boys*). We will leave the semantic issue aside here, referring the reader once again to the cited bibliography for references and tentative proposals, and assuming that the existential meaning is the simplest way to 'make a sentence out of a DP'.[8]

All in all, we can go back to Jespersen's generalization in (1) and give a (partial) explicit characterization of it. Let us factorize the defining properties of existential sentences that we have empirically discovered:

(10) **The defining properties of existential sentences:**
(i) Movement of the subject is impossible.
(ii) Movement from within the subject is possible.[9]
(iii) The determiner of the subject has an adjectival character.

Each property has an independent life, and it is only when the defining properties in (10) are *simultaneously* present in a given minimal structure that the output qualifies as an 'existential sentence'. For example, in English, the preverbal subject of an embedded clause displays the first property in (10) when a *wh*-phrase occupies the intermediate SPEC-CP position (see Rizzi 1990b for a principled explanation):

(11) *Which student do you know [which book C^0[t read t]]?

Turning now to the second property in (10), it is well known that in Italian, clitic extraction is possible from the subject position of a small-clause complement of a verb like *ritenere* (believe), as noted by Burzio (1986), among others:

(12) Gianni ne ritiene [[molti t] intelligenti].
Gianni of-them believes many intelligent

The third property in (10), instead, is manifested in constructions like the following:

(13) John hasn't met [many [girls]].

Simplifying somewhat, let us just focus on the interpretation of the determiner *many*. Here the adjectival character of the D^0 (in the sense of Higginbotham 1987) can be captured by means of the following paraphrase: 'It is not the case that the girls John met are numerous (i.e. many in number)'. Now, note that in a sentence like *There aren't many girls*, the same kind of interpretation of *many* occurs (i.e., "It is not the case that the girls are numerous"). There is therefore a sense in which (13) is not a minimal structure in which *many* functions as an adjectival predicate: in (13), there is at least one other predicate, namely *meet* occurring in the same sentence. Again, the conjecture defended here is that it is only when the defining properties in (10) are simultaneously present in a given minimal structure that the output qualifies as an 'existential sentence'. In such a case, they interact with each other, yielding the only possible interpretation where the D^0 is predicated of the NP. This is the explicit, i.e., formal correlate of Jespersen's generalization.[10]

3 Deriving the basic properties of existential sentences

The cluster of facts reproduced in (8) raises a pointed question: what principles of Universal Grammar generate these apparently unrelated facts and let children acquire them without specific instructions?[11] As noted in the introduction, the theory of the distribution of *there* played a crucial role in shaping the Principles and Parameters framework from its early stage in Chomsky (1981). In this section I will sketch the major lines of reasoning that directed the development of this field and compare two radically alternative proposals that are presently under debate.

3.1 The standard theory: **there** *as a place holder for the subject*

The first point to be observed is that ever since Milsark (1974; see also Milsark 1977), the two following sentences have been considered as generated from the same underlying structure:

(14) a. There are girls in the garden.
b. Girls are in the garden.

In the analysis proposed by Milsark, the two sentences were roughly considered as synonymous: in both cases, it is said that girls have the property of being in the garden. In other words, according to these analyses, the element *there*, always regarded as a noun phrase, had no semantic role in a sentence like *there is a man in the room*. This intuition was strongly supported by the fact that this special noun phrase cannot discharge the function of argument (say, subject or object) in cases like the following:

(15) a. John likes books.
b. *There likes books.
c. *John likes there.

The conclusion was clear enough: although *there* can occur where argumental DPs generally occur, namely in the subject position, it has no semantic content. The ungrammaticality of the above examples was then immediately explained as a violation of the reasonable assumption that semantically null elements are incompatible with theta-roles. From this, an important question naturally arose: what forces *there* to show up in a sentence like *there is a man in the room*? In other words, what principle of grammar rules out a sentence like the following?

(16) *Is a man in the room.

The standard treatment of this puzzle came in the shape of what was called the 'Projection Principle', that is to say, a principle requiring lexical entries to be respected (at all levels of representation). A simple case like the following illustrates this principle:

(17) a. John likes books.
b. *Likes books.
c. *John likes.

Only the first sentence is grammatical because only in the first sentence is the lexical entry of *like* respected. This verb, in fact, requires two arguments: in this case *John* and *books*. In the ungrammatical cases one of the two arguments is missing, and so the Projection Principle is violated. Clearly, the same principle could not immediately be applied to a sentence like **is a man in the room*. In this case, there are no missing arguments; rather they are misplaced. Immediate confirmation of this comes from the fact that a sentence containing exactly the same lexical elements arranged in a different way, like *a man is in the room*, is perfectly grammatical: what this means is that the ungrammaticality of **is a man in the room* cannot be a question of the incomplete realization of the arguments of a lexical head. Although the Projection Principle was clearly not sufficient to account for such cases, there was little readiness to acknowledge the fact that it was simply irrelevant to the phenomenon in question; thus the issue became one of refining the Projection Principle so that it would encompass the offending data. The crucial step was to extend it by exploiting an essential postulate of the theory of clause structure, namely that grammatical functions are defined on the basis of configuration. Thus, the Extended Projection Principle was formulated by Chomsky (1982: 10; see also Chomsky 1981: 28ff.); it required that all sentences have a subject of the predication (at least) at LF. Thus, to the question of why *there* is required in a sentence like *there is a man in the room* an immediate answer was now available: because *there* satisfies the Extended Projection Principle. The function of this semantically null element was then considered to be that of holding the place of the subject of the predication; consequently, it was termed 'expletive of the subject position' or, more simply, 'subject expletive'.[12]

Stowell's (1978) seminal analysis of *be* as a raising verb allowed the formalization of such a relation in the following way:

(18) There_i is $[_{SC}$ a man_i in the room].

The basic relation of predication is contained in the small clause where the subject *a man* is linked to the predicate *in the room*. *There* is inserted (at s-structure) as an alternative to subject DP raising. Coindexing was introduced as a device for indicating that *there* and *a man* have no independent referential properties.

This analysis of the distribution of *there* based on the assumption that the copula selects a small clause has met with general acceptance and has established itself as the standard analysis. It is nevertheless important to notice that an

alternative theory has been discussed in the literature since its original formulation in Williams (1984) (see for example Higginbotham 1987; Reuland and Ter Meulen 1987). This alternative is based on the idea that in a *there*-sentence, the complement of the copula is a noun phrase, not a small clause, while *there* is still regarded as a semantically null place holder of the subject position:

(19) There [is [a man]].

Crucially, in this analysis the idea that *there* plays the role of a subject is pushed to the limit. According to this analysis, *there* is not holding the place of a displaced subject: rather, *there* indeed is the subject, and correspondingly the DP following the copula is analyzed as a predicate. In other words, in a *there*-sentence like *there is a prime number*, the grammatical function of *a prime number* would be exactly the same as the one it has in *seven is a prime number*: in both cases *a prime number* is analyzed as predicate.

As noted before, the analysis of the distribution of *there* has played a central role in the development of generative grammar, although regarding it as an expletive has not been without cost. Let us briefly review the major stages in this development, which all share the fundamental hypothesis that *there* be the expletive of the subject of predication. Perhaps the most dramatic illustration of the shift from constructive rule system to selective principles comes from Chomsky's (1981) analysis of the distribution of *there*. Chomsky proposed that *there*-insertion should be regarded as totally free in noun phrase positions and that ungrammatical cases could be ruled out by the interaction of independent principles. This proposal was highlighted as one of the first and most notable examples of modular interaction:

(20) "insert *there* anywhere" (Chomsky 1981: 88)

Chomsky's idea was that the following examples are just freely generated under (20) and must be ruled out on the base of independent principles:

(21) a. *John likes there.
b. *There is raining.

What are the independent principles ruling out these sentences? The first sentence is essentially a violation of the lexical entry of *like*, which requires it to have two arguments. As for the second case, it could be ruled out by assuming that the lexical entry of *there* requires it to inherit number from an associated DP; since there is no DP at all, the sentence has to be ruled out. Notice that the assumption that *there* has number appears to be independently necessary in view of cases like the following, where the verb agrees with *there* (if, of course, one wants to maintain that agreement takes place under some form of SPEC-HEAD relation):[13]

(22) a. There is a girl in the room.
b. There are girls in the room.

A very different proposal to rule out the ungrammatical occurrences of expletive *there* was suggested by Chomsky (1986b), who pushed to the limit the idea that *there* is a semantically vacuous element. His central argument concerns the interaction of *there* with the Principle of Full Interpretation, which requires that at a certain level only legitimate objects be visible. Since by definition expletives do not have semantic content, they are not legitimate at LF, where grammatical structures undergo interpretation. For this reason, it was proposed that *there* is wiped out at LF and replaced by the DP it is coindexed with. Thus, at LF a *there*-sentence such as (22a) would end up being identical to its raising counterpart:

(23) A girl is [t in the room].

This analysis, generally referred to as the 'expletive replacement hypothesis', had at least three major consequences. We will briefly deal with each of them. The most important consequence is that the distribution of *there* is seen to be determined by the independent principles governing chain formation. The associated DP must move to substitute *there*, thus creating a chain: if locality is not respected in each step of the chain, then the sentence will be ruled out. We can now consider once again the following cases (taken from Chomsky 1991) from the new perspective:

(24) a. There is a man in the room.
b. There are men in the room.
c. There seems t to be a man in the room.

According to Chomsky (1991) they are grammatical because *a man* and *men* can move to the subject position replacing *there*; witness the grammaticality of cases like:

(25) a. [A man] is t in the room.
b. [Men] are t in the room.
c. [A man] seems t to be t in the room.

On the other hand, cases like the following are to be ruled out as instantiating illicit movements:

(26) a. *There seems that a man is in the room.
b. *There seems that John saw a man.
c. *There was thought that pictures of a man were on sale.

In other words, the process of LF replacement of the associated elements yields either ECP (26a–b) or Subjacency violations (26c), as indicated by independent cases such as the following:

(27) a. *[A man] seems that t is in the room.
b. *[A man] seems that John saw t.
c. *[A man] was thought that [[pictures of t] were on sale.

Of course, *there* would still need to inherit number from a DP, but otherwise it was claimed that its distribution can simply be regarded as the result of a more general phenomenon, i.e., chain formation. This was undoubtedly a considerable advance, but, as Chomsky himself explicitly noticed, a major exception survived (see also Borer 1984a) which challenged the system. Consider a pair like the following:

(28) a. *There seems a man to be t in the room.
b. [A man] seems t to be in the room.

Apparently, there is no way to account for the ungrammaticality of (28a) in terms of illicit movement, since movement of *a man* from this position to the matrix clause subject position is fully licensed, as (28b) clearly shows.

A second advantage implied by the expletive replacement analysis concerned Binding Theory. It was soon realized that the hypothesis of *there*-insertion yields a violation of Condition C of Binding Theory, which requires referential expressions not to be bound by an element in an A-position. If we assume that expletives are to be replaced by their associated elements, the question concerning the violation of Binding Theory Condition C by *there*-insertion is solved. The trace counts as an anaphor, and so at LF (where Binding Theory checks the structure) there is no violation of Condition C; rather Condition A, which requires anaphors to be bound (in a local domain), is satisfied.

A third major consequence of this analysis became apparent later, within the so-called 'Minimalist' approach (see Chomsky 1995c and earlier unpublished references cited there). Indeed, expletive replacement has become a fundamental support to this model, as it illustrates the effect of the 'Principle of Greed', which is central to the new system based on 'economy principles'. We will briefly reproduce the essential intuition by considering a sentence like the following (see Chomsky 1993: 32ff., among many other possible sources of citation of the very same case):

(29) There seems to [$_a$ a strange man] that it is raining outside.

In this sentence, the replacement of *there* by *a man* "would yield an intelligible interpretation (something like 'There is a strange man to whom it seems that it is raining outside')." However, "derivations are driven by the narrow mechanical requirement of feature checking only, not by a 'search for intelligibility' or the like . . . benefiting other elements is not allowed" (Chomsky 1993: 33). Thus, this process is not permitted and "the derivation converges with an unintelligible interpretation."

The original hypothesis of 'expletive replacement' has been slightly refined in the Minimalist models (see again references in Chomsky 1995c and many more recent works since then). Following Williams's (1984) original observation, it was realized that *there* could not simply be wiped out at LF. Consider the following contrast:

(30) a. There aren't many men in the room.
b. Many men aren't in the room.

There appears to play the role of a scope marker blocking the wide scope reading of *many men* which is available in the other sentence. The *there*-sentence cannot mean the same as the raising counterpart: in particular, it cannot mean that many men are not in the room. Thus, since scope is assigned at LF, *there* cannot be wiped out and the *there*-sentence cannot be exactly like the raising counterpart. Chomsky then proposed to reduce the replacement of *there* by its associate DP to a process of *there*-affixation which does not eliminate *there* from LF:[14]

(31) [There[a man]] is [t in the room]].

This analysis was considered to solve the problem posed by Williams (1984), and the proposed structure has subsequently met with general acceptance. Even so, certain data remained unexplained, including the ungrammatical **there seems a man to be in the room*, but these have generally been dismissed as 'exceptions'. As a further puzzle, Chomsky (1991) reports an original observation by Kenneth Safir, who discovered the following contrast:[15]

(32) a. [How many men] do you think that there were t in the room?
b. *[How many men] do you think that t were in the room?

The second clause shows a typical *that*-trace effect: the subject of an embedded sentence cannot be extracted across an overt complementizer. The obvious question is why the presence of *there* makes any difference, especially since in this view it is affixed to the subject at LF.

The analysis presented here, based on the idea that *there* is a place holder for the subject of predication, has been adopted as the standard one in modern syntax. Moreover, it has been adopted for many other languages, such as Italian. This extension goes back at least to the pioneering work of Burzio (1986) on the distribution of the equivalent of English *there*, namely *ci*, which seemed to confirm and refine the central intuition that *there*/*ci* is a subject expletive. For example, the following pair in Italian is also generally analyzed as stemming from the same underlying structure, paralleling the case of English *there*:

(33) a. Molte copie del libro sono [t nello studio].
many copies of the book are in the studio
b. Ci sono [molte copie del libro nello studio].
there are many copies of the book in the studio

The major difference between the two languages is that *ci* is a clitic while *there* was standardly analyzed as a full phrase.[16] All in all, we have seen that the standard theory rests on three crucial assumptions: first, the topmost position of the clause structure (SPEC-IP) is where the logical role of subject of predication is defined; second, *there* is a semantically null element; third, any *there*-sentence is associated with a copular sentence where the subject is raised from the lower position.

If one maintains such a standard theory, which in fact is shared by most syntactic theories of the twentieth century, including Jespersen (1924) and Bloomfieldian linguists (cf. Graffi 2001 and references cited there), it would be an easy exercise to conclude that the cluster of facts illustrated in (8) would go uncaptured, or at least would not be captured in a unitary way.[17] In the remainder of this section, an alternative theory will be briefly illustrated which aims at deriving the major syntactic properties of existential sentences from a principled framework, and in a unitary fashion. An important caveat should be made explicit here: the alternative theory I am going to introduce is not widely accepted; in fact it reflects only a minority view: nevertheless, it has been referred to in quite a number of works. Omitting it would make this chapter less exhaustive.[18]

3.2 *An alternative theory:* **there** *as a place holder for the predicate*

The alternative theory presented here relies heavily on the discovery of so-called 'inverse copular sentences' within the unified theory of copular sentences. Since there is a dedicated chapter on this topic in this collection (chapter 18), I will not present this theory in detail, and recommend the interested reader to refer to that chapter or to the original sources.[19] Here I will simply sketch out the essentials of the unified theory of copular sentences, focusing on those aspects which are conceptually strictly related to the alternative treatment of *there*-sentences. The core hypothesis of the unified theory of copular sentences is that, contrary to the standard 'Fregean' assumptions (which go back at least to Chomsky 1981, 1986b, and according to which SPEC-IP can only host the subject of predication), SPEC-IP can also host predicates, provided that they are realized as DPs, a case that can only occur in copular constructions. To illustrate this idea with a simple example, consider the following two sentences:

(34) a. Some pictures of the wall are [t the cause of the riot]. (canonical)
b. The cause of the riot is [some pictures of the wall t]. (inverse)

These sentences are generated by the same underlying structure by raising either the subject or the predicative DP to the preverbal position, yielding a canonical and an inverse copular sentence respectively. Despite the fact that superficially the two sentences are identical, i.e., they are both sequences of the type [DP V DP], it can be shown that they have very different syntactic properties. I will not

go through an illustration of these here (see again chapter 18). The important fact is that inverse copular sentences provide us with the key empirical argument for a reconsideration of *there*-sentences. This is because inverse copular sentences imply that there is no longer need for us to consider *there* as a place holder of the subject of predication: rather, there is a second logical possibility available now, namely that *there*-sentences belong to the more general class of inverse copular sentences. Formally, the following structure holds, where, contrary to the standard analyses previously reviewed here, *there* is analyzed as a raised place holder of the predicate and not as a place holder for the subject inserted in the position where it surfaces:[20]

(35) There are [many girls t].

Before briefly commenting on the advantages of this proposal with respect to the challenge posed by the facts in (8), a residual question remains concerning the coda. If one adopts the proposal that *there*-sentences are inverse copular sentences, there is only one option available, namely that a PP in the coda is an adjunct (since *there* is the place holder of the predicate). In fact, since a PP can be an adjunct of a clausal structure or of a nominal structure, there are two structures available. Taking, for example, a PP like *in the garden*, in a sentence like *there are many girls in the garden*, we have the following two options:[21]

(36) a. [There are [many girls t]] . . . [in the garden].
b. [There are [[many girls [in the garden]] t]].

How can this alternative theory explain the facts in (8)? We will briefly review them and, once more, refer to the more general source in Moro (1997). As a guideline, recall that the central proposal here is that *there* is a place holder of the predicate, not of the subject of predication. Let us start from the more complex facts, namely movement restrictions on the subject of existential sentences. Consider the examples from (8a) through (8h): movement of the subject is impossible, movement from within the subject is possible.

That movement of the subject is impossible (with *wh*-movement, Quantifier Raising, and clitics, as in (8a) (**which girls do you think that there are [t in the garden]*), (8d) (*there aren't [many girls] in the garden*), and (8g) (**ce le sono nel giardino* – there them are in garden)) is not surprising if one adopts the idea that *there*-sentences are inverse copular sentences. Indeed, this is a property characterizing the subject of all inverse sentences (cf. **which pictures of the wall do you think that the cause of the riot is* stemming from the inverse copular sentence *you think that the cause of the riot is some pictures of the wall*, where the predicate *the cause of the riot* is moved out of the small clause to SPEC-IP, leaving the subject *some pictures of the wall* in situ). Essentially, the prohibition on extracting the subject of an inverse copular sentence can be explained by a theory that regards activation of the agreement features on a governing head to be a way of meeting locality conditions on movement, much in the sense that the so-called '*que-qui* rule' is

explained as a way of satisfying the ECP in French in sentences like *l'homme que je pense t que/*qui Jean croit t qui/*que t viendra* (the man that I think that John believes that will come; see Rizzi's 1990b version of the ECP; see also Moro 1993b for some further refinements of the original proposal, and chapter 18 for a defense of a two-principle theory of locality). Since the copula already agrees with the raised predicative noun phrase (*the cause of the riot*), movement of the subject (*which pictures of the wall*) as a whole would violate the ECP. Similarly, the impossibility of moving the whole subject of a *there*-sentence can be explained in the same way. Movement is blocked since the copula already agrees with the raised predicate, namely *there*.

The fact that movement from within the subject is possible is indeed less direct to explain. The relevant examples are (8c) (*which girls do you think that there are [pictures of t] in the garden*), (8e) (*there aren't [pictures of [many girls]] in the garden*), and (8h) (*ce ne sono [molte foto t] in giardino* – there of-them are many pictures in garden). Why is movement from within the subject of a *there*-sentence allowed? After all, extraction from the subject position is banned in inverse copular sentences (cf. **which wall do you think that the cause of the riot was a picture of*): if *there*-sentences are indeed inverse copular sentences, why should it be possible? The crucial step to remember is that while extraction of the subject is prohibited by the ECP, movement from within the subject is banned by (some version of) the Subjacency condition (cf. chapter 18 for a detailed discussion). This suggests that raising *there* or *ci*, as opposed to a full phrase like, say, *the cause of the riot*, affects the relations to which Subjacency is sensitive in inverse copular constructions. Although I cannot go through the proposal in a detailed fashion, I would like to illustrate the major lines of reasoning that can be followed to solve this puzzle. Subjacency violations essentially amount to moving across a(n argumental) constituent which is not selected by a head in the proper configuration. The classic examples are extraction from an adjunct (cf. **who do you think that John screamed [while seeing a picture of t]*) or a preverbal subject (**who do you think that [a picture of t] frightened John*): in both cases, the constituent is not selected by a governing head and Subjacency is violated. Why should raising of *there* or *ci*, as opposed to a full phrase like, say, *the cause of the riot*, change the situation? There are two crucial observations to single out: first, predicates have selective capacities; second, the copula is not a predicate, but rather the expression of aspectual and modal aspects of clause structure in the traditional Aristotelian sense. Now, consider *there* or *ci* as opposed to a full phrase like, say, *the cause of the riot*. In the first case, we are assuming them to be predicates, while in the second case the predicate is rather the head *cause*, which is embedded in the larger determiner phrase. Thus, it is not unreasonable to assume that when *there* or *ci* is raised to the preverbal position, the lower subject is c-commanded by the predicate, whereas it is not when *the cause of the riot* is raised. Although the technical details have not been presented here, this should suggest why the theory that regards *there*-sentences as inverse copular sentences is more promising than the standard theory. Let us move on and consider the other empirical facts

observed in (8): it will be clear that these further cases can be derived directly from the alternative theory.

The fact that extraction from the PP in the coda of a *there*-sentence is degraded as in (8i), as opposed to a copular sentence in (8j), follows immediately, since the PP is an adjunct rather than the predicate of the small clause as in the corresponding copular sentence. The fact that the PP can be omitted in a *there*-sentence such as (8k), while it must be present in a copular sentence such as (81), follows immediately if we take *there* to be a place holder of the predicate: the PP can be omitted simply because it is not a predicate as opposed to the case of the copular sentence; rather, it is an adjunct and thus it can be omitted by definition. The fact that a DP (as opposed to APs and PPs) cannot be in the coda of a *there*-sentence such as (8m), while it can occur as a predicate in a copular construction such as (8n), follows, since the DP in the coda is not a predicate but an adjunct and we independently know that DPs cannot occur as adjuncts unless marked by a predicative marker such as *as* (cf. *John phoned *(as) a doctor*). The fact that *there* cannot be inserted in passives unless the subject is raised to the lower preverbal head position, as in (8o) vs. (8p), is a misinterpretation of the facts: the reason why (8o) is grammatical is that the phrase *impressed by this theory* can be interpreted as an adjunct in the coda of the *there*-sentence or as a part of a complex noun phrase containing a reduced relative clause; in fact, the subject of the *there*-sentence itself can be *many girls impressed by this theory* (cf. *many girls impressed by this theory can be easily found in this country*). The fact that the copula cannot be omitted in infinitival *there*-sentences, as in (8r) as opposed to (8q), is a general property of inverse copular sentences: for the predicate to cross over the subject, a landing site must be provided by the copula as in all inverse copular sentences (cf. *John believes the culprit *(to be) Mary* and many more examples discussed in chapter 18); note that the copula must not be present when the predicate is in situ, as in (8s–t). Finally, also note that the major challenging fact for the standard theory noticed in (28a) (**there seems a man to be t in the room*) is also solved. The reason why this sentence is ungrammatical is that the subject and the predicate cannot simultaneously raise out of a small clause (whether or not an adjunct PP occurs):

(37) *There seems [a man to be [t t]] . . . [in the room].

This is not a peculiarity of *there*-sentences, as indicated by the totally symmetric example with full predicative noun phrases:

(38) *The cause of the riot seems [some pictures of the wall to be [t t]].

If the predicative noun phrase *the cause of the riot* is raised, the subject *some pictures of the wall* must stay in situ: they cannot simultaneously be moved for locality reasons (again for the ECP reasons just mentioned). Note that the fact that *there* agrees with the subject can be considered as a reflex of number (and

Case) agreement between subject and (certain types of) predicative nominals, as in *John is the culprit*(**s*)/*the culprit*(**s*) *is John* (see Moro 1997 and references cited there for critical discussion of this issue).[22]

All in all, this alternative theory regarding *there*-sentences as instances of inverse copular sentences appears to solve some questions in a rather natural way.[23] Of course, this approach generates some new questions that the standard theory did not raise, such as why the canonical associate of the inverse *there*-sentence does not have an existential meaning. In other words, if *there are girls* is the inverse counterpart of the canonical *girls are there*, exactly as *the cause of the riot is a picture of the wall* is the counterpart of *a picture of the wall is the cause of the riot*, why doesn't the canonical sentence containing *there* have an existential reading?[24] I will not go through the proposal for such a phenomenon: for our limited purpose here, it will be sufficient to note that clearly the syntactic structure of the canonical counterpart of a *there*-sentence does not instantiate the 'conspiracy' of factors that constitute the defining properties of an existential sentences (cf. (10)). However, since a full treatment will involve the preliminary discussion of many semantic aspects of existential sentences, I will simply recommend the willing reader to the various bibliographical sources and discussions in Milsark (1974, 1977); Safir (1985b); Lumsden (1988); Moro (1997), among others. We can simply conclude our quite limited discussion here by observing that, from a semantic point of view, a *there*-sentence is nothing but the minimal syntactic device that is able to turn a DP into a clausal structure where the NP is predicated of the D^0 (of course, when the latter has an adjectival character in the intended sense).

Summarizing, in this section we have seen some major steps toward the reduction of the complex syntax of existential sentences to a principled framework. We have seen that there are at least three different proposals. A first proposal, stemming from Milsark's (1974) original analysis and further developed by Chomsky in many phases of his work up to the Minimalist approach, has undoubtedly become the standard one: according to this, *there*-sentences are the non-raising counterparts of copular sentences. A second proposal, originally made by Williams (1984) and supported by Higginbotham (1987), among others, considers *there*-sentences to be 'transitive sentences' in that the copula is followed by an argumental noun phrase rather than a clausal constituent. A third proposal, originally elaborated in Moro (1991, 1997), proposes that *there*-sentences are instances of the much broader class of inverse copular sentences. The first two proposals can be considered similar and akin to the Structuralist tradition in that in both cases *there* is regarded as the expletive of the subject of predication, whereas in the third proposal *there* is regarded as a raised predicate. Of course, none of the theories exhaustively explains all problems and issues concerning *there*-sentences: nevertheless, they constitute a step toward a better understanding of these issues, and more generally they illustrate some central topics of syntactic theory. In the next two sections, I will concentrate on a specific comparative problem raised by existential sentences and indicate some further possible extensions related to the exploration of the syntax of *there* and *ci*.

4 On the Definiteness Effect in existential sentences: are there parameters in semantics?

A cursory survey across languages shows that existential sentences raise a sharp comparative issue. Let us focus on the following well-known contrast, which is a word-by-word correspondence between English and Italian:

(39) a. *There is John in this garden.
b. C'è Gianni in questo giardino.

More generally, a DP headed by a definite article or by a universal quantifier or by a proper name cannot be the subject of a *there*-sentence, whereas it may be one in *ci*-sentences. Why are existential sentences different across languages? Traditionally, the restriction which rules out the offending case in English has been formulated by appealing to semantics:

(40) "sentences of the form *there is definite noun phrase* . . . are violations of the surface rules of semantic interpretation rather than of syntactic rules, it appears" (Chomsky 1973; reproduced from Chomsky 1977a: 52).

Since the notion of 'definiteness' plays the crucial role here, this restriction has been called the 'Definiteness Restriction' and the corresponding phenomenon the 'Definiteness Effect'.[25]

Why does the Definiteness Restriction fail to hold in Italian existential sentences? In Moro (1993a) I tentatively asked whether one could sensibly talk of comparative semantics along with comparative syntax and correspondingly of a semantic parameter. Is such a notion plausible? Of course, this is not the place to approach such a fundamental question; nevertheless the specific problem posed by the contrast between English and Italian, and the citation from Chomsky, bring out the importance of this issue. Before attempting any explanation, let us begin by considering the issue from an abstract point of view and asking what kind of answer modern linguistics might in principle allow. Comparative grammar shows that cross-linguistic variations are to be traced back to the interaction of a few independent parameters set by the child on the sole basis of overt evidence. The following citation from Chomsky (1986b) illustrates the current theory:

> There may be general principles that determine how the switches [of a parameter] are set, for example, the subset principle discussed by Berwick 1982, which states that if a parameter has two values + and –, and the value – generates a proper subset of the grammatical sentences generated with the choice of value +, then – is the "unmarked value" selected in absence of evidence; this is a necessary and sufficient condition for learning from positive evidence only, insofar as parameters are independent. (Chomsky 1986b: 146)

So for example, the pro-drop parameter is set by the occurrence of sentences which do not have a phonologically realized subject, by the presence of inverted subjects, etc. It may also be that in the last resort, the proper value of the parameter is decided by the presence of some overt (string of) elements.

If we maintain that the restriction ruling out definite subjects in English is semantic, what kind of evidence should we expect to find that might overtly differentiate the two languages? In other words, how does the child know that definite noun phrases are prohibited in English and allowed in Italian in the context under discussion? Suppose we assume that the application of the Definiteness Restriction is parametric. The subset principle leaves only one option: the unmarked value is that this restriction does apply, for a grammar containing it would generate a proper subset of sentences of a grammar not containing it. Universal Grammar provides the child with the positive value of the parameter. The English child will never have to change it. The Italian child, instead, would eventually shift to the negative value (i.e., the restriction does not apply), since that child hears sentences violating it.

It seems then that we are obliged by this type of reasoning to conclude that natural languages do contain parametric variation concerning semantic restrictions, that is, 'semantic parameters'. Whether or not this conclusion is tenable is hard to decide and definitely an empirical matter. More generally, the possibility of semantic parametrization has not been exhaustively investigated yet, as far as I know, and the issue is still entirely open. Indeed, there may well be a priori reasons for not adopting this view. For example, in the recent Minimalist framework stemming from Chomsky (1995c), it has been proposed that, apart from Saussurean arbitrariness, the field of language variation is "limited to lexical differences, specifically, to differences in the features of the lexical elements that occupy the functional category nodes" (Marantz 1995b: 372; see also Borer 1984a; Manzini and Wexler 1987). On the other hand, other theories have been put forward which purport to show that parametric variations take place in semantics (see, for example, Chierchia 1995c and references cited there).[26]

All in all, to conclude this section, whose major aim is just to highlight the theoretical impact of a simple empirical fact – the contrast in (39) – I would like to observe that the theory of *there*-sentences that considers them as instances of inverse copular sentences suggests a possible treatment of the lack of the Definiteness Effect in Italian: it can be regarded as a consequence of an independent syntactic parameter, avoiding recourse to the notion of a semantic parameter. Let us illustrate the major lines of reasoning. From this new perspective a sentence like *c'è Gianni in giardino* turns out to be similar to *lo legge Gianni un libro*, which is arguably generated as a clitic left dislocation structure in the sense of Cinque (1990c), involving a specifier of a Top^0 position in the left periphery of the clause structure (see Rizzi 1997):

(41) a. Un libro, Gianni lo legge.
a book Gianni it reads

b. In giardino, Gianni c' è.
in garden, Gianni there is

The surface order is obtained by subject–verb inversion (42a–b) involving pro (cf. *pro telefona Gianni* (pro telephones Gianni)) followed by further remnant movement of the lower IP constituent across the topic phrase (42c–d):

(42) a. Un libro, pro lo legge Gianni.
a book it reads Gianni
b. In giardino, pro c' è Gianni.
in garden, there is Gianni
c. pro lo legge Gianni . . . un libro t.
it Gianni reads a book
d. pro c'è Gianni . . . in giardino t.
in garden, Gianni there is

Note that extraction from the postverbal constituent in a clitic left dislocation yields the Subjacency violations we observed in section 2 (cf. (8j)), supporting the analogy proposed here:

(43) a. Di quale autore dici che Gianni legge [un libro t]?
of which author do you say that Gianni reads a book
b. *Di quale autore dici che Gianni lo legge, [un libro t]?
of which author do you say that Gianni it reads a book

In summary, the reason why Italian appears to escape the Definiteness Restriction can be traced back to the convergence of two independent, purely syntactic conditions: first, that *ci*, as opposed to *there*, is a clitic; second, that Italian is a pro-drop language. The first condition allows the subject to raise to the preverbal position; the second one allows subject–verb inversion: the result is an apparent violation of the Definiteness Effect. In the end, we don't need recourse to any semantic parameter, contra the implication of Chomksy's citation in (40).

Of course, since in the postverbal position the defining properties of the existential sentences illustrated in (10) are not all met (in particular there can be no extraction from the subject of an inverted subject, as in **ne hanno telefonati molti t* – of-them have phoned many), the sentence does not have an existential interpretation. Rather, the interpretation of a sentence like *c'è Gianni in giardino* can only be purely locative, as in the canonical counterpart *Gianni c'è*. Once more, as suggested by the formal interpretation of Jespersen's generalization, we must recall that 'existential sentences' are nothing but a conspiracy of independent syntactic factors that force the 'clausal interpretation' of a DP. See the discussion of the examples in (9) here: whenever one factor is missing the interpretation changes. Moreover, it is important to notice that both structural conditions must be realized for a certain language to escape the Definiteness Effect: in French, for example, the propredicative element that occurs in existential sentences is indeed

a clitic, namely *y*, but this is not sufficient for that language to escape the Definiteness Effect: since it is not a pro-drop language, subject–verb inversion is not allowed and the sentence is ruled out if the subject's determiner is not adjectival in the technical sense adopted here.

Interestingly, this explanation for the lack of the Definiteness Effect in Italian has as a consequence an independent issue concerning agreement. Since at least Burzio (1986), it has been noted that in Italian, agreement may fail in existential sentences (this is also true in many other languages, as observed at least since Jespersen 1924):

(44) a. Ci sono molte ragazze in questo giardino.
there are many girls in this garden
b. C' è molte ragazze in questo giardino.
there is many girls in this garden

However, when the subject of the existential sentence is definite, agreement, as in the case of a pronoun, is obligatory:

(45) a. Ci sono loro in questo giardino.
there are they in this garden
b. *C' è loro in questo giardino.
there is they in this garden

If verbal agreement is obligatory when a phrase is raised to SPEC-IP position, as commonly assumed, then the contrast in (35) independently supports the hypothesis that the Definiteness Restriction is circumvented in Italian via movement through preverbal position and subsequent subject–verb inversion, and it explains why the sentence in (45a) can only receive a purely locative interpretation.

5 Conclusion

After a short introduction in section 1 aiming at emphasizing the difficulties of separating semantic and syntactic aspects of existential sentences, in section 2 we explored the defining properties of existential sentences. There it was shown that an existential sentence is the output of a conspiracy of independent factors, in a way originally envisaged by Jespersen (1924) and now formally synthesized in (10). More explicitly, we saw that an existential sentence is the minimal syntactic structure that 'turns a DP into a clause', i.e., that allows the determiner to play the role of the predicate of the NP. In section 3, we took some major steps toward a derivation of a core cluster of specific properties of existential sentences, exemplified in (8), on principled grounds. Moreover, the development of the standard theory stemming from Milsark (1974) and Chomsky's own first works in the field (notably Chomsky 1981) up to the Minimalist program (cf. Chomsky 1995c and many subsequent works) was illustrated. Along with this standard theory, which

regards *there* as a place holder for the subject of predication (an idea that goes back at least to Jespersen 1924 and more generally to Structuralist linguistics), an alternative theory was presented based on Moro's (1987, 1997) unified theory of copular sentences, according to which *there* is rather to be regarded as a raised place holder for the predicate. In section 4 we concentrated on a simple cross-linguistic contrast showing the far-reaching and intricate questions that this raises on general comparative grounds: it was proposed that an apparent semantic contrast (the absence of the Definiteness Effect in the Italian equivalent of English *there*-sentences) should be traced back to purely syntactic conditions.

In this chapter, we have limited our attention to cases where *there* and *ci* occur with the copula (and a few cases involving the so-called 'quasi-copula' *seem*) and illustrated some of the major empirical and theoretical aspects of this field. In fact, it is well known that such elements can also co-occur with other verbs. In English for example, we have already observed that *there* can co-occur with *exist*; in fact, it is well known that *there* can also co-occur with other verbs such as *arrive*, *sink*, etc, namely with a subset of those verbs which give rise to the so-called 'unaccusative or ergative constructions' expressing motion (see Hale and Keyser 2002 for a critical and detailed discussion of *there*-sententeces with verbs other than the copula and the quasi-copula). In Italian, moreover, the equivalent of *there*, i.e., *ci*, can also occur in possessive constructions with *avere* (have), as in *Gianni c'ha un gatto* (Gianni there-has a cat), providing some alternative ideas toward the unified analysis of *have* and *be* across languages that has been pursued at least since Benveniste (1966a). Whether or not the predicative raising analysis offered here as an alternative theory can be extended to those constructions (unaccusative, quasi-copular, and possessive constructions) is a matter that cannot be discussed here. I will simply refer to Moro (1997: chapters 3, 4) for the extension of such a proposal to the empirical cases touched on here, and for a discussion of the consequences it has for the overall design of grammar and language acquisition.

NOTES

1 This chapter touches issues that lie across the rigid boundaries of syntax and semantics as established by didactic needs. Even the label 'existential sentences' itself suggests that crucial semantic facts must be known to approach the field. I have tried to stay away from intricate semantic aspects. The result is that the discussion is necessarily simplistic in many points: I do hope that the references I put in the text will help the reader who wants to master this field in a more detailed fashion. Moreover, since *there*-sentences in the existential reading involve the copula, reading chapter 18 is also highly recommended. I am grateful to the reviewers and to Orin Percus for many helpful suggestions.

2 For the analogy between the complement of the copula in *there*-sentences, perceptual verb constructions, and *averci* (*have-there*) constructions in Italian, see Moro (1997: 236ff.) and references cited there.

3 Of course the AP/PP can also be adjunct to the noun phrases, like the PP in the subject of the following sentence: *many pictures in this book show how big Rome was by the first century* AD.

4 It is important to note that the distinction between 'stage level' and 'individual level' predicates (as stemming from the seminal work by Carlson 1977b) appears to be relevant to describing the type of AP that can be in the coda of an existential sentence. I will not further develop the very interesting semantic aspect of this issue here.

5 See for example Reuland and Ter Meulen (1987).

6 In Higginbotham's words, "by adopting the standard algebraic picture in which restricted quantifiers over a domain D are interpreted as functions from ordered pairs of subsets of D to truth values, we can say that a quantifier q over D is of adjectival character if, for some function f from the subset of D to truth values, q (X, Y) = f (X Ç Y), for every pair X and Y of subsets of D" (Higginbotham 1987: 48).

7 Strictly speaking one should also exclude the possibility that *be* is a predicate of existence: I am assuming here the traditional Aristotelian view that the copula is not a predicate but rather the expression of aspectual and inflectional features of the sentence when they cannot be expressed syncretically on the verb (see chapter 18 and the appendix of Moro 1997 for historical references). Interestingly, the idea that 'existence' cannot be a predicate is explicitly stated by Immanuel Kant in his *Critique of Pure Reason* (for an English citation see Kant 1965: 504–505).

8 For this reason, when the splitting process is not available, the only way to 'rescue' the sentence is to give it a locative meaning (sometimes referred to as 'list reading'). In other words, if *there is John, Mary, and Peter* does not allow any 'splitting' process, the only possible interpretation is to say that the subject (*John, Mary, and Peter*) is predicated the property of being in a certain place (*there*). See also section 4 in this chapter. As for the so-called list interpretation, see Abbott (1992) and references cited there, among others.

9 *Pace* independent restrictions on movement related to the internal structure of the subject itself, of course.

10 Notice that, as with the original insight by Jespersen, there is no reference to a 'word' like *there*, i.e., to a locative element, in (10). Of course, the fact that a locative element frequently occurs in existential sentences is not accidental, since 'location' is indeed a metaphoric way to express existence. Nevertheless, location is per se not obligatory; witness expressions like Chinese *you* (have) to express existence, German *es gibt* (it gives), and the literary Italian *si da/si danno* (one gives/give). Interestingly, note also that the word *existence* itself is etymologically related to location, since it is made of the Ancient Greek prefix *ek-* (from) and the verbal root *sist-* (stay).

11 For the role of *there* in language acquisition see the pioneer work by Hyams (1986).

12 The debt of Chomsky's theory to Fregean thought is indeed explicit: "Rothstein 1983 proposes that the two clauses of the EPP are in fact closely related. We may think of a lexical head as a 'lexical function' that is 'unsaturated' (in roughly the Fregean sense) if it is not provided with appropriate arguments fulfilling the theta-roles it assigns, and we may correspondingly regard a maximal projection (apart from those that are quasi-referential: NP and clause) as a 'syntactic function' that is unsaturated if not provided with a subject of which it is predicated. Then, the EPP is a particular way of expressing the general principle that all functions must be saturated" (Chomsky 1986b: 116).

13 There is an intriguing issue that I am disregarding here, i.e., what exactly is the subject position in which *there* shows up, given the fine-grained taxonomy suggested

by many authors (see for example Cinque 1979; Cardinaletti and Roberts 1990; Poletto 1993; Moro 1997). Arguably, *there* must occupy a lower position than the subject; witness the very well-known fact that no adverbs seem to intervene between the copula and *there*, as opposed to a full DP:

(i) a. the cause of the riot arguably is a picture of the wall
b. there ?*arguably is/arguably's a picture of the wall

Since the debate on this issue is still developing, I will not discuss this issue further here, and simply assume that *there* occurs in the canonical preverbal DP position.

14 The representation given here essentially reproduces the original one given by Chomsky (1991). Later (Chomsky 1993), the DP was placed on the left of *there*, i.e., [$_{DP}$ a man [$_{DP}$ there]], on a par with all other instances of syntactic movement. See also Chomsky (1995c: 273) for a further slight refinement.

15 Safir's own theory of the distribution of *there* relied on the notion of 'unbalanced chain', which I will not introduce here; see Safir (1985b) for a detailed discussion of this issue and many related issues.

16 For a different approach to the categorial status of *there* see Moro (1997, 2000), where it is claimed that it has an intermediate status: it is generated where XPs are, but it behaves like a head, i.e., like a clitic. See also fn. 13 here.

17 For a synthetic review of the general literature on this "standard" view of *there* as a place holder for the subject of predications see Milsark (1974, 1977); Jenkins (1975); Chomsky (1981, 1995c: chapter 1); Safir (1985b); Lumsden (1988); Lasnik (1995a), among others. The literature in the field is indeed vast; for some other bibliographical indications see also the references to Moro (1997: chapters 2, 3, and the appendix on a brief history of the notion of copula).

18 See for example Zwart (1991); Chomsky (1995c: 392); Den Dikken (2002); Koopman (2002).

19 For the original sources see Moro (1987, 1988). For extensive discussion see Moro (1997) or the appendix to Moro (2000).

20 Note that the existence of place holders for predicates is independently assumed across languages: for example, Italian *lo*, French *le*, or English *so* are clear candidates. That a noun phrase can play the role of a propredicate as well as a prosubject should not be surprising: this is because, more generally, the fact that a noun phrase plays the role of the subject or that of a predicate is not an inherent lexical piece of information; rather it is a function of the position in the structure where the noun phrase occurs (cf. *a man killed John* vs. *John is a man*).

21 The second option becomes plausible when one considers examples like *girls in the garden can be very attractive* or *there are girls in the garden in the fresco*. As for the position of the PP in the first sentence, it can be argued that it is in a topic position with successive remnant IP movement. See Moro (2000: 130, fn. 12).

22 I say "certain types" because obviously not all predicative noun phrases must agree in number (and gender) with their subjects, as for example in the following Italian cases:

(i) a. Gianni è un maestro/*una maestra
Gianni is a-mas. teacher.mas./a-fem. teacher.fem
b. I ragazzi sono la causa
the-mas. boys-mas.- are the-fem. cause-fem.

I will not further explore a possible generalization for this phenomenon. See Moro (1997) and references cited there for this rather murky issue.

23 As for the case involving *how many* illustrated in (22), we are led to conclude that *how many* is extracted from the subject and that *men* is pied-piped for locality reasons. For a detailed discussion see Moro (1997).

24 Of course, one could always say that there are two (or even more) different *there*s (cf., for example, Jespersen 1924 or Rothstein 1983 and references cited there): a *there* of existence and a *there* of location, relying on the different phonological status of the two *there*s. However, even disregarding the fact that this seems an ad hoc explanation, the problem is that in languages like Italian, the same problem would be reproduced with exactly the same element, i.e., the clitic *ci*, which does not have two phonological variants. We will approach this issue directly in the next section.

25 For a general survey of the issue see Reuland and Ter Meulen (1987) and references cited there, and the seminal works by Milsark (1974) and Barwise and Cooper (1981).

26 Chierchia's work leads to interesting discussions in the field of noun phrases, stemming from Carlson's (1977b) seminal work; but see Delfitto (2002: 106ff.) for an extensive discussion of this issue and a critical approach to the notion of 'semantic parameter' proposed by Chierchia.

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25 Extraposition

MARK BALTIN

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1 Introduction

Extraposition may be defined as a process by which an element is moved to the right of, or subsequent to, its canonical position. Examples of extraposition are given in (1–3):

(1) a. That John is a fool is obvious.
    b. It is obvious that John is a fool.

(2) a. A book which was written by Chomsky appeared.
    b. A book appeared which was written by Chomsky.

(3) a. A review of Chomsky's book appeared.
b. A review appeared of Chomsky's book.

The (a) versions are assumed to represent the basic word orders, and the (b) versions are assumed to represent the extraposed versions. The extraposition that is exemplified in (1) is simply termed extraposition, following Rosenbaum (1967); the process in (2) is often called extraposition of relatives, and sometimes extraposition from NP (a term that originates in the period before nominals were analyzed as DPs); and the process in (3) is often called PP-extraposition. In this survey, Rosenbaum's extraposition will be dealt with only briefly, in section 4.1, where we discuss the status of the Right Roof Constraint, but it is necessary to delimit it, in order to emphasize the construction that we will not be talking about.

Rosenbaum's extraposition deals with the alternation in which a clausal argument of a predicate does not appear in its 'normal' position, but rather appears to the right of that position, and that position is occupied by the expletive *it*. We will be discussing another construction in which an element appears to the right of its canonical position but a gap is left. The element is either a PP or a CP. There is another construction in which an element appears to the right of its normal position, but this construction is usually distinguished in the literature from extraposition, and is termed the 'Heavy NP Shift' construction, exemplified in (4):

(4) a. I gave everything I had to John.
b. I gave to John everything I had.

Although the similarities between Heavy NP Shift and extraposition are highly suggestive of a unified analysis, a formal unification of the grammatical analysis of the two constructions has not been made, to our knowledge.

With the focus of discussion hopefully clarified, let us proceed to the question of the etiology of the extraposition construction. Four analyses have appeared in the literature: (i) rightward movement of the extraposed element from its canonical position to a position subsequent to the canonical position (Ross 1986; Akmajian 1975; Baltin 1978b, 1981); (ii) generation of the extraposed element in the extraposed position, perhaps with some interpretive process that treats it as though it were in the canonical position (Culicover and Rochemont 1990); (iii) given that extraposed elements are modifiers of some sort, generating the extraposed elements and the elements that they modify as constituents in the extraposed position, with leftward movement of the elements that are modified (Kayne 1994 and a modification of Kayne 1994 proposed by Wilder 1995); (iv) a 'mixed' analysis proposed by Fox and Nissenbaum (1999), in which some elements are moved rightward, while other 'extraposed' elements are adjuncts that are merged with heads that are moved rightward but are not pronounced in their moved positions.

We will discuss all of these analyses, and compare them, in subsequent sections, but we will first establish some high-level descriptive generalizations about the extraposition construction, as a kind of yard-stick against which to measure the success of each analysis.

2 The position of attachment of the extraposed element

To be neutral among these analyses of extraposition, it would be helpful to introduce some terminology. Let us refer to the phrase which the extraposed element is construed as modifying as the host. For example, the underlined subjects in (2b) and (3b) are hosts.

Hosts can occupy a variety of positions – the subject position is only one. For example, objects can be hosts:

(5) I called somebody yesterday who I couldn't stand.

Objects of prepositions can also serve as hosts:

(6) I talked to somebody about that who was quite knowledgeable.

Wh-phrases, presumably in [Spec, CP], can also be hosts:

(7) Who did you visit who was unhappy about the visit?

Extraposition cases such as (7), in which the host is in a derived position, raise the question of what the host is. If we assume that the *wh*-phrase and its trace form a chain, is the host the head of the chain, or the tail of the chain? Culicover and Rochemont (1990) present evidence that that host is the head of the chain. We will present this evidence below, but for now, it must be taken on faith, because the notion of a host has not been shown to have any theoretical significance; it has only been a terminological matter. It is clear, however, that unless grammatical relations are determined derivationally, i.e., pre-movement, in a way in which they are indelible, some mechanism must be countenanced that can determine the fact that a given extraposed element is the modifier of a given host. Guéron and May (1984) provide such a principle, which they dub the Complement Principle. This is presented in (8):

(8) **Complement Principle (Guéron and May's (11):**
In a sequence of categories α_i, $\beta^{i1} \ldots \beta^n_i$ in a structure Σ, $\beta^1_i \ldots \beta^n_i$ are complements to α_i only if α_i governs $\beta_1 \ldots \beta^n_i$.

They assume the following definition of government:

(9) **(Guéron and May's (12)):**
α governs $\beta =_{df} \alpha,\beta$ are dominated by all the same maximal projections, and there are no maximal projection boundaries between α and β.

Guéron and May assume May's (1985) principle that adjunction creates multimembered projections, and that to be dominated by a node is to be contained

within all of its members. They further assume that Bresnan's S' (i.e., Comp + S) is the maximal projection of S, a non-standard assumption today, the standard assumption being that there is a CP and a TP, both of which are maximal projections. Guéron and May's complement principle will be examined in section 3, but for now, we note that they require that the head of an A-bar-chain be the element that is construed with the extraposed constituent, and there are two independent reasons for allowing extraposed elements to be construed with A-bar-chain heads. The first is based on a fact first noted in Baltin (1978a, 1978b), to the effect that extraposition cannot occur out of a fronted PP:

(10) *In which magazine did you see it which was lying on the table?

The object of a preposition that remains within the VP can be related to an extraposed constituent:

(11) I saw it in a magazine yesterday which was lying on the table.

Crucially, if the preposition is stranded, a fronted *wh*-phrase can more acceptably be related to an extraposed constituent:

(12) ??Which magazine did you see it in which was lying on the table?

The essential contrast here is between (10) and (12). It is true that (11) shows that an extraposed constituent can be related to a prepositional object that is within the VP, but a prepositional object within a PP that is fronted out of the VP cannot launch an extraposed constituent. It seems, however, that a fronted prepositional object that is fronted by itself does more easily launch an extraposed constituent. We will return below to the inability of a fronted PP to host an argument that is related to an extraposed constituent. Unfortunately, the acceptability of (12) seems to be marginal.

A clearer piece of evidence that an extraposed constituent must be related to the head of an A-bar-chain, rather than the tail, is provided by Culicover and Rochemont (1997), who note the contrast between (13) and (14) (their (49) and (50), respectively):

(13) *He$_i$ [$_{VP}$ [$_{VP}$ invited several girls to the party] [$_{CP}$ that John$_i$ dated in high school]].

(14) How many girls did [$_{IP}$ he$_i$ invite to the party] [$_{CP}$ that John$_i$ dated in high school]?

If we assume that the extraposed relative in (13) is adjoined to the VP, co-indexing between a pronominal subject and an R-expression that is within the extraposed relative violates Principle C of the Binding Theory (Chomsky 1981) under standard assumptions. The fact that such co-indexing is acceptable in (14) indicates

that the extraposed relative must be outside of the domain of the subject, which it is if the extraposed relative in (14) is adjoined to CP.

Baltin (1981) shows that there is no unique point of attachment for extraposed constituents. It is shown there that constituents that are extraposed from subject position (relatives and extraposed PPs) are adjoined to IP, while relatives and PPs that are extraposed from within objects are adjoined to VP. The arguments are based on stranding contrasts of extraposed material under VP-ellipsis and VP-fronting processes. Specifically, material that is extraposed from subject position can be stranded when the VP is elided or fronted, and indeed must be stranded under those conditions, while material that is extraposed from object position cannot be stranded when the VP is elided or fronted:

(15) a. Although not many people would ride with Fred who knew just him, some would___who knew his brother.
b. Although no reviews appeared of Chomsky's book, one did___of Jakobson's book.
c. *Although he didn't call people up who are from Boston, he did ___who are from New York.
d. *Although he didn't call people up from Boston, he did___from New York.
e. John said that he would call people up who are from Boston, and call people up who are from Boston he did___.
f. *John said that he would call people up who are from Boston, and call people up he did___who are from Boston.
g. John said that he would call people up from Boston, and call people up from Boston he did___.
h. *John said that he would call people up from Boston, and call people up he did___from Boston.

This would indicate that the generalization about the structural position of extraposed phrases is the following:

(16) An extraposed phrase is adjoined to the first maximal projection that dominates the phrase in which it originates.

Therefore, an extraposed element that modifies a *wh*-phrase in [Spec, CP] would be adjoined to CP, and hence out of the c-command domain of the subject, accounting for Culicover and Rochemont's observations noted in (14). It will be noted that (16) predicts that an element that is extraposed from subject position will follow an element that is extraposed from object position, given that the former would be adjoined to a projection dominating VP, while the latter is adjoined to VP. This prediction appears to be correct:

(17) a. Someone picked some books up which were lying on the table who really didn't want to.

b. *Someone picked some books up who really didn't want to which were lying on the table.

It should be noted that while extraposition is usually thought of as applying to elements that modify nominals, the process is clearly more general. It applies to clausal and PP complements of adjectives and verbs as well (as noted by Baltin 1981):

(18) a. How fond of Sally are you?
b. How fond are you of Sally?

(19) a. How certain that the Mets will win are you?
b. How certain are you that the Mets will win?

(20) a. Believe that Fred is crazy though I may, it doesn't matter.
b. Believe though I may that Fred is crazy, it doesn't matter.

(21) a. Talk to Sally about Martha though I may, it won't matter.
b. Talk to Sally though I may about Martha, it won't matter.

Guéron and May's complement principle does not make reference to the categorial status of the head, and this is one of its virtues, as we see.

3 LF-locality between head and complement

Let us examine more closely Guéron and May's (1984) Complement Principle, repeated here, together with their definition of government:

(8) **Complement Principle (Guéron and May's (11)):**
In a sequence of categories α_i, $\beta^{i1} \ldots \beta^n_i$ in a structure $\sum$, $\beta^1_i \ldots \beta^n_i$ are complements to α_i only if α_i governs $\beta_1 \ldots \beta^n_i$.

(9) **(Guéron and May's (12)):**
α governs $\beta =_{df} \alpha,\beta$ are dominated by all the same maximal projections, and there are no maximal projection boundaries between α and β.

Assuming that the Complement Principle governs locality between an extraposed constituent and its host, S-structure cannot be the level at which the Complement Principle must hold. Guéron and May assume the S-structures advocated in Baltin (1981), in which a constituent that is extraposed from subject position is adjoined to TP, while a constituent that is extraposed from object position is adjoined to VP. They also assume May's (1985) convention regarding adjunction structures, which posits a distinction between projections and members of projections. Adjunction structures are viewed as creating multi-membered projections. Domination by a projection requires containment within all of the members of the projection, so that an adjoined element is not viewed as being

dominated by the node to which it is adjoined; rather, it is viewed as being dominated by the next higher projection. Hence, a relative clause that is adjoined to VP is not dominated by that VP, since it is not contained within the lowest member of that VP (the one to which it is adjoined), while an object would be dominated by the VP. The same argument holds, by parity of reasoning, for relative clauses adjoined to TP.

Hence, the nominal host of an extraposed relative clause would not govern it at S-structure. Guéron and May claim, however, that government by the nominal host of the extraposed relative clause would hold at LF if the nominal QRs (Quantifier Raises) to adjoin still higher than the extraposed relative clause (or PP).

As evidence for the Complement Principle's application at LF, after QR feeds the Complement Principle, it is necessary to bifurcate the class of restrictive relative clause-taking nominals into those that are quantified and those that are not, with the prediction being that only the former will be able to host extraposed relative clauses. The definite determiner *the*, and demonstratives, are not considered to be quantified, and therefore cannot cause the DPs that they head to QR. Therefore, they should not be able to host extraposed relative clauses. It has often been noted, and Guéron and May note as well, that nominals introduced by definite articles indeed do not host extraposed relatives:

(22) *The man showed up that hated Chomsky.

The claim, however, that DPs that are headed by demonstratives do not host extraposed constituents is less obviously true. Guéron and May assign a * to the following example (their (17b)):

(23) *I read that book during the vacation that was written by Chomsky.

However, it is not as bad as (22), and parallel examples are perfect:

(24) Those students will pass this course who complete all of their assignments on time.

It is, however, impossible, it seems, to improve a nominal that is introduced by a pure definite article as an extraposition host. Therefore, the predictions of the LF-locality theory of extraposition do not seem to be clearly borne out. In section 5.2, when we consider the stranding account of extraposition, we will examine an alternative, more overtly syntactic, account of the contrast between definite articles and demonstratives as introducers of extraposed relative clause hosts.

4 The Right Roof Constraint

Assuming that (16) is correct, and that extraposed elements are adjoined to the first maximal projection that dominates their 'hosts', we must ask precisely what mechanism ensures this. If extraposition is a rightward movement process, one

might locate its restriction within the theory of bounding, a specification of the locality constraints on movement. If one takes extraposition as arising from generation of the constituent in its extraposed position, and construal of this element as modifying some element to its left, the locality constraint would be taken to be a specification of the configuration in which this modification construal is licit. A third view of the rightward movement locality conditions was proposed by Kayne (1994), which we will discuss below.

First, however, a bit of history is in order. Ross (1986), taking extraposition to be a rightward movement process, noticed that extraposition had stricter constraints on how far it could move than leftward movement processes, such as *wh*-movement. Specifically, he posited a constraint that has come to be known as the Right Roof Constraint:

(25) **Right Roof Constraint:**
An element cannot move rightward out of the clause in which it originates.

An example of the Right Roof Constraint can be seen below, taken from Baltin (1978b):

(26) *John was believed to be certain by everybody that the Mets would lose.

Assuming the *by* phrase to be in the matrix clause, whose main verb is passive, it follows that the finite complement which follows it, the underlying complement of *certain*, must also be in the matrix clause, and cannot be within the infinitive. Since we have seen that clausal complements of adjectives can extrapose (as seen in (19)), something must be preventing it from extraposing out of the infinitive clause into the matrix clause, and the Right Roof Constraint seems to accurately describe this restriction.

Of course, the fact that the Right Roof Constraint needs to explicitly mention the direction of movement is a defect in a theory of Universal Grammar that incorporates it. It is clear that there is no 'Left Roof Constraint'; *wh*-movement, for example, can clearly extract elements out of the clauses in which they originate:

(27) What was John believed to be certain that we would be assigned___?

Let us put aside for the moment the objection to incorporating the Right Roof Constraint as is into the theory of grammar, while we examine its empirical adequacy.

Following Ross's extensive discussion of the range of syntactic islands, an attempt was made to unify them into a general theory of bounding of movement, a theory of locality of movement in the form of Chomsky's (1973) Subjacency condition:

(28) **Subjacency:**
In the configuration X . . . [$_{\alpha}$ . . . [$_{\beta}$ . . . Y . . .] . . .] . . . X', no element Y can be moved to position X or X', if α and β are both cyclic nodes.

It had been thought in the 1960s and 1970s that a proper subset of the set of maximal projections could be stipulated as cyclic nodes, the set of nodes that were relevant for the transformational cycle. It had been proposed that universally NP (before NPs were reanalyzed as DPs, in Abney 1987) was one of the cyclic nodes, and either CP, IP (in those days, S′ and S respectively), or both were cyclic nodes as a parameter.

Many of the empirical effects of the Right Roof Constraint could be derived from Subjacency, but not all, as shown by Baltin (1981), to whom we will return. Akmajian (1975) showed, however, that the Right Roof Constraint, which mentions only the clause as setting a boundary for rightward movement, is too weak, in that extraposition seems to be much more bounded in its movement, the required boundary being at a subclausal level. Akmajian discussed the ambiguity of (29):

(29) A review of a book by three authors appeared.

The ambiguity hinges on the modification relation between the second PP and the NP that it is taken to modify, with different structures for the subject. Presumably, assuming again that nominal arguments are NPs rather than DPs (for historical fidelity to the work cited, although nothing hinges on this), the structures would be as in (30):

(30) a. $[_{NP}$ A $[_{N'}$ $[_{N'}$ review of a book] $[_{PP}$ by three authors]]]
b. $[_{NP}$ A $[_{N'}$ [review] $[_{PP}$ $[_{P}$ of] $[_{NP}$ a book by three authors]]]]

In (30a), the second PP is within the highest NP, representing the reading in which three authors penned the review, while in (30b) the second PP is within the lowest NP, representing the reading in which three individuals wrote the book. Akmajian noted, however, that PP extraposition of the second PP removes the ambiguity, with the reading corresponding to (30a), rather than (30b):

(31) A review of a book appeared by three authors.

Assuming extraposition to be an instance of movement, movement out of the lowest NP would violate Subjacency, since the PP would have to cross two NPs to move out of the subject, while movement out of the higher NP would only cross one NP, obeying Subjacency.

Baltin (1978a, 1978b) and, independently, Van Riemsdijk (1978a), argued that PPs also had to be counted in the set of cyclic nodes that were relevant to Subjacency. These authors argued on the basis of leftward movement restrictions as well, but one argument, from Baltin (1978a), was the account that inclusion of PP in the inventory of cyclic nodes would furnish of the inability of extraposition of relative clauses to occur out of fronted PPs, noted in (10), repeated here:

(10) *In which magazine did you see it which was lying on the table?

If the PP and the NP that contain the relative clause are both counted for Subjacency, Subjacency rules out extraposition of a relative clause to a position outside of the PP.

A problem for this account, however, is the fact that such extraposition does seem to be possible out of a PP that remains inside of the VP, as noted in (11), repeated here:

(11) I saw it in a magazine yesterday which was lying on the table.

One account of the difference in extraposition possibilities between (10) and (11) relied on a notion of 'reanalysis' of the preposition, causing it to incorporate, in current parlance, into the verb, and presumably pruning the preposition's projections, so that there would be no PP node in (11) that would dominate the NP out of which extraposition took place. The reanalysis account was extremely influential for a number of years, but Baltin and Postal (1996) presented several arguments, to which the reader is referred, that there is no reanalysis of prepositions that occurs within the VP. For example, comparative subdeletion cannot occur in the object of a preposition, while it clearly can to uncontroversial objects, so that the contrast in (32) holds:

(32) a. *John talked to more of these people than he talked to___of those people.
b. John read more of these books than he read___of those books.

The contrast between (10) and (11) seems to be identical to the contrast in (33) and (34), involving anaphoric binding rather than extraposition:

(33) *To whom did he talk about each other?

(34) I talked to them about each other.

On the face of it, the contrast between (33) and (34) would seem to argue for reanalysis of the preposition with the verb, allowing the prepositional object to then c-command the second PP (again assuming subsequent pruning or some sort of analogous device of the preposition's original projection(s)). However, as shown by Baltin and Postal, we get contrary results for Principle B, involving pronouns:

(35) *To whom$_i$ did John talk about him$_i$?

(36) *John talked to Fred$_i$ about him$_i$

Assuming a uniform definition of c-command that would underlie Principle A and Principle B, we would first have to make reanalysis obligatory, to account for the impossibility of binding in (36), but the impossibility of binding in (35) is unexplained, since reanalysis would not be able to apply to the fronted P.

Another possible avenue of pursuit in the account of why PPs that remain within the VP allow extraposition out of them, within the attempt to subsume bounding constraints on extraposition from subjacency, would be the adoption of Chomsky's (1986a) revised formulation of Subjacency in the context of the *Barriers* approach. In this view, subjacency makes reference not simply to the number of maximal projections between the original position of a moved element and the position to which it moves; rather, reference is made to the number of barriers between a moved element and its trace, where a barrier is a maximal projection that is not L-marked (roughly speaking, L-marking means being a complement to a lexical category and being theta-marked by that lexical category). To see the need for relativization of the set of bounding nodes for subjacency to the set of L-marked maximal projections, consider (37), in which *wh*-movement is occurring out of an infinitival complement of a noun that is the semantic head of the object (Chomsky 1986a has similar examples):

(37) Who$_i$ did you announce [$_{DP}$ . . . [$_{NP}$ plans [$_{CP}$ to visit t_i]]]?

This would be ruled out by the earliest formulation of subjacency, but permitted by the *Barriers* approach to subjacency.

With this in mind, if a PP that remains within the VP is a selected complement of the V, and the prepositional object presumably bears the same relation to the P, neither said PP nor its object will be barriers, and subjacency will not be violated. A fronted PP, on the other hand, will be a barrier, since it is not in a configuration to be L-marked. Hence, the difference between (10) and (11) is accounted for.

We must still ask, however, how (26), repeated here, is accounted for if we assume the *Barriers* approach to Subjacency:

(26) *John was believed to be certain by everybody that the Mets would lose.

There is one way in which extraposition out of an infinitival complement that remains within the VP could be ruled out. An ECM infinitive, or an infinitive out of which raising can occur, is standardly analyzed as a TP complement. Although the TP is L-marked, and would therefore not be a barrier by itself, it does dominate the VP, which is a blocking category and a barrier, and therefore the TP would be a 'barrier by inheritance'. Hence, extraction out of the infinitive would cross two barriers – the VP and the CP.

Given that subjacency is taken to induce weak violations, with the number of barriers crossed leading to increased unacceptability, crossing two barriers is taken to induce unacceptability, while crossing one does not. For example, extraposition of the clausal complement of a *wh*-moved adjective does not induce any unacceptability:

(38) How fond are you of Sally?

However, assuming that movement over one barrier is possible, we can see that subjacency is insufficient in and of itself to account for the locality constraints on

the extraposition relation between an extraposed element and its host. For example, a relative clause that is extraposed from object position to a position outside of the VP would only be crossing one barrier, the VP, given that the object is L-marked by V, and yet we saw that such extraposition leads to unacceptability, as seen in (15f), repeated here:

(15) f. *John said that he would call people up who are from Boston, and call people up he did___who are from Boston.

Similarly, if we assume that prepositions L-mark their complements, extraposing a relative clause out of a fronted PP would only cross one barrier – the PP itself. We would therefore have no account of the impossibility of such extraposition, exemplified by (10), repeated here:

(10) *In which magazine did you see it which was lying on the table?

As a matter of historical fact, between the formulation of subjacency in Chomsky (1973), which simply counted cyclic nodes, and the *Barriers* formulation of subjacency in Chomsky (1986a), another formulation of subjacency was proposed by Baltin (1981). In that formulation, there was believed to be an asymmetry between the set of bounding nodes for rightward and leftward movements, such that every maximal projection was considered to be a bounding node for rightward movement, and only a subset of these were bounding nodes for leftward movements. The formulation is given in (39):

(39) **(Baltin 1981: 8) Generalized Subjacency:**
In the configuration A . . . [$_{\alpha}$ . . . [$_{\beta}$ . . . B . . .] . . . l . . . A',
ii. A' cannot be related to B where a and b are maximal projections of any major categories;
iii. A cannot be related to B where α and β are drawn from the following list of phrasal categories; (a) PP; (b) NP; (c) S or S' or both, depending on the specific language.

This asymmetry was motivated by the general impossibility of extraposing out of any VP complement to a position outside of the VP. An example would be the unacceptability of (40b) as opposed to (40a):

(40) a. Become fond of Sally though he may, it won't matter.
b. *Become fond though he may of Sally, it won't matter.

It was assumed in Baltin (1981) that the complement of *become* is an AP, and hence the extraposition in (40b) would involve movement past AP and VP. Clearly, leftward *wh*-movement of the PP is perfectly acceptable:

(41) Sally, of whom I became quite fond___, is an exceptional linguist.

4.1 The status of the Right Roof Constraint

There are some problems with the Right Roof Constraint and its successor, Generalized Subjacency. These problems are of both an empirical and a conceptual nature. Let us begin with an empirical problem.

We noted that PPs that are located within the VP can host extraposition of relative clauses out of them, as in (11), repeated here:

(11) I saw it in a magazine yesterday which was lying on the table.

Without reanalysis, Generalized Subjacency is apparently violated with impunity, since the relative clause, if extraposed, is crossing the NP or DP, as well as the PP dominating the host nominal. It is clear, however, that such violations are not systematically possible. For example, if we adapt Akmajian's example by placing the complex nominal within the VP, the extraposed PP cannot be interpreted as modifying the most deeply embedded nominal:

(42) I read a review of a book yesterday by three authors.

One potential problem may lie in the acceptability of the following:

(43) I would prefer for everyone to leave that you would___.

Sentence (43) seems to be an example of the much-discussed Antecedent-Contained Deletion (ACD) construction, originally discussed by Bouton (1970), and then by May (1985), Baltin (1987), Larson and May (1990), Hornstein (1994), and others. ACD is the phenomenon whereby ellipsis occurs apparently in the antecedent of the elided material. Another example is given in (44):

(44) I read everything you did___.

Assuming that the VP of the relative clause in (40) has undergone VP ellipsis (including elision of the trace of the relative clause operator), the antecedent of the elided VP appears to contain the elided VP, and reconstruction or copying of the antecedent into the null VP would lead to an infinite regress. To solve this problem, it is necessary to perform some operation that would move the relative clause out of the antecedent VP, so that the antecedent does not contain the VP to be elided at the stage at which the identity between antecedent and ellipsis candidate is to be determined.

There have been three main mechanisms in the literature to accomplish this configurational rescue: (i) Quantifier Raising of the DP at LF (May 1985; Larson and May 1990); (ii) extraposition of the relative clause out of the VP (Baltin 1987); (iii) movement of the DP that contains the null VP to [Spec, Agr-O″] for Case-checking reasons (Hornstein 1994).

Consider the difference between (43) and (45):

(45) *I would prefer for everyone that you would to leave.

Presumably the infinitival sequence which follows the infinitive's subject is a non-maximal projection, hence unable to extrapose out of the highest VP. The entire infinitive subject is therefore assumed to be a complex nominal, i.e., a constituent, and hence the relative clause in (45) would have to be contained within its antecedent.

Crucially, the antecedent in (43) is assumed to be the matrix VP, so that (43) means that I would prefer for everyone to leave that you would prefer to leave. However, in order to avoid antecedent containment, the relative clause in (43), if extraposed, would have to cross the TP of which it is subject, the CP, and the DP, violating Generalized Subjacency.

It would seem, therefore, that in at least two situations, when the host of the extraposed element is located within the VP, Generalized Subjacency, an extension of Ross's Right Roof Constraint, is violated. However, it cannot be violated in Akmajian's cases, as in (42).

The conceptual problem with Generalized Subjacency is its stipulative nature. Why should there be an asymmetry between the set of movement barriers for rightward and leftward movement? Moreover, the stipulation of the set of bounding nodes for leftward movement, an embarrassment for pre-*Barriers* formulations of Subjacency, remains in this account.

4.2 *Alternative accounts of the Right Roof Constraint in other approaches to extraposition*

At this point, it may be useful to compare the other two approaches to extraposition – the non-movement account and the stranding account – with respect to how they handle the bounding restrictions on the extraposition relationship. These two accounts will be examined in more detail in subsequent sections, but it will be useful to look at these approaches simply with respect to this issue.

First, with respect to the non-movement account, notice that the Complement Principle, given in (8), will ensure locality between the extraposed element and its host, given that the extraposed element must be adjoined to the minimal maximal projection containing the host (Culicover and Rochemont 1997) in order to be interpreted as a complement. Hence, violations of Generalized Subjacency will be due not to this constraint per se as a primitive, but to the Principle of Full Interpretation (Chomsky 1986b), given that an extraposed element that is adjoined above the first maximal projection that dominates the element that it is supposed to modify will not be in the right configuration to modify that element. Unless there is some other role for the extraposed element to play in the interpretation, it will simply be superfluous, and cause the structure to run afoul of the Principle of Full Interpretation.

It is clear, however, that the problems for Generalized Subjacency remain as problems for the Complement Principle. Without reanalysis, (11) violates the

Complement Principle, just as it violated Generalized Subjacency, and (43), for which reanalysis is even less plausible, violates the Complement Principle in exactly the same way as it violates Generalized Subjacency. In both cases, the extraposed element, assuming that it is adjoined, is adjoined higher than the first maximal projection dominating the candidate for modifiee.

Another alternative to the Right Roof Constraint was proposed by Kayne (1994), within the context of the stranding analysis of extraposition. Recall that the stranding analysis eschews rightward movement of the modifier. Kayne only discusses relative clause extraposition, but presumably the analysis would be extended to extraposition of complements of other types of modifiers, as in (18–21). In Kayne's analysis, the head is moved leftward by normal leftward movement (presumably A-movement), stranding the relative clause. Hence, the "extraposed" position is in fact the base position of the head. This analysis affords us the opportunity to view with a fresh eye Right Roof Constraint violations such as the following (Kayne 1994's (5), chapter 9):

(46) *The fact that somebody walked into the room is irrelevant who I knew.

Kayne notes that if we assume the stranding analysis, the head of the relative clause would have to originate in the matrix clause and move leftward, lowering into the subject noun-complement clause. Given that the nominal is not an argument of the matrix predicate, generating it in this position would violate the theta-criterion, however it is recast in Minimalist terms. Second, the movement would be movement to a non-c-commanding position, violating an assumption that movement is always to a c-commanding position (although see Bošković and Takahashi 1998 for a defense of lowering rules).

Hence, the stranding analysis of extraposition replaces Generalized Subjacency with either of two restrictions: (i) the requirement that arguments be generated in the domain of their heads; (ii) a ban on movement to non-c-commanding positions.

It can be shown, however, that while (ii), the ban on lowering, may be accurate, (i) is not. Turning our attention to extraposition of clausal arguments, discussed by Rosenbaum (1967), consider the following sentence, discussed in Baltin (1978a):

(47) It was believed to be certain by everybody that Fred would win.

Assuming that the *by* phrase is in the matrix clause, the finite complement, certainly an argument of *certain*, must also be in the matrix clause. Extraposition of clausal arguments clearly obeys Generalized Subjacency:

(48) a. That it was obvious to everybody that Bush was a moron surprised me.
b. *That it was obvious to everybody surprised me that Bush was a moron.

It should be noted that (47) contrasts with (26), repeated here:

(26) *John was believed to be certain by everybody that the Mets would lose.

What is the basis of this contrast? One immediate observation that comes to mind is that in (47), the finite complement is related to the expletive in some way, and the expletive has clearly undergone A-movement into the matrix. In (26), the clausal argument cannot be related to any position in the clause in which it resides; there is no expletive, for one thing.

The reanalysis of extraposition, viewed as a rightward movement, as stranding, a leftward movement, is done in the context of Kayne's (1994) Linear Correspondence Axiom (LCA), which maps linear precedence onto asymmetric c-command, such that if A asymmetrically c-commands B (A and B are assumed to be non-terminals), the terminals that A dominates must precede the terminals that B dominates. Therefore, rightward adjunction would be impossible, because the results could not be linearized.

The alternation that is characterized by extraposition must be characterized by any grammar, including one that assumes the LCA as the basis for linear order; one way to capture the relationship between the variant in which the clausal argument appears in subject position and the variant in which it appears in final position (the subject position being occupied by the expletive *it*) would be to generate the clausal argument in final position, and allow it to move leftward into subject position. Hence, the structure in which the clausal argument is in 'extraposed' position, corresponding to (49a), would be more basic than the structure in which the clausal argument is in subject position, corresponding to (49b):

(49) a. It is obvious that Fred is crazy.
b. That Fred is crazy is obvious.

Indeed, this was the tack that Emonds (1970, 1972b) took, in an analysis of the alternation that was an alternative to Rosenbaum's, labeling the leftward movement process 'intraposition'.

If we adopt the leftward-movement characterization of the extraposition analysis, the intraposition view – sentences such as (43), in which clausal arguments are in clauses superior to the ones in which their selecting predicates occur – indicates that Kayne's first suggestion as to how to rule out Right Roof Constraint violations cannot be correct. Arguments would have to be permitted to be generated in clauses that are superior to the ones in which they are arguments, under this view.

The second barrier to leftward movement of all or part of an argument into a lower clause – the fact that such movement would be lowering to a non-c-commanding position – may be more promising. The problem here comes from consideration of the case in which the clausal argument appears in final position, with the subject position apparently occupied by the expletive *it*. No overt movement of the clausal argument occurs here. In earlier times, Emonds (1970, 1972b) suggested that the expletive and the clausal argument were 'co-indexed'. If this were true, the unacceptability of apparent Right Roof Constraint violations that involve clausal argument extraposition, such as (48b), might be due to a requirement that such co-indexing requires c-command.

However, current Minimalism eschews indices in general. A more recent mechanism for the relationship of expletive–associate pairs, which Chomsky (1995c) pursues for *there*-expletives, involves positing the expletive *there* as defective, i.e., missing some of the features of T, in whose specifier position it occurs. The associate of the expletive has these features (Case and phi-features), so that these features would then raise and adjoin to T. However, crucially, Chomsky contrasts English *it*-expletives, which are not defective, so that features of the associate would not raise to T (1995c: 288). If this is correct, then there would seem to be no device to explicitly mark the relationship between the expletive and the clausal argument in the final representation.

However, we would then have to ask what is responsible for the Right Roof Constraint effects in (48b). It can be seen from examples such as (47) that arguments can be higher than their selecting predicates. If there is no device to explicitly relate the expletive and clausal argument pairs in extraposition constructions, then what is responsible for the Right Roof Constraint restrictions in this construction?

In fact, one possible move might be to generate the expletive and the clausal argument together, and move either the expletive or the clausal argument into subject position. In English, the expletive and the clausal argument cannot surface together, for reasons that we cannot explore here, but the two can surface together in Scandinavian languages, according to Chomsky (p.c., citing Dianne Jonas). If this is correct, one can perhaps assimilate Rosenbaum's view of extraposition to Kayne's view of extraposition as, in fact, leftward movement of the non-clausal part of an argument, stranding the clause. In the phenomenon that Rosenbaum analyzed, it would be the expletive itself that is moving leftward, rather than the semantic head of the relative clause. It would be necessary, however, to attribute the Right Roof Constraint effects to a ban on movement to a non-c-commanding position, rather than a requirement that arguments be generated within the same local domain as the heads that license them.

5 The base-generation analysis of extraposition and the stranding analysis in greater detail

5.1 The base-generation analysis

The earliest analysis of the extraposition phenomenon viewed it as arising from rightward movement of clauses and prepositional phrases. There are a number of problems that arise from this analysis of extraposition. One is a theory-internal problem that can be seen from considering extraposition of relatives and PPs from subject position. In Government-Binding theory terms, the Empty Category Principle (ECP), originally proposed in Chomsky (1981) and revised and refined in numerous works in that period, required that traces be properly governed, in the sense of being governed by either a lexical category (later, the trace's theta-role assigner) or its antecedent; traces of categories which were not theta-governed

had to fulfill the latter requirement. The subject position was always a barrier to government, and relative clauses, which have been viewed as adjuncts, are not theta-governed. Hence, as originally noted by Howard Lasnik (cited in Baltin 1987), if a relative clause were extraposed from subject position, and it left a trace, the trace would violate the ECP. Extraposition of a PP complement of a noun would not violate the ECP, since the PP would be governed by the noun, its theta-role assigner.

It is important to note an objection to a movement account of extraposition that was advanced often in the 1970s through the early 1990s that no longer has any force. As noted by Akmajian (1975) in a footnote, and often repeated, one might ask why extraposition could not violate subjacency by successive cyclically moving the extraposed element to adjoin to the first bounding node, and then the next, etc., parallel to the successive-cyclic movement of *wh*-elements, which, of course, superficially violate subjacency, but do not in reality because of the successive-cyclic character of *wh*-movement.

The reason that the question of why successive-cyclicity for extraposition was not possible was even raised in Akmajian (1975), and subsequently, was that successive-cyclicity was supposed to be the norm for movement, an assumption that was crucial in Chomsky (1986a), for example, who used widespread adjunctions to barriers as a means of voiding barrierhood. This assumption is no longer held within, e.g., Minimalism, where it is held that movement is only done for, e.g., feature-checking (Chomsky 1995c) or for some other purpose, pragmatic or semantic (Reinhart 1995, 1997; Fox 1999), a principle known as 'Last Resort' (Chomsky 1991, 1995c; Lasnik 1999). If Last Resort is assumed, something extra must be assumed to allow for successive-cyclic movement. For example, to allow for successive-cyclic raising, Chomsky (1995c) makes a distinction between interpretable features, which are checked but not erased, allowing an element to keep moving to check features of a target, and uninterpretable features, which are deleted as soon as they are first checked. If we assume that extraposition does not check any interpretable features, it could not be successive-cyclic, and the question disappears. Of course, the question within Minimalism, assuming Last Resort, would be what feature(s) extraposition would check. There is no satisfactory answer to this question at this time.

An extremely straightforward argument against a movement account of extraposition is based on a phenomenon originally noted by Perlmutter and Ross (1970). There are extraposed relative clauses with split antecedents, one in each conjunct of a coordination. In this case, there is no single head that could serve as the antecedent for the relative clause. The phenomenon is manifest when the relative clause contains a symmetric predicate, one requiring a plural subject:

(50) A man entered the room and a woman left who were similar.

Interestingly enough, such split antecedence appears to be possible only across conjuncts:

(51) *A man visited a woman (yesterday) who were similar.

It is also only possible when the two antecedents are in parallel positions within the conjuncts; a subject in the first conjunct cannot combine with an object in the second:

(52) *A man entered the room and I saw a woman who were similar.

Needless to say, as Perlmutter and Ross (1970) noted at the time, such cases of extraposition are extremely problematic for a movement account of this construction, since there is no plausible source for the origin of the relative clause within a single nominal. Such cases of extraposition would therefore appear to lend credence to a base-generation approach to extraposition. However, it is necessary to account for the apparent need for parallel positions for the antecedents in the split antecedent construction.

One line that might be pursued in accounting for these restrictions might be to make use of the difference in adjunction sites for relative clauses extraposed from subject position vs. those for relative clauses extraposed from object position. It should be recalled that the former were shown to be adjoined to TP, while the latter were adjoined to VP. Assuming that this difference in adjunction sites is relevant to the reconstruction of the complement relation, such that a complement could be at most adjoined to the maximal projection dominating the element to which it is to be interpreted as complement, the relative clause in (52) would have to be adjoined to the TP conjunction. This would allow the extraposed relative to be interpreted as modifying the subject in the first conjunct, but not the object in the second.

This account would also explain why split antecedence is not possible in simple sentences, as in (51). The extraposed relative could be interpreted as modifying the subject if adjoined to TP, but it would not be able to be interpreted as modifying the object in that case. If it is adjoined to VP, it could modify the object, but could not then modify the subject (if we assume that modifiers cannot be interpreted as being lower than the phrases they modify).

The Complement Principle, in tandem with the Principle of Full Interpretation (Chomsky 1986a), which requires that all elements that are present at LF must be integrated into the sentence in some way, thus accounts for the locality restrictions on 'extraposed' (the term being used in a purely descriptive sense now) elements vis-à-vis the elements that they modify. However, there is a cost. The term *complement* is usually reserved for a phrase that is an X-bar sister of an X^0 head that assigns it a theta-role; it is an argument of that head. Elements that modify higher projections are considered adjuncts. The Complement Principle does not distinguish between complements, which are internal arguments of some theta-role assigning X^0, and adjuncts, so that the underlined elements in both (53a) and (b) are considered complements:

(53) a. A review appeared <u>of Chomsky's book</u>.
b. A man showed up <u>who was quite convincing</u>.

While this may be accurate for the LF grammatical relations of these phrases, it does not reflect their underlying grammatical relations. The same problem shows up clearly in examples of extraposition that modify phrases other than nominals, such as the following, pointed out by an anonymous *Linguistic Inquiry* reviewer to Culicover and Rochemont (1990):

(54) a. How fond of Sally are you?
b. How fond are you of Sally?

The adjective *fond* obligatorily takes a PP headed by *of* as an internal argument, and yet a traceless structure with the Complement Principle would simply note the locality between the 'extraposed' PP and the AP headed by *of* – in other words, placing the PP in the configuration of an adjunct, modifying the AP. Nowhere is, e.g., the obligatory selection between the PP and *fond* reflected in this structure.

In sum, it would seem that the adoption of the Complement Principle obscures what has been thought to be a crucial grammatical distinction between arguments and adjuncts, and complicates the view that there are linking regularities between thematic relations and syntactic positions for realizing those thematic relations (Perlmutter and Postal 1977; Carter 1988; Pesetsky 1995; Gruber 2000).

5.2 The stranding analysis

As noted earlier, the stranding analysis of extraposed constituents (Kayne 1994) generates them, together with their hosts, in the positions in which they ultimately reside, and moves the host into its surface position, minus the relative clause. To see how this works, we must first discuss the analysis of relative clauses within this approach.[1]

First of all, relative clauses are analyzed as CP complements of determiners,[2] and the heads of relative clauses are promoted from within the relative clauses themselves, an analysis first advocated in the 1970s by Schachter (1973) and others. Hence, the structure of, e.g., (55) would be as in (56):

(55) The book that I read.

(56) $[_{DP}\ [_{D}$ the$]\ [_{CP}\ [_{NP}$ book$]\ [_{C'}\ [_{C}$ that$]\ [_{TP}$ I $[_{VP}\ [_{V}$ read$]\ [_{NP}$ t$]]]$

Hence, the nominal 'head' of the relative clause is within the Spec of the CP of the head of the relative clause, and, at least in the case of the determiner *the* introducing the relative clause, does not form a constituent with the determiner. This aspect of the analysis is crucial, as we will see in section 5.2.1, for accounting for stranding possibilities for relative clauses headed by various determiners. Other determiners are not located as the highest head of DP, but are in fact within the NP, such as numerals or the indefinite article *a*:

(57) Two books that I read.

(58) $[_{DP}\ [_{D}\ 0]\ [_{CP}\ [_{NP}$ two books$]\ [_{C'}\ [_{C}$ that$]\ [_{TP}$ I $[_{VP}\ [_{V}$ read$]\ [_{NP}$ t$]]]$

As evidence for this analysis of relative clauses, Kayne notes that the definite article cannot introduce a simple nominal with a postnominal genitive, as in (59):

(59) *The picture of John's.

Postnominal genitives that are introduced by *the* are possible when the nominals are further modified by relative clauses, however:

(60) The picture of John's that we like.

In contradistinction to *the*, numerals can introduce postnominal genitives in simple nominals:

(61) Two pictures of John's.

Briefly, Kayne analyzes nominals such as (61) as being headed by *of*, which he takes to be a determiner (D), and the material to the left of *of* in (61) originates in the NP complement of *of*, which then moves to its specifier. The two stages are shown in (62):

(62) a. $[_{DP}\ [_{D}$ of$]\ [_{NP}$ John's $[_{NP}$ two pictures$]]$
b. $[_{DP}\ [_{NP}$ two pictures$]^{i}\ [_{D}$ of$]\ [_{NP}$ John's $t^{i}]$

However, if *the*, unlike the numerals and the indefinite article, is a D which cannot take a DP complement, the impossibility of postnominal genitives introduced by *the* is accounted for.

With this in mind, we are now in a position to see some advantages of the stranding analysis of relative clause extraposition.

5.2.1 Advantages

It will be recalled that in section 3, we reviewed the claim by Guéron and May (1984) that the hosts of extraposed constituents had to be quantified. One piece of evidence for this claim was the observation that nominals which were introduced by the definite article *the* were impossible hosts for extraposed constituents, as in (22), repeated here:

(22) *The man showed up that hated Chomsky.

Guéron and May tied the impossibility of (22) to the non-quantified status of the head of the relative, but the stranding analysis offers a competing account.

The structure of a complex nominal which is introduced by *the* has the structure in (63):

(63) $[_{DP}\ [_{D}$ the$]\ [_{CP}\ [_{NP}$ man$]\ [_{C'}$ that hated Chomsky$]]$

Crucially, the determiner *the* and the NP *man* do not form a constituent under this analysis, and under the traditional assumption that only constituents can move, the derivation of (22) from a structure which corresponds to (64) would illicitly involve movement of a non-constituent:

(64) e showed up $[_{DP}\ [_{D}$ the$]\ [_{CP}\ [_{NP}$ man$]\ [_{C'}$ that hated Chomsky$]]$

We therefore have two proposed methods of preventing nominals that are introduced by *the* from hosting extraposed relative clauses. The first method, that of Guéron and May (1984), bases the method on the syntactico-semantic properties of the determiner; the second method, relying on Kayne (1994), bases the account on a purely syntactic restriction on the definite article *the* – it is a D^0, higher in the DP than numerals and the indefinite article. Can we find any additional evidence to choose between the Guéron and May account and the Kayne-based account?

We can. It will be recalled that the restriction on demonstratives introducing hosts of extraposed relatives, to the extent that the restriction is real at all, is much weaker than the restriction on *the* introducing hosts of extraposed relatives, as was seen from the perfect acceptability of (24), repeated here:

(24) Those students will pass this course who complete all of their assignments on time.

Demonstratives and *the* are equally definite; consequently, some other factor must be responsible for the distinction between (22) and (24).

It turns out that demonstratives, unlike the definite article *the*, can introduce postnominal genitive constructions:

(65) Those pictures of John's . . .

By the reasoning in Kayne (1994) concerning the postnominal genitive, demonstratives must be lower within the DP than the definite article, perhaps within the NP itself. Hence, the structure of the relative clause in (24) would be, in the relevant respects, (66):

(66) $[_{CP}\ [_{DP}\ [_{DP}\ [_{NP}$ those students$]\ [_{D'}\ [_{D}$ who$]]]_{i}\ [_{C'}\ [_{C}\ [_{TP}\ t_{i}\ [_{T'}\ [_{T}\ [_{VP}$ complete all their work on time$]]]]]$

The prediction would be the following: the ability to introduce a postnominal genitive construction would correlate with the ability to host an extraposed relative clause. More research is needed to see if this correlation holds.

Similarly, the inability of the host of an extraposed relative clause to reside within a fronted PP, noted in the discussion of (10), repeated here, has a natural explanation within the stranding analysis:

(10) *In which magazine did you see it which was lying on the table?

The preposition plus NP do not form a constituent if the head of the relative clause resides within the Spec of CP.

Of course, the fact that apparent prepositional objects that reside within the VP can host extraposed relative clauses, as in (6), repeated here, poses the same problems for the stranding analysis as it did for Generalized Subjacency, discussed in section 4:

(6) I talked to somebody about that who was quite knowledgeable.

5.2.2 Disadvantages

Given that a relative clause that is extraposed from subject position is to the right of the VP, the stranding analysis requires a stage of derivations in which the subject is to the right of VP, with the subject moving to [Spec, AgrP] or whatever the superficial subject position turns out to be. Assuming movement is always to a c-commanding position (a position that is currently predominantly but not universally accepted: Bobaljik and Brown 1997; Culicover and Rochemont 1997), note the following binding contrast involving extraposition from object position:

(67) **(Culicover and Rochemont 1997's ex. (7a) and (b)):**
  a. I sent her$_i$ many gifts last year that Mary$_i$ didn't like.
  b. *I sent her$_i$ many gifts that Mary$_i$ didn't like last year.

The pronominal first object c-commands the second object (Larson 1988b, based on Barss and Lasnik 1986), triggering a Principle C violation (Chomsky 1981) in (a), but if the only difference between the derivation of (67a) and (67b) is the complexity of the moved material into the second object position, Principle C should rule out both (67a) and (67b), as pointed out by Culicover and Rochemont. In short, it would appear that the 'extraposed' constituent is not c-commanded by its host.

A characterization of the positions from which stranding can occur is not a trivial matter. For example, Kayne (1994: 121, (21)) proposes that "A relative clause can be stranded by A-movement only in a non-Case position." However, if we assume, as is standard, that nominals that undergo passive A-movement are in non-Case positions, we would predict from this statement that a relative clause can be stranded in the first object position of a passive double object construction, contrary to fact:

(68) *Someone was given who liked Steinbeck an interesting book.

Kayne in fact discusses such cases, and suggests (1994: 166, fn. 4) that their deviance may be "an extreme case of the constraint against complex specifiers." However this constraint is formulated, it would seem to have to distinguish between specifier positions to which Case is assigned, and specifier positions to which Case is not assigned (or checked), given that the former positions, which don't allow stranding of the relative, do allow the entire DP to occur in them, and the entire DP is presumably more complex than the stranded relative.

If we look again at Culicover and Rochemont's examples, (13) and (14) repeated here, we see that stranding must be possible under A-bar movement:

(13) *He$_i$ [$_{VP}$ [$_{VP}$ invited several girls to the party] [$_{CP}$ that John$_i$ dated in high school]].

(14) How many girls did [$_{IP}$ he$_i$ invite to the party] [$_{CP}$ that John$_i$ dated in high school]?

This would, of course, be possible, if *wh*-movement first involved movement to an intermediate A-bar position that is higher than the surface subject position, as suggested for other cases by Chomsky (1986a). However, we then have no account, other than the necessarily extremely refined constraint against complex specifiers, as to why relatives cannot be stranded in object position, as in (69):

(69) *How many girls did he consider who were from Boston interesting?

(14) would furthermore require first movement of the object to pre-IP position, and then subsequent preposing of the IP as remnant movement to the left of the preposed object. These movements would require independent motivation.

In short, the stranding analysis captures some facts rather neatly, such as the distinction between demonstratives and definite-determiner-headed DPs as extraposition 'hosts', but it also suffers from some shortcomings, such as the binding facts that indicate that extraposition hosts must be lower than the extraposed material (64), the lack of a precise characterization of the positions from which stranding would take place, and the Perlmutter–Ross observation that extraposed relatives can have split antecedents.

6 Extraposition of PP

Barbiers (1995), in discussing extraposition of PPs in Dutch, notes that focus particles cannot precede extraposed PPs, although they can precede PPs that are moved by other processes, such as topicalization. He cites the following pattern:

(70) **(Barbiers 1995: chapter 4, ex. (6)):**

a. Jan heeft [$_{PP}$ pas in EEN stad] gewerkt.
John has just in one city] worked
'John has just worked in one city'.

b. Jan heeft [$_{FoP}$ pas [$_{VP}$ gewerkt] [$_{PP}$ in EEN stad].
John has just worked in one city
'John has worked in just one city'.
c. Jan heeft [$_{PP}$ in EEN stad] [$_{VP}$ gewerkt] pas.
John has in one city worked just
'#John has worked in just one city#. (# means 'unacceptable in this interpretation'.)'
d. *Jan heeft [gewerkt] [$_{PP}$ pas in EEN stad].
John has worked just in one city
e. [$_{PP}$ Pas in EEN stad] heeft Jan gewerkt.
Just in one city has John worked
'John has worked in just one city'.
f. Jan heeft [gewerkt] [$_{PP}$ in pas EEN stad].
John has worked in just one city
'John has worked in just one city'.
g. *Jan heeft [$_{PP}$ in pas EEN stad] gewerkt.
John has in just one city worked

The aforementioned contrast is between (70d) and (70e). Assuming that PP extraposition is rightward movement of the extraposed constituent, we must ask why a PP that is introduced by a focus particle cannot be extraposed. As seen from (70f), focus particles can occur within extraposed PPs; they just cannot introduce them.

Barbiers's account of this fact relies on a general account of the syntax–semantics mapping that he proposes and motivates within that work, and a detailed account of that proposal is beyond the scope of this chapter. Briefly, he proposes a principle of semantic interpretation:

(71) **(Barbiers 1995: 4.10) Principle of Semantic Interpretation:**
I. A node Z establishes a **S(EMANTIC)-RELATION** between a node X and a node Y iff X immediately c-commands Z and Z immediately c-commands Y.
II. Z is a **QUALIFIER** of X iff Z establishes a S(emantic)-relation between X and Y, and X and Y are coindexed.

Barbiers, in his chapter 2, defends a notion of c-command that differs somewhat from standard definitions. It is presented as (72) (his chapter 4, fn. 7):

(72) a. **C-command:**
X c-commands Y iff
(i) X does not dominate Y and Y does not dominate X
(ii) There is a (connected) path of left branches from Z, the minimal node that dominates X and Y, to X
b. Immediate c-command
X immediately c-commands Y iff X c-commands Y and there is no closer c-commander W such that X c-commands W and W commands Y

c. Connected path of left branches
Two paths of left branches A and B are a connected path of left branches AU B iff there is no node that intervenes between the two paths

Armed with this machinery, we are now in a position to describe Barbiers's analysis of extraposition. In essence, the Principle of Semantic Interpretation yields the syntactic configurations for the modification relation (or the Qualifier Relation), and, assuming Chomsky's (1986b) Principle of Full Interpretation, an element that occurs at LF that receives no interpretation causes the structure to be ruled out. A PP argument of a verb must be interpreted as a qualifier of the VP. In order to accomplish this, such PP arguments are generated as left-adjuncts of the VPs of which they are arguments, and the VP then moves leftward to the specifier position of the PP adjunct. Hence, the partial initial structure of (73) (the unfocused variant of (70a), (74):

(73) Jan heeft in een stad gewerkt.

(74) Jan heeft $[_{VP}\ [_{PP}$ in een stad$]\ [_{VP}$ gewerkt$]]$.

The aforementioned movement of the adjoined VP to the specifier of its adjunct PP can take place either before or after Spell Out (Chomsky 1995c), i.e., either overtly or covertly. In any event, the VP movement is motivated by the need to establish the qualification relation, and the LF is, in the essential respects, (75):

(75) Jan heeft $[_{VP}\ [_{PP}\ [_{VP^i}$ gewerkt$]\ [_{PP}\ [_{P}$ in$]\ [_{DP}$ een stad$]]]\ [_{VP}\ t^i]$.

In other words, the extraposition phenomenon is really the leftward movement of the host of the extraposition, in this analysis, motivated to yield the requisite qualification configuration. If the VP and its argument PP do not end up in this configuration, and if there is no other interpretation available, the structure will run foul of the Principle of Full Interpretation.

In fact, this is what happens in (70d), in Barbiers's account. In his analysis of focus particles (Barbiers 1995: chapter 3), the focus particle must immediately c-command either its semantic argument or the trace of its semantic argument. The semantic argument can be either a temporal object or a numeral object; in the former case, it corresponds to a VP, and in the latter case, it corresponds either to a DP or to a PP that contains the DP. It seems that FocPs can be generated as left-adjuncts of any maximal projections. However, FocPs must also be interpreted as qualifiers of their semantic arguments, and must hence be in the requisite configuration with respect to the constituents that denote those semantic arguments. With this in mind, the underlying structure of all of the sentences in (70) is (76):

(76) Jan heeft $[_{VP}\ [_{FocP}$ pas$]\ [_{VP}\ [_{PP}$ in een stad$]\ [_{VP}$ gewerkt$]]]$.

Given that the lowest VP must first move into the Spec of the PP adjunct in order to license the PP as its qualifier, the next structure would be (77):

(77) Jan heeft [$_{VP}$ [$_{FocP}$ pas] [$_{VP}$ [$_{PP}$ [$_{VP^i}$ gewerkt] [$_{PP}$ in een stad]] $_{VP^i}$ t]]].

The movement of VP into the Spec of its PP adjunct may be either overt or covert, as can be the movement into [Spec, FocP]. If the highest PP, with the VP filling the specifier, moves into [Spec, FocP], the focus particle is interpreted as a qualifier of the PP, so that the qualifier would receive a numeral-associated interpretation. Covert movement into [Spec, FocP] of the PP would yield (70b), if movement of the VP into [Spec, VP] is overt. If VP movement into [Spec, PP] is covert, and movement of PP into [Spec, FocP] is covert, we get (70a).

To derive a temporal interpretation for the focus particle, the VP must occupy the focus particle's Spec. This could be accomplished by moving the highest VP overtly into the Spec of FocP, and would correspond to (70c). (70d) is marginally possible, according to Barbiers, with a temporal interpretation, but is ungrammatical with a numeral association for the focus particle, because there is no derivation that would place the focus particle into the requisite configuration with the PP so as to allow it to receive a numeral-associated interpretation.

Barbiers's argument, however, is somewhat weak, in that it seems to overpredict the possibilities with respect to the interaction of focus particles and extraposition (here construed as leftward movement). Overt movement of the VP into Spec PP would cause the VP PP configuration to be a PP. This PP with filled Spec should be permitted to move to [Spec, FocP], where the focus particle will immediately c-command its trace. The result would be (70c), which would simply differ from (70b) in that the latter would involve covert movement into [Spec, FocP], while the former would involve overt movement of the large PP into [Spec, FocP]. Hence, this argument for PP extraposition involving leftward movement is problematic.

7 Variant of the stranding analysis

Wilder (1995) proposes a variant of the stranding analysis in which the 'extraposed' material is not stranded, but rather a larger constituent containing the material is L-moved, leaving a copy of this larger constituent in the original position. The material that appears as extraposed is in fact deleted in the L-moved position, and everything but this material is deleted in the right copy position. To illustrate with a noun-complement that appears in extraposed position, consider (78) (Wilder's (64)), in which bolding indicates deletion:

(78) We talked [about the claim **that Mary will hire Peter**] yesterday [**about the claim** that Mary will hire Peter]

As Wilder notes, his analysis requires the possibility of non-constituent deletion, exemplified in the rightmost deletion in (78).

An advantage of Wilder's analysis is that it accounts for the fact that the extraposed material is not c-commanded by the position in which it is interpreted (in rightward movement accounts, the trace does not c-command its antecedent).

Nevertheless, it seems that there are some aspects of the deletion analysis that are extremely problematic. First, it seems that it over-predicts the reconstruction possibilities. Since the phenomenon of extraposition results from deletion of material at PF, it predicts that the 'extraposed' material will reconstruct to the position in which the material is interpreted, i.e., the L-moved copy of the larger constituent. As Buring and Hartmann (1997a) (cited by Wilder) point out, this prediction is valid for Condition C reconstruction effects when the extraposed material is a noun-complement:

(79) **(based on) Wilder's (53a):**
*We talked [about her$_i$ claim___] yesterday that Mary$_i$ will hire Peter.

However, Fox and Nissenbaum (1999) point out, citing Taraldsen (1981) as the original source of the observation, that extraposed relative clauses do not reconstruct:

(80) **(Fox and Nissenbaum's (11b)):**
I gave him$_i$ an argument yesterday that supports John$_i$'s theory.

Hence, the conflation of both relative clause extraposition and noun complement extraposition is viewed by Fox and Nissenbaum, to whom we will turn in the next section, as inappropriate.

The allowance of non-constituent deletion that is exemplified in (75) also seems problematic. For example, VP ellipsis is standardly viewed as deleting a constituent, and this assumption seems justified by the impossibility of deleting, e.g., a verb plus small-clause subject, leaving the predicate, as in (81):

(81) *Although I don't consider him intelligent, I do **consider him** ambitious.

The allowance of non-constituent deletion that is required in this analysis seems overly powerful as well. For example, it would seem to allow deletion of the verb plus object in a VP-fronting construction, stranding the object relative, which was shown to be impossible, as in (15f), repeated here:

(15) f. *John said that he would call people up who are from Boston, and call people up he did___who are from Boston.

It would also seem to predict extraposition out of a fronted PP, as in (10), repeated here:

(10) *In which magazine did you see it which was lying on the table?

Furthermore, by taking extraposition to be a reflex of deletion of part of the copy of a leftward-moved constituent, it has no account of the Perlmutter–Ross phenomenon of relative clauses with split antecedents, as in (50).

8 All extrapositions are not created equal: a mixed analysis of the phenomenon

Fox and Nissenbaum (1999; also Fox 2002) propose that relative clause extraposition be separated analytically from complement extraposition. For the latter, they propose rightward movement of the complement. For the former, they adopt the view that relative clauses, as adjuncts, should be merged late with the constituents which they modify. Specifically, they propose that extraposed relative clauses are in fact merged with QRed nominals which are interpreted as the heads of those relative clauses, and that QR should be viewed as adjoining the nominal to the right of the projection that immediately dominates the nominal before QR. They propose that the distinction between covert and overt operations be eliminated and replaced by a distinction between pronunciation of the head of a chain (the traditional overt movements) and pronunciation of the tail of a chain (the traditional covert movements). The derivation of, e.g., (82) would be as in (83):

(82) John picked a book up which he really enjoyed.

(83) a. [$_{CP}$ John [$_{VP}$ picked a book up]] [$_{CP}$ which he really enjoyed].
QR yields:
b. [$_{CP}$ John [$_{VP}$ [$_{VP}$ picked a book up] [$_{DP}$ a book]]] [$_{CP}$ which he really enjoyed].
Merger of the relative clause:
c. [$_{CP}$ John [$_{VP}$ [$_{VP}$ picked a book up] [$_{DP}$ [$_{DP}$ a book] [$_{CP}$ which he really enjoyed]]]]].
PF deletion of the head of the QRed nominal chain (represented by bolding):
d. [$_{CP}$ John [$_{VP}$ [$_{VP}$ picked a book up] [$_{DP}$ [$_{\mathbf{DP}}$ **a book**] [$_{CP}$ which he really enjoyed]]]]].

The analysis has some noteworthy aspects. First, because it ties relative clause extraposition to QR, it captures the Guéron and May claim that extraposition of relatives is tied to the QR of the head. Second, because this analysis relies on merger of the extraposed relative in its overt position, it never places it within the constituent that immediately dominates the host's overt position; this accounts for the fact that relatives that are extraposed from object position do not reconstruct to the overt position of the object, exemplified in (80). Because complement extraposition is analyzed as involving rightward movement, by contrast, extraposed complements do reconstruct, as in (79).

It is tempting to apply this analysis of relative clause extraposition to the split antecedence phenomenon, by applying QR in across-the-board fashion for both conjuncts, as in the *wh*-movement example in (84):

(84) What did John give to Sally and Bill give to Martha?

The Perlmutter–Ross example would be derived as in (85):

(85) a. [[a man entered the room] and [a woman left]] [who were similar (QR from both conjuncts yielding (b))
b. [[[$_{DP}$ a man] entered the room] and [[$_{DP}$ a woman] left]] [$_{DP}$ [$_{DP}$ a man] and [$_{DP}$ a woman]]] [who were similar] (merger of the relative clause to the conjoined DP yields (c)
c. [[[$_{DP}$ a man] entered the room] and [$_{DP}$ a woman] left]] [$_{DP}$ [$_{DP}$ [$_{DP}$ **a man**] **and** [$_{DP}$ **a woman**]] $_{CP}$ who were similar]]

It is true that the two nominals in the Perlmutter–Ross example would have to be distinct, but it is possible for two distinct nominals to move across the board, as can be seen from the overt example in (86), with across-the-board topicalization, in a *respectively*-coordination sentence:

(86) This book$_i$ and that magazine$_j$ John bought t_i at Borders and Bill bought t_j at Dalton's respectively.

In fact, we can even derive the parallelism constraints on relative-clause extraposition noted in (50), in which the split antecedents cannot consist of a subject in the first conjunct and an object in the second conjunct, if we assume, following May (1985), that object QR is adjunction to VP, while subject adjunction is QR to TP. There would be no way to create a conjoined DP after QR in such cases to host merger of the relative clause.

There is one noteworthy consequence of the Fox–Nissenbaum analysis of relative clause extraposition, whose salient features are rightward QR followed by late merger of the relative clause. Recall Culicover and Rochemont's (1997) observation, discussed in section 2, that fronted *wh*-phrases can host extraposed relatives, based on the contrast in (13) and (14), repeated here:

(13) *He$_i$ [$_{VP}$ [$_{VP}$ invited several girls to the party] [$_{CP}$ that John$_i$ dated in high school]].

(14) How many girls did [$_{IP}$ he$_i$ invite to the party] [$_{CP}$ that John$_i$ dated in high school]?

In other words, the extraposed relative in (14) must be adjoined to a projection that takes it out of the c-command domain of the subject, presumably CP, in order to ensure that the coindexing indicated in (14) does not cause a Principle

C violation. However, in Fox and Nissenbaum's approach, we are led to first right-adjoin the object to CP, as a parallel to their analysis of QR, before moving the *wh*-phrase to [Spec, CP]. This movement of *wh*-phrases to the right edge of CP before moving to their final resting place is, to the best of our knowledge, unattested, and we are hard pressed to explain the reason for this movement, particularly in a theory which posits movement as a last resort.

We are also hard pressed to explain, in the late merger theory of relative clause extraposition, why reduced relatives do not appear in extraposed position, so that the only phrases that occur in the extraposition construction are PPs and CPs.

9 Result clauses

Finally, another construction that seems to have some affinities with extraposition is the degree-complement construction that is exemplified in (87):

(87) a. John was so hungry that he would eat anything.
b. John was too angry for us to talk to him.
c. John was hungry enough that he would eat anything.
d. John was hungry enough to eat anything.

There is a dependency between the underlined degree words and the clausal phrases to suggest a level of representation at which the clausal phrase is a complement of the degree word. For one thing, the clausal phrase cannot appear without the degree word's presence; for another, the finiteness value of the clausal phrase is determined by the particular degree word, such that *so* requires that the clause be finite, *too* that it be non-finite, and *enough* allows either (88c–d):

(88) a. *John was hungry that he would eat anything.
b. *John was angry for us to talk to him.
c. *John was so hungry to eat anything.
d. *John was too tired that he ate anything.

With these considerations, early analyses of degree phrases posited representations in which the degree word and the clause formed a constituent, in which the clause was a complement of the degree word. An obligatory extraposition process would then move the clause rightward, so that, e.g., (87a) would include (88) in its derivational history:

(89) John was $[_{AP}\ [_{Deg''}\ [_{Deg'}\ [_{Deg}$ so$]\ [_{C''}$ that he would eat anything$]]]]$.

It has been noted, however, by Liberman (1974) that, unlike the extraposition of relative clauses that we have been considering, a degree complement can have multiple antecedents:

(90) So many people read so many books so often that it's hard to keep track of them.

Moreover, there can only be one degree complement in a clause:

(91) *So many people read so many books so often that the lines are immense that we have to restock the shelves that the bookstores are making a mint.

The possibility of split antecedents for the degree complement contrasts with the impossibility of split antecedents for the extraposed relative clause, discussed above in connection with (50).

Furthermore, as Guéron and May (1984) show, the degree complement can occur in a clause that is higher than theclause in which the degree word resides:

(92) **(Guéron and May's (29a)):**
I told *her* that so many people attended last year's concert that I made *Mary* nervous.

The fact that (92) does not have the status of a Principle C violation of the binding theory indicates that the result clause, which contains *Mary*, must be higher in the tree than the matrix object object pronoun. Given that the degree word resides in *tell*'s complement CP in overt syntax, extraposition of the degree complement into the matrix clause would violate the Right Roof Constraint.

As Guéron and May note, however, the degree word can scope out of the clause in which it overtly resides. Hence, (93), originally noted by Liberman (1974), seems to have two understood interpretations, represented by the following logical forms (Guéron and May's (33)):

(93) Mary believed that Harry is so crazy that he acted irrationally.

(94) a. Mary believed $[_{CP}$ so^2 $[_{CP}$ that Harry is e_i^2 crazy $e_j^2]$ $[_{CP}$ that he acted irrationally$]$ $^2]]$.
b. $[_{CP}$ so^2 $[_{TP}$ Mary believed $[_{CP}$ e_i^2 $[_{CP}$ that Harry is $[e_i^2$ crazy $e_j^2]]$ $e_j^2]]$ $[_{CP}$ that he acted irrationally$]$ $^2]$.

The first interpretation of (93), corresponding to (94a), is one in which the extent of Harry's craziness is within the scope of Mary's beliefs, such that Mary believed that Harry's craziness was to such an extent that he acted irrationally. In the second interpretation of (93), corresponding to (94b), Mary believed to such an extent that Harry is crazy that her beliefs caused him to act irrationally.

These two interpretations are claimed to correlate with the syntactic position of the result clause, such that the result clause is analyzed as being adjoined to the CP in which the degree word takes scope. Matrix interpretation of the degree word is said to correlate with the attachment of the result clause to the matrix CP, and this is analyzed by Guéron and May as a reflex of the head–complement

relation being established at LF, a view that has become extremely consonant with the tenets of Minimalism (Chomsky 1995c), in which LF and PF are the only two significant linguistic levels. Therefore, the interpretation of (93), given that the result clause is adjoined to the matrix clause, is one in which the degree word must take matrix scope.

NOTES

1 See Borsley (1997) for a criticism of this approach, and Bianchi (2000) for a response to Borsley's criticisms.
2 While the approach taken in Kayne (1994) is easiest to explain for relative clauses that are introduced by the complementizer *that*, he also shows how this account can extend to *wh*-relatives. The exposition of this extension would take us too far afield. For details, see Kayne (1994: 88–90).

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26 Focus Movement (with Special Reference to Hungarian)

KRISZTA SZENDRŐI

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1 Introduction

1.1 Focus movement in generative syntax: an overview

This chapter is concerned with the way focus movement has been analyzed in generative syntax. In languages like Hungarian, discourse functions such as topic or focus are associated with a particular syntactic position. In other words, constituents that serve as the focus or topic of the utterance are displaced from their canonical position in the sentence.

All the analyses in the generative syntax literature agree that the displacement of focus in these languages is an instance of movement. The analyses diverge with respect to the nature of the movement and its trigger. There are two major trends in the literature, as it happens, following the historical development of the field, and a third, newly emerging one. Let us take these in turn.

The first group of analyses argued that focus assignment is similar to case assignment as both are assigned under government in S-structure. The earliest analysis of Hungarian focus movement is due to Horvath (1986). She proposed that a constituent has to appear in the governing domain of the verb in order to be focused. This is what triggers focus movement. Since focus assignment is argued to take place under government at S-structure, there is an obvious parallel

with case assignment in languages like English. One of the main advantages of this proposal is that it predicts a directionality effect: languages that govern to the left have focus movement targeting a left-adjacent position to the verb, while languages with rightward-oriented government have immediately postverbal focus positions. It turns out that this directionality effect shows up in many languages. What one might call a disadvantage of this theory is that it does not readily provide an explanation of the wide-spread similarities between focus constituents and *wh*-elements. Focus movement exhibits quantificational properties and several syntactic and semantic properties of operator-variable dependencies, such as weak crossover and parasitic gap licensing.

This brings us to the second group of analyses of focus movement, whose main tenet is that focus movement is like *wh*-movement. The main advantage of this idea is that it explains both syntactic and semantic considerations that establish a parallel between focus movement and *wh*-movement. The earliest analysis, due to Brody (1990b) and Rizzi (1996), proposed that focus movement, just like *wh*-movement, is triggered by the Focus criterion and the *Wh*-criterion. The focus/*wh*-element has to appear in a specifier–head relationship with its licensor. As checking theory became full-blown, the new analyses proposed specific functional head positions, such as the Focus head, to provide a licensor for the moved focus (e.g., Brody 1995a; Rizzi 1997). There are several advantages to this group of theories. First, the proposed specifier–head licensing accounts for the often-attested adjacency effects between focus/*wh* and verb (or Infl). It provides an explanation for the occurrence of pied-piping in focus movement, as pied-piping is a well-known characteristic of *wh*-movement as well. This is not to say that there are no open questions. In particular, an important issue concerns the status of alleged weak crossover violations involving focus movement. There is an alternative way to account for these data, one that argues that the ungrammaticality of these examples does not stem from a syntactic violation, rather a discourse violation. If so, this undermines the very basis of the analysis of focus movement, in terms of *wh*-movement, as it removes an important syntactic parallel between focus movement and *wh*-movement.

A newly emerging set of analyses capitalizes on the well-known but long-neglected generalization that the focus constituent always bears main prosodic prominence (Chomsky 1971). Until very recently, the fact that, at least in languages like English, the focus constituent bears main stress was regarded as irrelevant for the syntax of focus. All the analyses before had regarded focus as the primary property of syntax; prosody was secondary. In other words, in order to ensure that the focal constituent receives main stress, it was assumed that main stress gets assigned to the constituent that was marked focus in syntax. Thus, all these analyses conformed to what Ladd (1996) called the accent-to-focus view. The new set of analyses takes just the opposite perspective. It is not accent that matches focus, but rather focal interpretation is attached to the constituent that bears accent; this is the focus-to-accent view. One of the main advantages of this approach is that it provides a natural account for certain empirical facts; for instance, for the existence of focus projection. Another, more conceptual, advantage

is that it provides a way to conform to Chomsky's (1995c) Inclusiveness condition, which all accent-to-focus views violate. The focus-to-accent view faces empirical and conceptual issues of its own. For instance, arguably, it assumes a certain kind of look-ahead property, and is therefore incompatible with the T-model as the architecture of the grammar.

This chapter is organized in the following way. This section provides an introduction. First, some preliminary discussion is put forth (section 1.2). The basic concepts such as focus and focus movement are defined and the scope of the chapter is determined. The notion of focus is examined briefly, from both a discourse-pragmatic and a semantic perspective, and a brief review is provided of positions available in the wider linguistic literature on the grammatical encoding of focus. Then the basic syntactic and semantic characteristics of focus movement are described with the help of Hungarian data (section 1.3). The bulk of the chapter is in sections 2–4. Here, one by one, the major lines of analyses concerning focus movement are reviewed. In particular, section 2 concerns analyses that argue that focus assignment is under government and thus liken focus to case; section 3 describes some analyses that draw a parallel between focus and *wh*; and section 4 explains the focus-to-accent view. In all of these sections, the last subsection (i.e., sections 2.4, 3.5, and 4.4) contains a discussion of the main advantages and disadvantages of the line of argumentation under consideration. These subsections are inevitably more speculative than the rest of the section, as their aim is to provide an evaluation of the proposals in both empirical and theoretical terms. Section 5 concludes the chapter.

1.2 Preliminaries

This introduction has three aims. First, the notions of focus and focus construction are defined in a way that is as theory-neutral as possible but nevertheless restrictive enough to determine the set of phenomena under consideration. This will allow for the conclusion that cleft constructions and constructions like English Heavy NP Shift are outside the scope of this chapter (section 1.2). Second, the basic syntactic and semantic characteristics of focus constructions are exemplified with Hungarian data. Two syntactic characteristics that are crucial for further discussion are identified: (i) focus is immediately adjacent to the verb; (ii) focus and *wh*-elements are in complementary distribution (section 1.3). Third, Horvath's (1986) arguments in favor of a movement analysis of the Hungarian focus construction are summarized (section 1.3.2).

1.2.1 Definition of focus and the wh*-test*

A well-formed sentence satisfies all the syntactic, semantic, morphological, and phonological principles of the grammar, and the utterance is an expression of the given language. This does not imply, however, that the utterance of such a sentence can be used appropriately in any discourse context. Discourse is organized by information packaging devices, such as topic, focus, etc. If the information structure of a particular expression does not match the information packaging

required by the context, the expression is infelicitous in that context, albeit grammatically well-formed. For instance, the utterance in (1b) is not felicitous in the context of (1a), even though it is a well-formed expression of English:[1]

(1) a. What did John eat?
b. #John ate the pizza.

It is a well-known characteristic of *wh*-questions that they require an answer whose focus is the constituent corresponding to the *wh*-phrase. In (1b), the focus of the utterance is on the subject, *John*. In contrast, the *wh*-question in (1a) requires an answer whose focus is the direct object. As a result of this incompatibility of information structure, (1b) is not appropriate in the context of (1a). The incompatibility of the question–answer pair in (1) indicates that certain aspects of information structure are grammatically encoded: the utterance in (1b) has some grammatical properties that disallow it in the context of the *wh*-question in (1a), requiring focus on the object.

In this work, focus is taken to be the part of an utterance that is new or asserted. The rest of the utterance is the background (or in some cases the presupposed part). In particular, a diagnostic test to identify the focal part of an utterance is the *wh*-test. As was mentioned above, the part of the utterance that provides the answer to a *wh*-question is the focus. So, the focus of the answer in (2) is the DP_{DO}:

(2) Q: What did John eat?
A: John ate the pizza.

1.2.2 Different types of focus: semantic and pragmatic differences

Different types of focus have been identified in the literature. These include semantico-pragmatic distinctions such as contrastive focus (Rochemont 1986) (3a), identificational focus (Kiss 1998) (3b), or new information focus (3c). Also, focus can be wide (or broad), as in (3c), or narrow, as in (3a) (Chomsky 1971). In this work, all these are taken to be part of the (general) notion of focus:

(3) a. I hate broccoli, not zucchini.
b. A brokkolit utálom. Hungarian
the broccoli-acc hate-I
'It's broccoli that I hate.'
c. A: Do you have any special requirements for food?
B: I hate broccoli.

1.2.3 On the semantics of focus

This is not to say that there are no semantic or pragmatic distinctions between the different types of focus. Szabolcsi (1981b) argued that the preverbal focus position in Hungarian is associated with exhaustive listing in a way that is directly reflected in the truth-conditions of the utterance. Thus a sentence like (4a) means something like (4b):

(4) a. A tanár$_i$ Jánosnak$_j$ adott jelest t_i t_j.
the teacher John-dat gave A+-acc
'The teacher gave an A+ to John.' (Kiss 1994: 27, ex. 55)
b. John is the only person amongst the members of the class (or some other set of people who could have gotten A+) that the teacher gave an A+ to.

In other words, there is a focus operator that checks every member of the contextually given relevant set for the property in question (here the property of receiving A+ from the teacher) and identifies John as the single member of that set of whom the property is true. Similar semantics has been proposed for the English cleft construction and for the focus-sensitive operator *only* (e.g., Rooth 1992). (See Rooth 1996 for an overview of the semantics of focus.)

As strong support for the semantic nature of focus, Szabolcsi (1981b) demonstrated that focusing has an effect on the truth-conditions of the sentence. For instance, compare (5) and (6). (5b) is a logical consequence of (5a), while this is not true of (6b) and (6a). Consequently, conjoining either (6a) or (6b) with the negation of the other one does not yield a contradiction. This is shown in (7):

(5) a. János$_i$ magával vitte Marit és Évát t_i.
John self-com took Mary-acc and Eva-acc
'John took Mary and Eva with him.'
b. János$_i$ magával vitte Marit t_i.
John self-com took Mary-acc
'John took Mary with him.' (Kiss 1994: 28, ex. 59)

(6) a. János$_i$ [Marit és Évát]$_j$ vitte magával t_i t_j.
John Mary-acc and Eva-acc took self-com
'It was Mary and Eva that John took with himself.'
b. János$_i$ Marit$_j$ vitte magával t_i t_j.
John Mary-acc took self-com
'It was Mary that John took with him.' (Kiss 1994: 29, ex. 60)

(7) János$_i$ nem [Marit és Évát]j vitte magával t_i t_j. hanem Marit$_j$ vitte
John not Mary-acc and Eva-acc took self-com but Mary-acc took
magával t_i t_j.
self-com
'It was not Mary and Eva but Mary that John took with him.'
(Kiss 1994: 29, ex. 61)

The same is true for sentences involving *only* and clefts in English:

(8) a. John invited only Mary and Eve. He didn't invite only Mary.
b. It was Mary and Eve that John invited, not Mary.
c. *John invited Mary and Eve. He didn't invite Mary.

However, there is evidence that exclusion may sometimes be absent from the meaning of preverbal focus in Hungarian (Kiss 1987). In these cases, only identification is present. Indefinites often have this property. So, for instance, (9) does not presuppose the existence of a set of groups of people, identifying the set of actors as the only relevant one for which it is true that they are reading in the garden. It simply identifies the set of people that are reading in the garden as actors:

(9) A kertben$_i$ színészek$_j$ olvasnak fel t_i t_j.
the garden-loc actors read prt
'In the garden, actors are reading out loud.'
(based on Kiss 1994: 28, ex. 56)

Similarly, numerals also only express identification and not exclusion. Even though (10b) means that it is exactly 30,000 forints that John spends a month, this is not the result of an operation where 30,000 would be identified as the only member of the set of natural numbers such that John spends that many forints in a month. Rather, as (10b) indicates, focusing the numeral has the effect that an 'exactly' rather than an 'at least' reading is associated with the numeral (Szabolcsi 1981b):

(10) a. János$_i$ elkölt 30 000 forintot egy hónapban t_i t_j.
John prt-spends 30,000 forints-acc a month-loc
'John spends (at least) 30,000 forints a month.'
b. János$_i$ 30 000 forintot költ el egy hónapban t_i t_j
John 30,000 forints-acc spends prt a month-loc
'John spends exactly 30,000 forints a month.' (Kiss 1994: 28, ex. 58)

The fact that exhaustivity disappears in these cases suggests that a sufficiently refined semantic analysis of focus is required to be capable of taking such cases into consideration. Alternatively, it could be argued that such cases make it less clear that the specific focus interpretations can be systematically paired with certain construction types (e.g., exhaustivity with preverbal focus in Hungarian). This chapter does not intend to take a stand on this issue. In general, pragmatico-semantic distinctions such as exhaustivity will only be mentioned below where they are directly relevant for the analyses of certain focus constructions (see, e.g., sections 1.3.4 or 4.3.2). More often than not, such distinctions will be ignored and focus will be treated as a unified phenomenon. This is based on the fact that all types of foci satisfy the *wh*-test, which was argued above to be a characteristic test for focus; all types of foci share a distinctive prosodic marking (main stress or pitch accent); and all types of focus have the discourse status of new or asserted information.

1.2.4 Ways of encoding focus in the grammar

The literature on focus is vast. Without any attempt at an exhaustive mention, works that deal with focus and other discourse roles from a semantic perspective

include Szabolcsi (1981b), Krifka (1991), Diesing (1992b), Rooth (1992), and Schwarzschild (1999). The prosodic aspect of focus is investigated by Gussenhoven (1984), Selkirk (1984, 1986, 1995), Rochemont (1986), Pierrehumbert and Hirschberg (1990), Hayes and Lahiri (1991), and Cinque (1993). Bosch and Van der Sandt (1999) investigate the issue from a performance perspective.

Let us briefly review the literature on focus in light of some questions related to the nature of the interface between the grammar and discourse: does the grammar (in its wide sense; i.e., including phonology but not pragmatics) determine the focus of an utterance? If so, does the grammar encode focus unambiguously? As we shall see, these questions help us divide the positions available in the literature into two classes: those that argue for encoding focus in the grammar directly, and those that argue for underdeterminacy with respect to grammatical encoding of focus.

There is a wide range of views on the issue of the grammatical representation of focus. The spectrum ranges from the functional sentence perspective (i.e., the Prague School) through the discourse-theoretically motivated works (e.g., Gundel 1974; Prince 1979, 1981; Lambrecht 1994) to the strict 'encoding' view of the GB/Minimalist literature.

The Prague School view, at least in its original form (e.g., Dezső 1974; Hajičová and Sgall 1988; Hajičová et al. 1998; and others), did not perceive the representation of focus in the grammar as an issue. For them, discourse notions such as focus and topic were readily available in the grammar itself. Their functionalist and to a large extent descriptivist point of view enabled them to make certain far-reaching generalizations (e.g., the fact that the topic usually precedes the focus, or the tendency for topics to be left-peripheral), and they intended to go no further.

The pragmatic approaches to focus, in particular the different works based on Relevance Theory (Sperber and Wilson 1995; Kempson et al. 2004), advocate a certain underdeterminacy of the grammar with respect to focus. They argue that the focus of an utterance is not fully determined by the syntactic and prosodic make-up of the utterance, although no doubt these contribute to the actual focus.

The GB/Minimalist approaches are the strictest in the sense that they advocate a direct and unambiguous mapping between the grammatical representation of an utterance and its focus. From now on, we will concentrate on these. This is not to say that these approaches would be the only ones that advocate a deterministic encoding of focus in the grammar. There are many proposals, some outside the GB/Minimalist framework, that are not considered here for lack of space. These include King (1993, 1997), Butt and King (1996), Vallduví and Engdahl (1996), Erteschik-Shir (1997), Steedman (2000), and Kempson et al. (2004), among many others.

In the generative literature, the standard view of the late 1980s and early 1990s was and to a large extent still is that focus is directly and unambiguously represented in the syntactic representation (cf. Antinucci and Cinque 1977; Calabrese 1982, 1992b; Abraham and De Meij 1986; Horvath 1986; Rochemont 1986;

Rochemont and Culicover 1989; Brody 1990b, 1995a; Kiss 1995b, 1998; Vallduví 1995; Erteschik-Shir 1997; Rizzi 1997; Vallduví and Vilkuna 1998; Zubizarreta 1998). In other words, the syntactic representation of a sentence would provide the necessary information to identify the focus.

In particular, since Jackendoff's (1972) seminal work, the standard way to encode focus in the syntactic representation is by the syntactic (and semantic) feature [+Focus], or [+F] for short: "I suggest the following way, which does minimal violence to the theory as a whole. One artificial construct is required: a syntactic marker F which can be associated with any node in the surface structure" (Jackendoff 1972: 240). [+F] is freely assigned to a constituent, (11), and the F-marked constituent is taken to be the semantic focus of the utterance, by his focus assignment principle, (12):

(11) **[+F] marking:**
Mark any constituent as [+F].

(12) **Focus assignment:**
The semantic material associated with surface structure nodes dominated by F is the Focus of the sentence. To derive the Presupposition, substitute appropriate semantic variables for the focused material.
(Jackendoff 1972: 240)

Let us illustrate Jackendoff's proposal. In the answer in (2) above, [+F] is assigned to the direct object *pizza*, which is interpreted as the focal part of the utterance. The presupposition of the utterance can be obtained by replacing the focus with a variable. This is shown in (13):

(13) a. John ate [$_{F}$ the pizza].
b. Presupposition: John ate *x*.

As will become clear in the course of this chapter, the idea that focus is encoded in the syntactic representation by means of a syntactic feature, [+Focus], has been fundamental to all GB/Minimalist theories of focus until very recently.[2] It is therefore the most important theoretical assumption in these theories.

1.2.5 The focus construction

Focus as a grammatical notion is universal. There are no known languages that would not have a way to signal that a particular constituent is focused. Predominantly, focus is marked by prosodic prominence, more precisely by main stress or pitch accent or (boundary) tones. Morphological focus marking is also available in many languages. Finally, many languages use specific syntactic constructions to indicate discourse functions such as focus. In what follows, the discussion will center on this group. An informal definition of languages that have syntactic focus constructions is given by Kiss (1995b):

(14) The (discourse-)semantic function 'focus', expressing identification, is realised through a particular structural relation (in other words, it is associated with a particular structural position). (Kiss 1995: 6)

There are two constructions that arguably fall under this definition, but that are not discussed here: clefts and Heavy NP Shift. Apart from space limitations, the main reason for the omission is that they do not always carry a focus interpretation, although it is true that they often or even predominantly do. The fact that they do not necessarily carry focus interpretation is enough for a claim that they are not really 'focus constructions'.

This fact is illustrated for clefts first. It is often claimed that the fronted part in a cleft is the focus of the utterance (e.g., Rochemont 1986; Kiss 1998). This is true in the exchange in (15a), but not in the exchange in (15b):

(15) a. A: I thought you ate the pizza.
B: No, it was the spaghetti I ate.
b. A: I thought it was Peter who ate the pizza.
B: No, it was Peter who ate the spaghetti.

Admittedly, the non-focal clefted phrase is well-formed, because the example in (15b) is echoic. But other cases exist where the clefted phrase does not correspond to the focus of the utterance. In French, as Doetjes et al. (2004) showed, the clefted constituent may only form a part of the focus, rather than be the focus itself. Their examples are given below. In (16), *avec plaisir* 'with pleasure' is not the focus itself. The sentence does not mean that the speaker means to refute a belief that it is not with pleasure that he invites the other one to the seminar. Similarly, (17) does not mean that the person only thanks Nicolas Ruwet and Maurice Gross, but no one else. Rather, as Doetjes et al. argue, these sentences are broad (or wide) focus utterances. So clefting does not serve the need to focus the fronted constituent:

(16) C'est avec plaisir que je vous invite à participer à ce séminaire.
it/that is with pleasure that I invite you to this seminar

(17) C'est à Nicolas Ruwet et à Maurice Gross que je dois l'essentiel de ma formation dans cette discipline.
'It's to Nicolas Ruwet and to Maurice Gross that I owe the essential part of my training in this discipline.'

Heavy NP Shift has similar characteristics. As (18a) illustrates, the rightmost constituent is often the focus of the utterance. However, this is not always the case. First, according to Williams (2003b), Heavy NP Shift is also felicitous as an answer to a question that requires VP focus (see (18b)). Second, the same echoic pattern as above can be also illustrated for Heavy NP Shift, (18c). Finally, as (18d)

shows, discourse-linked phrases may also undergo Heavy NP Shift, (18d) (Fritz Newmeyer, p.c.):

(18) a. A: What did John give to Mary?
B: John gave to Mary all the money in the SATCHEL.
b. A: What did John do?
B: John gave to Mary all the money in the SATCHEL.
c. A: John gave to Joe all the money in the satchel.
B: No, John gave to MARY all the money in the satchel.
d. A: To whom did you give all your books on the phonetic foundations of conventional implicature?
B: I gave to MARY all of those unbelievably ridiculous publications.

In what follows, the discussion will be limited to the cases that fall under a somewhat more restrictive characterization of focus constructions that is given in intuitive terms in (19):

(19) **Focus construction:**
A particular structural relation (in other words, a particular structural position) that is associated with the (discourse-)semantic function 'focus'.

In the next section a description is given of the basic facts concerning the Hungarian focus construction. At the same time, some arguments are put forward based on Horvath's (1986) analysis that the Hungarian focus construction is the result of syntactic movement.

1.3 Focus movement in Hungarian: basic data

This section introduces the basic data concerning focus constructions. The facts enumerated here are exemplified by Hungarian, but most of the properties hold in other languages as well. Further characteristics and facts from other languages are introduced in the following sections as they become relevant for the discussion of the various analyses.

1.3.1 Preverbal focus in Hungarian

Horvath (1986) gives the following generalization for focus in Hungarian:

(20) A constituent (other than V or a projection of V) can be interpreted as the FOCUS of its clause in Hungarian if, and only if, it itself occupies an immediately pre-verbal position, or is contained in a phrase that does so.
(Horvath 1986: 91)

In (21b–c) and (22b–c) it is shown that a focused constituent in Hungarian must appear preverbally. At the same time, as (21a) and (22a) illustrate, the most

natural position of both arguments (see 22a) and adjuncts (see 21a) is postverbal, if the constituent is not focused:

(21) a. Attila félt a földrengéstől.
Attila feared the earthquake-loc
'Attila was afraid of the earthquake.'
b. Attila a földrengéstől félt.
Attila the earthquake-loc feared
'It was the earthquake that Attila was afraid of.'
(Horvath 1986: 91, ex. 1)
c. *Attila félt a földrengéstől.
Attila feared the earthquake-loc
'It was the earthquake that Attila was afraid of.'
(Horvath 1986: 92, ex. 3)

(22) a. Mari az asztalra tette az edényeket.
Mari table-loc put the dishes-acc
'Mari put the dishes on the table.'
b. Mari az edényeket tette az asztalra.
Mari the dishes-acc put table-loc
'It was the dishes that Mari put on the table.'
(Horvath 1986: 91, ex. 2)
c. *Mari az asztalra tette az edényeket.
Mari table-loc put the dishes-acc
'It was the dishes that Mari put on the table.'
(Horvath 1986: 92, ex. 4)

This is also true if a subpart of a DP is focused, as shown in (23):[3]

(23) a. Attila Mari kutyájától félt.
Attila Mari dog-loc feared
b. *Attila félt Mari kutyájától.
Attila feared Mari dog-loc
'It was Mary's dog that Attila was afraid of.'
(Horvath 1986: 143, fn. 2, ex. i, ii)

1.3.2 Scrambling or movement?

Horvath (1986) shows that the focus of an utterance that surfaces in the matrix clause may originate from an embedded clause, even if the embedded clause is finite. This is illustrated for arguments in (24a), and for adjuncts in (24b). (Note that long focus movement is unacceptable for many speakers.)

(24) a. Annát$_i$ mondta hogy t_i jön.
Anna-acc said that comes
'((S)he) said that Anna was coming.' (Lipták 1998: 91)

b. Londonba$_i$ mondtad hogy mész t_i
London-loc said-you that go-you
'You said you were going to London' (Lipták 1998: 92)

As (25) shows, there is no restriction to the number of clauses a focus can cross:

(25) Annát$_i$ mondtad hogy a szomszédok látták hogy t_i jön.
Anna-acc said-you that the neighbors saw that comes
'You said that the neighbors saw that Anna was coming.'
(modified from Lipták 1998: 92)

This indicates that the focus construction is not clause-bound, which led to the general conclusion that the preverbal focus in Hungarian is the result of movement rather than a case of scrambling. Such so-called long focus movement cases are discussed in Horvath (1986), Kiss (1987, 1998), Lipták (1998), and Gervain (2002).

As Horvath shows, an analysis of the preverbal focus as scrambling is independently ruled out, as scrambling into the higher clause is not well-formed even though the matrix predicate may case-mark and/or agree with the moved element. In other words, long focus movement may only target the preverbal position. This is shown in (26):

(26) *A gyerekek mondták a földrengéstől$_i$ hogy Attila félt t_i.
the kids said the earthquake-loc that Attila feared
'The kids said that Attila was afraid of the earthquake.'
(Horvath 1986: 100, ex. 19)

As a further indication that focus constructions involve movement, Horvath (1986) showed that long focus movement observes complex NP islands:[4]

(27) *Az elnököt$_i$ mondtad hogy hallottad [$_{DP}$ a hírt [$_{CP}$ hogy
the president-acc said-you that heard-you the news-acc that
megérkezett e_i]].
prt-arrived
'You said you heard the news that the president had arrived.'
(Gervain 2002: 39, ex. 25)

Focus movement observes adjunct islands as well. So focus movement out of an adjunct clause is blocked:

(28) *Az elnök(öt)$_i$ figyelmeztettek minket [$_{CP}$ hogy meg érkezett e_i]].
the president(-acc) warned-they us-acc that prt arrived
'They warned us that the president arrived.'
(Gervain 2002: 39, ex. 25)

Wh-elements in Hungarian do not occupy the [Spec, CP] position; rather, if they appear in an embedded clause, they follow the complementizer *hogy* 'that'. Thus, an intervening *wh*-element is not expected to block long focus movement. In other words, focus movement is not sensitive to *wh*-islands:[5]

(29) Az elnököt$_i$ mondtad hogy hallottad [$_{CP}$ hogy mikor érkezett meg t$_i$].
the president-acc said-you that heard-you that when arrived prt
'You said you heard when the president had arrived.'

On the basis of the above data, the Hungarian preverbal focus construction is taken to be a case of focus movement, in the sense that it is a movement operation into a position where the moved element is interpreted as focus.

1.3.3 *The syntactic position of the focus: adjacency with the verb and complementarity with* wh

The two syntactic characteristics that proved to be essential in GB and Minimalist analyses of the Hungarian focus construction are the following: (i) the focused constituent is immediately preverbal; (ii) a *wh*-element and a focus are in complementary distribution. As we shall now see, the two properties are in fact closely related.

As Horvath (1986) shows, the distribution of adverbs can be used to demonstrate that focus and verb must be adjacent in Hungarian. Sentence adverbs can precede the focus, or follow the verb, but they cannot intervene between focus and verb:

(30) Mari valószínűleg/hirtelen egy kanál sót *valószínűleg/*hirtelen
Mary probably/suddenly a spoonful salt-acc probably/suddenly
tett valószínűleg/hirtelen a kávéjába
put probably/suddenly the coffee-her-loc
'Mary probably/suddenly put a spoonful of salt in her coffee.'
(Horvath 1986: 102, ex. 23)

The same adjacency requirement is also observed with *wh*-elements. As (31) illustrates, every *wh*-element (except for *miért* 'why') has to be immediately preverbal. So sentence adverbs can precede the *wh*-element, or follow the verb, but they cannot intervene between the two:

(31) Mari ?valószínűleg/?hirtelen mit *valószínűleg/*hirtelen tett
Mary probably/suddenly what-acc probably/suddenly put
?valószínűleg/hirtelen a kávéjába.
probably/suddenly the coffee-her-loc
'What did Mary probably/suddenly put in her coffee?'
(based on Horvath 1986: 102, ex. 23)

The fact that focus and *wh* both need to occupy an immediately preverbal position explains the complementary distribution between the two. This is illustrated in (32). *Ritkán* 'rarely' requires obligatory focusing, so it cannot appear postverbally (32a–b). This restriction is absent if it appears in a *wh*-question. In this case the adverb must occur postverbally and the *wh*-element occupies the immediately preverbal position (32c–f):

(32) a. Ritkán jár ide.
rarely comes *prt*-to
b. *Ide jár ritkán.
c. Ki jár ritkán ide?
who comes rarely here-to
'Who comes here rarely?'
d. *Ki ritkán jár ide?
e. *Ritkán ki jár ide?
f. *Ritkán jár ki ide?

In Hungarian there is a class of elements that are called verbal modifers, which also appear immediately preverbally. This group includes verbal particles (prt), resultatives, depictives, and incorporated prototypical objects that often lack a determiner layer. The immediately preverbal positioning of these is illustrated in (33a–d) respectively:

(33) a. Mari valószínűleg/hirtelen bele *valószínűleg/*hirtelen tett
Mary probably/suddenly prt probably/suddenly put
valószínűleg/hirtelen a kávéjába egy kanál sót.
probably/suddenly the coffee-her-loc a spoonful salt-acc
'Mary probably/suddenly put a spoonful of salt into her coffee.'
b. Mari valószínűleg/hirtelen tönkre *valószínűleg/*hirtelen tette
Mary probably/suddenly res-loc probably/suddenly put-def
?valószínűleg/?hirtelen a kávéját egy kanál sóval.
probably/suddenly the coffee-her-acc a spoonful salt-inst
'Mary probably/suddenly spoilt her coffee with a spoonful of salt.'
c. Mari valószínűleg hidegen *valószínűleg itta
Mary probably cold-loc probably drank-def
valószínűleg a kávéját.
probably/suddenly the coffee-her-acc
'Mary probably drank her coffee cold.'
d. Mari valószínűleg kávét *valószínűleg ivott valószínűleg
Mary probably coffee-acc probably drank probably
reggel.
morning
'Mary probably drank coffee this morning.'

(based on Horvath 1986: 102, ex. 23)

As expected, verbal modifiers are in complementary distribution with foci (and also with *wh*). This illustrated for particles in (34):

(34) Mari *bele egy kanál sót *bele tett bele a kávéjába.
Mary prt a spoonful salt-acc prt put prt the coffee-her-loc
'Mary put a spoonful of salt into her coffee.'
(based on Horvath 1986: 102, ex. 23)

As a final characteristic of preverbal focus, Horvath notes that the immediately preverbal position does not admit free right-branching recursion. This is a characteristic left-branch effect in an otherwise right-branching language (see Emonds 1976: 19), which might be indicating that the focus occupies a left-branch position. As (35) shows, the focus position only admits the head of the relative clause, not the clause itself. Vogel and Kenesei (1990) argued that the reason for this restriction is in fact prosodic. It is due to the requirement that the focus and the verb form one phonological phrase. Thus, material that is itself the size of an intonational phrase, such as a relative clause, cannot intervene between the focus and the verb:

(35) a. *A tanár AZT a gyereket [$_{CP}$ aki túl sokat beszélt] küldte ki
the teacher that-acc the kid-acc who too much-acc talked sent prt
a szobából.
the room-loc
b. A tanár AZT a gyereket küldte ki a szobából
the teacher that-acc the kid-acc sent prt the room-loc
[$_{CP}$ aki túl sokat beszélt].
who too much-acc talked
'The teacher sent out of the room the kid that was talking too much.'
(Horvath 1986: 103–4, ex. 24)

1.3.4 The semantics of Hungarian preverbal focus

Szabolcsi (1981b) argued that the preverbal focus position in Hungarian is associated with exhaustive listing in such a way that it is directly reflected in the truth-conditions. Thus a sentence like (4a) means something like (4b) (repeated here):

(4) a. A tanár$_i$ Jánosnak$_j$ adott jelest t$_i$ t$_j$.
the teacher John-dat gave A+-acc
'The teacher gave an A+ to John.' (Kiss 1994: 27, ex. 55)
b. John is the only person amongst the members of the class (or some other set of people who could have gotten A+) that the teacher gave an A+ to.

In other words, there is a focus operator that checks every member of a contextually given relevant set of entities for the property in question (here the property of receiving A+ from the teacher) and identifies John as the single member of that set of whom the property is true.

Szabolcsi (1981b) also demonstrated that focusing has an effect on the truth-conditions of the sentence. For instance, compare (5) and (6) (repeated here). (5b) is a logical consequence of (5a), while this is not true of (6b) and (6a). Consequently, conjoining either (6a) or (6b) with the negation of the other one does not yield a contradiction. This is shown in (7) (repeated here):

(5) a. János$_i$ magával vitte Marit és Évát t_i.
John self-com took Mary-acc and Eva-acc
'John took Mary and Eva with him.'
b. János$_i$ magával vitte Marit t_i.
John self-com took Mary-acc
'John took Mary with him.' (Kiss 1994: 28, ex. 59)

(6) a. János$_i$ [Marit és Évát]$_j$ vitte magával t_i t_j.
John Mary-acc and Eva-acc took self-com
'It was Mary and Eva that John took with himself.'
b. János$_i$ Marit$_j$ vitte magával t_i t_j
John Mary-acc took self-com
'It was Mary that John took with himself.' (Kiss 1994: 29, ex. 60)

(7) a. János$_i$ nem [Marit és Évát]$_j$ vitte magával t_i t_j hanem Marit$_j$
John not Mary-acc and Eva-acc took self-com but Mary-acc
vitte magával t_i t_j.
took self-com
'It was not Mary and Eva but Mary that John took with himself.'
(Kiss 1994: 29, ex. 61)

Recall also, however, that Kiss (1987) points out that exclusion may sometimes be absent from the meaning of focus. In (9), for instance, no exhaustivity requirement is present on the focused element *színészek* 'actors'. Rather, the group of people outside reading out loud is simply identified as a group of actors:

(9) A kertben$_i$ színészek$_j$ olvasnak fel t_i t_j.
the garden-loc actors read prt
'In the garden, actors are reading out loud.'
(based on Kiss 1994: 28, ex. 56)

1.4 Summary

This introduction had three aims: (i) to give a working definition of focus and focus construction that is precise enough to delimit the range of phenomena that are under discussion; (ii) to introduce basic data and identify some syntactic and semantic characteristics of the Hungarian focus construction; and (iii) to argue that this construction involves syntactic movement rather than scrambling (or PF movement).

2 Focus assignment under government

Armed with the definitions and basic data, we can now turn to the first group of analyses of focus movement: the proposal that focus is assigned under government, like case (this section). First, the original proposal of Horvath (1986) is spelt out (section 2.1). Given that government is known to display directionality effects across languages, both preverbal (section 2.2) and postverbal (section 2.3) focus constructions are analyzed. In the final subsection (section 2.4), several aspects of the proposal are discussed. In particular, it is spelt out that this proposal is committed to the idea that focus, like case, is an S-structure phenomenon (section 2.4.1). Word-order variations and directionality effects found in the world's languages are reviewed in light of the proposal. This seems important, as the proposal assumes that government plays a role in focus assignment, and government is known to display directionality effects with case (section 2.4.2). The morphological aspects of the proposal are discussed in section 2.4.3. Finally, the connection between focus and *wh*-elements as well as verbal modifiers is explored, paving the way to the discussion of the second group of analyses: those that propose that focus movement is like *wh*-movement (section 3).

2.1 Focus parameter

Horvath (1986) observes that the adjacency requirement on focus and the verb, spelt out in section 1.3.3 above, is not restricted to Hungarian. Rather, in other languages such as Basque and Aghem there is also an adjacency requirement on focus and verb, (36a) and (36b):

(36) a. Jon aurten etorri da herri honetara. Basque
John this year come has this town
'It is this year that John came to this town.'
(Ortiz de Urbina 1989: 214–215)

b. à mɔ zí á-fín bç-kɔ Aghem
sub P eat friends fufu
'The friends ate fufu.' (Horvath 1986: 124)

Another grammatical phenomenon that typically requires adjacency with the verb is case. Thus in English, which is a VO language, the object appears immediately postverbally, while in Turkish, an OV language, indefinites, which lack morphological case marking, appear immediately preverbally, (37a) and (37b):

(37) a. John ate (*pensively) the sandwich.
b. Üc cocuk ücü yeni bir araba (*din) almis. Turkish
three child three new a car yesterday bought
'Three children bought three new cars.'

Moreover, it turns out that the order of the verb and the focus follows the directionality of government for case in the language. Thus in Basque, which is an OV language, the focus appears immediately to the left of the V, while in Aghem, which is a VO language, the focus is immediately postverbal. For this reason Horvath proposed that in languages with syntactic focus constructions, the syntactic feature FOCUS is assigned by the verb under government, while in languages where syntactic focus constructions are missing FOCUS is assigned freely at S-structure. Thus she formulated the FOCUS parameter:

(38) **FOCUS parameter:**
   i. FOCUS can be freely assigned to categories in S-structure.
   ii. FOCUS is a syntactic feature inherent to the lexical category V. It can be assigned to other categories by the V under government and adjacency.
   (modified from Horvath 1986: 132)

It is hard to overemphasize the importance of this proposal. By establishing a parallel between case and syntactic focus constructions, Horvath (1986) provided a way to handle the phenomenon of syntactic focus marking. The similarities of case and focus were compelling. Both are subject to the same government-under-adjacency requirement that was fundamental to GB theory. Consequently, languages with focus constructions received a convincing analysis: focus can be treated similarly to case.

The consequences of Horvath's work, both empirical and theoretical, are far-reaching. For instance, they are at least partially responsible for the birth of a whole enterprise of analyses of focus constructions in different languages, culminating in the collection of papers edited by Kiss (1995b) and Rebuschi and Tuller (1999). The details of two of these will be fleshed out here: Horvath's own analysis of Hungarian (section 2.2) and Tuller's (1992) analysis of the Chadic languages (section 2.3). The choice is motivated by the fact that Hungarian has preverbal focus, while the Chadic languages discussed here have postverbal focus constructions.

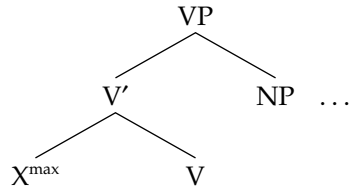
2.2 *Preverbal focus languages: Hungarian*

Recall from section 1.3.3 that Horvath (1986) showed that in Hungarian focused constituents, *wh*-elements, and verbal modifiers are in complementary distribution. The relevant data are repeated here for convenience. If a focused constituent or a *wh*-element is present in the clause, it appears immediately preverbally. The verbal modifier is postverbal in this case. If there is no *wh*-element or focused constituent in the clause, the verbal modifier is immediately preverbal:

(39) Mari hirtelen egy kanál sót/mit/bele *hirtelen tett hirtelen
Mary suddenly a spoonful salt-acc/what-acc/prt suddenly put suddenly
(bele) a kávéjába.
prt the coffee-her-loc
'Mary suddenly put a spoonful of salt/what in(to) her coffee.'

To put it differently, *wh*-elements, focused constituents, and verbal modifiers all appear in the immediately preverbal position. Thus, they are in complementary distribution (see section 1.3.3 for precise data). Horvath argues that this is due to the fact that they literally appear in the same syntactic position. If one occupies this position, neither of the others can appear there. In other words, she proposes that focused constituents (as well as verbal modifiers and *wh*-elements) move to an immediately preverbal position:

(40)



wh/focus/verbal modifier (Horvath 1986: 61)

This allows the verb to govern the preposed constituents, which Horvath claims is necessary for foci according to the proposed FOCUS parameter (see 38 above). She proposes that *wh*-elements target the same position because they are subject to a universal constraint regarding their distribution:

(41) The syntactic position(s) in which non-echo interrogative *wh*-phrases can appear in a language L will be identical to or be a proper subset of the positions in which FOCUS-constituents can appear in a language L.
(Horvath 1986: 122)

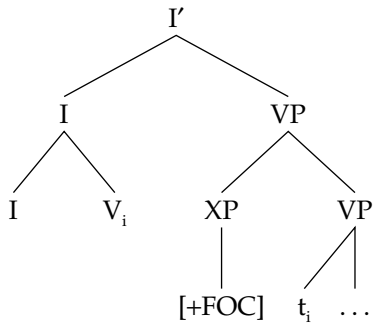
2.3 Postverbal focus languages: Chadic languages

Horvath's (1986) idea that the adjacency requirement between the V and the focus is the result of the requirement that the V governs the focus makes strong predictions for cross-linguistic variation. Languages like Basque, Turkish, Hindi, and Urdu are strict SOV languages, so presumably the direction of government in these languages is to the left. Thus, the prediction is that if these languages have focus constructions, then focus will be immediately preverbal. This is indeed the case, as has been argued among others by Ortiz de Urbina (1995) for Basque, by Kural (1992) for Turkish, and by Butt and King (1996) and Kidwai (1999) for Hindi-Urdu. On the other hand, typical VO languages, where the direction of government is to the right, are expected to have focus constituents in an immediately postverbal position. There are a number of languages that show this pattern. This possibility will be illustrated here by reproducing Tuller's (1992) analysis of Chadic languages.

Tuller (1992) presents an analysis of focus constructions in Chadic languages, which is very close to Horvath's (1986) analysis in spirit. Tuller argues that [+FOCUS] is a feature of Infl and that the focused constituent needs to be in the governing domain of Infl. In the languages she discusses (Western Bade, Podoko,

Tangale, Kanakuru, and Ngizim), the direction of government is to the right, as in English. She argues that in these languages, the V moves to Infl, while the focused constituent adjoins to the VP from the left. As a result, we get a configuration where focus is postverbal and adjacent to the verb and is in the governing domain of the verb in an ECM fashion. This is illustrated schematically in (42):

(42)



The languages under discussion fall into two groups depending on a more precise characterization of their focus constructions. In Type A languages, the focus is directly adjacent to the V from the right. Western Bade and Podoko are languages of this kind. In Type B languages, the head of the direct object or the entire direct object intervenes between the V and the focus on its right. This group includes languages like Tangale, Ngizim, and Kanakuru. Tuller notes that all the Type B languages are SVO and that Type A languages are either SVO or VSO. She argues that this is not an accident; rather, what distinguishes Type A languages from Type B languages is that the trace of the V that undergoes V-movement to I is able to govern (for case purposes) a VP-internal direct object in Type A languages, but not in Type B.

Given the schema in (42), Type B languages face a difficulty. V-to-I movement is necessary to license the focus in the governing domain of Infl. At the same time, since the trace of the verb is unable to govern a VP-internal object, V-to-I movement is not possible, as the direct object would remain caseless. Tuller arges that the head of the direct object incorporates into the V prior to V-to-I, thus bypassing the case problem. Indeed, as the following example shows, in Kanakuru, the head of a complex NP intervenes between the V and the focus, but the relative clause has to follow the focus. This phenomenon is called direct object splitting:

(43) Ad'e [shiruwoi] <u>ŋgadlai</u> [mə shee wura] ane. Kanakuru
ate fish-the cat-the RM she fried up
'<u>The cat</u> ate up the fish that she fried.' (Tuller 1992: 309, ex. 9a)

But in Tangale and Ngizim, there seems to be optionality with respect to the size of the intervening object. The head or the entire object may intervene. See (44)

for a Tangale example. This is unexpected: how could the whole complex NP incorporate into the V? Incorporation usually only affects heads, not complex phrases:

(44) Shag [wamunjaanan] nɔŋ [nam Aisha d'ikɔ]? Tangale
ate food-RM who RM Aisha prepared
'Who ate the food that Aisha prepared?'
b. shag [wamunjaanan Aisha d'ikɔn] nɔŋ
(Tuller 1992: 310, ex. 10)

Tuller offers an elegant solution to the problem. She observes that in all the examples where an entire object intervenes between the V and the focus, the focus is in fact clause-final. So she argues, Tangale and Ngizim have a separate focus construction, one that places the focused constituent in a right-peripheral specifier in the complementizer domain. So the optionality of direct object splitting is merely epiphenomenal. What really happens is that direct object splitting (i.e., incorporation of the head of the direct object into the V) is obligatory in these languages as well, but this can be masked by the presence of an alternative construction that places focus in a right-peripheral, clause-final position.

As a final point, Tuller explains why Kanakuru, the language where the obligatoriness of object splitting is transparent, lacks the clause-final focus position. The answer is simple: it has a clause-initial focus position instead. See (45):

(45) Basha shee tupa ya. Kanakuru
foc 2perf V DO
'Basha sent him.' (Tuller 1992: 324, ex. 28a)

2.4 Focus and case: discussion

So far, analyses of both postverbal and preverbal focus constructions have been sketched. It was shown that Horvath's focus parameter goes a long way toward accounting for the data. In languages with focus movement, the focus moves to a position governed by Infl. Thus the directionality of focus movement follows the directionality of government in the language. Apart from the empirical explanatory value, the theoretical significance of this work is also remarkable in several respects. The discussion of the theoretical implications of this proposal is the topic of this section.

2.4.1 D-structure or S-structure?

First, Horvath's theory provides further support for the position argued for by Chomsky (1971) that focus is established at S-structure, rather than at D-structure or at PF. Case is the prototypical example of an S-structure phenomenon in GB theory. So, by drawing a parallel between case and focus, Horvath emphasizes the S-structure characteristics of focus. Chomsky (1971) and Jackendoff (1972) argued that focus cannot be a D-structure phenomenon as previously assumed,

since focused constituents can be created at S-structure that were not available at D-structure. An example is given in (46). Here the underlying D-structure of (46a) is given in (46b). If focus was determined at D-structure, then we would expect that the focus of the utterance would be as in (46c). So (46d) would be a possible answer to (46a). However, as (46e) indicates, (46d) is not the only possible answer that can be given, and thus (46c) is not the only possible focus of the utterance in (46a); (46f) is also a possible focus:

(46) a. Was it a red-shirted EX-CONVICT that he was warned to look out for?
b. the one he was warned to look out for was X
c. a red-shirted ex-convict
d. No, he was warned to look out for an AUTOMOBILE SALESMAN.
e. No, he was warned to look out for a red-shirted AUTOMOBILE SALESMAN.
f. ex-convict

Chomsky argues that the potential foci of the utterance in (46a), which are *[$_N$ ex-convict]* and *[$_{NP}$ a red-shirted ex-convict]*, are not available at the D-structure representation; rather they are distinguished by the prosody of the utterance: any constituent at S-structure that contains the main stress of the utterance is a potential focus of the utterance.

In another example, Chomsky shows that in certain cases, the S-structure focus of an utterance does not even correspond to a constituent in D-structure. The utterance in (47a) can be felicitously answered by any of the utterances in (47b–d). Presumably the D-structure representation of (47a) is (47e). If so, then the focus indicated in (47c), *[$_{VP}$ likely not even to be nominated]*, corresponds to the string *certain to lose*, which is not a constituent at D-structure in (47e):

(47) a. Is John certain to WIN?
b. No, John is certain to LOSE.
c. No, John is likely not even to be NOMINATED.
d. No, the election will never take PLACE.
e. [John win] is certain

So focus in English is an S-structure phenomenon. Then an analysis, such as Horvath's, that argues that the syntax of focus constructions is similar to the syntax of case is a welcome one, given that case is an S-structure phenomenon as well.

2.4.2 Focus, case, and word order universals

Another advantage of Horvath's proposal is that by providing a parameter of available options for UG, the proposal has a strong predictive power. Languages are not expected to have focus positions such as 'second constituent on the right of the verb' or 'penultimate constituent preceding the verb', which are not attested. It is expected that languages where the direction of government is to the

left will have preverbal, rather than postverbal, focus constructions. And vice versa: languages where the direction of government is to the right are expected to have postverbal focus constructions. There are exceptions to this generalization. For instance, it is certainly controversial to claim that Hungarian, which has a preverbal focus construction, would be an OV language (but see Marácz 1989 and Ackema 2004 for proposals along this line).[6]

Nevertheless, the parallelism with case is quite compelling. This is especially clear in Tuller's analysis of Chadic languages. There it seems that a direct object that requires adjacency to the V for case reasons, and a focus that also requires adjacency to the verb, may even 'compete' for this position in a way that is similar to phenomena involving more than one object requiring case. For instance, in their analysis of double object constructions, Neeleman and Weerman (1999) argued that in double object constructions, where two NPs need to be case-marked by the verb, movement of the verb and VP-shell formation is necessary to provide a second position that is right-adjacent to and therefore governed by the verb.

There is another aspect of the relationship between case and focus that is relevant here, and it is for this reason, too, that Tuller's analysis of the Chadic languages is important. It is a wide-spread belief among linguists, although one that is not often rigorously argued for, that some kind of a functionalist explanation is ultimately right for the well-known and by no means absolute generalization that languages that have rich morphological case systems have free word order. To be more precise, the line of thought would go as follows: if a language marks argument relations by case morphology, then syntactic positions need not mark grammatical functions; rather they mark discourse functions. Hence topic and focus constructions are expected in languages with an elaborate system of morphological argument marking (either in the form of case markers on the arguments or in the form of head-marking on the V). Hungarian, Basque, and Turkish are textbook examples for this claim.

But the generalization is not absolute. For instance, the Chadic languages that Tuller discusses are clear counter-examples to the claim. These languages have strict SVO or VSO/SVO word order. They are by no means free-word-order, non-configurational languages. Nevertheless, they have grammaticalized focus constructions. Furthermore, they are counter-examples to the claim that syntactic discourse function marking necessarily means the presence of morphological argument structure marking. These languages also lack a rich case or head-marking paradigm. An in-depth study of such counter-examples would be enlightening for a formal account of the interactions of morphological and syntactic marking of argument structure and discourse functions.

2.4.3 Focus, case, and morphology

As far as case and focus are concerned, there is also room for establishing morphological parallelism. If syntactic focus constructions are similar to syntactic case assignment, then it is suggestive that one could find the equivalent of morphological case marking as well. There are many proposals in the literature that

identify focus particles that attach to focused constituents in a similar way to that in which morphological case markers attach to NPs. (See the discussion on Somali in section 3.5.3 for a potential example for a morphologically overt focus head.) This, however, only shows that both case and focus can be marked by means of morhological markers. But this is true of many other things, such as tense and aspect. A real parallel would have to be established between morphological case marking and focus particles.

A case that might be interesting to study from this perspective is Japanese and Korean.[7] In Japanese, Vermeulen (2005) argued that the nominative marker *-ga* is actually a focus marker when it appears on adjuncts in the so-called multiple nominative construction. In Korean, if an object is contrastively focused, the object-marker *-lul/-ul* is replaced by the contrastive focus marker *-nun/-un*, which bears main stress. The subject marker *-ka/-i* can be replaced by the topic marker *-nun/-un*. The complementary distribution of the morphological markers suggest that they somehow belong to the same class of morphological markers. This is illustrated in (48):

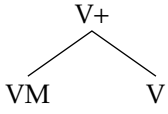
(48) a. Swuni-ka hakkyo-eyse Chelswu-lul manna-ss-ta. Korean
Swuni-sub school-at Chelswu-obj meet-pst-M
'Swuni met Chelswu at school.'
b. Chelswu-nun ku chayk-un sa-ss-ta.
Chelswu-top the book-con buy-pst-m
'Chelswu bought the book.' (Choe 1995: 271, ex. 2a; 285, ex. 35a)

2.4.4 Focus, verbal modifiers, and wh

Horvath (1986) showed that in Hungarian, focused constituents, *wh*-elements, and verbal modifiers are in complementary distribution. They all appear immediately preverbally. She argued that the reason for the complementary distribution is that they literally occupy the same syntactic position.

However, Brody (1990b) challenged this view and argued that this reasoning only applies to focused constituents and *wh*-elements. The complementary distribution between verbal modifiers and foci (or *wh*) is not due to the fact that they occupy the same position. Rather, he proposed that verbal modifiers bear a semantically and lexically close relationship to the verb. Resultatives and verbal particles arguably form complex verbs with the V, and have common theta-grids. This idea has been formulated by Ackerman (1984), who argued that verbal modifiers are base generated in an immediately preverbal position:

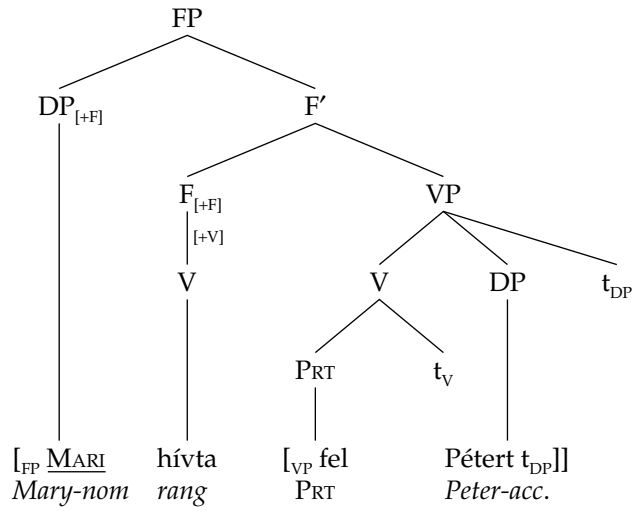
(49)



In contrast, Brody argued, focus and *wh*-elements are different: they occupy a preverbal position as a result of movement of both the focal element and the V.

The analysis is based on similar data from V2 languages like Dutch. Under V2, the verb moves to C. If it has a particle, which is a subclass of verbal modifiers, the particle is stranded in the VP (Koster 1975). The data in (50) illustrate the analysis: the focused element (or the *wh*-element) moves to the specifier of a functional head, while the verb adjoins to this head, leaving the particle behind:[8]

(50)



'Mary rang Peter.'

The main argument in favor of Brody's (1990b) proposal is that focused phrases (or *wh*-elements) and verbal modifiers are not incompatible. They can occur in one clause, but in this case the verbal modifier is obligatorily postverbal. By assuming that verb movement takes place in clauses with focused constituents or *wh*-phrases, Brody can maintain a uniform analysis for the position of verbal modifiers in the sense that these are always adjoined to the base position of the verb. In contrast, Horvath has to assume that the position of the verbal modifier is different in clauses with or without a focus (or a *wh*-element). A further argument in favor of Brody's approach is the syntactic and semantic similarities between focus and *wh* that are not, or at best partially, shared by verbal modifiers. These similarities between *wh* and focus will be the subject of the discussion in section 3.

3 Focus movement is like *wh*-movement

The idea that focus is similar to *wh* rests on both syntactic and semantic considerations that draw a parallel between the two (section 3.2). These considerations gave rise to analyses arguing for the Focus criterion alongside the *Wh*-criterion, which state that a focus or *wh*-element has to be licensed in a specifier–head

relationship with its licensing head. This proposal is illustrated here by the discussion of Ortiz de Urbina's (1995) analysis of focus movement in Basque (section 3.3). Another, highly influential, proposal, in Rizzi (1997), concerns focus movement in Italian. The innovation here is that the licensing head is no longer Infl or C, but rather a designated functional head, the Focus head (section 3.4). This line of analysis is evaluated in section 3.5. Here the notion is discussed that adjacency effects and the presence of pied-piping give support to an analysis of focus movement based on *wh*-movement, as the latter also exhibits both adjacency effects and pied-piping (sections 3.5.1–3.5.2). It would be a strong support for Rizzi's line of thinking if a language with an overt Focus head could be identified. The case of Somali is examined from this perspective, with, however, an inconclusive outcome (section 3.5.3). Finally, an alternative, discourse-based explanation is provided for the alleged weak crossover violations described in section 3.1, which are fundamental to the idea that focus involves movement similar to *wh*-movement (section 3.5.4). By calling into question the parallel between focus movement and *wh*-movement, the discussion in section 3.5.4 shakes the foundations of the proposal that regards focus movement and *wh*-movement as essentially similar.

3.1 The origins of a movement analysis

Before we embark on a trip to discover the characteristics of focus movement that assimilate it to *wh*-movement, let us take a step back and investigate the origins of a movement approach to focus. The idea that focus would be associated with movement stems from two independent factors: (i) the fact that focus is quantificational, and (ii) the assumption that quantificational elements take their respective scopes via quantifier raising (May 1977). Let us take these in turn.

3.1.1 Focus is quantificational

The fact that focus is quantificational can be illustrated by the examples in (51), where (51a) is true while (51b) is false in the context in (51c), even though (51a) and (51b) differ only in focus. In other words, two sentences may differ in truth-value if they only differ in focus:

(51) a. John only gave a book <u>to SUE</u>. True
b. John only gave <u>a BOOK</u> to Sue. False
c. John gave a book and a pen to Sue. He gave nothing else to anybody.

As Szabolcsi (1981b) argued, in Hungarian, where overt focus movement takes place, the effect on the truth-value can be observed even without the presence of a focus-sensitive operator such as *only*. So it is really the focal difference that is responsible for the truth-conditional effect. The Hungarian equivalent of (51) is given in (52) (see also the discussion in section 1.3):

(52) a. János$_i$ [ZSUZSINAK]$_j$ adott t_i t_j egy könyvet. True
John Sue-dat gave a book-acc
'It was to Sue that John gave a book.'
b. János$_i$ [egy KÖNYVET]$_j$ adott t_i t_j Zsuzsinak. False
John a book-acc gave Sue-dat
'It was a book that John gave to Sue.'
c. János$_i$ adott t_i egy könyvet és egy tollat Zsuzsinak. Nem adott
John gave a book-acc and a pen-acc Sue-dat not gave
semmi mást senkinek.
nothing else-acc nobody-dat
'John gave a book and a pen to Sue. He gave nothing else to anybody.'

3.1.2 Weak crossover

The treatment of focus in terms of 'quantifier raising' was first suggested by Chomsky (1976), who noted that backward coreference is ruled out if the full DP is focused, while allowed if not. Thus (53b), as opposed to (53a), is ungrammatical:

(53) a. The man that she$_i$ met LIKED Mary$_i$.
b. *The man that she$_i$ met liked MARY$_i$.
LF: MARY$_i$ [the man that she$_i$ met liked t_i]

Chomsky (1976) argued that the ungrammaticality of (53b) can be explained if one assumes that the focal element undergoes fronting at LF. (53b) is a weak crossover violation resulting from the LF movement of the focused element over the co-indexed pronoun. Thus (53b) is similar to (54a), where the movement of the *wh*-element across a co-indexed pronoun is ruled out as a weak crossover violation. Note that this argument is considerably weakened by the observation, already made by Jackendoff (1972), that focus disregards syntactic islands. This is illustrated in (54b) for a complex NP island:

(54) a. *Who$_i$ does the man that she$_i$ met like t_i?
b. Sam only saw a [$_{NP}$ man [$_{CP}$ who was wearing a RED hat]].

This would mean that focus movement (or maybe LF movement in general) is different from overt movement in that it is not sensitive to islands. This would be an undesirable outcome, especially in light of the facts given in section 1.3.3 that showed that islands are observed by focus movement in languages with focus constructions, like Hungarian. Nevertheless, at least until the early 1990s the alleged weak crossover violation exemplified in (53) was taken to be the strongest argument for the treatment of focus in terms of movement even in languages like English. An evaluation of the strength of this argument will be given in section 3.5.4, where it is shown that (53b) should be analyzed as a discourse violation rather than a violation of the conditions on variable binding.

3.2 *Focus and* wh

3.2.1 Semantic parallelism

An immediate advantage of treating the syntax of focus and *wh* in a similar fashion is the following. While it is unclear what would constitute semantic parallelism between focus and case, focus and *wh* appear to behave in a similar way semantically. Following Jackendoff (1972), we may represent the non-focal part of an utterance by replacing the focus with an appropriate semantic variable, which is existentially bound, as in (55b). Argueably, the *wh*-question in (55c) carries the same presupposition. In a negative answer to a *wh*-question, such as (55d), the presupposition is denied.[9] In other words, what we see is that both focal and *wh*-utterances contain a presupposition. This is partly why a *wh*-test is so appropriate for identifying foci. The *wh*-question provides the necessary presupposition for us, and thus it is easy to identify the focus of the answer: it is the part of the answer that is not contained in the presupposition:

(55) a. It is the man in the red HAT that John saw.
b. ∃x (John saw x)
c. Who did John see?
d. No one. ¬ ∃x (John saw x)

3.2.2 Syntactic parallelism

It has long been noted that focus in languages like Hungarian behaves similarly to *wh*-elements.[10] In particular, recall from section 1.3.3 (and also sections 2.2 and 2.4) that Hungarian focus movement is in complementary distribution with *wh*-movement in simple clauses, suggesting that the focus element and the *wh*-constituent occupy the same surface syntactic position (e.g., Horvath 1986).

Another similarity between focus movement and *wh*-movement is that both may apply successive-cyclically and thus across finite clauses. As was shown in section 1.3.3, Hungarian has long focus movement of the relevant sort. (In section 3.3 we will see examples of long focus movement in Basque.)

A final property of focus movement that is also displayed by *wh*-movement is that it licenses parasitic gaps. This is illustrated for Hungarian in (56): (56a, b) show that *wh*-movement and focus movement license parastic gaps, while (56c, d) show that scrambling or topic movement do not:

(56) a. Mit$_i$ dobott ki Péter t$_i$ anélkül hogy elolvasott volna t$_i$?
what-acc threw prt Peter without that prt-read be-irreal
'What did Peter file without reading?'
b. Fontos iratokat$_i$ dobott ki Péter t$_i$ anélkül hogy
important documents-acc threw prt Peter without that
elolvasott volna t$_i$.
prt-read be-irreal
'It was important documents that Peter filed without reading.'

c. Kidobott fontos iratokat$_i$ Péter t$_i$ anélkül hogy elolvasott
threw-prt important documents-acc Peter without that prt-read
volna t$_i$.
be-irreal
'Peter filed important documents without reading (them).'

d. *Fontos iratokat Péter$_i$ dobott ki anélkül hogy elolvasott
important documents-acc Peter threw prt without that prt-read
volna t$_i$.
be-irreal
'Peter filed important documents without reading (them).'

3.3 Focus criterion: Basque

The analysis of focus as an instance of A-bar movement, similar to *wh*-movement, will be illustrated by Basque. Basque is an OV language (Ortiz de Urbina 1989). It is (split) ergative and has morphological case. It has no morphological focus markers, but just as in Hungarian, focused constituents appear in the immediately preverbal position:

(57) a. Jon herri honetara aurten etorri da.
John this town this year come has
'John came this year to this town.'

b. Jon AURTEN etorri da herri honetara.
'It is this year that John came to this town.'

(Ortiz de Urbina 1989: 214–215)

Ortiz de Urbina (1989, 1995) argues that clauses that have a focused constituent instantiate residual V2 effects. Thus in these cases the focused constituent is clause-initial and the V follows immediately. In this respect focus constituents are parallel to *wh*-words. For this reason, Ortiz de Urbina (1995) proposes an analysis following Rizzi's (1996) *Wh*-criterion, given in (58):

(58) ***Wh*-criterion:**
A. A *wh*-operator must be in a spec–head configuration with an $X^0_{[+wh]}$.
B. An $X^0_{[+wh]}$ must be in a spec–head configuration with an *wh*-operator.

Rizzi's proposal was meant to capture the fact that (i) *wh*-questions in English are residual cases of V2; (ii) in multiple *wh*-questions only one *wh*-element moves overtly. (i) is ensured if it is assumed that (A) applies at S-structure in English. Languages are parameterized with respect to the level of representation where (B) applies. In English multiple *wh*-questions, only one *wh*-element moves to [Spec, CP] overtly; the remaining *wh*-elements move there at LF. So, in English, (A) applies at S-structure, while (B) applies at LF.[11]

In Basque, just as in Hungarian, a focused phrase appears in the specifier of a head bearing a focus feature at S-structure. Any further focused phrases move

there at LF. Brody (1990b) and Ortiz de Urbina (1995) proposed the analysis in (59a). What happens in clauses containing a focused constituent and in *wh*-questions in Basque is that the focus or the *wh*-element moves to the specifier of C to check the [+*wh*] or the [+F] feature of C. (So in Basque, the Focus/*Wh*-criterion applies for both *wh*-words and focus constituents.) Since C itself does not contain a matching feature, Infl has to raise to C to provide the necessary [+*wh*] or [+F] feature. This is illustrated schematically in (59b):

(59) a. **Focus criterion:**
At S-structure and LF the specifier of a $X^0_{[+F]}$ must contain a [+F] phrase.
At LF all [+F] phrases must be in the $X^0_{[+wh]}$ must be in a spec–head configuration with a *wh*-operator.
(modified from Brody 1990: 208)

b. $[_{CP}wh_{[+wh]}/focus_{[+F]}[_{C}\ Infl_{[+wh]/[+F]}\ C]_{\ [+wh]/[+F]}[_{IP}\ [_{I'}t_{Infl}VP]]]$

To be precise, the picture is slightly more complicated. Although in the northern dialects of Basque, the focused constituent may optionally be followed by the inflected auxiliary, with the V remaining in clause-final position, this is not the case in the southern dialects (compare 60b and 60c). In the southern dialects, the V-Aux complex follows the focused constituent, even in the case of periphrastic forms and, unlike in Italian, nothing can intervene between the auxiliary and a verb. The pattern in the northern dialects is similar to the pattern found in V2 constructions, for instance, in Dutch, so it is explained by the Focus criterion. As Ortiz de Urbina (1995) proposed, the pattern in the southern dialects can be accounted for if it is assumed that in addition to I to C movement the V moves to I and the whole V-I complex moves to C:

(60) a. Jonek liburua irakurri du.
John book read has
'John has read the book.'
b. JONEK irakurri du liburura.
c. JONEK du liburua irakurri
'It is John that has read this book.' (Ortiz de Urbina 1995: 200)

The language also displays V1 patterns. As expected, these show up in two cases: as an instance of yes/no questions (61a) and as an instance of what Ortiz de Urbina calls 'verbal focalization' (61b):

(61) a. Irakurri du Jonek liburua?
read has John book
'Has John read the book?'
b. Hil da gure ata.
die has our father
'Our father has died.'
'Our father did die.' (Ortiz de Urbina 1995: 110, ex. 22, 23a)

Ortiz de Urbina claims that this is an instance of movement of the Aux-V complex to C triggered by the [+Q]-feature of C in (61a) and triggered by [+F]-feature on C in (61b).

Note that the northern dialects present a partial problem in the V1 case. In these dialects, the Auxiliary does not have to cliticize onto the V, so it is expected that it is the Auxiliary alone that moves to C in yes/no questions or cases of verb focalization. However, as illustrated in (62a) and (62b) respectively, Aux focalization is grammatical, but yes/no questions are deviant:

(62) a. ba-dut . . . ikusi
ba-aux seen
'I have seen . . .'
b. ??baduzu . . . ikusi
ba-aux seen
'Have you seen . . . ?'

(Ortiz de Urbina 1995: 112, ex. 30a, 31a)

To conclude, Ortiz de Urbina (1995) argued that the focus construction in Basque is similar to the *wh*-construction. They both involve A-bar movement to [Spec, CP], therefore they both instantiate residual V2 (and V1) effects.[12]

Similar proposals have been put forward for many languages. Svolaccia et al. (1995) argue that in Somali, [+F] is a feature of C. (See section 3.5.3 for discussion.) The same was proposed by Vilkuna (1994) for Finnish and by King (1993) for Russian. There are also proposals to the effect that [+F] is on I and that therefore [Spec, IP] is the position targeted by focus movement. Aissen (1992) argued that this is the case in some Mayan languages, for example Tzotzil. A review of the syntactic options available for focus constructions is given by Kenesei (1998).

3.4 Focus as a functional head: Italian

3.4.1 The Focus head

In the spirit of Pollock's (1989) proposal, in the course of the 1990s it became more and more generally assumed that a separate functional head, Focus, is projected in the left periphery of the clause. The focused element moves to the specifier of the Focus head to check features in a spec–head configuration. An abstract schema is given in (63):

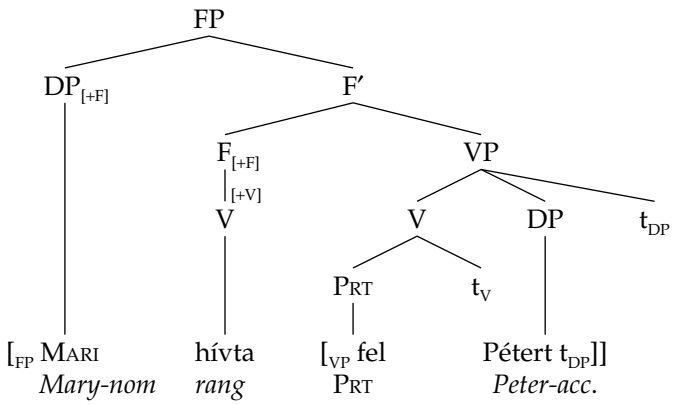
(63) $[_{FP}\ XP_{focus}\ F \ldots [_{VP}V_t_{XP}]$
[+F] [+F]

This was proposed for many languages, with the only differences being the location of Focus with respect to other heads, and whether the movement of the focused constituent (and of the V) is overt or covert. To mention a few: Brody

(1995a) on Hungarian; Laka (1990) on Basque; Ouhalla (1994) on Standard Arabic; and many works in Kiss (1995b) and Rebuschi and Tuller (1999), including accounts for Greek (Tsimpli 1995), Korean (Choe 1995), Western Romance languages (Uriagereka 1995b), and Portuguese (Ambar 1999).

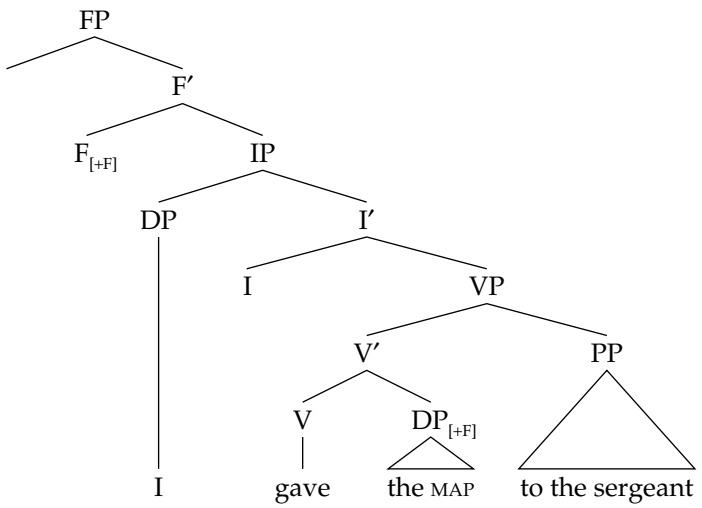
In Hungarian, the Focus head is located in the left periphery of the clause (Brody 1995a, among many others). If the Focus head is strong, as it is in Hungarian, it will trigger overt movement of the constituent bearing [+F]. In a tensed sentence, this is accompanied by V movement to F, thus the focused constituent and the V are adjacent. As already mentioned in section 2.2, the main data supporting V-movement are sentences that contain verbal particles. In Hungarian the default position for particles is preverbal; it is immediately in front of the V. In sentences which have a focused element, the particle follows the verb. Brody (1995a) takes this to be an indication of V-movement. This is illustrated in (64):

(64)



If the Focus head is weak, as it is in the English, the focused constituent will remain in situ (at least in the overt syntax).[13] This is illustrated in (65):

(65)



Rizzi (1997) proposed a similar analysis for the so-called left-peripheral focus in Italian. He argued that the complementizer field in Italian is split in a way that is similar to the proposal about the tense field by Pollock (1989). The topmost complementizer-like head is Force and the lowermost is Finiteness. Topic positions and a unique Focus position are sandwiched between the two. This is shown in the schema in (66):

(66) . . . Force . . . *Topic . . . Focus . . . *Topic . . . Fin . . . IP (* indicates possibility of recursion) (modified from Rizzi 1997, ex. 38)

Movement into the specifier of the Focus head is subject to the Focus criterion, which says that movement is 'last resort' and that it only happens to satisfy LF requirements of the element. In particular, a focal element needs to be in a specifier–head configuration with the Focus head at LF (Rizzi 1997: 6).

3.4.2 Five characteristics of focus in Italian

Rizzi (1997: 8–9) enumerates a number of properties that characterize foci, as opposed to topics. First, topics, but not foci, allow the presence of resumptive clitics:

(67) a. Il tuo libro, lo ho comprato.
'Your book, I bought it.'
b. Il tuo libro ho comprato(, non il suo).
c. *Il tuo libro lo ho comprato(, non il suo).

Focus gives rise to weak crossover violations, while topics do not:

(68) a. Gianni$_i$, sua$_i$ madre lo sempre apprezzato.
b. ??Gianni$_i$ sua$_i$ madre ha sempre apprezzato.
'Gianni his mother always appreciated, not Pietro.'
(Rizzi 1997: ex. 17, 18)

Bare quantificational elements are felicitous foci, but they cannot be topics:

(69) a. *Nessuno, lo ho visto.
'No one, I saw him.'
b. Nessuno ho visto t.
'I saw no one.' (Rizzi 1997: ex. 19a, 20a)

There is no restriction on the number of topics that can appear in a clause, while each clause allows only one focus:

(70) a. Il libro, a Gianni, domani, glielo daro senza'ltro.
'The book, to John, tomorrow, I'll give it to him for sure.'
b. *Il libro a Gianni daro senza'ltro (non a Piero, l'articolo).
'The book to John I'll give, not to Piero, the article.'
(Rizzi 1997: ex. 21, 22)

Finally, topics, but not foci are compatible with a clause-mate *wh*-word:

(71) a. A Gianni, che cosa gli hai detto?
'To John, what did you tell him?'
b. *A Gianni che cosa hai detto (non a Piero)?
'To John what did you say, not to Piero?' (Rizzi 1997: ex. 24a, 25a)

Let us start with the last property of foci, i.e., that they are incompatible with *wh*-elements. Similarly to Horvath (1986) and Brody (1990b), Rizzi (1997) suggests that focus and *wh* are incompatible because they are in complementary distribution. In other words, they target the same position.

Rizzi (1997) argues that the first three properties follow from the assumption that focus is quantificational, while topic is not. In particular, he suggests that the LF representation of focus movement results in a configuration where a quantifier binds a variable, while the LF representation of the topic construction is different. Here there is A-bar binding of a null constant, by a null operator:

(72) a. ?* Who$_i$ does his$_i$ mother really like t$_i$ (= vbl)?
b. John, who$_i$ his$_i$ mother really likes t$_i$ (= nc) . . . (Rizzi 1997: ex. 26)

This characterization of the data would explain why focus gives rise to weak crossover violations, as these are due to semantic variable chains, absent in the case of topics. It would also explain why bare quantificational elements are not possible topics. This is because topic constructions do not provide a variable for the bare quantificational element to bind. Finally, the presence of an overt clitic in the topic constructions disallows the formation of a quantificational chain on the assumptions that quantificational chains bind variables and that overt pronominal clitics are different from traces in this respect: unlike traces, clitics do not license the presence of a variable in the LF representation.

So three seemingly independent generalizations receive a unified explanation. But there is reason to doubt that all three characteristics are a consequence of the proposed quantificational vs. non-quantificational distinction between focus chains and topic chains. The fact that quantificational elements are unlikely topics, the third characteristic difference between focus and topics, also follows from discourse-oriented considerations. Topics, by definition, are referential expressions (Reinhart 1981). So quantificational elements are unlikely topics. To be precise, they are possible topics if and only if they "can be interpreted (pragmatically) as denoting sets" (Reinhart 1981: 65). This possibility is obviously not available for bare quantifiers, but a set denotation can be facilitated by the presence of a lexical restriction. As Rizzi himself notes, quantificational elements with lexical restrictions are much better as topics:

(73) a. Tutto, lo concosco veramente bene.
'Everything, I know it really well.'
b. Tutti i tuoi libri, li ho rimessi a posto.
'All your books, I put them back.' (Rizzi 1997: ex. 34c)

Let us now turn to the explanation Rizzi offers for the fourth characteristic property of focus in Italian: uniqueness. There can be any number of topics in a clause, but each clause allows a unique focus. He offers an analysis based on the idea, going back to Jackendoff (1972), that the focus of an utterance partitions the utterance in the focal part and the presupposition. Thus he assumes that just as the specifier of the Focus head identifies the focus, the complement of the Focus head is the presupposition. Since the non-focal part of the utterance is the presupposition, a second (or third, etc.) focus would be part of the presupposition, and thus by definition would not be focal (Rizzi 1997: 14).[14]

But the claim that the complement of the Focus head would be the presupposition is probably too strong. In fact, under such a view topics that precede a left-peripheral focus would not be part of the presupposition. So one has to weaken the statement that the LF representation of the presupposition is a continuous constituent (e.g., the complement of FP). But this opens up the possibility of a situation where two (or more) foci are identified in a clause and the rest of the utterance would be the presupposition. Such cases are attested. For instance, the Hungarian example in (74) has two foci:

(74) Csak két lány választott csak egy könyvet. Hungarian
only two girls chose only one book-acc
'It was only two girls who chose only one book.' (Kiss 1998: 16)

3.4.3 Left-peripheral vs. right-peripheral focus in Italian

Rizzi claims that the left-peripheral focus can be distinguished from a lower, right-peripheral focus position described in detail by Calabrese (1982), Cinque (1993), Belletti and Shlonsky (1995), and Samek-Lodovici (1996).

One of the characteristics of the left-peripheral focus is that it is not appropriate as an answer to a question indicating non-contrastive new information. Rather, it is allowed as a correction, as in (75) (Rizzi 1997: 5):[15]

(75) a. A: Che cosa hai letto?
What thing have-you read
'What did you read?'
B: #Il tuo libro ho letto.
the his book have-I read
'I read your book.'
b. A: Gianni ma dice che hai letto il suo libro.
John to-me said that have-you read the his book
'John told me that you read his book.'
B: Il tuo libro ho letto (, non il suo)
the his book have-I read not the his
'I read your book, not his.'

Although Rizzi (1997: 6) claims that the right-peripheral focus is in situ, Samek-Lodovici (1996) showed that it can be targeted by movement. For instance, the

example in (76) illustrates this. The canonical order of two internal arguments in Italian is direct object preceding dative PP (see 76a). This order can be altered, as in the answer in (76b), in such a way that main stress falls on the direct object, which is therefore focused:

(76) Piero ha presentato Giorgio a Maria.
Piero has introduced Giorgio to Maria.
a. Chi non hai presentato a nessuno?
who not have-you introduced to no one
b. Non ho presentato a nessuno Gianni.
not have-I introduced to no one Gianni
'I have introduced Gianni to no one.' (Samek-Lodovici 1996)

To the extent that Samek-Lodovici's arguments turn out to be right, they raise a theoretical issue. The point is that according to Rizzi's Focus criterion, the focused element moves to an A-bar position in order to be licensed in this position at LF. Languages are parameterized with respect to the locus of this movement. On the one hand, Hungarian and Italian left-peripheral constructions are overt instances of such a movement operation. On the other, English focus movement is covert; its presence is only indirectly observable, for instance, as it induces weak cross-over violation (Chomsky 1976). In the realm of the Focus criterion, there is no room for a construction that involves overt movement to a designated syntactic position other than the position where focus is licensed at LF. In the case of the Italian right-peripheral focus, this position is targeted overtly, while presumably, a further covert movement step places the focal element in the left-peripheral licensing position (Rizzi 1997: 6). What would be the reason for the (intermediate) overt movement step? The only possible way out seems to be to assume that there is more than one possible licensing position for foci: a right-peripheral one and a left-peripheral one. Thus movement into either of these would satisfy the Focus criterion. But the result of this proliferation of functional landing sites is an increased potential for overgeneration and for loss of predictive power.

A similar point is put forward in Horvath (1995). She argues that languages, such as Aghem, that have a low postverbal focus position pose a problem for the Focus criterion. Her argument is based on the fact that in this language the same low position hosts *wh*-elements as well. Given the assumption that a *wh*-element needs to take scope over the clause at LF for the *wh*-question interpretation to be felicitous, one needs to assume that there is a further covert movement step taking the *wh*-element from the low postverbal position to some high position from which the *wh*-element would take scope over the clause. However, this means that the reason for the focus movement – targeting the low postverbal position – could not have been to satisfy an LF requirement, as proposed by the Focus criterion, since the LF requirement on the *wh*-element is not satisfied without a further movement step. Thus the same question arises as before: what is the trigger for the (overt) movement operation to the postverbal focus position? Horvath's answer is that the trigger for focus movement is an S-structure

requirement that the focus be adjacent to the V. This is clearly orthogonal to the LF requirement that *wh*-elements need to take scope at LF, so the puzzle dissolves. Note that Horvath's solution has an important insight in the sense that she claims that it is an S-structure rather than an LF requirement of the focus that triggers overt movement to some designated position. Nevertheless, the proposed adjacency requirement cannot be the whole explanation, as, for instance, in Italian neither the left-peripheral nor the right-peripheral focus position is obligatorily adjacent to the V.

3.5 Focus movement is like wh*-movement: discussion*

3.5.1 Adjacency requirement

One characteristic property that suggests a similar treatment of focus and *wh* is that in many languages both of these elements require adjacency to the verb. This has been shown for Hungarian in section 1.3.3, for Basque in section 3.3, and for a postverbal focus language Podoko in section 2.3.

The adjacency requirement is often explained by the fact that the focus or *wh*-element is in the specifier of a functional head, while the verb occupies the head position. Therefore, focus (or *wh*) and verb are necessarily adjacent, since there is no intervening syntactic position between a leftward specifier and a head in the head–complement order.

It is important to note that, as Rizzi (1997: 16) shows, in Italian the parallel breaks down, since the adjacency requirement is present for *wh* but not for preverbal focus:

(77) Questo Gianni ti dira' (non quello che pensavi).
this John you-dat say-fut.3 not which that thought.2
'This Gianni will say to you, not what you thought.'
*Che cosa Gianni ti dira'?
what John you-dat say-fut.3
'What will Gianni say to you?' (Rizzi 1997: ex. 48)

Accordingly, Rizzi (1997) hypothesizes that the Focus head attracts the verb in *wh*-constructions, but not in focus constructions.

3.5.2 Pied-piping

Another similarity between focus movement and *wh*-movement is that they both exhibit pied-piping. As the following data illustrate, Hungarian focus movement (cf. 78a) is similar to Hungarian and English *wh*-movement (cf. 78b, c) in that sometimes the moved constituent is bigger than the actual focused or *wh*-element:

(78) a. $[_{FP}\ [_{DP}$ Használt autót] vettem.]
second-hand car bought-I

b. [$_{FP}$ [$_{DP}$ Melyik autót] vetted meg?]
which car-acc bought-you VM
c. [$_{CP}$ [$_{DP}$ Whose car] did you buy?]

On the basis that focus and *wh* both exhibit pied-piping, Kenesei (1998: 40) argues that *wh* and focus should be treated alike, in terms of a syntactic [+*wh*]- and [+F]-feature, and that pied-piping should be accounted for in terms of feature percolation.

Horvath (2000: 197) showed that the parallelism between pied-piping in focus and *wh* does not go all the way in Hungarian. In particular, the *wh*-feature cannot be pied-piped from an object onto the participial clause (79a–b). Nevertheless, focus interpretation of the structurally parallel object in (79c) is allowed. This, she suggests, indicates that a different treatment for focus and *wh* is necessary in the grammar:

(79) a. *az ital amit követelő vendégektől fél a pincér
the drink which-acc demanding guests-loc fears the waiter
'the drink customers demanding which the waiter is afraid of . . .'
b. *Mit követelő vendégektől fél a pincér t?
what-acc demanding guests-loc fears the waiter
'Customers demanding what is the waiter afraid of?'
c. Barackpálinkát követelő vendégektől fél a pincér.
apricot-brandy-acc demanding guests-loc fears the waiter
'It is customers demanding apricot brandy that the waiter is afraid of.'

However, according to Ortiz de Urbina (1999: 317), there is absolute parallelism between the pied-piping properties of focus and *wh* in Basque, suggesting that the Hungarian restriction on *wh*-pied-piping may just be a language-particular property.

Several languages are reported in the literature as exhibiting so-called clausal pied-piping (cf. Hermon 1984 on Quechua; Ortiz de Urbina 1990 on Basque; and Simpson and Bhattacharya 2000 on Bangla). In these cases, a *wh*-word or focus undergoes movement to a designated position inside the embedded clause, while the whole embedded clause gets pied-piped to the matrix *wh* or focus position. This is illustrated for Bangla in (80a, b) and for Basque in (81a, b). (82a, b) illustrate that clausal pied-piping is ungrammatical in Hungarian:

(80) a. jOn [$_{CP}$ ke cole gEche]$_i$ bollo t$_i$?
John who leave gone said
'Who did John say left?'
b. jOn [$_{CP}$ or baba$_i$ aS-be t$_i$]$_k$ Sone ni t$_k$, kintu [$_{CP}$ ma$_j$ aSbe t$_j$]$_l$
John his father come-fut.3 heard not but mother come-fut.3
Suneche t$_l$
heard
'John didn't hear his father but heard his mother.'
(Simpson and Bhattacharya 2000: 9, ex. 25)

(81) a. [Nork$_i$ idatzi du-elat$_i$ liburua]$_k$ esan du Peiokt$_k$?
who write aux-comp book say aux Peio
'Who did Peio say wrote the book?'
b. [Jonek$_i$ idatzi du-elat$_i$ liburua]$_k$ esan du Peiot$_k$.
Jon write aux-comp book say aux Peio
'It is Jon that Peio said wrote the book.'

(82) a. *[Ki jön ide t$_i$ holnap] mondtam Marinak t$_k$
who comes prt tomorrow said-I Mary-dat
b. *[János jön ide t$_i$ holnap] mondtam Marinak t$_k$.
John comes prt tomorrow said-I Mary-dat
'I have told Mary that it is John that will come tomorrow.'

In all of these languages, an alternative derivation exists, where the *wh*-element in the embedded clause undergoes long *wh*-movement targeting the designated position in the matrix clause. In Basque the position of the embedded verb is clause-initial, indicating that the long focus movement is successive-cyclic. In other words, it passes through an embedded designated focus position, thus triggering V1 in the embedded clause. This is not the case in Hungarian, as can be observed from the prt-V order in (83c). It appears that the Bangla data can be analyzed either way:

(83) a. jOn ke$_i$ bollo [$_{CP}$ t$_i$ cole gEche]?
John who said leave gone
'Who said that John left?'
(Simpson and Bhattacharya 2000: 9, ex. 26)
b. Nork/Jonek uste duzu/dut [$_{CP}$ t esan du-ela Mikelek[$_{CP}$ t idatzi du-ela eskutitza]]?
who/Jon think aux say aux-that Mikel write aux-that letter
'Who do you think/It is Jon that I think Mikel has said has written the letter?' (Ortiz de Urbina 1999: 313, ex. 4, 5)
c. Kit/Marit mondta János hogy elment?
who-acc/Mary-acc said-def John that prt-went
'Who did John say left?/It is Mary that John said left.'

3.5.3 Overt manifestations of the Focus head: Somali

The languages discussed so far, namely Italian, Hungarian, and Basque, give no overt morphological evidence for the presence of a Focus head. However, there are languages that have morphological focus markers that have been analyzed as functional heads. Somali is a case at hand.

As reported in Hyman and Watters (1984), in Somali, the marker *-baa/-buu* is attached to a focused XP, while the prefix *waa-* attaches to focused verbs:

(84) a. Cali-baa moos cunay.
Ali-FM banana ate
'Ali ate a banana.'
b. Cali MOOS-buu cunay.
'Ali ate a banana.'
c. Cali moos waa-cunay.
'Ali ate a banana.'

Svolaccia et al. (1995) and Lecarme (1999) question all of Hyman and Watters's (1984) claim. Rather they argue that the focus particles sit in Infl or C, and the [Spec, CP] position is available for focused constituents, while topics adjoin to CP.[16]

The argument that *-baa* is dependent on the V rather than on the preceding NP comes from gapping. Gapping the V in a coordinate structure renders the presence of a focus marker ungrammatical, suggesting that *-baa* is dependent on the V rather than on the NP:

(85) a. Ma Maxamed baa tegay mise Cabdi baa tegay?
Q Maxamed FM went or Cabdi FM went
'Has Maxamed gone or has Cabdi gone?'
b. Ma Maxamed baa tegay mise Cabdi?
Q Maxamed FM went or Cabdi
'Has Maxamed gone or has Cabdi?'
c. *Ma Maxamed baa tegay mise Cabdi baa?
Q Maxamed FM went or Cabdi FM
'Has Maxamed gone or has Cabdi?' (Saeed 1984: 110)

Both Svolaccia et al. (1995) and Lecarme (1999) suggest that a focused constituent appears preverbally as a result of movement to the specifier of a functional head that hosts the focus particle. So the examples above are analyzed as in (86):

(86) a. $[_{CP}$ Cali-$[_{C}$ baa] moos cunay]
Ali-FM banana ate
'Ali ate a banana.'
b. $[_{CP}$ Cali$[_{CP}$ moos-$[_{C}$ buu] cunay]]
'Ali ate a banana.'

If this is on the right track, then Somali is essentially analyzed like Hungarian by Brody (1995a) or Italian by Rizzi (1997). The focus moves to the specifier of a matching functional head. Moreover, the focus feature in Somali is overtly manifest in the form of a morphological marker.

Note, however, that the following data are interesting in this respect. Somali, just like Italian or Hungarian, allows for wide focal sentences. The question–answer pairs appear to look as follows (Svolaccia et al. 1995: 73–75). It seems that both O and VP focus are possible if the O is focus marked and fronted (87a–c). The subject, which is mentioned in the question, has to be a topic or a postverbal

constituent in the answer (87c). It is inappropriate to focus mark the V even in VP-focus (87d):

(87) Q_{VP}: Cali muxuu sameeyay?
Cali what-FM-he did
'What did Cali do?'
Q_O: Cali yuu dilay?
Cali whom-FM-he beat
'Who did Cali beat?'
a. Cali Maryan buu dilay.
Cali Maryan FM-he beat
b. Maryan buu dilay Cali.
Maryan FM-he beat Cali
c. *Cali baa Maryan dilay.
Cali FM Maryan beat
d. *Cali Maryan wuu dilay.
Cali Maryan FM-he beat
'Cali <u>beat Maryan</u>' or 'Cali beat <u>Maryan</u>.'

If the context question suggests IP-focus, the most appropriate answer is to put the marker *-baa* on the subject (88a). To focus mark the object is more marked (88b). It is inappropriate to put either the subject or the object either in prefocal or postverbal position (88c). These positions most probably indicate discourse-linked status, which is incompatible with the context question, which requires an all-focus utterance as the answer:

(88) Q_{IP}: Maxaad hacay?
What-FM happened
'What happened?'
a. Cali baa Maryan dilay.
Cali FM Maryan beat
b. (?)Maryan baa Cali dilay.
Maryan FM Cali beat
c. *Cali Maryan buu dilay.
Cali Maryan FM-he beat
d. *Maryan buu dilay Cali.
Maryan FM-he beat Cali
e. *Maryan Cali baa dilay.
Maryan Cali FM beat
f. *Cali baa dilay Maryan.
Cali FM beat Maryan
'<u>Cali beat Maryan</u>.'

The point of these examples with respect to the functional head status of *-baa* is that the moved element that sits in the specifier of the head bearing focus

morphology is not necessarily the focus of the utterance, albeit it is always part of the focus. This seriously undermines the idea that the trigger for the movement operation would be focus and that the head in question would be Focus head. If it were, then the moved constituent sitting in its specifier would have to receive a focal interpretation obligatorily.

3.5.4 Focus and weak crossover revisited

Recall from section 3.1 that one of the two basic pillars of the analyses that take focus constructions to be a case of syntactic movement, similar to *wh*-movement, is that focus displays weak crossover effects (Chomsky 1976).

The argument goes as follows. Backward coreference is ruled out if the full DP is focused, while allowed if not. Thus (53b), as opposed to (53a) (repeated here as (89a–b)) is ungrammatical:

(89) a. The man that she$_i$ met LIKED Mary$_i$.
b. *The man that she$_i$ met liked MARY$_i$.
LF: Mary$_i$ [the man that she$_i$ met liked t$_i$]

(90) *Who$_i$ does the man that she$_i$ met like t$_i$?

As the LF representation of (89b) indicates, Chomsky (1976) argued the focus is preposed at LF. Thus (89b) is similar to (54a) (repeated here as (90)), where the movement of the *wh*-element across a co-indexed pronoun is ruled out as a weak crossover violation. In a parallel fashion, in (89b), the fronting of the focal element at LF presents a weak crossover violation.

We have already noted that this argument is considerably weakened by the observation of Jackendoff (1972) that focus disregards syntactic islands. This is illustrated in (54b) (repeated here as (91)) for a complex NP island. If focusing involved LF movement, that would mean that focus movement (or maybe LF movement in general) is different from overt movement in that it does not observe islands – an undesirable outcome:

(91) Sam only saw a [$_{NP}$ man [$_{CP}$ who was wearing a RED hat]]

But there are additional arguments against a weak crossover analysis of the lack of backward anaphora with a focused constituent. Williams (1997) points out that a weak crossover account is too restrictive, as it incorrectly predicts that 'backward-and-down' anaphora cases like (92) are ungrammatical. This is because (92) would yield the LF indicated, which contains a weak crossover violation:

(92) Anyone who has written it$_i$ can turn his TERM PAPER$_i$ in to me.
LF: his TERM PAPER$_i$ [anyone who has written it$_i$ can turn t$_i$ in to me].
(Williams 1997: ex. 33a; diacritics added)

Furthermore, an alternative analysis of the relevant data is possible. It is possible to show that (89b) is ungrammatical for a reason that has nothing to do with the

status of the bound pronominal. Rather, what renders the utterance ungrammatical is that *Mary* is an ill-formed focus.

Rochemont (1986) argued for the generalization of c-construability, according to which any constituent is focus if and only if it is not c-construable from the earlier discourse. In other words, a constituent bears prosodic prominence if and only if it is not accessibly discourse-linked (Neeleman and Reinhart 1998). For this reason, utterances such as (93) are ungrammatical, as they contain a focus marked element, *John*, which has just been introduced to the discourse in the previous utterance in a salient way:

(93) John and Mary danced on the floor. *Then JOHN kissed Mary.

This could very well be the reason for the ungrammaticality of (89b) as well. Such examples pose a paradox for discourse. Either the pronoun is not licensed in the absence of an antecedent, or focus on *Mary* is ill-formed. Let us see why this is the case. In (89b) *Mary* bears prosodic prominence, indicating focus. By c-construability this means that it cannot be linked to an entity mentioned in previous discourse. At the same time, the utterance contains a pronoun *he*. Unless they are interpreted deictically, pronouns need an accessible entity in the discourse. If the previous discourse contains an accessible entity as the antecedent of the pronoun, which allows the use of the pronoun in (89b), then this same accessible discourse entity renders focus on *Mary* ill-formed, as it causes a c-construability violation.

If the preceding discourse does not contain an earlier mention of *Mary*, and thus focus on it is allowed by c-construability, then there is no discourse antecedent for the pronoun to rely on. There cannot be one by c-construability. (If there were an antecedent, *Mary* could not be focused, and we just assumed it can be.) Note, however, that it is not completely impossible to use a pronoun when an antecedent is not present in earlier discourse: for instance, in cases when the antecedent is in the same utterance as the pronoun. This is known as backward anaphora. It is even possible for such utterances to be discourse-initial. Some examples are given here from Carden (1982), reported in Reinhart (1981):

(94) a. Because they wanted to know more about the ocean's current, students in the science club at Mark Twain Junior High School of Coney Island gave ten bottles with return address card inside to crewmen of the NY city's sludge barges. (*New York Times*)
b. When she was five years old, a child of my acquaintance announced a theory that she was acquainted with rabbits. (*New York Times*)

In principle, this means that (89) could be a case of backward anaphora, where there is no antecedent available for the pronoun in the previous discourse; rather its antecedent is *Mary* in the same utterance. However, this possibility is ruled out by Reinhart's (1981: fn. 9) generalization, originally proposed by Kuno (1972a), which says that backward anaphora is restricted to cases where the

antecedent is the topic. This is indeed the case in the examples in (94).[17] In contrast, the antecedent is the focus in (89b). Since an element cannot be topic and focus at the same time, (89b) can be ruled out as a discourse violation without any mention of weak crossover.

As a final point, it can be shown that (89b) can be rendered grammatical in certain discourse contexts, indicating that it is not a syntactic (or semantic) but rather a discourse violation. According to c-construability, an entity cannot bear prosodic prominence if it is not a new entity in the discourse. However, there are exceptions to this generalization. Contrastively focused constituents may bear focal prominence even if they are not new:

(95) A: Sally and the woman John loves is leaving the country today.
B: I thought that the woman he loves has BETRAYED Sally.
A: No, the woman he_i loves betrayed $JOHN_i$. (Rochemont 1986)

In (95), *John* is contrastively focused. In fact, the second utterance of A is a correction of B's utterance. So *John*, even though it is not new to the discourse, still does not violate c-construability, as it is contrasted with *Sally* in B's utterance. As we see, coreference between *John* and *he* is allowed. If one pursued an analysis that renders (89b) ungrammatical as a weak crossover violation, one would have to assume that focus fronting does not affect constituents that are contrastively focused, only ones that are new to the discourse. This way, it would be possible to exclude cases like (89) while still permitting cases like (95). However, this assumption would be counter-intuitive in light of the semantics associated with Hungarian focus movement discussed in section 1.3.4. There it was shown that Hungarian focus movement is necessarily contrastive; however, it need not affect foci that are new to the discourse. So under this proposal Hungarian would come out just the opposite of English.

4 Focus and prosodic prominence

4.1 Accent to focus vs. focus to accent

It is a well known characteristic of focus, which has been alluded to previously but not stated explicitly, that at least in English, the focus of the utterance is always marked by some kind of prosodic prominence: main stress or pitch accent. This generalization is the Stress–Focus Correspondence Principle (see 96). This has been known since Chomsky (1971), Jackendoff (1972), and Selkirk (1984, 1986) (in the functionalist literature, Dezső 1974, Harlig and Bardovi-Harlig 1988):

(96) **Stress–Focus Correspondence Principle:**
The focus of an utterance always contains the main stress of the utterance.

Ladd (1996) divides approaches to focus into two groups on the basis of the perspective they take with respect to stress–focus correspondence. All of the

analyses discussed so far exemplify what he calls the 'accent-to-focus' view. In these approaches, focus is determined by the presence of a syntactic (or semantic) focus feature, rather than by the position of stress. The prosodic characteristic of focus is secondary: main stress is assigned to the constituent marked as focus in syntax. This view has its origins in Jackendoff's (1972) proposal, which argued for the presence of syntactic focus marking.

However, we have seen in section 3.5.4 that the reasoning behind the idea that focus movement is like other instances of movement in syntax, such as *wh*-movement, is questionable in languages like English. Rather, certain properties of focus can be explained by discourse principles, not syntactic ones. This opens up the way to question the idea that focus would be a syntactic construct in the first place. In other words, if the arguments that focus movement would be similar to *wh*-movement are weakened, one might wonder why focus movement would be a case of feature-driven movement, even in languages where it happens overtly. In fact, one can go one step further and ask why a syntactic [+Focus]-feature would exist in the first place. The analyses reviewed in section 4.3 take these questions as their starting point. They belong to what Ladd (1996) called the 'focus-to-accent' view. In these proposals, it is assumed that there is an independent prosodic operation, the nuclear stress rule, that assigns main stress to the utterance. The focus is determined on the basis of the prosodic properties of the utterance: a constituent bearing main stress is a possible focus of the utterance. This view goes back to Chomsky's (1971) work and was later revived by Cinque (1993) and others.

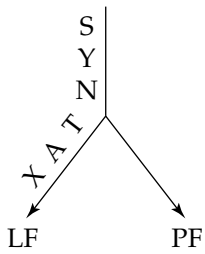
Some of these proposals are described in section 4.3. But before we come to them, we first have to evaluate the reasons for which the previous analyses all assumed the existence of a syntactic [+Focus]-feature. It will become clear from the discussion in section 4.2 that the two perspectives with respect to (96) are fundamentally different in their conception of the architecture of the grammar. The T-model, where phonological information is stripped off before the derivation reaches the conceptual interface, can only be maintained in the accent-to-focus view. This is what prompted all the analyses described above to assume the existence of some form of syntactic focus marking. However, the focus-to-accent view requires the availability of prosodic information at the interface. If focus, a semantic (or pragmatic) notion, is determined by the position of main stress, then it is evident that such prosodic information has to be available at the level of representation where focus is relevant, so the derivation cannot branch into a PF and an LF branch. In contrast, as argued in section 4.4, the accent-to-focus view has a conceptual advantage of its own. It maintains Chomsky's (1995c) Inclusiveness Principle, which is violated by all focus-to-accent views assuming the existence of a syntactic [+Focus]-feature.

4.2 *The accent-to-focus view and the T-model*

In the GB/Minimalist framework, phonological information, which is ultimately relevant for the interface of the grammar in its wide sense with sensori-motor

apparatus (i.e., the articulatory and auditory devices), is separated from syntactic (or syntactico-semantic) information, which ultimately feeds the interface of the grammar with the conceptual-intentional system. This is known as the T-model (see (97)):

(97) **T-model:**
Numeration/Lexicon



One of the motivations behind the T-model is that phonology is a module whose role is merely to interpret the output of the (overt) syntactic component for the sensori-motor apparatus.[18] Consider the Stress–Focus Correspondence Principle in (96). It is clear that it cannot be stated in the T-model at any level of representation (i.e., either at PF or at LF), as it refers to prosodic information and the LF notion focus at the same time.[19]

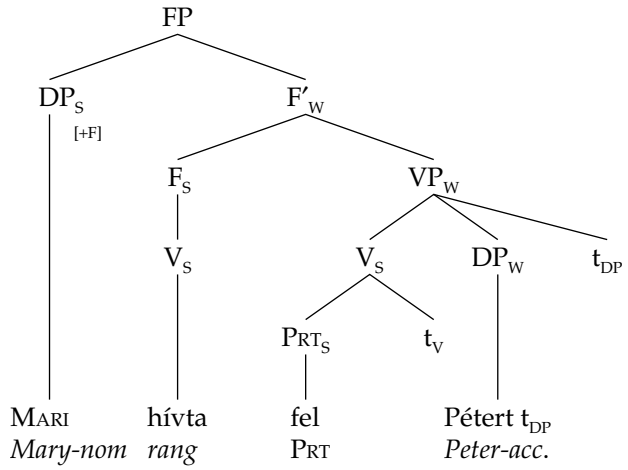
Let us see whether the feature-driven account can be extended to account for (96) without violating the assumptions of the T-model. Although the standard account remained agnostic on the issue of focus–stress correspondence, it can be easily extended to account for the fact that in both English and Hungarian the focused constituent receives main stress. Let us use a tree-based metrical system to indicate stress placement (following Liberman and Prince 1977; Liberman 1979). In this notation, Strong and Weak (S/W) labels are assigned to the binary branching structure, and main stress is on the node that bears S and that is only dominated by nodes bearing S. In this system, main stress falls on the element that bears an S label and that is only dominated by nodes that bear S labels. To derive the fact that main stress falls on the focused element, all we have to assume is the following (Jackendoff 1972: 241; cf. also Selkirk 1996 and Kenesei 1998):

(98) **[+F] interpretation at PF:**
Assign S to the node marked [+F] and to any dominating node.

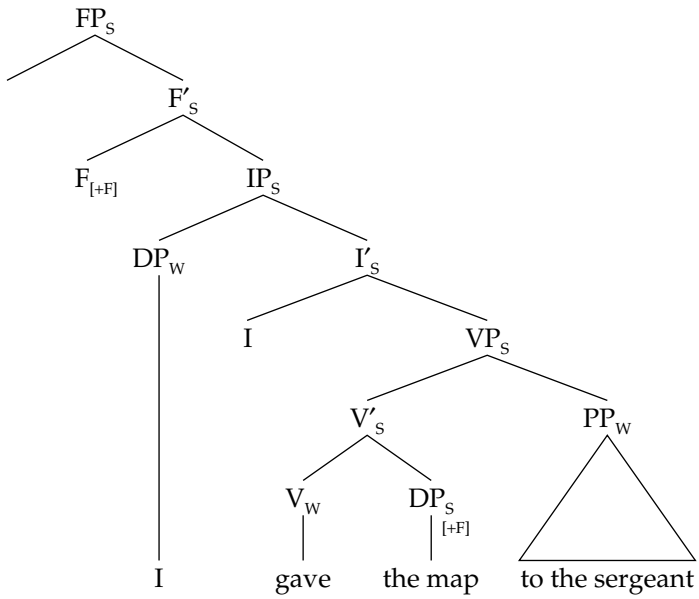
As (99) and (100) illustrate, the feature-based analysis gives the right word order and the right stress pattern in both English and Hungarian. In particular, the [+F]-marked element, *Mari* 'Mary', in (99) is marked S together with the only dominating node, the root node. This ensures that *Mari* 'Mary' receives main stress in (99). Similarly, the focused element bearing [+F] in (100), *the map*, is

assigned an S label by (98), together with all the dominating nodes, such as the W, VP, F, IP, F, and FP nodes. As a result the focused element *the map* will receive main stress:[20]

(99)



(100)



Thus, one may conclude that the feature-driven approach to focus is able to account for the basic syntactic and prosodic facts, while maintaining the hypothesis of no direct PF–LF communication implicit in the T-model. Nevertheless, this approach violates Chomsky's (1995c) Inclusiveness Principle, in the sense that the lexical item where [+F] is introduced into the derivation does not have any

specific lexical property corresponding to the feature [+F]. The terminal node is not itself focused; rather it is part of the focus. So [+F] cannot be taken to be an interpretable feature on the terminal node where it is introduced into the derivation. (See section 4.4.3 for more discussion of this issue.)

4.3 The focus-to-accent view

Ever since Jackendoff (1972), the accent-to-focus view was predominant in the literature until recently. This was due to a variety of factors, one of which is the conceptual issue spelt out above. But there were empirical arguments in favor of this view as well. First, as we have seen in the discussion in section 3, the assumption of a syntactic focus feature is a straightforward way to provide a uniform analysis for languages with focus movement and those without it. But recall that the idea so fundamental to this position, namely the discussion of the alleged weak crossover violations, was challenged in section 3.5.4, where it was shown that an alternative explanation of these facts exists that analyzes these cases as discourse violations. Nevertheless, the presence of syntactic focus movement has to be accommodated in any analysis of focus. The assumption of a syntactic focus feature is useful in this regard, given Chomsky's (1995c) proposal that movement is feature-driven. This issue will be addressed in section 4.3.2. In addition, as Reinhart (1995, forthcoming) notes, the focus-to-accent view crucially relies on the distinction between neutral stress and focal stress, which was challenged both empirically and conceptually during the 1980 (see Reinhart forthcoming for a review). However, Cinque (1993) reopened the issue and argued forcefully that the distinction exists and thus a focus-to-accent view might be tenable. To illustrate how such a proposal would work, let us see Reinhart's (1995, forthcoming) proposal in more detail.

4.3.1 Reinhart's (1995, forthcoming) focus-to-accent view

Reinhart (1995, forthcoming) and Neeleman and Reinhart (1998) assume that it is the prosodic make-up of the utterance, rather than its syntactic characteristics, that encodes focus in the grammar. In particular, in Reinhart's theory, focus is not encoded by a syntactic feature; rather the prosody of the utterance determines the possible foci in accordance with the stress-focus correspondence generalization, following Chomsky (1971). The Stress–Focus Correspondence Principle (96) is repeated here for convenience:[21]

(101) **Stress–Focus Correspondence Principle:**
The focus of an utterance always contains the main stress of the utterance.

In particular, Reinhart (1995, forthcoming) argues that the focus of an utterance is determined by its intonation. A particular utterance may have more than one focus interpretation. They define the set of possible foci for a given utterance as follows:

(102) The focus set of IP consists of the constituents containing the main stress of IP. (Reinhart 1995, forthcoming)

Thus the utterance in (103), where main stress falls on the object, has the focus set given in (104). Accordingly, it is felicitous in the context of the questions in (103), indicating IP, VP, and DP-DO focus, respectively:

(103) a. A: What's this noise?
B: My neighbour is building a DESK.
b. A: What's your neighbour doing?
B: My neighbour is building a DESK.
c. A: What's your neighbour building?
B: My neighbour is building a DESK.
(Neeleman and Reinhart 1998: 333, ex. 53)

(104) Focus set: {IP, VP, DP_{DO}}

In Reinhart's (1995, forthcoming) approach, the output of the grammar is an ambiguous utterance with more than one possible focus interpretation. Depending on the discourse conditions, one interpretation is chosen as the actual focus. However, discourse may only select a member of the focus set, and may not select a constituent outside the focus set. Thus the answer in (103a) is inappropriate in the context of the question in (105), as that context requires DP-SU focus, which is not in the focus set of the utterance. It is equally inappropriate in the context of (106), as that requires focus on the V, which is also not in the focus set of the utterance:

(105) A: Who's building a desk?
B: #My neighbour is building a DESK.

(106) A: Has your neighbour bought a desk already?
B: #No, my neighbour is building a DESK.
(Neeleman and Reinhart 1998: 334, ex. 54)

Reinhart (1995, forthcoming) follows Cinque (1993) in arguing that every language has a neutral, unmarked stress pattern, assigned by the nuclear stress rule (NSR). In English, the result of the NSR is main stress on the rightmost constituent, i.e., on the object in a transitive construction. If the focus set defined by the NSR does not contain the intended focus of the utterance, a special operation may apply to place stress on the constituent in question:

(107) Relocate main stress. (Neeleman and Reinhart 1998: 333, ex. 55)

By (107), in the context of (108a), a marked stress (not the one assigned by NSR) is assigned to the DP-SU, and in (108b) to the V. As a result, the focus set of the

utterance, defined by the main stress, contains the relevant constituents, and the utterances are appropriate in their given contexts. In fact, in their contexts, the utterances do not seem marked; they are perfectly natural:

(108) a. A: Who's building a desk?
B: My NEIGHBOUR is building a desk.
b. A: Has your neighbour bought a desk already?
B: No, my neighbour is BUILDING a desk.
(Neeleman and Reinhart 1998: 334, ex. 56)

Reinhart (1995, forthcoming) argues that there is a very precise sense in which the utterances in (108) can be viewed as marked. They both involve an optional operation: stress shift. Stress shift is an optional operation in the sense that performing it is not necessary to save the derivation from crashing at the interfaces. Stress shift does not apply to turn an otherwise ill-formed expression into a well-formed one, as, for instance, movement of the object to [Spec, TP] in English passives does. Rather, the utterance would be well-formed even if stress shift did not apply. Nevertheless, such optional operations are not totally unrestricted. Reinhart argues that they apply if and only if they have an effect on the interpretation. In other words, such operations can be viewed as marked in the sense that they lead to ungrammaticality unless they derive an interpretation that was otherwise unavailable. This intuition is formalized in the following definition:

(109) **Reference set computation at the interface:**
Take fully derived (syntactically and prosodically) structures D_i and their interpretations I_i as ordered pairs. $<D_1, I_1>$ is ruled out at the interface if and only if there exists $<D_2, I_1>$, and D_2 involves fewer operations (syntactic or prosodic) than D_1.
(cf. Reinhart 1995, forthcoming: 48, following Fox 1995b)

To illustrate how interface economy operates, compare the exchange in (108a) with the infelicitous exchange in (110):

(110) A: What's this noise?
B: #My NEIGHBOR is building a desk.

The same utterance is appropriate as an answer to a question that requires subject focus (cf. 108a), but it is inappropriate as an answer to an all-focus (i.e., IP-focus) question (cf. 110). The stress-shifting operation that places stress on the subject is legitimate under a reading that puts focus on the subject, as subject focus was not available unless stress strengthening applied to the subject. The same operation is, however, illegitimate under a reading such as the all-focus reading, because there exists an expression – the neutrally stressed utterance (103a) – where the optional operation did not apply and where the same all-focus reading is available. In this way, Reinhart (1995, forthcoming) accounts for the

well-known generalization that wide focus readings (i.e., focus on a constituent larger than the stress-bearing element) are blocked from certain positions (see Selkirk 1984, 1986, and many others).

To summarize, Reinhart (1995, forthcoming) argues that the set of possible foci of an utterance is determined by the main stress of the utterance. If focus is required on an element that is not in the focus set of the unmarked utterance, where stress is assigned by the NSR, then an optional stress-strengthening operation may assign stress to the element, to make it available in the focus set of the marked utterance. Reinhart is an advocate of the focus-to-accent view. She argues that it is the set of possible foci, rather than the actual focus of the utterance, that is determined by the grammatical representation of the sentence, where grammatical representation is understood in the wider sense of including the prosodic representation as well as syntactic structure.

4.3.2 Focus movement in the focus-to-accent view

Cinque's (1993) and Reinhart's (1995, forthcoming) revival of the focus-to-accent view has become influential for analyses of focus movement. The idea that the focus of an utterance is determined by the prosodic make-up of the utterance led to the formulation of analyses that take focus movement to be essentially prosodically driven.[22]

4.3.2.1 Zubizarreta (1998): *p*-movement

Zubizarreta's (1998) analysis of certain movement operations in Spanish, which she termed *p*-movement, was one of the first in the literature to be proposed along these lines. She observed that alongside the VSO and SVO orders, VOS order is also grammatical in Spanish. In this order the subject is not right-dislocated. An example is given in (111):

(111) a. Quién te regaló la bottella de vino?
who you-dat gave the bottle of wine
'Who gave you the bottle of wine?'
b. Me regaló la botella de vino <u>MARIA</u>.
me-dat gave the bottle of wine Maria
'<u>Maria</u> gave me the bottle of wine.'

As the question in (111a) indicates, the VOS order in Spanish is felicitous as an answer to a question asking for the identity of the subject. Given that (111b) need not be interpreted contrastively, but rather is felicitous in a question–answer pair, Zubizarreta hypothesizes that the stress on the subject is neutral; in other words, it is the NSR rather than her proposed additional focal stress rule that assigns stress to the subject in VOS structures.

As it is a characteristic property of nuclear stress that it allows for focus projection, it is expected that wide focal interpretations are available in VOS structures, just as in VSO and SVO orders. This is not the case. Zubizarreta (1998: 127) offers the following explanation. The VOS order is not a basic order; rather it is

derived from VSO (or SVO) order by preposing the object. The movement operation is a last-resort operation, triggered only if the subject needs to be focused. It is not feature-driven movement, but rather prosodically motivated movement. Hence the term *p*-movement.

An important argument in favor of this conclusion comes from the fact that the VOS order is only allowed in contexts that indicate that the subject is focused. No other constituent can be contrastively focused in the VOS order by the focal stress rule. (This possibility is not excluded in SVO and VSO orders.) This is illustrated in (112):

(112) *Me regaló la botella de VINO María.
me-dat gave the bottle of wine Maria
'Maria gave me the bottle of wine.'

This can be understood if the fronting of the object was motivated by allowing the subject to be positioned where nuclear stress falls. If the focal stress rule applied and placed focal stress on another constituent, the fronting of the object would have been a superfluous operation, thus ruled out by last resort.

Zubizarreta shows that *p*-movement is a strictly local process, and she concludes that the empirical arguments that are available are insufficient to determine whether it applies prior to Spell Out or after Spell Out. She assumes that it applies in the final stretch of the overt syntactic derivation just before the derivation branches to PF and LF. (Her analysis maintains the T-model, although with significant modifications, including the introduction of a separate level of representation at the point of branching. See Zubizarreta 1998 for discussion.)

4.3.2.2 Stress-driven focus movement

A similar analysis of Hungarian focus movement is put forward in Szendrői (2001, 2003). This analysis takes Reinhart's (1995) proposal as its starting point. It also relies on the fact that main stress in Hungarian is assigned to the leftmost constituent of the clause, rather than the rightmost constituent as it is in English or Italian.

Szendrői argues that Brody's (1990b, 1995a) analysis of Hungarian focus is correct as far as the syntactic configuration is concerned: the focus moves to a specifier of a functional head and the verb adjoins to the head leaving its particle behind (see section 3.4.1). However, the motivation for the movement is not that the functional head in question has a [+Focus]-feature. Rather, the focused element moves in order to be in the position where main stress is assigned. As a result, it can be interpreted as the focus by the Reinhartian assumption that focus is identified as the constituent that contains main stress. Thus Hungarian focus movement is not feature-driven; rather it targets the position where main stress is assigned.

There are at least two important characteristics of Hungarian focus movement that follow from this hypothesis. First, focus movement in Hungarian is unique. In other words, utterances with multiple foci involve only a single instance of focus movement. The other foci remain in situ. This is illustrated in (113):

(113) Q: Mit adtál oda kinek?
what-acc gave-you prt who-dat
'What did you give to whom?'
A: A könyvet adtam oda Marinak, és a tollat adtam oda Péternek.
the book-acc gave-I prt Mary-dat and the pen-acc gave-I prt Peter-dat
A':*A könyvet adtam Marinak oda, és a tollat adtam Péternek oda.
'I gave the book to Mary and the pen to Peter.'

This follows from the fact that the NSR assigns a single main stress, so there is a single position in every clause where main stress falls. If focus movement targets this position, only one focused constituent can be moved. The remaining foci acquire stress by a prosodic operation that assigns extra stresses.

Another characteristic of Hungarian focus that is explained by the proposal that Hungarian focus movement is driven by the need for the focus constituent to get stressed is that verb focusing in Hungarian does not involve the separation of the verbal particle from the verb. Given that verb movement strands the particle, the fact that the prt-V order is undisturbed in cases of verb focus suggests that the verbal complex is in situ. So verb focusing appears not to involve movement:

(114) a. Elvitted a gyereket az állatkertbe?
prt-took-you the child-acc the zoo-loc
'Did you take the child to the zoo?'
b. Elvittem a gyereket az állatkertbe.
*Vittem el a gyereket az állatkertbe.
'I took the child to the zoo.'

This is explained in the stress-driven analysis of focus movement, as main stress falls on the verbal complex by the NSR even if it is in situ. Given that the verbal complex occupies a left-peripheral position within the VP, it receives stress by the NSR and thus may acquire focus interpretation in situ. As there is no reason for it to move, it stays in situ.

So Szendrői (2001, 2003) argues that focus movement in Hungarian is prosodically motivated. It targets a left-peripheral position because the main stress rule in Hungarian is leftward oriented. In contrast, main stress in Italian is rightward oriented, as it is in English. But unlike in English, the prosodic operation of stress shift is not available in Italian. Rather, Italian displays focus movement, just as Hungarian does. However, in contrast to Hungarian focus movement, Italian focus movement targets a right-peripheral position, in accordance with the directionality of the stress rule in the language. This is the right-peripheral focus position that was mentioned in section 3.4.3. (See Lambrecht 1994; Szendrői 2001, 2002; for further discussion on this point.)

4.3.2.3 Hungarian focus movement revisited (Horvath 2000)

Szendrői's (2001, 2003) work is not the only account in the literature concerning Hungarian focus movement and prosody. Horvath (2000) provides a reanalysis

of her earlier work on Hungarian focus movement in light of Reinhart's (1995) proposal that stress determines the focus of an utterance. Horvath notes that in accordance with Reinhart's hypothesis, the fronted focused constituent in Hungarian bears main stress. She accepts Reinhart's view that it is this prosodic property that determines the focal interpretation of the constituent, rather than its position. She proposes that the movement of focused constituents in Hungarian is thus not actually driven by the fact that they are interpreted as foci. Rather, it is another distinctive characteristic of Hungarian focus that motivates the movement to the preverbal position: exhaustive identification.

Recall from section 1.3.4 that a characteristic semantic property of Hungarian focus movement is that it provides an exhaustive listing. Thus preverbal focus in Hungarian "exhaustively identifies the proper subset of a contextually relevant set of entities as the one for which the predicate holds" (Horvath 2000: 201). This is illustrated by the contrast in (115). Horvath shows that (115c), which indicates an answer whose focus is not exhaustive, cannot involve focus movement to the preverbal position:

(115) Q: Kit hívtak meg?
- a. A: Jánost hívták meg.
  John-acc invited prt
  'They invited John (and no one else).'
- b. A':Meghívták *(például/többek között) Jánost.
  invited-they for-example/others among John-acc
  'They invited John, for example/among others'
- c. A":*Jánost például hívták meg.
  John-acc for-example invited prt
  'They invited John, for example/among others'

Horvath (2000) concludes that the preverbal position in Hungarian is a grammaticalized position for exhaustive identification. Thus the movement to the preverbal position is in no sense a case of focus movement; rather it is a case of movement for exhaustive identification.

4.4 Focus and prosodic prominence: discussion

4.4.1 Ways of encoding focus in the grammar

The most basic characteristic difference between the feature-based approach to focus and the prosodically oriented approaches is that the former encode focus in the syntactic representation, while the latter do so in the prosodic representation.

Recall that in section 1.2.2 it was argued that GB and Minimalist approaches to focus are the strictest, in the sense that they advocate encoding focus in the grammar directly and unambiguously. Let us note that in this light, another characteristic difference between the feature-driven approach and the prosodically oriented is that the former determines the unique and unambiguous focus

of the utterance, while the latter define the set of possible foci. The actual focus is selected from this set by the discourse context. Thus, in the focus-to-accent view, there is no one-to-one correspondence between an expression (comprising a syntactic representation and a prosodic representation) and its focus interpretation. Rather there is a one-to-many correspondence; each expression is associated with a set of potential foci.

A final general point with respect to the accent-to-focus view is that stating the Stress–Focus Correspondence Principle at the interface means that some kind of marking of focus that is legible from the prosodic representation should be universal. Being at the interface between the grammar and the conceptual system, it is highly unlikely that there would be a sufficient system of overt cues that would enable the acquisition of this principle. Thus, the stress-based theory makes a strong and easily falsifiable prediction: namely, there is no language where focus is marked *only* by a specific syntactic position without an accompanying prosodic marking (stress or tone) or a morpheme. In contrast, the absence of such languages would be unexpected under the accent-to-focus view.

4.4.2 Adjacency, edge-sensitivity, and directionality

Recall that feature-based approaches to focus movement fall in two classes: those that argue that focus is essentially parallel to case in the sense that there is an adjacency requirement between focus and verb (section 2); and those that argue that focus movement is similar to *wh*-movement (section 3). Let us now examine the stress-based approaches to focus movement in comparison to these approaches.

In a stress-driven approach to focus movement, the quantificational characteristics of focus movement are hard to capture. To the extent that focus movement is really movement for stress, it is unclear why it should be in complementary distribution with *wh*-movement, license parasitic gaps, or instantiate any other characteristics that are normally associated with operator-variable dependencies. Under the view that focus movement is in fact movement for exhaustive interpretation, the quantificational properties of the focus construction are easier to understand, as in this case some kind of operator is involved.[23]

A potential advantage of the stress-based view is that it offers a new perspective on the syntax of focus movement in the following sense. Cross-linguistically, focus movement seems to instantiate characteristics that are typical prosodic properties, such as adjacency, edge-sensitivity, and directionality.

Adjacency requirements are attested elsewhere in the grammar. Many such areas are typically prosodic in nature. The most straightforward case is cliticization. Clitics, which tend to instantiate insufficient prosodic weight, have to appear either immediately to the left or immediately to the right of the verb (or the finite auxiliary or the complementizer) in many languages.[24]

Edge-sensitivity is also often attested in prosody. For instance, extra-metricality is a typical edge phenomenon. For example, in syllables the nucleus is the most sonorous. Sonority increases from the start of the onset toward the nucleus, and decreases after the nucleus toward the end of coda cluster. In English, at the edges of the phonological word, an additional coronal [s] may be added to the

beginning of an onset cluster even if it is followed by a less sonorous consonant, as in *s[tri*, or to the end of a coda cluster even if it is more sonorous than the final consonant of the coda cluster, as in *ark]s*.

Headedness is also edge-sensitive. For instance, in foot structure, iambs are right-headed, while trochees are left-headed. There are feet that have three moras, but these have either left-aligned heads or right-aligned ones; there is no foot structure involving three moras where the middle one is heavy and the ones on the edges are light. As Van der Hulst (1999) argued, stress systems in general are often edge-sensitive.

Finally, left and right directionality is also highly relevant in stress systems, as well as to cliticization (as in enclitics and proclitics). Although left and right asymmetries are often invoked in syntax as well, hierarchical notions such as c-command are the propotypical syntactic cases.

To sum up, the potential advantage of a prosodically oriented perspective on focus movement is that it easily accommmodates edge-sensitivity, adjacency, and left–right directionality, which are all widely attested to be relevant properties of focus constructions. The potential weakness of this approach is that it does not easily accommodate quantificational properties of focus constructions that are characteristic of operator-variable dependencies, unless something extra, such as an operator, is assumed.

4.4.3 The Inclusiveness Principle (Chomsky 1995c)

Another difference between the accent-to-focus view and the focus-to-accent view is that focus is encoded syntactically in the former, but not in the latter. As was shown at the beginning of this section, the latter view gives up the hypothesis of no direct PF–LF communication, or in other words the T-model. This appears to be a shortcoming, although see Jackendoff (1996, 2002b) for arguments to the contrary.

Whatever the nature of the architecture, the accent-to-focus view is not without conceptual difficulties of its own: this approach violates Chomsky's Inclusiveness Principle, which is maintained in the focus-to-accent view. Let us see the argumentation in detail.

As Zubizarreta (1998) observes, the notion of a [+Focus]-feature is conceptually problematic. In fact, Chomsky (1995c: 228) states that:

> a 'perfect language' should meet the condition of inclusiveness: any structure formed by the computation . . . is constituted of elements already present in the lexical items selected for N [the numeration]; no new objects are added in the course of the computation apart from rearrangements of lexical properties . . . Let us assume that this condition holds (virtually) of the computation from N to LF ($N \rightarrow \lambda$).

In the original formulation of the feature-based approach adopted here (Jackendoff 1972), [+F] violates the Inclusiveness condition. In order to see this, recall the original proposal of Jackendoff (11), repeated here for convenience:

(116) **[+F] marking (first version):**
Mark any constituent as [+F].

This proposal violates Inclusiveness in a very precise sense. According to Inclusiveness, in a Minimalist grammar there are two ways a node may acquire some property, i.e., a feature. A terminal node may be assigned a feature from the lexicon. A non-terminal node has to inherit its features from its daughters, which created the non-terminal node via merger. This is formulated as follows (cf. also Chomsky 1995c: 228):

(117) **Inclusiveness:**
a. The properties of a non-terminal node are fully recoverable from its daughters.
b. The properties of terminal nodes are recoverable from the mapping principles [between the lexical-conceptual system and the grammar].
(modified from Neeleman and Van de Koot 2002: 529)

In effect, Inclusiveness ensures that no information may enter the derivation via a non-terminal node, and thus that all the information present in the tree ultimately comes from a terminal node.

Given the first part of the definition of Inclusiveness (117a), it is not possible for a non-terminal node to possess a [+F]-feature if neither of its daughters has that feature. As a first step toward a solution, one may assign the [+F]-feature to terminal nodes, allow for its percolation to non-terminal nodes (cf. Selkirk 1984), and reformulate the LF-Interpretation Principle accordingly. The reformulated principles of [+F]-marking, percolation, and interpretation are given below:

(118) **[+F] marking (second and final version):**
Assign [+F] to a lexical item.

(119) **[+F] percolation:**
Allow the percolation of [+F] from a node to a dominating node.

(120) **[+F] interpretation at LF:**
Interpret the largest [+F]-marked constituent as focus.

Note that this state of affairs violates Inclusiveness in the sense that it still contravenes (117b), the second clause of the definition – thus only in a weaker sense. (An approach based on (116) violates inclusiveness in a stronger sense, as it violates both clauses of (117).) The fact that [+F] satisfies the first clause, (117a), means that it behaves like other syntactic features in the grammar. This is important, as a syntactic encoding of a pragmatic notion would be rather unwelcome if it involved characteristics that are otherwise not normally present in syntax. Nevertheless, [+F] is clearly not a lexical feature. As is clearly stated by Jackendoff (1972), the notion of focus itself is not a property of a constituent, but rather a relation. It encodes the information status of a constituent relative to the rest of

the utterance. If a constituent is focused, then the rest of the utterance is backgrounded (or presupposed). For this reason, focus may never be a property of a single node, let alone a lexical property of that node. So in this sense, an approach that encodes focus in the syntactic computation, such as the feature-driven approaches, will always violate Inclusiveness. (See Szendrői 2004 and Neeleman and Szendrői 2004 for further discussion on this issue.)

5 Conclusion

This chapter was concerned with focus movement. A language has a 'focus construction' if a focused constituent (at least optionally) appears in a non-canonical syntactic position. Jackendoff's (1972) invention, the [+Focus]-feature, and Chomksy's (1976) observation that focus gives rise to weak crossover effects paved the way for an analysis of focus constructions as instances of focus movement. The analyses were presented in three groups, which also by and large correspond to their order of appearance.

The first group of analyses, which includes, for instance, Horvath (1986), regards the often-attested adjacency requirement between the focus and the V (or other functional head, like I or C) as the crucial characteristic of focus constructions. Advocates of this view argue that focus is in important respects similar to case. One of the main advantages of this view is that it is able to accommodate both preverbal and postverbal focus positions.

For the second group, which includes, for instance, Rizzi (1997), the crucial factor is that in focus constructions the focal element is often clause-initial and in complementary distribution with a *wh*-element. Thus they establish a parallel between focus and *wh* in the sense that they argue that focus movement is like *wh*-movement. One immediate advantage of such a view is that it easily accounts for the quantificational properties of focus constructions.

A third, newly emerging set of analyses argues that the characteristic property shared between focus in languages like English and languages like Hungarian is that focus bears main accent, in irrespective of the presence or absence of syntactic focus movement. These analyses therefore emphasize the prosodic characteristics of focus constructions. The focus-to-accent view is incompatible with the standard T-model as the architecture of the grammar, while it maintains Chomsky's (1995c) Inclusiveness condition.

NOTES

1 Infelicity is marked by #. Underlining indicates focus; capitals show the position of main stress.
2 See section 4 for approaches that question the existence of a focus feature.
3 Horvath claims that (23b) is acceptable as an answer to echo questions or as correction, but the author disagrees with this judgment. According to the author's judgments (23b) is marginal even as a correction or as echoic.

Consequently, the echoic patterns illustrated in (15) and (18) for English clefts and Heavy NP Shift respectively cannot be constructed for Hungarian preverbal focus, which shows that preverbal focus in Hungarian is a focus construction according to the definition in (19). This is shown in (i):

(i) A: János a PÉNZESZACSKÓT adta oda Péternek.
John the money-satchel-acc gave prt Peter-dat
'John gave to Peter the money satchel.'
B: *Nem, János a pénzeszacskót adta oda MARINAK.
No, John the money-sacthel-acc gave prt Mary-dat
'No, John gave the money satchel to Mary.'
B': Nem, a pénzeszacskót, János MARINAK adta oda.
No, the money-satchel-acc John Mary-dat gave prt
'No, John gave the money satchel to Mary.'

4 Gervain (2002) showed that speakers who fall into the so-called 'resumption dialect' accept such island violations.

5 Focus movement in Hungarian is not sensitive to subject islands either. Kiss (1987) argues that this is the case because clausal subjects are in a postverbal position, and thus not on a left branch like English clausal subjects:

(i) Marinak$_i$ volt kétséges hogy át adják-e a díjat t_i.
Mary-dat was doubtful that prt give-they-q the award-acc
'It was doubtful whether they would give the award to Mary.'

6 Another problematic issue is raised by languages such as Italian, where more than one structural position can be identified as focus positions. A detailed discussion of this problem is given in section 3.4.3, where Italian focus is discussed.

7 See also Lecarme (1999) for a similar claim in Somali.

8 For a more detailed description of this type of analysis of focus movement, see section 3.3 below.

9 Note that to obtain the existential presupposition at LF, the *wh*-element translates into a variable, while the focal element is replaced by one. Thus, semantic considerations establish a parallel between the non-focal part of an utterance and the *wh*-question. There is no such parallel established between the semantics of a focal element and the *wh*-element itself. So strictly speaking, there is no semantic argument for the parallel treatment of focus and *wh*, only for a parallel treatment of the non-focal part of an utterance with focus and a *wh*-question.

10 Note, however, that as Lipták (2001) convincingly argues, even in languages like Hungarian, a closer inspection of the parallelism reveals many problems with a fully unified treatment of *wh* and focus.

11 Since the appearance of the *Wh*-criterion a whole body of works has been devoted to the analysis of multiple *wh*-questions. It is no longer standardly assumed that multiple *wh*-questions would involve LF movement. See Reinhart (1998), Boškovič (2002), and chapter 44 for alternative proposals and an overview of the relevant literature.

12 Uriagereka (1995b) questions the validity of Ortiz de Urbina's V2-type analysis, mainly on the basis that the affixal Comp attaches to Infl from the right, thus there is no evidence for a leftward C head in the language. Ortiz de Urbina (1999) provides

further evidence for the presence of a functional head in the C-domain that is projected on the left, rather than the right. He suggests that the split-CP hypothesis of Rizzi (1997) might be sufficient to solve the puzzle. There is a Focus head on the left and an additional Force head on the right. It is the latter that contains the affixal complementizer morphology in embedded clauses.

13 But see Kayne (1998) for an analysis that takes focus movement in English to be overt as well.

14 It is precisely this entity, the focus of the presupposition, that Williams (1997) identifies as topic.

15 The inappropriateness of (75a) will be dealt with below.

16 Lecarme (1999) also proposes that the [Spec, CP] position is in fact a case position in this language.

17 As Reinhart (1981) points out, these cases also illustrate that topics can introduce new entities to the discourse.

18 See, for instance, Miller et al. (1997) or Vogel and Kenesei (1990) for support.

19 As we will shortly see, an approach such as Reinhart's has to give up the hypothesis of no direct PF–LF communication (cf. 97). At the same time, it maintains Inclusiveness, as focus in this theory is not encoded in the syntactic computation where Inclusiveness is supposed to hold.

20 Note that this brief sketch glosses over the important issue of the existence of an independent nuclear stress rule. Two approaches are possible. First, the [+F] interpretation principle at PF, (98), only applies if an element with 'marked' focus is present, while in the neutral cases, a nuclear stress rule assigns an S label to the most deeply embedded (or rightmost) element and to all its dominating nodes, ensuring that unmarked stress falls on this element. This was Jackendoff's original proposal, also taken over by Zubizarreta (1998).

Alternatively, one may assume that main stress is always defined by [+F], but [+F] is placed on the most embedded or rightmost element in the unmarked cases. Apart from empirical considerations, the choice between these two approaches raises conceptual issues, which are discussed in more detail in Szendrői (2001) and Neeleman and Szendrői (2004).

21 Other proposals in the literature that take a focus-to-accent perspective include Williams (1997) and Schwarzschild (1999).

22 Other similar proposals include: Costa (1998) on Portuguese; Büring and Gutiérrez-Bravo (2000) on German and Spanish; Arregi (2001) and Elordieta (2001) on Basque.

23 Weak crossover violations are similarly unexpected, but recall the argumentation put forward in section 3.5.4 against the relevance of weak crossover for the syntax of focus.

24 See Neeleman and Weerman (1999) for a prosodic approach to case adjacency.

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27 Free Relatives

HENK VAN RIEMSDIJK

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1 Introduction

A relative clause is a clause that modifies a phrasal constituent, generally a noun phrase.[1] We call the noun phrase that is so modified the head of the relative clause. There are two main positions in which the head can be found with respect to the modifying clause: internal and external. In internally headed relatives, the head NP is inside the relative clause in the position it is expected to have according to the laws governing the syntactic behavior of elements within that clause. This is so despite the fact that the same NP must also satisfy the needs of the matrix clause. English and, more generally, Indo-European languages do not

have any internally headed relatives (but see section 5.3 for a qualification of this statement). Japanese, however, does, as is shown in the following example from Grosu (1994):[2]

(1) [John-ga **ronbun-o** kaita-no]-ga Linguistic Inquiry-ni notta.
John-nom article-acc wrote-NM-nom Linguistic Inquiry-loc appeared
'The article that John wrote appeared in Linguistic Inquiry.'

In (1) the NP *ronbun-o* 'the article' is in every respect the object of the verb *kaita* 'write' in the embedded clause. But in addition, it functions as the subject of *notta* 'appear' in the matrix clause. In this respect, internally headed relative clauses are in sharp contrast with the externally headed relative clauses which are much more familiar from the Indo-European languages. The typical grammatical way of forming relative clauses in English is (2):

(2) I returned *the book* [(that) you finished reading [e] to your children] to the library.

In (2), the head is in its matrix position, while the corresponding position inside the relative clause is empty, indicated by [e] here. There is a sense, then, in which the head has to satisfy a dual set of requirements: those of the relative clause and those of the matrix clause. How does the grammar solve this problem? In an example like (2), the answer is not immediately obvious, since all we have is a complementizer (*that*) at the beginning of the clause and a missing element inside it. But there are alternative ways of expressing the external relative that reveal what is going on:

(3) I returned the book$_i$ [which$_i$ you finished reading [e]$_i$ to your children] to the library.

The relative pronoun *which* is the element that originates in the embedded object position.[3] The relative pronoun is moved from that position by the standard case of A'-movement, generally referred to as *wh*-movement, into the initial position of the relative clause, next to the external head. Relative clauses without an overt relative pronoun such as (2) are derived in very much the same way as (3), the only difference being that the relative pronoun is either deleted or phonologically null. The question which arises immediately is what the relation is between the head and the (overt or covert) relative pronoun. Clearly, the relation is not arbitrary. If we say that the relative element is a pronoun, what we mean is that it is a kind of place holder for, a link to, the head noun phrase. To put it differently, we say that the head is the antecedent of the relative pronoun. One of the ways in which this relation, indicated by the co-indexation of the head with the relative pronoun in (3), manifests itself is the fact that the nature of the head determines, in part, the choice of the relative pronoun. The fact that in (3) *which* must be chosen instead of *who* is a consequence of the fact that its antecedent is non-human, for example.

With this much as background, consider now an example like (4):

(4) You should return *what you have finished reading* to the library.

What we seem to have here is a relative clause without a head. That is, there is neither an internal nor an external head to be found. Such relative clauses are usually called 'headless relatives' or 'free relatives', and they are the central topic of the present chapter. Before turning to a more detailed description of the main properties of free relatives (FRs), however, we must address an alternative analysis which immediately suggests itself. Why can't we say that the italicized clause in (4) is an embedded (or indirect) question? In other words, why can't we equate a sentence like (4) with a superficially similar one such as (5)?

(5) Could you tell me *what you have finished reading*?

The difference has to do with the selectional behavior of the two matrix verbs. They differ in that *return* selects noun phrases while *could you tell me* selects questions. This becomes clear immediately if we replace the *wh*-clause with an unequivocal question (one introduced by *whether*, for example) or by a real noun phrase such as *War and Peace*:

(6) a. *You should return *whether you have finished your book* to the library.
b. You should return *War and Peace* to the library.

(7) a. Could you tell me *whether you have finished your book*?
b. *Could you tell me *War and Peace*?

Similarly, a preposition like *with* cannot take a question as its object, but an NP object is permitted and so is an FR:

(8) a. *I am going to swat this fly with *whether you have finished your book*.
b. I am going to swat this fly with *War and Peace*.
c. I am going to swat this fly with *what you have finished reading*.

As a preliminary conclusion,[4] we may record that questions are pure clauses, CPs, while FRs are noun phrases, that is, NPs or DPs, which contain a CP. This conclusion immediately raises a number of questions, however. If an FR is a DP, which contains a CP, then what exactly is the structure? More specifically, the obvious question to ask is if there is a head at all. In other words, is the structure essentially as in (9a) or as in (9b)?

(9) a. $[_{DP}$ CP]
b. $[_{DP}$ DP CP]

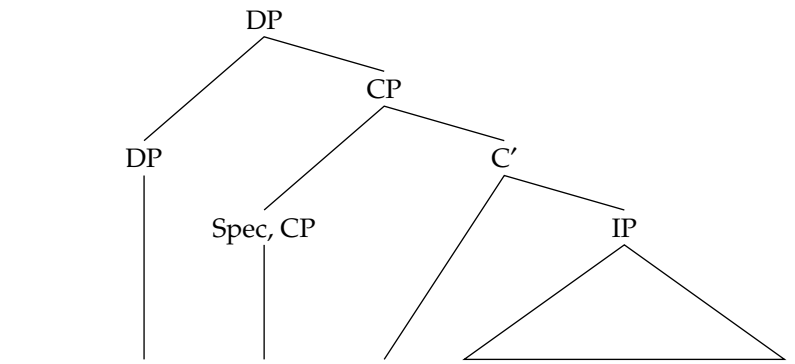
And if there is a head, as in (9b), is it entirely empty or is it phonetically realized in some way? Both options can be interpreted in a number of ways:

(10) a. Head is empty:
- (i) If the DP is truly empty, then this is indistinguishable from (or identical to) (9a).
- (ii) There is an empty element in the head position – most likely PRO or pro.

b. Head is filled:
- (iii) There could be a pronominal element in the head position which ends up being coalesced with the *wh*-element, e.g., *it/that* + *wh* → *what*.
- (iv) The *wh*-word (or -phrase) could be in the head position instead of being in its canonical Spec, CP-position.

We may schematically represent these options in the following manner:

(11)



(i)	e	what$_i$	C^o	you have finished reading e$_i$
(ii)	PRO/pro$_i$	what$_i$	C^o	you have finished reading e$_i$
(iii)	it/that$_i$	*wh*-$_i$	C^o	you have finished reading e$_i$
(iv)	what$_i$	e$_i$	C^o	you have finished reading e$_i$

The main discussion has been about the choice between (ii) and (iii/iv). That will be the topic of section 2. The conclusion will be that, at least in many cases, the *wh*-word/phrase is in the Spec, CP position. This conclusion leads immediately to the question of whether the head position is filled by some phonetically unrealized element, as in (ii), or is entirely absent, as in (i). The general aspects of this issue are dealt with in section 3. In this discussion, one set of phenomena has played a principal role, viz. matching vs. non-matching; that is, the extent to which the *wh*-pronoun/phrase must satisfy in and by itself the requirements (selection, subcategorization, case marking) of both the embedded clause and the matrix clause. These matching effects are discussed in section 4. In determining what the nature of the missing head is, semantic considerations play a considerable role. In fact, many FRs are ambiguous. An example like (4), repeated here as (12a), can be paraphrased as either (12b) or (12c):

(12) a. You should return *what you have finished reading* to the library.
b. You should return that (the thing, sc. the book) which you have finished reading to the library.
c. You should return anything (whatever it is) which you have finished reading to the library.

These readings, and the relevance they might have for the determination of the nature of the missing head, constitute the topic of section 5. Some of these semantic issues reactivate the question of whether FRs and questions are really that different, and consequently what the structural representation of FRs is. This issue is the central topic of section 6.

2 Where is the relative pronoun?

One of the main questions that arise in the context of FRs, as stated in (9) and (10) above, is whether the *wh*-word, or, more generally, the relative pronoun, occupies the position of the head of the relative clause or is in its canonical complementizer (Spec, CP) position. The former analysis, which has come to be called the Head Hypothesis[5] (HH), came to fame by an article by Bresnan and Grimshaw (1978). And the opposition to this hypothesis, gathered under the name of COMP Hypothesis (CH),[6] was initiated in Groos and Van Riemsdijk (1981).

The main reason why this debate was fairly heated and achieved a certain notoriety is to be found in the role that it played in one of the major issues that raged through the field in the late 1970s. This was the question of whether unbounded processes exist in grammar. One of the results in the early 1970s, in particular the theory outlined in Chomsky (1973), was that long-distance processes could be decomposed into chains of successive, local steps in a derivation, the standard example being the analysis of long *wh*-movement in terms of a series of successive-cyclic movements from COMP to COMP. The idea that transformational processes were limited to local domains was embodied in the Subjacency Condition, the cornerstone of Bounding Theory. Suppose now that the HH is correct. This would mean that an FR like the one in (12a) has a structure roughly like that in (13):

(13) $[_{DP}\ [_{DP}\ what_i]\ [_{CP}$ you have finished reading $[e]_i]]$

Clearly, there is a relationship between the *wh*-head and the gap in the FR. This relationship is marked here by co-indexation for expository purposes. The question is, what is the nature of the rule responsible for this dependency? Presumably, it is not movement, since the *wh*-word is in the head position and the null hypothesis would be that, like the heads of regular headed relative clauses, it is base generated there.[7] Bresnan and Grimshaw (1978) proposed to describe the dependency in question in terms of a deletion rule which they call Controlled

Pro Deletion. The idea of the rule is that the position of the gap in (13) is underlyingly occupied by a pronominal element, a (resumptive) element like *it*, *him*, *them*, *then*, or *there*, which is subsequently deleted under referential identity with the head.

Observe now that this rule of Controlled Pro Deletion must be able to apply to head–pronoun pairs over an arbitrary distance, as shown in examples like (14):

(14) $[_{DP}\,[_{DP}\,what_i]\,[_{CP}$ you told Bill that Mary said he should have finished reading $[e]_i]]$

On the basis of this observation, Bresnan and Grimshaw concluded that unbounded transformational processes could not be entirely eliminated from the theory of grammar. But, of course, the conclusion depended heavily on the validity of the arguments supporting the HH. These arguments have to do with one of the most salient properties of FRs: the matching effects which they exhibit.

Consider the following paradigm:

(15) a. We should interview the woman with whom he goes out?
b. *We should interview with whom/whoever he goes out?

(16) a. We should talk to the woman whom he dates.
b. We should talk to whom/whoever he dates.

(17) a. We should talk to the woman with whom he goes out.
b. *We should talk to with whom/whoever he goes out.

(18) a. We should talk to the woman to whom he talks.
b. We should talk to whom/whoever he talks.

In (15) the head of the relative clause is a DP while the *wh*-phrase is a PP. When the head is missing, the result is ungrammatical. This is due to the fact, somehow, that the verb *interview* can only take DP direct objects, not PPs. This is confirmed by the fact that in (16) the situation is reversed. Here we have a matrix preposition, which takes a DP object, and the FR in (16b) indeed starts with a *wh*-phrase, which is a DP. Apparently the categorial requirements in the matrix clause and in the relative clause can be different in the case of headed relatives, but must be identical in the case of FRs. This categorial matching effect is further confirmed by (17), where the matrix preposition cannot take an FR which is introduced by a PP. On the other hand, if the two prepositions (the matrix one and the embedded one) are identical, the result is again (more or less) grammatical, though one of the two prepositions disappears (see section 4.1.2 for more discussion of the missing P phenomenon).

This categorial matching effect is elegantly explained if we assume the HH. The *wh*-phrase is in the head position and must, therefore, satisfy matrix requirements just as regular heads do. The fact that it must also satisfy the embedded

requirements follows from the identity requirement on the rule of Controlled Pro Deletion. A DP-head cannot cause the deletion of a PP-pronominal, etc.

In addition to the categorial matching effect, matching can also be observed in the domain of case marking. German serves as a language which exhibits case matching. Consider the following examples:[8]

(19) a. Wer_{NOM} nicht stark ist muss klug sein.
who not strong is must clever be
'Who is not strong must be clever.'
b. *Wen/*wer Gott schwach geschaffen hat muss klug sein.
whom_{ACC}/who_{NOM} God weak created has must clever be
'Who God has created weak must be clever.'
c. *Wem/*wer Gott keine Kraft geschenkt hat muss klug sein.
who_{DAT}/who_{NOM} God no strength given has must clever be
'Who God has given no strength must be clever.'

(20) a. Ich nehme wen du mir empfiehlst.
I take whom_{ACC} you me recommend
'I take whom you recommend to me.'
b. Ich nehme *wem/*wen du vertraust.
I take who_{DAT}/whom_{ACC} you trust
'I take who you trust.'
c. Ich nehme *wer/*wen einen guten Eindruck macht.
I take who_{NOM}/whom_{ACC} a good impression makes
'I take who makes a good impression.'

(21) a. Ich vertraue wem du vertraust.
I trust who you trust
'I trust who you trust.'
b. Ich vertraue *wen/*wem du mir empfiehlst.
I trust whom_{ACC}/who_{DAT} you me recommend
'I trust who you recommend to me.'
c. Ich vertraue *wer/*wem einen guten Eindruck macht.
I trust who_{NOM}/who_{DAT} a good impression makes
'I trust who makes a good impresion.'

In (19) the FR is in the subject position, in (20) it is in a direct object position, and in (21) it is in a dative object position. In other words, the matrix case requirements are nominative, accusative, and dative respectively. The a-sentences show that the FR is well-formed if the relative clause case requirement is identical to the matrix requirement: nominative in (19), accusative in (20), and dative in (21). Whenever the relative clause case requirement does not match the matrix requirement, as illustrated in the b- and c-examples, the result is ungrammatical. That is, the corresponding meaning cannot be expressed by means of an FR – instead a headed relative clause construction must be used.

The same reasoning as was used in the case of categorial matching applies here. By assuming that the *wh*-phrase of the FR is in the head position, we explain why it must meet the matrix case requirements, while the matching with the embedded case requirements follows from the identity condition imposed on the rule of Controlled Pro Deletion.

Against this analysis of FRs and, concomitantly, against this argument in favor of the view that unbounded deletion rules exist, Groos and Van Riemsdijk (1981) presented strong evidence that at least in some languages the *wh*-phrase occupies the Spec, CP position in FRs. The main argument that these authors present is based on the way in which relative clause extraposition (see chapter 25) applies to FRs. The argument is based on German and Dutch. Illustrations will be exclusively from German. Consider the following placement possibilities for headed relative clauses:

(22) a. Der Hans hat [das Geld, das er gestohlen hat], zurückgegeben.
the Hans has the money, which he stolen has returned
'Hans has returned the money that he has stolen.'
b. Der Hans hat [das Geld] zurückgegeben, [das er gestohlen hat].
the Hans has the money returned which he stolen has
'Hans has returned the money that he has stolen.'
c. *Der Hans hat zurückgegeben, [das Geld, das er gestohlen hat].
the Hans has returned the money which he stolen has
'Hans has returned the money that he has stolen.'

In (22a), the whole DP, including the relative clause, is in the canonical direct object position. In (22b), the relative clause is extraposed. What (22c) shows, however, is that the whole DP cannot be extraposed, a process that would generally be referred to as Heavy NP Shift. Basically, Dutch and German do not have Heavy NP Shift.[9] With this in mind, consider now the question of how we expect FRs to behave, depending on whether we adopt the HH or the CH. On the HH, we expect the *wh*-phrase to remain in situ to the left of the verb under relative clause extraposition, while the rest of the clause would extrapose. On the CH, however, we expect to find all of the phonetically realized elements together undergoing extraposition, while the empty head would remain (invisibly) in situ. The latter is what we actually find:

(23) a. *Der Hans hat [was] zurückgegeben, [er gestohlen hat].
the Hans has what returned he stolen has
'Hans has returned what he has stolen.'
b. *Der Hans hat [e] zurückgegeben, [was er gestohlen hat].
the Hans has returned what he stolen has
'Hans has returned what he has stolen.'

This straightforwardly shows that the HH cannot account for FR-extraposition in German (and Dutch).[10] And in view of the fact that these languages exhibit

categorial matching effects in very much the same way as English does, and that German in addition is subject to full-scale case matching, we must conclude that another way must be found to derive matching effects in FRs.

There are several other considerations which favor the CH over the HH, of which one deserves to be mentioned that has to do with the absence of the complementizer in the FR on the HH. If the *wh*-phrase is in the head position, then what follows it must be the relative clause. The null hypothesis would be that this clause, as in the case of headed relatives, is a CP (an S′ in older versions). Taking things a step further, the null hypothesis would then be that the canonical positions under CP, viz. Spec, CP and C°, have the same properties as in headed relatives. In other words, we would expect the following two paradigms to be fully identical:

(24) I put [the pie] [which/*which that/that/Ø you prepared] in the refrigerator.

(25) I put [what] [*which/*which that/*that/Ø you prepared] in the refrigerator.

In actual fact, they are not. In the case of the FR, (25), both positions must be empty. Similarly, if the position relativized is the subject position,[11] we get a reverse paradigm, as shown in the following two examples:

(26) [The pie] [which/*which that/that/*Ø was in the refrigerator] tasted bad.

(27) [What] [*which/*which that/*that/Ø was in the refrigerator] tasted bad.

The bracketing given in examples (24) through (27) is, of course, that of the HH. Bresnan and Grimshaw (1978) are perfectly aware of this problem. They propose to solve it by assuming that the clause that follows the free relative head is not a full CP (in their terms: S′) but rather a reduced clause, IP (in their system: S). The stipulative nature of such an assumption[12] compels us to look for a more principled solution, however.

If, indeed, we now contrast the above examples with the corresponding bracketings under the CH, a rather different picture results:

(24′) I put [the pie] [which/*which that/that/Ø you prepared] in the refrigerator.

(25′) I put [—] [what/*what that/*that/*Ø you prepared] in the refrigerator.

(26′) [The pie] [which/*which that/that/*Ø was in the refrigerator] tasted bad.

(27′) [—] [What/*what that/*that/*Ø was in the refrigerator] tasted bad.

While this way of presenting the paradigm does not bring out a full parallelism between the headed and the headless relative, one perfectly natural auxiliary hypothesis will do the trick. This is to say that in a free relative, unlike in a headed relative, the *wh*-word may not be absent for reasons having to do with recoverability. Thereby, the ungrammaticality of the third and fourth options in (25′) and (27′) is accounted for, and full parallelism is achieved.

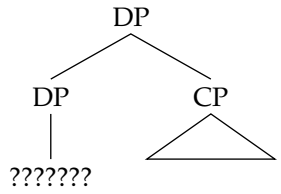
These considerations make it very difficult to maintain the idea that the HH could be correct for either English or languages like Dutch and German. While this does not exclude the possibility that FRs in some other languages might be constructed according to the HH, or, in fact, that both structures might be available in some languages, two main analytical questions arise from the adoption of the CH:

(i) What is the status of the empty head? (see section 3)
(ii) How do we now account for matching effects? (see section 4)

3 The status of the empty head

The early work on FRs, up to Bresnan and Grimshaw (1978) and Groos and Van Riemsdijk (1981), had been carried out in a framework preceding Government and Binding Theory (GB). In this pre-GB framework, traces and PRO did exist, but no systematic account of their contrasting properties had yet been given. This must be at least part of the reason why these authors are not very explicit as to the nature of the empty head on the CH. Bresnan and Grimshaw assume, without further discussion, that the structure of FRs on the CH would have to be as in [$_{DP}$ CP] (9a), while Groos and Van Riemsdijk assume a structure more like (9b), graphically shown here as (28):

(28)



But they too largely ignore the issue of what this empty DP is like, because in their account the *wh*-phrase in Spec, CP fulfills all the functions which the head of a headed relative clause normally fulfills. Grosu (1994) calls this the "head bypass analysis." Somewhat more specific versions of this type of approach have been presented in Hirschbühler and Rivero (1981, 1983) and Harbert (1983b). But if the empty category representing the DP head has no properties at all, then it is as if the head is absent, and we are back with (9a), that is, with a structure like [$_{DP}$ CP]. But if that is the case, then why not go one step further and assume that the FR is simply a CP whose Spec is accessible to government from the outside? This is indeed a logical possibility. But the type of argument presented in

section 2 concerning the distribution of FRs as opposed to regular complement or adjunct CPs suggests otherwise. If the FR as a whole can have the distribution of a DP, then how can this fact be derived in a pure CP analysis? We would have to assume that the accessibility of a DP in the Spec, CP suffices to determine the distribution of the CP, but the question is how. One way in which this could be done is explored in section 6.

It should be noted at this point that any head bypass approach is subject to one major line of criticism: any such analysis violates the theta-criterion. Consider a simple case like *I ate what you cooked*. Here *what* heads a chain whose foot is the direct object of the verb *cook*; hence the chain is theta-marked by the verb. But now, if we say that *what* (and not the whole FR or its empty head) is the target of theta-government by the matrix verb *eat* as well, that chain will be assigned two theta-roles and thus constitutes a theta-criterion violation. Groos and Van Riemsdijk (1981) were not concerned about this because their analysis was pre-GB, but subsequent work tried to explore ways to avoid this problem. The three-dimensional approach, which we will return to in section 6, may well be a way out, but first we will address a number of more orthodox ways to deal with the problem.

The obvious alternative to the head bypass approach is to assume that the empty head DP in (28) is filled with an empty category of an identifiable kind. Clearly, the empty category cannot be a trace, as there is no plausible candidate for anything having been moved out of the head position. Hence the empty category must be either PRO or pro. One might think that PRO can be dismissed immediately, since the FR can occur in governed positions, and then PRO, being the head of the containing DP, would be governed. This is valid reasoning only up to a certain point. Recall that we are still assuming that Spec, CP is subject to government (for category selection and for case) from outside the DP. Now, if we assume that the Spec, CP absorbs government entirely, the empty head of the DP would be ungoverned in all cases, and hence PRO would be tolerated. Observe first, however, that this approach will not avoid the theta-criterion problem. Furthermore, we would have to ask what the control properties of this PRO are. Since actual control by an identifiable controller does not seem to obtain, the only option is to interpret PRO as being arbitrary. As will be discussed in somewhat greater detail in section 5, FRs are either definite/specific, as in (29) or universally quantified, as in (30):

(29) You can't make a pancake with what you bought (=with the thing(s) that you bought).

(30) I will invite who(ever) you tell me to (=everybody that you tell me to invite).

It is an interesting question whether PRO_{arb} can be assumed to cover exactly this range of cases. The answer, at first sight, seems to be no, but so far, modulo some discussion in Grosu (1989), Harbert (1983b), and Suñer (1984b), the issue still remains to be investigated in detail.

Turning now to the second option, could the empty head be pro? This seems a more likely road to success in that pro can occur in governed positions. Exploiting this property, we are led to assume that the pro is identified (or licensed) by some outside element, and that any sensitivity of the *wh*-word in Spec, CP to matrix influences must be mediated by this pro. This is essentially the approach that has been pursued in Suñer (1984b) and Grosu (1994). In view of the fact, however, that matching is a wide-spread phenomenon, and, moreover, that it is a phenomenon that is rather tightly linked to the morpho-phonological shape of the *wh*-words in question (cf. section 4.2.1), mediation by means of some kind of agreement relation between pro and the *wh*-word in Spec, CP seems problematic.[13]

4 Matching effects

As was shown in section 2 in connection with examples (15–18) and (19–21), matching effects are among the most salient and crucial properties of FRs. The present section will discuss the relevant phenomena in greater detail.

4.1 Category matching

4.1.1 The normal case

The discussion about the nature of the head of the FR in section 3, most notably the graphic representation in (28), was simplified in one crucial respect in that it suggested that DPs were the only potential candidates for the status of heads of FRs. In actual fact, FRs can apparently be headed by DP, AP, or PP, as shown in the following examples:

(31) a. The police arrested *who* the witness identified. (DP)
b. They tend to live *in whatever town* their parents used to live. (PP)
c. She will make you *however happy* your ex made you. (AP)
d. I'll play my music *however loudly* you play yours. (AP)

Here the italicized phrases are of the matching type. That is, their category is appropriate for categorial selection both in the matrix clause and in the relative clause. In (31a) *arrest* selects a DP object, and so does the embedded verb *identify*. Similarly, the PP in (31b) is selected both by the matrix instance of *live* and by the embedded instance of this verb. And the same thing is true for the APs (adverbial or not) in (31c, d). This type of matching is absent in regular relative clauses, of course:

(32) a. The police arrested the man to whom the witness pointed.
b. They live in the town that their parents live in.

In (32a) the head is a DP while the *wh*-phrase is a PP. As for PP, (32b) could be a non-matching case, but this is impossible to tell because we do not know whether the head is the DP or the PP. Since APs cannot head relative clauses,

non-matching is impossible to illustrate. Non-matching will indeed result in ungrammaticality, as shown in (33) and (34):

(33) a. *The police arrested *who* the witness pointed.
b. *Zij wonen waarnaast hun ouders gekocht hebben.
they live where next-to their parents bought have
'They live next to what their parents have bought.'
c. *She will make you however happy your ex married.
d. *I'll play my music however loudly you listen to.

(33) represents the case in which the *wh*-phrase properly satisfies the selectional requirements of the matrix, but not those of the relative clause. The ungrammaticality is caused by the following mismatches:

(33') a. matrix DP vs. RelCl PP
b. matrix PP vs. RelCl DP
c. matrix AP vs. RelCl DP
d. matrix AP (adv.) vs. RelCl DP

In the PP case (33b) we encounter again the problem that we do not know whether the preposition is part of the head of the relative clause or outside it. But in a language like Dutch, in which forms equivalent to *whereby* are fully productive, this problem can be overcome. *Waarnaast* 'next to which' is a PP, properly selected by the matrix verb *wonen* 'live' but unsuitable as a direct DP object of the embedded verb *gekocht* 'bought'. In the AP cases, again, the AP is properly selected or interpreted in the matrix, but cannot satisfy the categorial selection requirements of the relative clause.

Similarly, if the *wh*-phrase is appropriate for the relative clause but not for the matrix we again get ungrammatical results, as shown in (34):

(34) a. *The witness pointed *who* the police had arrested.
b. *The police arrested *to who(m)* the witness pointed.
c. *She will marry however happy her ex made her.
d. *I'll play my music whatever rock opera you are listening to.

The mismatches are as follows:

(34') a. matrix PP vs. RelCl DP
b. matrix DP vs. RelCl PP
c. matrix DP vs. RelCl AP
d. matrix AP (adv.) vs. RelCl DP

There is, nevertheless, a certain asymmetry between the DP cases on the one hand and the PP/AP cases on the other hand. This has to do with two additional restrictions that are imposed on the latter but not on the former. Recall that there are two main semantic types of FRs: definite/specific and universally quantified

(cf. (29/30) and section 5.2). Observe now that the DP-FRs come quite readily in both types but that for the PP/AP-FRs there is a very strong bias in favor of the universally quantified type. In fact, when the context strongly imposes the definite/specific reading, the result tends to be quite degraded.[14] Consider (34″):

(34″) a. ?Tomorrow I will speak to who(m) you spoke last night.
b. ?You can't word your letter how rudely they worded theirs.

The second restriction is that the matching requirement, if anything, seems to go beyond the identity of the head of the relative clause. Note, indeed, that in all the above examples of AP/PP-FRs the matrix verb and the embedded verb were identical. Choosing different verbs with identical categorial selection requirements also tends to result in less than fully acceptable examples:

(35) a. ?Why don't you ever dance with whomever I come to parties?
b. ?She always dotes on whomever you can't count.
c. ?I'll keep my bedroom however dark you paint your study.

In view of these restrictions, most of the literature has concentrated on DP-FRs, with the exception of so-called 'missing P FRs', which we return to in section 4.1.2. Before doing so, however, we also need to address the question as to whether categorial matching is an absolute and inviolable requirement. The answer appears to be that it is not.

Consider an English example like the following:

(36) a. *On whatever mattress I sleep gives me a terrible back ache.

Clearly, the FR is headed by a PP and since it occupies a DP-position (the subject position) the sentence is ungrammatical. In English, the effect is quite straightforward, partly because there is a simple way of choosing a matching variant:

(36) b. Whatever mattress I sleep on gives me a terrible back ache.

If we strand the preposition, we end up in Spec, CP with only the *wh*-phrase, which is a DP. But other languages don't allow preposition stranding (see chapter 51), and in such languages, sometimes, the non-matching variant corresponding to (36a) is acceptable. Consider the following example from Romanian, taken from Grosu (1994):

(37) Cu ciene iese Maria e deobicei un om de nimic.
with whom goes-out Mary is usually a man of nothing
'Who Mary goes out with is usually a no-good.'

It should be noted, however, that even in languages that do allow such non-matching FRs, their status tends to be rather marginal and subject to several further conditions. Most importantly, non-matching seems to be largely limited

to ungoverned or at least weakly governed positions. Among the latter, we may include the subject position, as opposed to the object position, for example. With pure adjuncts, of course, there is nothing in the matrix to match with, so this case is untestable. But what we do find is cases of correlatives which can often be analyzed as left- or right-dislocated FRs. (38) is an example of such a construction from Spanish, taken from Suñer (1984b):

(38) Con quien me quiero casar, ése ni me da la hora.
with whom me want to-marry that-one not-even me gives the time
'The one with whom I want to get married does not even give me the time of day.'

Another condition mentioned in Grosu (1994) is that the *wh*-word may not be too deeply embedded within the *wh*-phrase:

(39) Con la foto de quien Maria se fué es muy simpático.
with the picture of who Mary self went is very pleasant
'(The person) with whom Mary went away is very pleasant.'

Finally, it is noted that the best examples of categorially non-matching FRs tend to be proverbs. Grosu (1994) notes, for example, that all examples of non-matching FRs in subject position in Catalan, as provided in Hirschbühler and Rivero (1981), are proverbs, as illustrated in (40):

(40) A qui l' adulació halaga, si la pren la paga.
to whom the flattery pleases if her takes her pays
'He who likes flattery, if he accepts it he pays for it.'

For further comments on non-matching, see also section 4.2.2 below.

4.1.2 Missing prepositions

Returning now to examples like (34a), notice that you might say that a preposition has disappeared. Consider some other examples of this type:

(41) a. He'll remain in whatever town he has been living all his life.
b. Children worry about whatever their parents worry.

In both examples, the preposition appears to fulfill a double role in that it is required both by the matrix clause and by the FR. In (41a) both verbs (*remain* and *live*) select a locative PP, and similarly, in (41b) the *about*-phrase seems to serve as a complement both to the matrix-*worry* and to the embedded *worry*. The impression of a missing preposition is reinforced when we consider variants of (41) in which the preposition in question is actually present:

(42) a. He'll remain in whatever town he has been living in all his life.
b. Children worry about whatever their parents worry about.

From another perspective, however, the absence of the preposition in (41) is hardly surprising, since sharing is what matching is all about. If in simple FRs like *I eat what you cook* the *wh*-word is both the embedded object and the matrix object, then why can't a whole *wh*-PP have a double function in precisely the same way? The question in other words is whether such examples have structure (43a) or (43b):

(43) a. . . . V [$_{PP}$ P [$_{FR}$ [$_{DP}$ *wh*-word]$_i$ . . . V . . . ***P*** [e]$_i$ . . .]] . . .
b. . . . V [$_{FR}$ [$_{PP}$ P *wh*-word]$_i$ . . . V . . . [e]$_i$ . . .] . . .

In (43b) there is no missing P, or rather, there is no P that has to mysteriously disappear. On the other hand, in (43a) the ***P*** is supernumerary and has to disappear somehow. And given that we already need a mechanism to account for matching in the simple case, the most straightforward way of analyzing these cases would be to extend this mechanism to PPs.

There is actually quite a controversy on this point, which is still ongoing. The main protagonists are Larson and Grosu. Larson (1987) defends the analysis with the missing preposition, i.e., (43a), and Grosu (1996) argues against Larson in favor of (43b). For details about this controversy, the reader is referred to these texts.

4.2 Case matching

As in the case of categorial matching effects, the case on the *wh*-word or *wh*-phrase must generally match; that is, the case requirements of the matrix context and those of the FR-context must be identical. The overall approach which we have been pursuing is that the *wh*-phrase is, in fact, a shared constituent: a constituent that originates inside the FR, is moved into the Spec, CP of that FR, and, in that position, serves to satisfy some matrix requirement, be it selection or case government. The phenomenon of case matching, like that of categorial matching, is directly relevant to the choice between the two main approaches to FRs, the HH and the CP, cf. (19–21).

4.2.1 Full matching

The full matching paradigm is exhibited in the following examples from section 2:

(19) a. Wer$_{NOM}$ nicht stark ist muss klug sein.
who not strong is must clever be
'Who is not strong must be clever.'
b. *Wen/*wer Gott schwach geschaffen hat muss klug sein.
whom$_{ACC}$/who$_{NOM}$ God weak created has must clever be
'Who God has created weak must be clever.'
c. *Wem/*wer Gott keine Kraft geschenkt hat muss klug sein.
who$_{DAT}$/who$_{NOM}$ God no strength given has must clever be
'Who God has given no strength must be clever.'

(20) a. Ich nehme wen du mir empfiehlst.
I take whom$_{ACC}$ you me recommend
'I take whom you recommend to me.'
b. Ich nehme *wem/*wen du vertraust.
I take who$_{DAT}$/whom$_{ACC}$ you trust
'I take who you trust.'
c. Ich nehme *wer/*wen einen guten Eindruck macht.
I take who$_{NOM}$/whom$_{ACC}$ a good impression makes
'I take who makes a good impression.'

(21) a. Ich vertraue wem du vertraust.
I trust who you trust
'I trust who you trust.'
b. Ich vertraue *wen/*wem du mir empfiehlst.
I trust whom$_{ACC}$/who$_{DAT}$ you me recommend
'I trust who you recommend to me.'
c. Ich vertraue *wer/*wem einen guten Eindruck macht.
I trust who$_{NOM}$/who$_{DAT}$ a good impression makes
'I trust who makes a good impresion.'

One may wonder, of course, how a language can get away with this tight a restriction. The richer the case system, the fewer the chances that the upstairs and the downstairs requirements can be made to match. The answer to this puzzle is twofold. First, if the *wh*-phrase is truly a shared constituent, then matching is the only option available. Second, all languages in question have the possibility of using what Citko (1999) calls a 'light-headed relative' instead. That is, mismatches can be accommodated by making use of a semantically minimally specified head, generally a pronoun. In German, demonstrative or d-pronouns are normally used for this purpose. For (19–21) the grammatical counterparts of the ungrammatical examples would then be the following:

(19) b'. Der, den Gott schwach geschaffen hat muss klug sein.
c'. Der, dem Gott keine Kraft geschenkt hat muss klug sein.

(20) b'. Ich nehme den, dem du vertraust.
c'. Ich nehme den, der einen guten Eindruck macht.

(21) b'. Ich vertraue dem, den du mir empfiehlst.
c'. Ich vertraue dem, der einen guten Eindruck macht.

In addition to this strategy of using 'light-headed relatives', there are a few other ways in which languages resolve the problem of case mismatches, and this is a topic which is discussed in sections 4.2.3 and 4.2.4.

4.2.2 Mismatches

As in the case of category matching (section 4.1), mismatching does occur with case marking as well. There are three main aspects to be considered here. First,

there are situations in which mismatches appear to be tolerated. Second, mismatches can be resolved under circumstances of syncretism (see section 4.2.3). And third, mismatches may sometimes be resolved by means of case attraction (see section 4.2.4).

A substantial number of cases have been invoked in the literature (see among others Grosu 1994; Pittner 1995). Consider the following examples:[15]

(44) a. Ich liebe^{acc} wer$_{nom}$ Gutes tut und hasse^{acc} wer$_{nom}$ mich verletzt.
I love who good does and hate who me offends
'I love whoever does good and hate whoever offends me.'

b. Ich nehme^{acc} wem$_{dat}$ immer du vertraust^{dat}.
I take whom ever you trust
'I take whomever you trust.'

c. Was$_{nom}$ ein Mädchen ist von gutem Gefühl müssen dergleichen
what a girl is of good feeling must such
Sachen zuwider sein^{dat}.
things repugnant be
'To whoever is a girl of good sense such things must be repugnant.'

NB: subscripts indicate the case of a form, superscripts indicate the case imposed by some predicate.

It is quite clear that such examples constitute prima facie problems for the idea that the *wh*-phrase of the FR is a shared element. A number of remarks are in order, however. First, the data situation is rather complicated here. Some of these examples have a distinctly archaic flavor to them. To the present author, all three are fully ungrammatical. More importantly, the case system of spoken German is subject to considerable decay. Dutch has completely lost morphological case on full noun phrases. In many German dialects, surface case has been lost to varying degrees. Swiss German, for example, has lost the genitive, has a dative that is only marginally distinct from a PP, and the distinction between nominative and accusative, when present at all, is probably more a hypercorrection from Standard German than part of the language itself. Other dialects in the German-speaking countries are less radical, but the dative/accusative distinction is lost in many of them, sometimes with the dative surviving as in the Berlin dialect and sometimes with the accusative winning out as in many Bavarian dialects. This observation may well account for some of the above. If (44a) were from a speaker of Swiss German, for example, we could immediately trace the example's grammaticality to the Swiss dialect situation. In actual fact, the sentence is from Schiller, so the question remains open. Similarly, (44b) is a case of dative–accusative confusion, which may possibly be traced to dialectal factors. (44c) is from Goethe and, to the present-day ear, completely impossible. In his discussion of such examples, Paul (1920: IV, §411) repeatedly points out that such examples are rare, archaic, marked, and not part of present-day German (his grammar came out in 1920).

The second point that needs to be made here concerns the difficulty that arises from such examples for an approach in which the *wh*-phrase is a constituent

'shared' by the matrix and by the FR. If one wants to maintain such an analysis, some way must be found to account for the asymmetry between the upstairs and downstairs environment in terms of their impact on case checking. In all three of the examples cited, the case of the *wh*-word is that imposed within the FR. And indeed, Paul (1920) notes that this is the only type of deviation from matching found in New High German. One way of looking at this would be to say that case is checked inside the relative clause and that (in certain varieties of German) it need not be checked again in the matrix environment. We will not pursue the details of such an approach here. Note, in fact, that an alternative approach in which the head is occupied by some empty element (say pro) does not fare any better, loosely speaking. On such an approach, the null hypothesis would be to say that we find the same patterns that are found with overt pronominal heads (light-headed relatives). The latter exhibit no matching whatsoever. Hence, we would face the task of explaining why much tighter restrictions on the agreement relation between the pronominal head and the *wh*-phrase of the FR come into play when the pronominal head is an empty category. The reader is referred to Grosu (1994) for an account along such lines.

4.2.3 Case syncretism

It is a well-known fact that in case paradigms of a certain complexity, syncretism may be found. That is, a certain morphological case form may be used for two or even more abstract case features. Take the simplex question words in German. These constitute the following paradigm:

	Masc./Fem.	Neuter
Nominative	*wer*	*was*
Genitive	*wessen*	*wessen*
Dative	*wem*	—
Accusative	*wen*	*was*

This table shows that there is syncretism in two respects: the genitive forms syncretize for gender: same form for masc./fem. and for neuter, while the nominative and the accusative forms are identical in the neuter.

If we wish to test, now, whether case matching is affected by syncretism, we must immediately conclude that the genitive syncretism (*wessen*) cannot be tested because the gender switch cannot be tolerated or forced. That is, in an example like (45) it is impossible to force an interpretation in which *wessen* is taken to be, say, feminine in the matrix but neuter in the FR:

(45) Ich bediene mich wessen du dich erinnerst.
I avail myself whose you refl. remember
'I avail myself of who you remember.'

Due to the identity required between the head of the relative clause and the relative pronoun, here conflated into one word, the genitive object of *sich bedienen*

could never be taken to be a feminine noun, while at the same time the genitive object of *sich erinnern* is interpreted as a neuter noun.

Turning to the second instance of syncretism, the test can be successfully constructed. Take the following two fully matching examples:

(46) Was im Kühlschrank liegt ist schimmlig.
what in-the refrigerator lies is moldy
'What is in the refrigerator is moldy.'

(47) Ich esse was du gekocht hast.
I eat what you cooked have
'I eat what you cooked.'

In (46) *was* is a nominative subject both in the matrix and in the FR, while in (47) *was* is an accusative object both in the matrix and in the FR. Consider now, however, what happens when we invert the FRs with respect to the two matrix contexts:

(48) Was du gekocht hast ist schimmlig.

(49) Ich esse was im Kühlschrank liegt.

Both examples are fully grammatical despite the fact that in abstract case feature terms we have a non-matching combination: matrix nominative + FR-accusative in (48), and matrix accusative + FR-nominative in (49). We must conclude that the case-matching effect is concerned with the actual morpho-phonological shape of the case form in question, not with the abstract case features that it represents in a specific syntactic context.

With this in mind, let us go back to the main choices listed in (9):

(9) a. $[_{DP}$ CP]
b. $[_{DP}$ DP CP]

One way of characterizing the difference between these two analyses is to say that in (9a) the *wh*-element in Spec, CP is 'shared' between the relative clause structure and the containing matrix structure, while in (9b) the DP-head is part of the matrix and the Spec, CP is part of the relative clause, the relation between the two being mediated by agreement. Accordingly, we may call the former hypothesis the Shared Structure Hypothesis (SSH) and the latter the Distributed Structure Hypothesis (DSH). The case syncretism phenomena just discussed have considerable relevance for the choice between the SSH and the DSH. On the DSH one would not expect the actual morpho-phonological shape of the *wh*-word to play any role, since agreement processes such as those found between the head of a relative clause and the *wh*-word of the relative clause are in terms of features, not in terms of phonetic identity. Agreement as we understand it works in terms of morphosemantic features, not in terms of phonetics.[16]

4.2.4 Case attraction

If case matching is the norm, then the richer a case system, the poorer the options for FRs. In other words, if a language has *n* cases, there are n^2 possible combinations out of which only *n* yield a grammatical output (modulo syncretism). Again, this is not tragic, since a light-headed relative clause construction can always be chosen to avoid the case-matching restriction. But actually there is another way in which languages can, sometimes, escape this case-matching restriction: case attraction. Consider again the examples discussed under the heading 'case mismatches' in (44). In these examples, the case of the *wh*-word is the case imposed within the relative clause. But sometimes the case required by the matrix context is, as it were, superimposed on the *wh*-word. This is a pattern found in Classical Greek, as shown in Hirschbühler (1976a), whose data have been amply used in the later literature. Consider the following:[17]

(50) a. Deitai sou touton ekpiein sun hois$_{dat}$ malista phileis.
he-requests you this to-drink with who best you-love
'He requests you to drink this (sc. wine) with (those) who you love best.'
b. Deitai sou touton ekpiein sun toutois$_{dat}$ hous$_{acc}$ malista phileis.
with those whom

(51) a. Par' hôn$_{gen}$ boêtheis ouch apoleipsei charin.
from who you-help not you-get help
'From who you help you get no help.'
b. Par' ekeinôn$_{gen}$ hois$_{dat}$ boêtheis ouch apoleipsei charin.
from those whom

The b-examples show the corresponding light-headed relative with the distributed case forms. As the a-examples show, the matrix case wins: in (50a) the FR-accusative is superseded by the matrix dative, and in (51a) the FR-dative is superseded by the matrix genitive. The way this is generally expressed is to say that the case of the relative pronoun is attracted to the case of the matrix (the head). From this perspective, we might be tempted to reinterpret the mismatches discussed in section 4.2.2 as constituting the direct counterpart of the attraction cases in (50) and (51). We might then say that in cases like (50) and (51) attraction is downward, while in the cases shown in section 4.2.2. attraction is inverse or upward. By this we mean that the matrix case is imposed (attracted) in a downward direction to the *wh*-element in the FR, or transmitted (attracted) upward from the FR into the matrix context.

If we try to interpret these phenomena from the point of view of the two main hypotheses that we are comparing, the Shared Structure Hypothesis (SSH) and the Distributed Structure Hypothesis (DSH), a certain amount of stipulation seems to be required on both views. On an SSH view, we have to say that two independent structures are glued together in the shared element, but that these two structures are not equivalent: one is dominant and the other is recessive. This is feasible, and comparable phenomena can be found in other areas of grammar,

for example case attraction under long *wh*-movement in Hungarian. On the alternative DSH view, we have to say that the agreement process applying between the (empty) head and the *wh*-element in the FR sometimes does not require full identity of cases but that sometimes the head wins, sometimes the *wh*-element.

It must be recognized, however, that the latter view (the DSH) receives considerable support from the fact that the attraction phenomena just shown are also attested in headed relative clauses. Downward attraction is attested in the following example from Classical Greek, where the b-example shows what the unattracted version would be:[18]

(52) a. Phoboimen an tôi hegemoni$_{dat}$ hôi$_{dat}$ doiê hepesthai.
I-should-fear the leader who he-might-give to-follow
'I should fear to follow the leader whom he might give.'
b. Phoboimen an [tôi hegemoni$_{dat}$ [hon$_{acc}$ doiê]] hepesthai.

Upward attraction, though reported to be rarer in Classical Greek, is also found:

(53) a. Tên ousian$_{acc}$ hên$_{acc}$ katelipe ou pleionos aksia$_{nom}$ estin ê tettarôn
the estate which he-left not more worth is than four
kai deka talantôn.
and ten talents
'The estate which he left is not worth more than fourteen talents.'
b. Hê ousia$_{nom}$ hên$_{acc}$ katelipe ou pleionos aksia$_{nom}$ estin ê tettarôn kai deka talantôn.

Similar examples of upward attraction are also found in Latin:[19]

(54) a. Naucratem$_{acc}$ quem$_{acc}$ convenire volui in navi non erat.
Naucrates whom join I-wanted in ship not was
'Naucrates, whom I wanted to join, was not on the ship.'
b. Naucrates$_{nom}$ quem$_{acc}$ convenire volui in navi non erat.

Upward attraction appears to be rather exceptional (cf. note 18) but downward attraction is frequent enough to permit some generalizations. In particular, it appears that the more marked case must win. In other words, if the matrix case is, say, a dative and the case on the *wh*-word is a nominative, then downward attraction is possible, but not vice versa. Grosu (1994: 108) formulates the case hierarchy as follows:

(55) NOM < ACC < DAT < GEN < . . . < P-CASE

Here, P-Case can be extended to various highly oblique cases in richly case-marking languages. The idea is that a case lower on the hierarchy can replace a case higher on the hierarchy under downward attraction, but not the other way around. As Hirschbühler (1976a) notes, however, there may be asymmetries within one language. In particular, he notes, in Classical Greek[20] attraction is more liberal

in FRs than in headed relative clauses. In his formulation, an accusative may be attracted to a genitive or dative in headed relatives, but in FRs, neuter nominatives, accusatives, and datives may be attracted to datives or genitives.

5 Types of free relatives

5.1 Questions vs. free relatives

Since FRs are clauses with an initial *wh*-word, they look like questions. As was pointed out in the introduction (examples (5) ff.), FRs can generally be distinguished from questions without any problems since they differ in their subcategorizational properties. Nevertheless, when an FR occurs in a non-subcategorized position, say as an adjunct, then the distinction tends to be blurred. Consider:

(56) *Whatever Bill says*, it always comes out wrong.

Is the italicized part of this example a question or an FR? Subcategorization is not a factor here. The presence of *-ever* would seem to suggest that this is an FR, since embedded *wh*-questions do not take *-ever*. On the other hand, a close paraphrase of (56) has *no matter* prefixed to the *wh*-word, which is generally impossible in argument FRs:

(57) a. No matter what Bill says, it always comes out wrong.
b. ?*This dog attacks no matter who crosses its path.

Furthermore, *whether* can occur in this type of clause, and *whether* is normally limited to questions and excluded in FRs:

(58) (No matter) whether Carl talks or not, he will be convicted.

Semantically, such subordinate clauses appear to be a special subtype of concessive clauses, which does not help much if we try to determine whether they are questions or FRs.

There are, indeed, a number of other indications that FRs are closer to questions than headed relative clauses are. Consider first the fact that adjunct clauses like the ones above can sometimes contain multiple *wh*-phrases:

(59) a. Whichever CD you buy in whatever store, you always pay too much.
b. *This dog attacks whoever crosses whatever street.
c. *a person who crosses what street.
d. Who crossed what street?

As these examples show, there are multiple questions (59d) but no multiple relative clauses (59c), but multiple *wh*-phrases in the concessive clauses under consideration are possible.[21]

More generally, a second indication that FRs are closer to questions than headed relatives comes from the choice of pronoun that we find in them. In some languages such as German, questions are constructed by means of *w*-words, while headed relatives clauses make use of *d*-words (demonstrative pronouns):

(60) a. Peter fragte wen ich vorziehe.
Peter asked whom I prefer
'Peter asked whom I prefer.'
b. Peter hasst den Mann den ich vorziehe.
Peter hates the man whom I prefer
'Peter hates the man whom I prefer.'
c. Peter hasst wen ich vorziehe.
Peter hates whom(ever) I prefer
'Peter hates whomever I prefer.'

As (60c) shows, FRs pattern like questions and not like headed relative clauses in that they uniformly take *w*-words.

In German, what is at stake is essentially a morphological choice,[22] but there are languages in which the syntax of relative clauses and questions is more radically different. This is the case, for example, in Swiss German. Swiss German forms relative clauses by means of an invariable complementizer element *wo* and a resumptive personal pronoun in situ, which is sometimes deleted (cf. Van Riemsdijk 1989b). Questions, on the other hand, are formed by means of *w*-phrases that are moved to the front of the clause in the same way as in English or Standard German. Again, we find that FRs pattern with questions in this respect:

(61) a. De Peter wet wüsse mit wem s Susi redet.
the Peter wants know with whom the Susi talks
'Peter wants to know with whom Susi talks'
b. De Peter redet mit em maa wo s Susi mit em redet.
the Peter talks with the man that the Susi with him talks
'Peter talks with the man that Susi talks with.'
c. De Peter redet mit wem s Susi redet.
the Peter talks with whom the Susi talks
'Peter talks with whoever Susi talks.'

In conclusion, there is a variety of phenomena that suggest that FRs as a construction occupy a position somewhat intermediary between questions and (headed) relative clauses.[23]

5.2 The interpretation of free relatives

The main distinction among different types of headed relatives that comes to mind is the one between restrictive relatives on the one hand and non-restrictive or appositive relatives on the other. But this distinction is not helpful in coming

to grips with the essential semantics of FRs.[24] It is more helpful to contemplate what types of (pronominal) heads we use when we paraphrase FRs. Consider the following examples with their paraphrases:

(62) a. I ate what the waiter put on my plate.
b. I ate the thing that the waiter put on my plate.

(63) a. I will eat whatever the waiter will put on my plate.
b. I will eat anything/everything that the waiter will put on my plate.

It appears, then, that there are two main subtypes of FRs, definite FRs and universally quantified FRs. Note that the addition of *-ever* to the *wh*-word tends to disambiguate potentially ambiguous examples, since *-ever* pretty much forces the universally quantified reading. The opposite is not true, however. *Wh*-words without the suffix *-ever* can nevertheless have universal force, as in:

(64) I will eat what happens to be on the menu.

On closer inspection, in fact, even an example like (62a) can be interpreted with universal force: at that time my condition was such that I would eat whatever the waiter put on my plate. Furthermore, as the two alternatives in (63b) show (everything vs. anything), there is some question as to the precise nature of the type of universal quantification that is involved. By (63a) we mean either that I will eat all the food items that the waiter puts on my plate, or that I will eat any item from a larger set of items that the waiter chooses to put on my plate. The latter interpretation is often referred to as 'free choice *any*'. This observation also leads us to re-evaluate the above statement that *-ever* forces the universally quantified meaning, since a *wh-ever* FR sometimes also has a meaning that comes close to that of a definite noun phrase, but one that the speaker of the sentence is not able to identify at the point of speaking. This is illustrated in (65):[25]

(65) Everyone who went to whatever movie the Avon is now showing said it was very boring.

As noted in Jacobson (1995), this differentiates such an FR from truly universally quantified noun phrases, since the latter cannot be referred to by *it*:

(66) *Everyone who went to every movie the Avon is now showing said it was very boring.

The observation that the two subtypes of FRs are, at least sometimes, quite close to each other invites the question as to whether it is possible to unify the two. Jacobson (1995), which the following account paraphrases closely, suggests that this can be done by means of the notion of a maximal plural entity. It is important that the term *plural* is used in a broad way here: if in a given domain there is only one atomic individual with a given property, then the maximal

plural entity with that property is the one consisting of just this atomic individual. We may then assume that an FR like *what Mary recommended* denotes the set of maximal plural entities that Mary recommended (rather than any set of individuals that Mary recommended). Given the fact that this set may be limited to a single atomic entity, we now have an account for the fact that FRs at times seem to be singular definites and at times universals: we always have a singleton set. If there is only a single entity that Mary recommended, then the FR will be equivalent to a singular definite. And if there is more than one entity, then the FR will denote the single entity composed of all entities that Mary recommended, which amounts to a universal interpretation.[26]

5.3 Transparent free relatives

Intuitively speaking, we may say that the *wh*-element in a FR constitutes the link between the relative clause CP and the containing matrix structure. This is true regardless of whether this link is mediated by some empty pro-head or by anything else. There is, however, a very special type of free relative in which the initial *wh*-element (always *what*) is almost like a dummy element, while the relative clause contains a small-clause predicate that has most of the properties of the pivotal element, the element that provides the link between the relative clause CP and the matrix structure. Without prejudice to the formal analysis of such free relatives, which will be discussed in section 6, I will call this pivotal or link element the 'shared element' or 'shared structure'. This type of relative clause, which has been dubbed 'transparent free relative' (TFR) by Wilder (1999), can be exemplified by (67):[27]

(67) *What appeared to be **a jet airliner*** had landed on the freeway.

The TFR is in italics, and the boldfaced noun phrase is the shared constituent. TFRs are different from regular FRs in a variety of ways, and most of the differences have to do with the presence of a shared element that is distinct from the *wh*-element. The following is a succinct list of such properties:[28]

(i) **Indefinites allowed.** FRs are either definite or universal (cf. section 5.2), but an indefinite predicate nominal expression can turn a TFR into an indefinite. (67) does not mean 'the thing that looked like a jet . . .' but rather 'something that looked like a jet . . .' or even, more directly, 'a jet airliner had landed on the freeway'. That this is so is demonstrated further by the fact that TFRs are permitted in contexts that are diagnostic for indefinites, such as *there*-insertion constructions:

(68) a. There was a jet on the freeway.
b. *There was the jet on the freeway.
c. *There was what had incurred extensive engine failure on the freeway.
d. There was what appeared to be a jet on the freeway.

(ii) **Intensional modifier.** The meaning of the TFR minus the shared constituent is that of a hedge or an intensional modifier. In that sense, the TFR is similar to that of adjectives like *alleged*:

(69) a. They served me what they euphemistically referred to as a steak.
b. They served me an alleged steak.

Both (69a) and (69b) leave open the possibility that the entity in question is not what the noun says it is. That is, in both cases this entity may well not be a steak.

(iii) ****-ever.*** As is to be expected on the basis of property (i), *-ever* cannot be suffixed to the *wh*-element in a TFR:

(70) *There was whatever appeared to be a jet on the freeway.

(iv) **Plural agreement.** When used as a subject, the *what* of a TFR can trigger plural agreement on the verb, which it can never do in regular FRs:

(71) a. What *seems/seem to be several jets *was/were landing on the freeway.
b. What pleases/*please me most adorns/*adorn the living room wall.

(v) **Reference to [+human].** In TFRs, *what* can refer to humans, which is impossible in regular FRs:

(72) a. She invited what I took to be a policeman to stay overnight.
b. *She invited what was carrying a baton and a gun to stay overnight.

(vi) **No island sensitivity under extraction.** Extraction, for example by *wh*-movement, out of some constituent contained in a headed relative or a FR is prohibited by island constraints (specifically, the Complex Noun Phrase Constraint subsumed under Bounding Theory). However, extraction out of a TFR is acceptable or only weakly deviant:[29]

(73) a. *Who did you order a picture that represented the sole possession of?
b. *Who did you order what represented the sole possession of?
c. Who did you order what was advertised as a first-rate picture of?

(vii) **Conjunction of (un-)likes.** As is well known, only constituents of identical categorial status can be conjoined under coordinate conjunction. Consider now a TFR with a predicate adjective. If we interpret such a relative clause from the point of view of a regular FR, the categorial status will be determined by the *wh*-word (*what*); that is, it will count as a noun phrase. But if the predicative adjective determines the categorial status, the clause will have the distributional properties of an AP. With this in mind, consider (74):

(74) a. *He dislikes trains and what I consider inconvenient.
b. He dislikes trains and what I consider an equally inconvenient alternative.
c. He dislikes trains and what the government proposes to replace them with.

(74a, b) are TFRs, while (74c) is a regular FR. On the assumption that it is the predicate that counts, (74b) is OK since two noun phrases are conjoined, while (74a) is ungrammatical because an NP is conjoined with an AP. Note, in fact, that (74a) can, with some difficulty, be interpreted as a regular FR: he dislikes trains and anything that I consider inconvenient. While such a reading may not be the most plausible one, (74a) is grammatical on that reading. There is a complication here, however. The verb *dislike* subcategorizes NPs and not APs. Hence, on the TFR-reading, (74a) is ungrammatical regardless of conjunction of unlikes because it includes the substatement **he dislikes inconvenient*. This is important in its own right, of course, but the full force of the 'conjunction of unlikes' argument can be seen in an example like the following:

(75) a. *The creature changed from a frog and slimy into a prince and radiant.
b. *The creature changed from a frog and what can only be termed slimy into a prince and what truly deserves to be called radiant.
c. The creature changed from a frog and a slimy abomination into a prince and a prospective lover.
d. The creature changed from a frog and what can only be termed a slimy abomination into a prince and what truly deserves to be called a prospective lover.

(viii) **Idiom chunks.** The small-clause predicate in the TFR can be an idiom chunk that is part of a matrix idiom expression:

(76) a. Nick$_i$ lost what according to the dictionary are called his$_i$ marbles.
b. (*)Nick$_i$ lost what his$_i$ marbles cost in the store.

Note that (76b) is in principle grammatical as a regular FR, but the idiomatic reading disappears completely.

(ix) **Bound anaphors.** Similarly, bound anaphors that are part of the small-clause predicate can be bound by an antecedent in the matrix structure, which is impossible in regular FRs:

(77) a. They$_i$ live in what is often referred to as each other's$_i$ backyard.
b. *They$_i$ live in what Fred uses each other's$_i$ backyard for.

(x) **Case matching.** While in regular FRs it is the *wh*-word/phrase that is subject to case-matching requirements (cf. section 4.2), in TFRs it is the predicate nominal in the small clause that is subject to such a restriction. Predicate nominals only occur in the nominative and in the accusative, hence dative and genitive play no role here:

(78) a. Gestern ist was als ein$_{nom}$ Meteorit identifiziert wurde^{nom} bei uns eingeschlagen^{nom}.
yesterday has what as a meteorite identified was near us struck
'Yesterday, what was identified as a meteorite struck at our place.'

b. Gestern ist was Experten als $\begin{Bmatrix} *\text{ein}_{nom} & \text{Meteorit}_{nom} \\ ??\text{einen}_{acc} & \text{Meteoriten}_{acc} \end{Bmatrix}$ identifiziert haben^{acc} bei uns eingeschlagen^{nom}.
yesterday has what experts as a meteorite identified have near us struck
'Yesterday, what experts identified as a meteorite struck at our place.'

c. Wir haben was als $\begin{Bmatrix} ??\text{ein}_{nom} & \text{Meteorit}_{nom} \\ *\text{einen}_{acc} & \text{Meteoriten}_{acc} \end{Bmatrix}$ identifiziert wurde^{nom} gesehen^{acc}.
we have what as a meteorite identified was seen
'We have seen what was identified as a meteorite.'

d. Wir haben was Experten als einen$_{acc}$ Meteoriten$_{acc}$ identifiziert haben^{acc} gesehen^{acc}.
we have what experts as a meteorite identified have seen
'We have seen what experts identified as a meteorite.'

(79) a. Gestern ist was als eine$_{nom}$ Sternschnuppe identifiziert wurde^{nom} bei uns eingeschlagen^{nom}.

b. Gestern ist was Experten als eine$_{nom/acc}$ Sternschnuppe identifiziert haben^{acc} bei uns eingeschlagen^{nom}.

c. Wir haben was als eine$_{nom/acc}$ Sternschnuppe identifiziert wurde^{nom} gesehen^{acc}.

d. Wir haben was Experten als eine$_{acc}$ Sternschnuppe identifiziert haben^{acc} gesehen^{acc}.

In (78a, d) the matrix and the TFR case requirements (both indicated by superscripts on the verbal complex) are identical. Hence, matching is satisfied. In (78b, c) we have conflicting requirements. No matter what case we have on the predicate nominal, the result is degraded. There does seem to be a contrast, however in that the TFR requirement is absolute, while non-matching in the matrix yields only mild deviance.[30] (79) contrasts minimally with (78) in that the masculine noun *Meteorit* has been replaced by the feminine noun *Sternschnuppe*. In the feminine paradigm, there is no distinction between the nominative and the accusative forms. In other words, we have case syncretism. As observed before for regular FRs, syncretism resolves the case conflict, and hence we have a grammatical result for all examples.

(xi) **Inflection.** The predicate constituent in the TFR sometimes inflects as if it were part of the matrix rather than part of the relative clause. A straightforward case of this phenomenon is found with adjectives in Dutch. Predicate adjectives in Dutch are uninflected, but attributive adjectives must be inflected. Roughly speaking the rule is that an attributive adjective must be inflected by the suffix *-e* ([ə]) unless the noun it modifies is indefinite neuter singular:

(80) a. Deze auto is duur/*dure.
this car is expensive
'This car is expensive.'
b. een *duur/dure auto
an expensive car
'an expensive car'

This pattern shows up in identical fashion in TFRs:[31]

(81) a. Deze auto is wat je duur/*dure zou kunnen noemen.
this car is what you expensive could call
'This car is what you could call expensive.'
b. een wat je zou kunnen noemen *duur/dure auto
a what you could call expensive car
'a what you could call expensive car'

From the point of view of adjectival inflection, then, we may say that the adjective, which is ostensibly inside the relative clause, acts as if it were fully a constituent of the matrix structure. Observe, however, that the adjective must also be a constituent of the relative clause, because otherwise the relative clause is incomplete: [*what you could call *(expensive)*]. This then is another simple, straightforward piece of evidence that the small-clause predicate in a TFR is 'shared' between the matrix and the relative clause.

6 Matching and the syntactic representation of free relatives

Matching phenomena are among the most salient properties of FRs (cf. section 4), and accordingly one of the main analytical questions is how these matching phenomena are to be accounted for. Perhaps the most salient issue here is whether the link between the relative clause and the matrix is a direct one or an indirect one. Consider a simple example (cf. (4)):

(82) You should return *what you have finished reading* to the library.

On the direct approach, the *wh*-word/phrase of the relative clause is at the same time part of, or at least accessible to, whatever syntactic and semantic requirements the matrix clause imposes, in this case subcategorization of a direct object and accusative case. The alternative is to assume that there is an empty head, which acts as an intermediary between the relative clause and the matrix. As before (cf. section 4.2.3), we may call the former type of analysis the Shared Structure Hypothesis (SSH) and the latter type the Distributed Structure Hypothesis (DSH). On the DSH, the relevant properties of the *wh*-element (category, case, person, number, etc.) are present as features on the empty head, and it is the empty head which is responsible for any checking or

licensing processes that are relevant for the matrix structure. On the SSH, the empty head plays no such role and may well be entirely absent in that the *wh*-element is directly accessible to any checking or licensing imposed by the matrix. Both hypotheses can be defended and have been defended, as was shown in section 3.

The existence and the properties of TFRs, which were discussed in section 5.3, shed new light on this issue, however. As was shown, it is the small-clause predicate which constitutes the link with the matrix environment, whereas the clause-initial *wh*-element is, in a sense, a dummy element, which plays no role in the matching process. The question then is whether it is plausible to assume that there could be a relation, a kind of agreement process, between the small-clause predicate and the empty head of the TFR. If we examine again the various properties of TFRs listed in section 5.3, we immediately see that such an indirect approach is quite implausible. Perhaps the single most impressive argument comes from the fact that the small-clause predicate can be inflected like a matrix element, as shown in (81). Without further discussion, we will therefore assume that the SSH is to be preferred for TFRs. Furthermore, given that we have to find a way to implement the SSH, we will also assume that regular FRs are to be accounted for in terms of the SSH.[32] A further extension of the SSH, and of the insights derived from TFRs in particular, is that internally headed relatives may now be directly interpreted as relative clauses in which the internal head is shared with the matrix structure (cf. (1)).[33]

The implementation of the SSH is far from trivial. In order to see this, consider the case of a TFR with a shared attributive adjective such as the one in (81), repeated here for convenience:

(81) a. Deze auto is wat je duur/*dure zou kunnen noemen.
b. een wat je zou kunnen noemen *duur/dure auto

The DP in (81b) consists, linearly, of the following constituents:

(83) $[_{DP}$ D^{o} CP N]

But what is missing here is the fact that the noun in (81b) is modified by an attributive adjective. Hence, perhaps the correct way of describing the structure is (84):

(84) $[_{DP}$ D^{o} CP AP N]

But both of these structures are very problematic. First, both assume that full, finite CPs are permissible in the prenominal position, even though in the languages in question (English, Dutch, etc.), regular relative clauses always have to follow the noun. Second, as we have seen, there is an AP missing in (83), whereas in (84) the AP, that is, the small-clause predicate in the TFR, is missing inside the CP, which is therefore incomplete and should be as ungrammatical as, say, **a man whom Mary described as*.[34] One way to put this problem is that from the point of

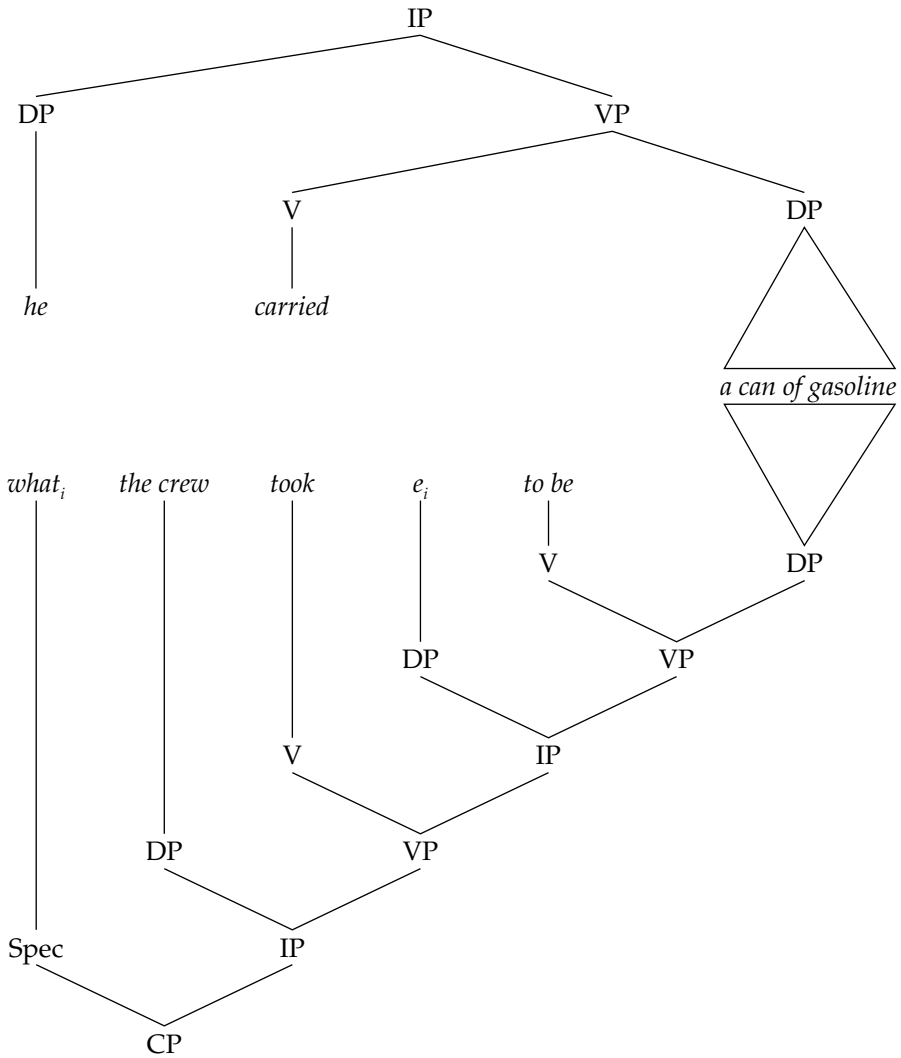
view of the DP, the CP should be invisible (except for its AP), whereas from the point of view of TFR (the CP), the AP should not be missing. That is, we have a classical case of conflicting tree structures here, and one way to resolve such conflicts is to assume that, just as in the case of reanalysis, a single string of terminal elements (words) can be associated with more than one tree structure.[35]

Pursuing this idea, consider the following TFR, adapted from an example by Kajita (1977):

(85) He carried what the crew took to be a can of gasoline.

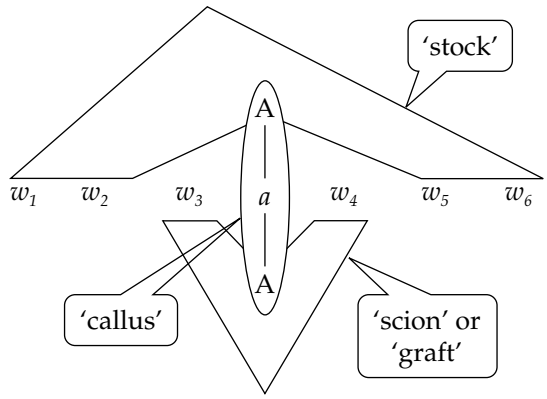
Such a TFR could then be represented by the following 'multidimensional' tree structure:

(86)



The arguments for such an approach have been explored in Van Riemsdijk (1998d, 2000, 2001). In these works, a terminology is also suggested to describe complex tree structures such as (86). For this purpose, the botanical metaphor of 'grafting' has been used. Accordingly, we can call the shared constituent the 'callus', the host tree is called the 'stock', while the subtree which is grafted onto the stock is called the 'graft' or the 'scion'. Graphically:

(87)



Needless to say, a proposal along such lines is far from unproblematic. First of all, a more formal theory of such representations must be developed. It is believed that a framework such as that presented in Moltmann (1992) would be a likely candidate for this task. The formalism which is chosen will then have to form the basis for substantive restrictions on the types of representations that are allowed under such a theory of grafting. Among many other considerations, it is important to recognize that there is an asymmetry between the stock and the scion, in that the former constitutes the matrix structure and the latter the embedded insert. One important aspect of this asymmetry shows up when we consider linearization. Indeed, if we look at a structure like (86), the question immediately arises as to how the conflicting lines of terminals should be linearized: the upper before the lower or vice versa? The answer has to be that the terminal elements constituting the scion are pronounced adjacent to, that is, directly before and after, the callus.

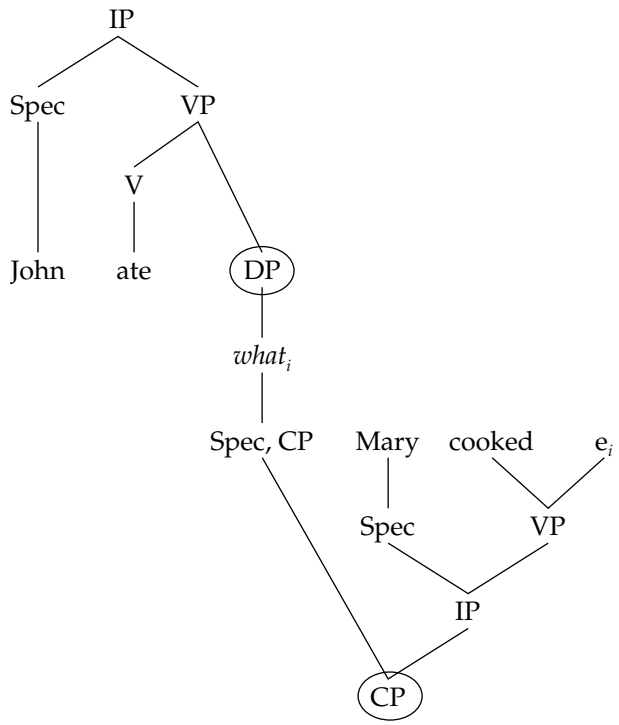
A second aspect that must be taken into account is the fact that matching is sometimes not fully realized. The simple assumption would be that for two syntactic trees to be grafted together by the 'fusion' of two substrings of terminal elements, the terminals in question have to be fully identical. But that is too simple. Consider again, for example, the Dutch example (81). In (81b) we have an apparent mismatch in that the stock (the matrix) requires the inflected form of the attributive adjective (*dure*), while the scion (the TFR) requires the uninflected form of the predicative adjective (*duur*). But in this case, we might be able to solve the problem by taking into account the morphological structure. Suppose the relevant part of the stock has a structure something like [$_{\text{DegP}}$ [$_{\text{AP}}$ *duur*] [$_{\text{INFL}}$ *-e*]]. We might then say that the predicative adjective in the scion has

the structure [$_{DegP}$ [$_{AP}$ *duur*] [$_{INFL}$ -ϕ]] and that the grafting process affects just the AP, not the DegP, leaving the INFL markers in the respective substructures. Needless to say, this would only be possible if one of the two morphological markers is -ϕ. It is unlikely, however, that the cases of imperfect matching in which either the stock or the scion is dominant in imposing its morphology, as discussed in section 4.2.2 as well as in connection with example (78) and note 29, can all be accounted for in this manner. It is important to recognize, though, that such cases of imperfect matching require stipulative solutions on the alternative analysis according to the DSH.

But once we have taken the radical step of adopting the grafting approach, it is natural to extend the theory of grafting to regular FRs as well, thereby implementing the Shared Structure Hypothesis for FRs. A simple FR such as (88) will then be represented as in (89):[36]

(88) John ate what Mary cooked.

(89)



7 Conclusion

Free relatives exhibit a considerable number of properties that deserve the attention of syntacticians. The most salient of these is a variety of types of matching

phenomena which raise a number of fundamental questions as to whether they have a head at all, and, if they do, what the nature of that head is. Depending on the answer to this question, we may be led to revise the theory of phrase structure in such a way that grafted structures with multiple connected trees such as those discussed in section 6 must be permitted to exist.

NOTES

Thanks are due to Alex Grosu and Paul Hirschbühler for helpful discussion and suggestions for improvement respectively. My knowledge of and thinking about free relatives has been influenced by literally dozens of colleagues and friends over almost a quarter century now. To all of them I can now only extend a collective thank you.

1 Within certain limitations, PPs, CPs, and APs can also be modified by a relative clause, as in:

   (i) They left the books downstairs, which is not the safest place for them to be.

   (ii) John wondered whether to trust the FBI, which is a rather stupid thing to ask yourself.

   (iii) Bill turned out to be quite intelligent, which is a quality not often found in his family.

   Note, however, that these are constructed most easily if the relative clause contains a noun (here: *place* and *quality* respectively) which, in a sense, translates the PP or AP into an NP. Furthermore, relative clauses of this kind are always non-restrictive. Free relatives (FRs), on the other hand, can be formed on NP/DP, AP, and PP, though various restrictions apply there as well (see, for example, section 4).

2 It should be noted, however, that this is not the only way to construct relative clauses in Japanese. In fact, internally headed relative clauses are rather restricted in their use. See, among many others, Kurosawa (2003) for discussion and references.

3 In other languages, the embedded position is occupied by a so-called resumptive pronoun, and there is no special pronoun which is moved to a position adjacent to the head of the relative clause (see chapter 55).

4 In actual fact, the distinction between questions and FRs is not quite as unproblematic as the text argument suggests. See section 5.1 for more discussion.

5 The Head Hypothesis has precursors in Bresnan (1973a) and Hirschbühler (1976b). Rooryck (1994b) points out that the term 'Head Hypothesis' is potentially misleading, since it might suggest that the head is a category of type X^o rather than XP; in the present text we will continue to use the term Head Hypothesis, however.

6 The COMP Hypothesis was first introduced in Kuroda (1968a). It was also defended in Hirschbühler (1978) and received further support in Rooryck (1994b), and in Jacobson (1995) and earlier unpublished materials by the same author cited there. This hypothesis has been adopted most frequently in the current literature.

7 If a raising analysis of relative clauses is assumed, this assumption is challenged.

8 The examples are taken from Groos and Van Riemsdijk (1981: 177). In these examples, genitives have not been included because of the severe limitations on their occurrence in modern German.

9 Things are slightly more complex in that it might be better to say that Heavy NP Shift does exist but is limited to stylistically highly marked contexts. The text argument is not affected by this complication, however, since the extraposition of FRs is not stylistically limited in any way.

10 It might be objected that (23a) is ungrammatical for independent reasons, namely the fact that the extraposed relative clause lacks a complementizer. That is, (23a) could be ungrammatical for the same reason as (ib) without *that* is:

(i) a. I'll take the book (that) you gave me into consideration.
b. I'll take the book into consideration *(that) you gave me.

Note, however, that the argument rests primarily on the grammaticality of (23b), and note furthermore that the obligatory absence of the complementizer in FRs on the HH is a puzzling aspect of that analysis in the first place, as will be discussed in the text directly.

11 This was pointed out in Groos and Van Riemsdijk (1981). See also Grosu (1994) for discussion.

12 The relevance of this particular consideration in the present context is attributed in Grosu (1994) to an unpublished talk by Polly Jacobson.

13 For a much more differentiated and detailed discussion, see Grosu (1994).

14 I am using a single question mark here to accommodate the more liberal speakers, but in actual fact many speakers would find '?*' or even '"*" more appropriate. Furthermore, languages tend to differ considerably with respect to the extent to which such restrictions are imposed. See Grosu (1994) for an overview of a range of languages including German, Hebrew, French, and Romanian.

15 The examples given here are cited in Grosu (1994). (44a, c) are taken from Paul (1920).

16 One might object that the lexical representation of a form like *was* could be an underspecified feature matrix. Suppose, for example, that nominative and accusative are [−oblique] in German, as opposed to genitive and dative. Suppose furthermore that there is a second feature, say [accusative], that distinguishes the nominative and the accusative. A form like *wer* would then be [−obl, −acc], but *was* could be underspecified and have the representation [−obl]. By non-distinctness, [−obl] would satisfy both nominative and accusative contexts. An approach along such lines is questionable, however, for a number of reasons. To mention just one, *was* must be fully specified for the purposes of subject–predicate agreement, as shown by the following contrast:

(i) a. Was_{nom} ist ein_{nom} guter Wagen?
what is a good car
b. *Was_{acc} nennst Du ein_{nom} guter Wagen?
what call you a good car

a′. *Was_{nom} ist $\text{einen}_{\text{acc}}$ guten Wagen?
b′. Was_{acc} nennst du $\text{einen}_{\text{acc}}$ guten Wagen?

Beyond such considerations, theoretical questions may be asked about the degree of language specificity of the feature systems involved in case morphology, about the compatibility of underspecification with checking and/or assignment approaches to case features, etc. But such considerations are beyond the scope of the present survey.

17 The examples from Classical Greek in this section are cited from Hirschbühler (1976a). The sources he gives are as follows. (50) is X.A.1.9.25, cited from J. Hadley and F. Allen, *A Greek Grammar*, New York 1912, section 996, a, 2. (51) is Aesch. 2,117, cited from W. Goodwin, *A Greek Grammar*, Ginn 1892, § 1033. (52) is X.A.1.3.17, cited from H. Smyth, *Greek Grammar*, Cambridge: Harvard University Press 1956, § 2522, b. And (53) is L.19.14. cited from Goodwin, *Greek Grammar*, § 1035. The Latin example (54) I have taken from Grosu (1994), who cites it from F. Schwyzer, *Griechische Grammatik*, Munich 1950, section II, 641.

18 See note 17.

19 See note 17. Grosu (1994) also cites some examples from what he calls archaic German, the examples again being taken from Schwyzer, *Griechische Grammatik*, 16, as well as from H. Paul, *Mittelhochdeutsche Grammatik*, Tübingen 1904, § 345. Without going into details, these examples are indicative of the limitations that such cases of upward attraction are subject to. Four of the five cases are correlative in nature, which means that it is the correlative pronoun which occupies the matrix position and has the appropriate, i.e., unattracted, case. The head of the relative clause is correspondingly a kind of left-dislocated noun phrase and much freer to have its case determined by outside forces. Also, in four of the five cases the competing case is the nominative.

20 Interestingly, the sensitivity of subject–predicate agreement noted in note 16 is also found in cases of downward attraction. An instructive example is discussed in Quicoli (1972), who took it from Andrews (1971). The importance of such examples for the theory of FRs was discovered in Hirschbühler (1976a). Consider the following example (P.C. 50, a, cited in Smyth, *Greek Grammar*, 16:

(i) a. emmenomen hois$_{dat}$ hômologêsamen dikaiois$_{dat}$ ousi$_{dat}$ ê ou
we abide by- those we-have-agreed just being or not
'Do we abide by those things which we consider just, or not?'
b. emmenomen toutois$_{dat}$ ha$_{acc}$ hômologêsamen dikaia$_{acc}$ onta$_{acc}$ ê ou

It would appear that any analysis in which the case on the relative pronoun starts out as an accusative and is then attracted to a dative under influence of the matrix structure must be problematic, because subsequent (re)application of case agreement between that *wh*-element (or its trace) and the predicative modifier will flagrantly violate the strict cycle condition, or what replaces it in more recent syntactic frameworks.

21 More generally, as argued in Izvorski (2001), such concessive free relative clauses have the status of free adjuncts. Izvorski argues that these should be analyzed as bare CPs, thereby accounting for the possibility of multiple *wh*-elements, which are absent in other types of FRs. It should be noted here that under an analysis in terms of grafts, as suggested in section 6, and in particular in connection with (89), all FRs are considered to be bare CPs. The difference would then be that free adjunct FRs, unlike the other types of FRs, do not have their *wh*-word grafted onto some XP-position in the matrix clause.

22 See Wiltschko (1998) for some related discussion.

23 There are several other distinctions between headed relative clauses and FRs that deserve to be mentioned. First, the structure of the *wh*-phrase tends to be more limited in FRs than in headed relatives. For English, such differences are minimal, but in Dutch and German, for example, only simplex *w*-words can introduce an FR. The following examples are from German:

(i) Ich esse was/*welche Speisen Maria mir serviert.
I eat what/whichever dishes Maria me serves
'I eat whatever (dishes) Maria serves me.'

A second remarkable difference concerns the finite vs. infinitival distinction. In many languages, including English, relative clauses can sometimes be infinitival. FRs however, at least in English, cannot be infinitival, as shown by the following contrasts:

(ii) a. The books that/which you should read are lying on the table.
The books (*that/*which) (for you) to read are lying on the table.
What/whichever books you should read is/are lying on the table.
*What (for you) to read is lying on the table.

24 There is a second distinction that is more or less tangential to our main concern, viz. the distinction between realis FRs and irrealis FRs (cf. Grosu and Landman 1998). This distinction is not found in English or any of the other Germanic languages, which only have the normal, realis, type of FR, but it does exist in Romance, Slavic, and Semitic. Irrealis FRs look like normal FRs except that they exhibit an irrealis verb form. (i) is an example from Romanian, example (78b) in Grosu and Landman (1998):

(i) Nu mai avem ce locuri moi să vizită m.
not more have-we what places new SUBJUNCTIVE visit
'There are no longer any places for us to visit.'

Grosu (1994) argues that irrealis FRs differ in a number of significant ways from ordinary FRs:

- There are no matching effects such as those found in regular (realis) FRs; cf. section 4.
- Unlike realis FRs, irrealis FRs allow multiple *wh*-phrases (and in this sense the adjunct FRs discussed in section 5.1 are perhaps more like irrealis FRs):

(ii) Nu mai avem pe cine cu cine împerechia.
not more have-we ACC who with who to-match
'We no longer have any pairs to match.' (said by an unsuccessful matchmaker)

Note, finally, that the absence of infinitival FRs remarked upon above does not extend to irrealis FRs. This is shown in (ii), and a French example such as (iii) may also be an instance of an irrealis FR:

(iii) Je n'ai pas où aller.
I have not where go
'I do not have any place to go to.'

25 The main references for the semantics of FRs are Jacobson (1995) and Grosu and Landman (1998).

26 Grosu and Landman (1998) build on this proposal and extend it to an overall typology of relative clauses. More specifically, they define a type of relative clause which they call *maximalizing relatives* and which they show includes degree or amount

relatives, free relatives, (certain) internally headed relatives, and correlatives. Dayal (1995, 1997) further argues that definite FRs (identity FRs) and universal FRs (free-choice FRs) are both definite, and that *-ever* contributes a modal dimension to the interpretation of the definite description by ensuring that it denotes a generalized quantifier that includes only those properties that are true of the bearer, regardless of identity.

27 The special status of TFRs has apparently first been noticed by Nakau (1971). Further discussion can be found in Kajita (1977), McCawley (1988), Wilder (1998, 1999), Van Riemsdijk (1998d, 2000, 2001), and Grosu (2002).

28 Properties (ii) and (vii) are from McCawley (1988) and Kajita (1977) respectively. Properties (i) and (iii–vi) are from Wilder (1998, 1999), while properties (viii–xi) are from Van Riemsdijk (2000, 2001).

29 A similar and in certain ways even more instructive case concerns rightward detachment of PPs out of noun phrases in Dutch, a necessary condition in order for extraction of *wh*-elements out of such a PP to be possible. In other words, in order for extraction to be possible in (ia), the PP must be detached as in (ib), while extraction in (ic) is prohibited. See Van Riemsdijk (1997b) for discussion:

(i) a. Waar heb je de conceptversie (gisteren) ___ van afgewezen?
what have you the draft version (yesterday) ___ of rejected
'What did you reject the draft version of?'
b. wh_i . . . [$_{NP}$ X] . . . [$_{PP}$ e_i *van*]
c. *wh_i . . . [$_{NP}$ X [$_{PP}$ e_i *van*]]$_{NP}$

If we apply this rightward detachment of the PP to a PP that is part of the predicate nominal in a TFR, it turns out that the landing site of the detached PP must be in the matrix structure in order for extraction to be possible, whereas extraction out of a rightward-detached PP inside the relative clause yields strongly ungrammatical results:

(ii) a. Waar heb je [wat hij een conceptversie noemde] gisteren van
what have you what he a draft called yesterday of
afgewezen?
rejected
'What did you reject what he called a draft version of?'
b. *Waar heb je [wat hij een [conceptversie ___] [___van] noemde] afgewezen?

30 It is not entirely clear whether this contrast is comparable to the phenomena of imperfect matching observed in section 4.2.2, or whether the contrast is rather an illusion that stems from the fact that the apparent TFR can also be interpreted as a regular FR, in which case the *was* is the element that trivially (due to nom/acc-syncretism) satisfies the conflicting case requirements.

31 Note, incidentally, that the word order within the relative clause is different in the two cases because in (81a) the predicative adjective precedes the verb while in (81b) it follows it. As a matter of fact, in the predicative case (81a) both orders are possible, while in the attributive case only the order V-PRED is possible. There is a simple reason for this contrast. As is the case in many languages, including English, prenominal attributive adjectives must be adjacent to the noun (**the proud of his father boy*). German, which, like Dutch, is verb final, lacks this possibility of extraposing the

small-clause predicate of the TFR. Consequently, attributive adjectives in German can never be modified by a TFR.

32 See Grosu (2002) for a defense of the DSH.

33 It is interesting to note that the notion of 'shared elements' also plays a central role in the analysis of Japanese (internally and externally) headed relative clauses within the framework of Dynamic Semantics presented in Kurosawa (2003).

34 Wilder (1999) proposes to adopt (84), but with a second, identical, occurrence of the small-clause predicate inside the CP. Backward deletion then applies to that small-clause predicate. Such an analysis is problematic, however (cf. Van Riemsdijk 2001). One of the problems concerns the position of the deletion site. Backward deletion (like Right Node Raising, for example) is subject to the constraint that backward deletion can only apply to right-peripheral elements. But the shared element in TFRs need not be clause-final at all, as is shown among other things by German examples such as (78) and (79).

35 In addition to reanalysis (as frequently assumed for pseudo-passives like *this must be looked into* or *John was taken advantage of*), there are various other syntactic phenomena of this kind (see Lakoff 1974b for an early discussion of such phenomena). A simple example from Kajita (1977) illustrates a case which is quite similar to that of TFRs: the *far from* construction. In examples like (i):

(i) a far from simple matter

simple is the semantic head, and it is also the syntactic head in that it is adjacent to the noun, as required by the general adjacency requirement on attributive adjectives. Nevertheless, if *simple* is the head, then what could *far from* be? It is a non-constituent, and it certainly looks as if *far* takes a PP-complement, as it regularly does, and that the preposition *from* takes an adjectival complement, as it is known to do. As is argued in Van Riemsdijk (2001), this case can also be resolved by means of multiple tree structures being associated with a single string of terminals.

36 A proposal for a multidimensional analysis of FRs which is quite similar to the proposal sketched here is Citko (1998).

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28 Freezing Effects

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1 Introduction

This chapter discusses the phenomenon of Freezing. Freezing is an island effect that is associated with certain movement-derived structures. The general idea is that a phrase from which, in principle, an element can be extracted turns into an island for extraction when that phrase has been involved in some movement process, either as the moved item or as the site to which the moved phrase gets attached. Thus, phrases that have been moved become islands for extraction;

they get frozen, so to speak. And phrases to which an element has been attached via some movement operation also turn into islands (i.e., frozen domains).

The organization of this chapter is as follows. In section 2, two early generative studies will be presented that discuss the phenomenon of Freezing, namely Ross (1974b) and Wexler and Culicover (1980). Section 3 discusses the frozenness of moved constituents and section 4 deals with the frozenness of certain movement-derived configurations (involving adjunction).

2 Ross's ISP and Wexler and Culicover's Freezing Principle

2.1 The Immediate Self-Domination Principle

As Ross pointed out in his seminal dissertation (1986, dissertation 1967), certain phrase structure configurations are inaccessible to transformational rules. These island effects led to the formulation of a number of constraints in linguistic theory, such as the Complex NP Constraint, the Sentential Subject Constraint, and the Coordinate Structure Constraint. In Ross (1974b), the question was raised whether (some of) the island constraints could be subsumed under a more general island constraint. He argued that the Complex NP-configuration (CNPC) and the Coordinate Structure configuration (CSC) shared one phrase structural property: the containing node out of which an element is removed is a self-dominating node, i.e., a node which immediately dominates another node of the same type. This is illustrated in (1):

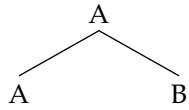
(1) a. $[_{NP}\ [_{NP}$ the fact] $[_{S}$ which they uncovered]]
b. $[_{ConjP}\ [_{ConjP}$ his socks] or $[_{ConjP}$ his gloves]]

The CNPC and the CSC were unified under what Ross called the Immediate Self-Domination Principle:[1]

(2) **The Immediate Self-Domination Principle (ISP):**
No element may be Chopped out of a node which immediately dominates another node of the same type.

Given the fact that self-dominating nodes represent Chomsky-adjunction configurations, the ISP states that extraction of a constituent out of an adjoined structure is prohibited. Schematically:

(3)



As implied by the ISP, islandhood holds not only for base-generated adjunction configurations, but also for movement-derived adjunction configurations. Ross illustrates this with the island-creating effect of the transformational rule Complex NP-Shift, which moves a constituent to the right of the clause:[2]

(4) a. She will send [a picture of the Waco Post Office] [to Inspector Smithers].
b. She will send t_i [to Inspector Smithers] [a picture of the Waco Post Office]$_i$.

(5) a. [The Waco Post Office]$_j$ she will send [a picture of t_j] [to Inspector Smithers].
b. ??[The Waco Post Office]$_j$ she will send t_i [to Inspector Smithers] [a picture of t_j]$_i$.

As Ross (1974b: 103) observes, "it is more difficult to chop constituents from the shifted constituent than it is to chop them from an unshifted one."[3] Compare (5a) and (5b). The ISP accounts for this contrast: After NP-shift, we get a phrasal S-node which immediately dominates another S-node; removal of a constituent out of this (S-)adjunction configuration is blocked.

2.2 *The Freezing Principle and the Raising Principle*

The island-creating effect of certain movement operations was independently observed by Wexler and Culicover (1977, 1980), who proposed a theory of locality on the basis of learnability considerations. They discern two types of 'frozen' nodes:

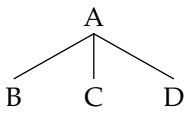
- nodes that are frozen because they are non-structure preserving (i.e., having a non-base-immediate structure) (frozenness because of the so-called Freezing Principle (see (7));
- nodes that are frozen because they are moved/raised (frozenness because of the Raising Principle (see (9)).

The first type of frozen node is the result of the application of a non-structure-preserving adjunction operation: a syntactic node gets frozen if a transformation changes the structure of that node so that it is no longer a base structure. Thus, those nodes that represent derived structures that are not base generable form islands for transformational rules. Such rules which derive a non-base-generable node A are dubbed rules which are 'non-structure-preserving at a node A'. This notion is the opposite of 'structure-preserving at a node A', which is defined as follows (definition taken from Culicover 1982):[4]

> A transformation is structure-preserving at a node A just in case the structure immediately dominated by A after the transformation has applied to A is a structure that could have been generated immediately below A as a base expansion by the phrase structure rules.

Given this definition, we could say that the derived structure represented by node A in (6) forms an island for extraction, if there is no Phrase Structure rule A → B C D which can base generate this order in the base component of the grammar. That is, the output B C D is non-base generable, but is the result of some transformational rule which is non-structure preserving at node A.[5] Such nodes to which a non-structure-preserving transformation has applied are frozen nodes. The principle of grammar which blocks extraction out of frozen nodes can now be stated as in (7):

(6)



(7) **Freezing Principle (FP) (Wexler and Culicover 1980: 119):**
If a node A of a Phrase-marker is frozen, no node dominated by A may be analyzed by a transformation.

Consider now the following examples:

(8) a. Who_j did John [$_{VP}$ send an expensive book about horned frogs [to t_j]]?
b. *Who_j did John [$_{VP}$ send t_i [to t_j] [an expensive book about horned frogs]$_i$]?

If the base structure of the VP consists of the sequence V NP PP (i.e., VP → V NP PP in terms of phrase structure rules) and if the structural change of Heavy NP-Shift corresponds to the structure [$_{VP}$ V PP NP] – a non-base-generable order – it follows by the definition of 'non-structure preserving' that the VP in which Heavy NP-Shift has applied is frozen. The Freezing Principle in (7) states that it is impossible to analyze this frozen VP. This is illustrated in (8): even though *wh*-fronting may apply to the object of the preposition *to* in (8a), it is impossible to strand the preposition in (8b), a structure in which Heavy NP-Shift has applied. The node to which the adjunction is made, i.e., VP, is frozen.

Let us next turn to the second type of frozen node: that is, a node that is frozen because it has undergone Raising, i.e., (structure-preserving) movement of a constituent from one cyclic domain to another (S and NP being the traditional cyclic domains; cf. Chomsky 1973). More specifically, Wexler and Culicover formulate the locality principle as follows:

(9) **Raising Principle (RP) (Wexler and Culicover 1980: 143):**
If a node A is raised, then no node that A dominates may be used to fit a transformation.

Wexler and Culicover illustrate the application of the Raising Principle with the following example (among others):

(10) a. [$_S$ [$_{NP}$ Some people *from Philadelphia*] greeted me].
b. [$_S$ [$_{NP}$ Some people t_i] greeted me [*from Philadelphia*]$_i$].
c. *[What city]$_j$ did you expect [$_S$ [$_{NP}$ some people t_i] to greet you [$_{PP}$ from t_j]$_i$]?

In (10b), a PP has been extraposed from the cyclic node NP to a sentence-final position within the dominating cyclic node S. As shown by (10c), this PP cannot be analyzed by a transformation like *wh*-fronting. In this respect, it differs from an example like (11), in which the NP has been extracted from a (non-extraposed) PP which is part of an NP occupying a VP-final object position:

(11) This is the only city [*WH*$_j$ that [you have to provide [an analysis [$_{PP}$ of t_j]]]].

Importantly, the derived structure in (10b) (displaying the linear sequence V NP PP) is a possible base structure. Compare, for example, (10b) with example (12):

(12) [$_S$ Some people [$_{VP}$ [$_V$ greeted] [$_{NP}$ me] [$_{PP}$ with enthusiasm]]].

Given the fact that the derived order V NP PP is also a base-generable one, the frozenness of the extraposed PP cannot be explained, then, in terms of the Freezing Principle, which holds for non-structure-preserving contexts. It is the Raising Principle, as stated in (9), which blocks extraction of the complement of P. More particularly, the moved PP is the frozen node.

Since in both cases, frozenness of A implies non-analyzability by transformational rules, the two subcases of freezing may be subsumed as subcases of a generalized Freezing Principle stating (cf. Wexler and Culicover (1980: 542; note 6)):[6]

(13) **The generalized Freezing Principle:**
A node is frozen if (i) its immediate structure is non-base, or (ii) it has been raised.

The essential characteristic of the Freezing Principle is clear from the following quotation from Wexler and Culicover (1980: 120): "In line with the Freezing Principle, we may think of the base grammar as providing *characteristic structures* of the language. Transformations sometimes distort these structures, but only these characteristic structures may be affected by transformations."

2.3 Freezing and the Cycle

Some further illustrations of the frozenness of moved constituents will be given in section 3. First, it is important to note the role of ordering of transformations in a derivation. The frozenness of moved constituents presupposes an ordering on the application of transformational rules. If no ordering were imposed, one

might simply propose an alternative potential derivation of a sentence like (8b) according to which extraction of the complement to P applies before the heavy object NP is shifted rightward. In that case, P-stranding takes place prior to Heavy NP-Shift.

Although originally, ordering was defined at the level of specific transformational rules (rule A applying before rule B, etc.), it was captured by the more general principle of the Cycle as introduced in Chomsky (1964a).[7] In line with this principle, the rule shifting the heavy NP to a position adjoined to VP must apply first, because it involves the smallest domain, viz. VP. The rule which fronts the NP-complement to P must follow PP-extraposition, since it involves a larger cyclic domain, viz. CP. Thus, the Principle of the Cycle will require that rightward movement takes place first in those structural contexts. In the rest of this chapter, the principle of the Cycle is supposed to regulate the transformations in the derivation of the various constructions that will be discussed; the application of this principle of grammar in the derivation of a given construction will not always be explicitly mentioned.

3 The frozenness of raised constituents

3.1 The frozenness of rightward-moved constituents

Consider the following structures that have been argued to involve rightward movement of the phrase in italics. In (14), the phrase *a book about linguistics* has undergone Heavy/Complex NP-Shift. The examples in (15) illustrate PP-extraposition (see chapter 25). (16), finally, exemplifies the phenomenon of CP-extraposition; in these examples, extraposition from within a noun phrase has taken place:

(14) I gave – to John *a book about linguistics*.

(15) a. I saw [a book –] yesterday *about lazy pronouns*.
b. John put his finger – yesterday *into his sister's throat*.

(16) a. John announced [a plan –] yesterday *PRO to fix Mary's car*.
b. John met [a child] yesterday *who read Syntactic Structures*.

The examples in (17) show that after Heavy/Complex NP-Shift, the noun phrase has become an island for extraction. Thus, a rightward-moved noun phrase is frozen:[8]

(17) a. *What$_j$ did you give t_i to John [a book about t_j]$_i$?
b. *Who$_j$ did you see t_i yesterday [some beautiful pictures of t_j]$_i$?
c. *Horned frogs$_j$, John sent t_i to Horace [an expensive book about t_j]$_i$.

The frozenness of extraposed PPs is shown by the ill-formedness of the following examples:[9,10]

(18) a. *[What kind of pronouns]$_j$ did you read [a book t_i] yesterday [about t_j]$_i$?
b. *[Whose throat]$_j$ did John put his finger t_i yesterday [into t_j]$_i$?

Thus, after extraposition of PP, preposition stranding is blocked. As shown in (19), preposition stranding is generally permitted if the PP occupies its base position:

(19) a. [What kind of pronouns]$_i$ did you read [a book about t_i] yesterday?
b. [Whose throat]$_i$ did John put his finger [into t_i] yesterday?

As shown in (16), a clause can be extraposed out of a noun phrase. It is well known that a non-extraposed clause constitutes an island for extraction (cf. Ross's 1986 CNPC). As Wexler and Culicover (1980) observe, there is no complex NP after extraposition of the clause; however, removal of an element from within the clause is still impossible. This is exemplified in (20). This opacity of the extraposed clause follows if moved phrases are frozen, i.e., non-analyzable for subextraction operations (i.e., Wexler and Culicover's RP):[11]

(20) a. *[Whose car]$_j$ did John announce [a plan t_i] yesterday [PRO to fix t_j]$_i$?
b. *[Which book]$_j$ did you meet [a child t_i] yesterday [who read t_j]$_i$?

In short, the above phenomena show that rightward-moved constituents are frozen, i.e., constituents contained within the moved phrase cannot be moved to a position external to it.

3.2 The frozenness of leftward-moved constituents

Let us next turn to those Freezing effects in which the frozen constituent is one which has undergone leftward movement and ends up left-adjoined to some higher phrase. In English, the following examples of embedded topicalization have been analyzed as instances of leftward adjunction to IP (S) (cf. Baltin 1978b, 1982; Johnson 1986; Lasnik and Saito 1992):

(21) a. I think that [reviews of his books]$_i$ John never reads t_i.
b. I think that [articles about vowel harmony]$_i$ you should read t_i carefully.

Under the assumption that the topicalized phrase is adjoined to IP, we get the following structure:

(22) . . . [$_{CP}$ . . . [$_{IP}$ NP_i [$_{IP}$ . . . t_i . . .]]]

This structure would be unanalyzable for further transformations both under Ross's ISP and under Wexler and Culicover's Freezing Principle (or generalized Freezing Principle). Under the ISP, the node IP would be a frozen node, since it is a self-dominating node. Under the Freezing Principle, as defined by Wexler and Culicover, IP would be a frozen node if the adjunction is non-structure preserving.

As shown by the following examples from Lasnik and Saito (1992: 101), extraction out of the clause-internally topicalized noun phrase yields a very marginal sentence (see chapter 23):[12]

(23) a. ??Vowel harmony$_j$, I think that [articles about t_j]$_i$ [$_{IP}$ you should read t_i carefully].
b. ??Who$_j$ do you think that [pictures of t_j]$_i$ [$_{IP}$ John wanted t_i]?

Embedded topicalization also applies to PPs:

(24) I think that [to Mary]$_i$ John gave a book t_i.

As Postal (1972) observed, extraction of the complement to P is impossible (cf. (25a)) in a derived structure like (24). In other words, P-stranding is blocked after the PP has been topicalized within the embedded clause. The islandhood of the moved PP in (24) could also be characterized as a Freezing effect. Of course, extraction is permitted from the base position (cf. (25b)):

(25) a. ?*Who$_j$ do you think that [$_{PP}$ to t_j]$_i$, John gave a book t_i?
b. Who$_i$ do you think that John gave a book [$_{PP}$ to t_i]?

Other ill-formed extraction patterns given in the literature as illustrations of the freezing effect involve (leftward) scrambling. In languages like Dutch and German, it is impossible to remove an element out of a phrase that has been scrambled leftward in the so-called Middle Field of the clause (cf. Webelhuth 1989; Müller 1998). Consider, for example, the contrast between (26) and (27) from Dutch. In (26), the PP-complement to V is in its base position (i.e., the position following the adverbial phrase); extraction of the R-pronoun *daar* from within the PP is permitted (cf. (26b)). In (27), on the contrary, the PP has been scrambled and does not occupy its base position any more. As a consequence, extraction of the R-pronoun out of the PP is impossible:[13]

(26) a. Jan had nog nooit daarvan gehoord.
Jan had yet never there-of heard
'Jan had never heard of it.'
b. Daar$_i$ had Jan nog nooit [t_i van] gehoord.
There had Jan yet never – of heard
'Jan had never heard of it.'

(27) a. Jan had [daarvan]$_i$ nog nooit t_i gehoord.
Jan had there-of not yet – heard
'Jan had never heard of it.'
b. Daar$_i$ had Jan [t_i van] nog nooit gehoord.
There had Jan – of yet never heard
'Jan had never heard of it.'

Adopting an analysis in which the scrambled PP is left-adjoined to the VP, we get a structure like (28):

(28) . . . [$_{IP}$ . . . [$_{VP}$ PP$_i$ [$_{VP}$ ADVP . . . t_i V . . .]]]

Ross's ISP would analyze the VP node as a frozen node, since it is a self-dominating node. Given the frozen status of VP, this structure would be unanalyzable for further transformations. According to Wexler and Culicover's theory, the frozenness of the VP would be attributable to the Freezing Principle. If the VP containing the leftward scrambled PP is non-structure preserving (i.e., having a non-base-immediate structure), it is frozen and therefore unanalyzable for further transformations.

3.3 Freezing and substitution

The Freezing phenomena discussed thus far involve an adjunction configuration (i.e., if one follows the standard approach to these phenomena): a moved phrase XP that has been (left- or right-)adjoined to another phrase YP forms an island for extraction. Of course, one could propose to generalize the frozenness of moved phrases to all moved constituents, i.e., not only phrases that are input to an adjunction operation but also those that are input to a substitution operation. In that case, A-movement of a noun phrase to [Spec, IP] and A'-movement of a phrase to [Spec, CP] would result in frozenness of the moved constituent.[14]

Freezing as a result of A-movement can be illustrated by means of the following examples from German (taken from Müller 1995):

(29) a. Worüber$_j$ ist von keinem [ein Buch t_j] gelesen worden?
About-what is by no-one a book-NOM read been
'No one has read a book about what?'
b. *Worüber$_j$ ist [ein Buch t_j]$_i$ von keinem t_i gelesen worden?

These examples represent passive constructions. In German, the nominative NP can remain in its base (i.e., direct object) position. As shown by (29a), *wh*-extraction of *worüber* from within the nominative NP that occupies its base position is possible. The ill-formedness of (29b) shows that A-movement of the noun phrase to [Spec, IP] turns the raised NP into a frozen constituent; subextraction of *worüber* is not allowed.

As shown by (30), A-movement also induces a Freezing effect in English (cf. Huybregts 1976; Lasnik and Saito 1992; Collins 1994a). Unlike German, English does not permit VP-internal nominative subjects in passive constructions; A-movement to [Spec, IP] is obligatory:[15]

(30) a. *Who$_j$ do you think that [$_{IP}$ [pictures of t_j]$_i$ were painted t_i]?
b. *Which cars$_j$ were [$_{IP}$ [the hoods of t_j]$_i$ damaged t_i]?

Freezing as a result of A′-movement to [Spec, CP] is exemplified in (31) (cf. Johnson 1986):[16]

(31) a. ??[Which guy]$_j$ did you ask [which picture of t_j]$_i$ she bought t_i?
b. ??[Which guy]$_j$ did you wonder [which story about t_j]$_i$ I had told t_i?

Observe that *wh*-movement out of an in situ *wh*-phrase yields a better result:

(32) a. ?[Which guy]$_j$ did you buy [which picture of t_j]?
b. ?[Which guy]$_j$ did you tell me [which story about t_j]?

Given the ungrammaticality of the examples in (29b), (30), and (31), one might want to generalize the Freezing effect to all types of phrasal movement (i.e., A-movement, A′-movement involving adjunction, and A′-movement involving substitution); see Müller (1998) for such a proposal.

3.4 Analyses of the frozenness of moved constituents

3.4.1 Locality

The islandhood of moved constituents has never had a very prominent place in general theories of locality. Other island effects, such as the complex NP-island and the *wh*-island, have received much more attention in attempts to come to a more general, unified theory of locality. Neither Chomsky (1977b) nor Chomsky (1986a) contains a discussion of the phenomenon of freezing. Johnson (1986: 3.2.2) shows, however, that the islandhood of moved constituents follows quite straightforwardly from Chomsky's Barriers theory.[17] After having been moved, a phrase occupies a non-L-marked position (say, non-theta-governed). As a result of this, the phrase forms a Blocking Category (BC) and a Barrier for constituents that are dominated by it. Because the moved phrase is a BC, the maximal projection immediately dominating it (e.g., VP or IP) is also a Barrier. Movement out of constituent that has itself been moved thus crosses two Barriers, and hence violates the Subjacency Condition.

Let us take as an illustration the examples in (17b) and (23b). The derived structures of these sentences is the following:

(33) *[$_{CP}$ Who$_j$ did [$_{IP}$ you [$_{VP}$ [$_{VP}$ see t_i yesterday] [some beautiful pictures of t_j]$_i$]]]?

(34) *[$_{CP}$ Who$_j$ do [$_{IP}$ you think [$_{CP}$ t_j' that [$_{IP}$ [pictures of t_j]$_i$ [$_{IP}$ John wanted t_i]]]]]?

In the derivation of (33), the NP *some beautiful pictures of who* undergoes Heavy NP-Shift and gets adjoined to the VP. Since the shifted NP does not occupy its base position (i.e., sister to V), the NP is not L-marked and hence forms a BC and a Barrier for extraction. When the *wh*-phrase *who* is moved out of the shifted NP to the specifier of the embedded CP, it crosses three Barriers: the shifted NP, the higher VP, and IP.

In (34), the noun phrase *pictures of who* has been topicalized within the embedded clause. It ends up in a position left-adjoined to the IP-node. Extraction out of the topicalized NP to the [Spec, CP] of the embedded clause violates the Subjacency Condition. Two Barriers are crossed: the moved NP is a blocking category and a barrier, since it is not L-marked; the IP to which the moved phrase is adjoined is a barrier by inheritance.

3.4.2 Incomplete antecedents

In Huybregts (1976), the Freezing phenomenon is explained in terms of a restriction on antecedents. He points out that by adopting Trace theory (cf. Chomsky 1973, 1976) it is possible to give a unified explanation of certain ill-formed relationships between an antecedent-phrase and an element that is linked to it. His starting point is the observation made by George Williams (1971) that incomplete antecedents (i.e., antecedents from which an element has been removed) are bad as antecedents for pronominal elements. Consider for this the following pair (taken from Huybregts 1976):

(35) a. The man who spoke to [the mother of the boy]$_i$ said she$_i$ was ill.
b. *The boy who$_j$ I saw [the mother of t$_j$]$_i$ said she$_i$ was ill.

In (35a), the (complete) noun phrase *the mother of the boy* can function as the antecedent of the pronoun *she*. As shown by the ill-formedness of (35b), an antecedent–anaphor relationship is impossible when the antecedent (*[the mother of t$_j$]*) is incomplete. Thus, schematically, the following configuration is impossible:

(36) . . . Z . . . [$_X$ . . . t$_z$ . . .]$_i$ . . . pron$_i$
where t$_z$ is a trace of the moved element Z

Huybregts points out that the Freezing-effect configuration correponds to the configuration in (36), the only difference being that instead of a lexical pronoun we have an empty element, more specifically "a trace":

(37) . . . Z . . . [$_X$ . . . t$_z$ . . .]$_i$ . . . t$_i$
where t$_z$ is a trace of the moved element Z and t$_i$ the trace of the moved element X

In short, the Freezing effect is explained in terms of a restriction on antecedents: phrases from which an element has been removed are not proper antecedents for a dependency relation (e.g., antecedent–pronoun, antecedent–trace). This is stated more formally as follows (Huybregts 1976: 346):

(38) **Antecedent condition:**
No rule can refer to X, Y in the structure:
. . . X . . . [$_{\alpha}$ . . . Y . . .] . . . Z . . .
where Z is linked to α

Consider now how (39) is ruled out by this constraint:

(39) ??[$_{CP}$ Who$_j$ do [$_{IP}$ you think [$_{CP}$ t$_j$′ that [$_{IP}$ [pictures of t$_j$]$_i$ [$_{IP}$ John wanted t$_i$]]]]]?

The syntactic structure in (39) violates the Antecedent Condition: t$_i$ is the trace of the incomplete antecedent noun phrase *[pictures of t$_j$]*.

3.5 Thawing effects

The generalization formulated thus far is that a moved phrase forms an island for extraction. It was shown that a phrase XP that allows subextraction of an element when it occupies its base position turns into an island when it is in a derived position. Movement, in other words, has a Freezing effect.

Although in general it seems true that a node gets inaccessible for subextraction after movement, it has been observed that sometimes movement has a thawing effect. That is, sometimes extraction out of a phrase XP gets better after XP has been moved to some position. In other words, movement of XP makes it (more) transparent for extraction.

Lasnik and Saito (1992: 100ff.), for example, observe such a thawing effect in the case of A′-moved subject NPs. They agree with the observation that extraction is better from a direct object NP in its base position than from one in a derived position (e.g., [Spec, CP] (cf. (31)) or adjoined to IP (cf. (23)). They point out, however, that for subject-NPs we have the opposite effect: extraction from a subject-NP in [Spec, IP] (cf. (40)) is worse than removal from a subject-NP that has been moved to [Spec, CP] (cf. (41a)) or to a position adjoined to IP (cf. (41b)). In other words, movement of a subject NP to [Spec, CP] or a position adjoined to IP has a thawing effect; extraction from the subject NP is better when it is in a derived position (examples drawn from Lasnik and Saito 1992: 101, 102):[18]

(40) ?*Who$_j$ do you think that [pictures of t$_j$] are on sale?

(41) a. ??Who$_j$ do you wonder [$_{CP}$ [which picture of t$_j$]$_i$ [$_{IP}$ t$_i$ is on sale]]?
b. ??Who$_j$ do you think that [$_{IP}$ [pictures of t$_j$]$_i$ [$_{IP}$ Mary believes t$_i$ are on sale]]?

The question, of course, arises how to account for the Freezing effect with moved object NPs and the thawing effect with moved subject NPs. Or if one puts it in terms of Subjacency, why does extraction out of a moved object NP yield a Subjacency violation and movement out of a moved subject weaken the Subjacency effect?

Lasnik and Saito account for the observed asymmetry in the following way. On the basis of the thawing effect in sentences like (41), they conclude that A'-moved constituents (i.e., A'-binders) are non-barriers. Formally, this is achieved by adopting the following definition of barrier:

(42) G is a barrier for b if:
  a. G is a maximal projection;
  b. G is not an A'-binder;
  c. G is not L-marked; and
  d. G dominates b.

Thus, the moved object NPs in (23) and (31), the topicalized subject NP in (41b), and the *wh*-moved subject in (41a) do not constitute Barriers for extraction; they are A'-binders and therefore transparent for extraction.

The subject NP in (40), on the other hand, does not occupy an A'-position. Not being an A'-binder, the subject NP forms a Barrier for extraction; extraction out of the non-moved subject NP yields a Subjacency violation.

If A'-binders do not constitute Barriers for Subjacency, the question arises what accounts for the marginality (i.e., "??") of the examples in (23), (31), and (41). Lasnik and Saito argue that their marginality is due to Kuno's (1973a) Internal Constituent Constraint (ICC). This constraint roughly states that extraction cannot take place from clause-internal constituents. Extraction is only possible from phrases that are in a clause-external (i.e., right-peripheral) position. This is exemplified by the following contrastive pair:

(43) $^{??}\text{Who}_j$ did you give [pictures of t_j] to Bill?

(44) Who_j did you see [several pictures of t_j]?

Clearly, the moved phrases in (23), (31), and (41) are not in right-peripheral position within the embedded clause. Extraction out of these phrases violates Kuno's ICC constraint. Notice that extraction out of the subject NP in (40) violates both Subjacency and the ICC.

Summarizing, Lasnik and Saito interpret the 'frozenness' of A'-moved constituents in terms of Kuno's ICC, rather than in terms of Subjacency. Clearly, the frozenness of rightward moved constituents (see section 3.1) cannot be subsumed under the ICC, since after rightward shift has applied to some phrase, this phrase is in a clause-external (i.e., peripheral) position. Furthermore, the ill-formedness of these rightward movement constructions cannot be explained in terms of Subjacency, if movement is really involved; this for the reason that under such a movement analysis, the rightward-moved phrase is an A'-binder, which, following the definition in (42), does not count as a barrier. Lasnik and Saito (1992: 104) are aware of the impossibility of explaining the islandhood of "rightward moved phrases" in terms of Subjacency. They point out this problem for their analysis on the basis of relative clauses that have been extraposed from a noun phrase (cf.

(20)). They conclude that the problem can be solved if it is assumed that "extraposed" relative clauses are simply base generated in a right-peripheral position (see chapter 25). Being not in a derived A'-position, the relative clause counts as a Barrier for extraction.

3.6 (Apparent) counter-examples to Freezing

Thus far we have seen that when a phrase has been dislocated, it functions as an island for elements that are contained within the moved phrase. Extraction from within the displaced phrase is impossible. When a PP has been extraposed, or when an NP undergoes Heavy NP-Shift, movement from these phrases is barred. There are structures, however, where extraction from a moved phrase appears to be possible. One such case, which was already noted in Wexler and Culicover (1980: 342), is given in (45) (see also Johnson 1986):

(45) a. Who$_j$ is it obvious [that Mary met t_j]?
b. What$_j$ was it clear [that Mary had bought t_j]?

Under a traditional analysis of these constructions, the postverbal clause has been moved from subject position.[19] The expletive element *it* is inserted in the vacated subject position, and forms a chain with the extraposed clause.

If movement is involved, the question, of course, arises why extraction out of the clause is not blocked. That is, why doesn't the extraposed clause constitute a frozen domain? Wexler and Culicover (1980) point out that one way out of this difficulty is to adopt the view that such 'extraposition' structures as in (45) are not transformationally derived. Rather, the right-peripheral subject clause is base generated in a right peripheral position (cf. Koster 1978d). Since the argument clause is base generated, no Freezing effect is invoked.

Absence of Freezing has also been noted for SOV-languages like Dutch and German, which have their clausal complement to V in extraposed position at 'surface structure'. While the direct object NP occurs in a preverbal position (cf. (46)), its clausal counterpart must occur in a postverbal position (cf. (47)). Consider, for example, the following examples from Dutch:

(46) a. Jan heeft nooit zulke dingen gezegd.
Jan has never such things said
'Jan has never said such things.'
b. *Jan heeft nooit gezegd *zulke dingen*

(47) a. ?*Jan heeft nooit [dat hij Marie aardig vond] gezegd.
Jan has never that he Marie nice considered said
'Jan has never said that he liked Marie.'
b. Jan heeft nooit – gezegd [dat hij Marie aardig vond]

According to the traditional analysis (cf. Koster 1975), the base position of the direct object is the preverbal position, i.e., the position where the direct object noun phrase can occur in 'surface structure'. This means that the postverbal direct object clause occupies a derived position. Hence, a Freezing effect is expected. As shown by the following example, however, extraction out of the extraposed clause is possible:

(48) Wie$_i$ heeft Jan t$_j$ gezegd [dat hij t$_i$ aardig vond]$_j$?
Who has Jan – said that he – nice considered
'Who did John say that he liked?'

Given the transparency of the clause in (48), it has been argued that the right-peripheral clause in fact occupies its base position (cf. de Haan 1979; Hoekstra 1983). There are various ways of implementing this, depending on one's theoretical assumptions. If one adopts directionality of case assignment (cf. Koopman 1984; Travis 1984), one could say that the direct object NP in (46a) is base generated to the left of the verb in Dutch, since V assigns case to the left in Dutch. Since the clause does not permit case, it is base generated to the right of the verb (as in (47b)). Under this analysis, both the preverbal direct object and the postverbal direct object clause are sisters to V, if it is assumed that theta-role assignment is not subject to a directionality requirement.

Another way to go would be to adopt Kayne's (1994) Antisymmetry theory and assume that all languages are underlyingly SVO. This means that the direct object clause in (47b) (and (48)) simply occupies its base position in Dutch (see Zwart 1993 for discussion). Consequently, no Freezing effect is expected to be invoked. Notice, however, that under this analysis, the surface position of the direct object noun phrase in (46a) is a derived position; the DO-NP is generally taken to be moved to the specifier of some functional head, e.g., AgrO. If one adopts the view that movement induces Freezing, one would expect extraction out of the preverbal direct object to be impossible. It turns out, however, that extraction out of the direct object NP is allowed. Consider, for example, the following Dutch sentence, where the *wh*-element *wat* has been moved out of the direct object noun phrase (see chapter 66):

(49) Wat$_i$ heb jij nog nooit [t$_i$ voor dingen] gezegd?
What has you yet never – for things said
'What kind of things haven't you ever said?'

Of course, one could stipulate that movement never induces any Freezing effect. Scambled constituents, however, typically display a Freezing effect in a language like Dutch (see, e.g., (27), where a PP-complement has been scrambled). Possibly, the absence of Freezing should be related to certain types of movement (e.g., movement to [Spec, AgroP]) but not to others. This, obviously, is something which needs further investigation.

4 The frozenness of adjunction sites

As already mentioned in section 2.2, Wexler and Culicover (1980) observed that it is not only the raised node which gets frozen, but also the syntactic domain within which the transformation has applied. That is, a phrase is frozen for further movement rules once it has been the site of adjunction. Or to put it differently again, transformations cannot apply to derived structures that are not also base-generable structures.

Two Freezing configurations can be distinguished, then: (i) a configuration in which a moved phrase ZP has been right-adjoined (cf. (50a)), and (ii) a configuration in which a moved phrase has been left-adjoined (cf. (50b)):

(50) a. *[YP_j [$_{XP}$ . . . t_j . . . t_i . . .] ZP_i]
b. *[YP_j [$_{XP}$ ZP_i [$_{XP}$ . . . t_j . . . t_i . . .]]

In section 4.1, I will consider constructions instantiating (50a). In section 4.2, the frozenness of left-adjunction configurations (50b) will be discussed.

4.1 The frozenness of right-adjunction configurations

Wexler and Culicover (1980) observed the following contrast:

(51) a. Who_j did John [$_{VP}$ send [$_{NP}$ an expensive book about horned frogs] [$_{PP}$ to t_j]]]?
b. *Who_j did John [$_{VP}$ send t_i [$_{PP}$ to t_j] [an expensive book about horned frogs]$_i$]?

In (51a), the direct object noun phrase is in its base position and extraction of the NP out of the prepositional indirect object is possible. In (51b), on the contrary, extraction out of the PP is no longer possible. This islandhood, they argue, does not reside in the PP, since the PP has not been moved; it is simply in its base position. The islandhood, however, relates to the Heavy NP-Shift operation that moves the direct object to the right periphery of the clause and attaches it to VP. This Heavy NP-Shift operation derives a string that is non-base generable; that is, it is a non-structure-preserving rule. As a consequence, the VP to which the shifted NP has been adjoined gets frozen. Extraction out of this frozen domain is not allowed. Schematically:[20]

(52) . . . [$_{VP}$ [$_{VP}$ send t_j to who] *an expensive book about horned frogs*$_j$]]

Some additional examples that illustrate this Freezing effect are given in (53–54) (examples taken from Wexler and Culicover 1980: 279 and Culicover 1982):

(53) a. Who_j did John give [a book about amphibians] [to t_j]?
b. *Who_j did you [$_{VP}$ [$_{VP}$ give t_i [to t_j]] [a book about amphibians]$_i$]?

(54) a. [Which country]$_j$ did they elect [the colonel who had engineered the recent coup] [President of t_j]?
b. *[Which country]$_j$ did they [$_{VP}$ [$_{VP}$ elect t_i [President of t_j]] [the colonel who had engineered the recent coup]$_i$]?

4.2 The frozenness of left-adjunction configurations

Freezing effects with left-adjunction configurations have also been noted in the literature. Wexler and Culicover (1980: 271ff.), for example, interpret the ungrammaticality of the following examples in which an indirect object NP undergoes *wh*-movement as a Freezing effect:

(55) a. *Who did John give a book about astronomy?
b. *Mary, I gave a book about astronomy.

Their reasoning goes as follows: the double object construction in (56b) derives from (56a) (see chapter 21). In their analysis, the direct object NP and the indirect object PP are sisters to V:

(56) a. John [gave [a book about astronomy] [to Mary]].
b. John [gave [Mary] [a book about astronomy]].

They argue that the string in (56b) is derived by (right-)adjunction of the indirect object NP to the verb:[21]

(57) [$_{VP}$ [$_{V*}$ V *NP2*] NP1 –]

Since the phrase structure rule V → V NP is not a rule of the base, Dative Shift is a non-structure-preserving rule. NP2 is dominated by a frozen node (V*) after Dative Shift and therefore cannot be moved by later transformations.

Another left-adjunction configuration that invokes a Freezing effect is the embedded topicalization environment. As shown by the following examples from Johnson (1986), a *wh*-phrase cannot be moved out of an embedded clause in which embedded topicalization has applied:[22]

(58) a. *What$_j$ did you say [that [$_{IP}$ [$_{NP}$ on the porch]$_i$ [$_{IP}$ you put t_j t_i]]]?
b. *[To whom]$_j$ did you believe [that [$_{IP}$ [$_{NP}$ my book]$_i$ [$_{IP}$ you gave t_i t_j]]]?

Of course, extraction of *what* and *to whom* is permitted when no embedded topicalization has taken place:

(59) a. What$_j$ did you say that you put t_j on the porch?
b. [To whom]$_j$ did you believe that you gave my book t_j?

4.3 Analyses of the frozenness of adjunction sites

The intuitive content of the Freezing Principle is that a phrase is frozen for further movement rules once it has been the site of adjunction. The question arises whether this principle can be subsumed under another, more general condition. Johnson (1986) proposes that the Freezing effect can be explained in terms of the Subjacency Condition. Adopting a *Barriers*-style approach toward island phenomena, he reinterprets the frozenness of adjunction sites in terms of the notions Blocking Category (BC) and Barrier (cf. Chomsky 1986a). More specifically, he argues that adjunction of a phrase ZP (e.g., a rightward-moved NP) to a node XP (e.g., VP) turns XP into a BC and a Barrier. It is further assumed that the node created by adjunction is a Barrier by inheritance. So the ill-formed configurations in (50) can now be ruled out as follows: after (left- or right-)adjunction, XP is a BC and a Barrier. Because XP is a BC, the dominating XP* is a Barrier by inheritance. Hence movement of YP out of this adjunction configuration will violate Subjacency, since it must cross two Barriers: XP and XP*:

(50) a. *$[YP_j\ [_{XP^*}\ [_{XP} \ldots t_j \ldots t_i \ldots]\ ZP_i]]$ (extraction out of a right-adunction configuration)

b. *$[YP_j\ [_{XP^*}\ ZP_i\ [_{XP} \ldots t_j \ldots t_i \ldots]]]$ (extraction out of a left-adjunction configuration)

A crucial assumption in Johnson's Subjacency account of the Freezing effect is that the two nodes of the adjunction structure (i.e., XP and XP*) count as separate maximal projections. So adjunction creates an additional category. The adjoined item (ZP) is dominated by this 'new' node (XP*), but is not dominated by the original node to which it is adjoined (XP). Being separate maximal categories, both XP and XP* form Barriers for extraction.[23] Another assumption made by Johnson is that double adjunction to one phrase is barred. If this assumption were not made, movement of YP could circumvent a Subjacency violation by first adjoining to XP or XP*.

The ill-formedness of examples like (53b), where Heavy NP-Shift has applied within VP, can now be explained as follows: after adjunction of the shifted NP to VP, the lower VP is a BC and a Barrier. Because VP is a BC, the dominating VP* is a Barrier by inheritance. Movement of the *wh*-phrase to [Spec, CP] will violate Subjacency, since it must cross two Barriers, viz. VP and VP*.

The ungrammaticality of the examples in (58) featuring embedded topicalization is derived as follows: in accordance with the principle of the Cycle, topicalization within the embedded clause applies before *wh*-movement of the *wh*-phrase to [Spec, CP] (where *wh*-movement applies successive-cyclically). After the topicalized phrase has been adjoined to IP, IP is a BC. The dominating IP is a barrier by inheritance. Hence movement of the *wh*-phrase to [Spec, CP] will violate Subjacency, since it must cross two Barriers: IP and IP*.

4.4 Absence of Freezing

In sections 4.1 and 4.2, several adjunction configurations were discussed that induce islandhood. Rightward Heavy NP-Shift turns the VP-node into a frozen structure, and embedded topicalization invokes freezing at the IP-level. As Wexler and Culicover (1980) have already pointed out, there are structural environments where apparently an adjunction operation has applied but no freezing is invoked. They observe, for example, that extraposition of a PP out of a direct object NP (cf. (60)) or a subject NP (cf. (61)) does not invoke freezing of the VP and the IP, respectively, to which the PP arguably has been adjoined:

(60) a. Mary is the person [$_{CP}$ *OP*$_j$ that [IP I gave *a book* [$_{PP}$ to t$_j$] *about Fred*]].
b. What$_j$ did you [$_{VP}$ put *a folio* [$_{PP}$ on t$_j$] *about decorative arts in the sixteenth century*]?
c. ?Who$_j$ did you buy *a picture* [$_{PP}$ for t$_j$] *of my great aunt Florrie*?

(61) a. [Which newspaper]$_j$ did *a review* appear [$_{PP}$ in t$_j$] *of that new book by Fred*?
b. Who$_j$ did *the editor* talk [$_{PP}$ to t$_j$] *from the New York Times*?
c. [How necessary]$_j$ will *an analysis* be t$_j$ *of these samples*?

Wexler and Culicover interpret the absence of Freezing by stating that extraposition of PP is in fact a structure-preserving operation, i.e., an operation that does not give rise to an adjoined structure. That is, extraposition of PP yields an output which is independently generable by PS-rules. Thus, they interpret it in terms of the structure-preserving nature of the movement rule.

Johnson (1986) argues that the absence of the Freezing effect in such examples directly follows if Extraposition of PP is not syntactic movement but rather a Stylistic (i.e., PF-movement) operation, along the lines of Rochemont (1978, 1982). Under such an analysis, *wh*-movement (a syntactic operation) would take place before PP-extraposition (a PF-operation). Thus, when *wh*-movement takes place, an adjunction configuration has not yet been created.

The absence of Freezing in such examples as (62), where CP-extraposition has applied, may be explained along the same lines:

(62) a. Who$_j$ was it obvious [$_{PP}$ to t$_j$] [that Mary had left]?
b. Who$_j$ was it clear [$_{PP}$ to t$_j$] [that Mary had left]?

One may explain the absence of Freezing by saying that the extraposed clause is simply base generated in a right-peripheral position. Alternatively, one could reason along the lines of Johnson and say that CP-extraposition applies at PF. Consequently, at the point in the derivation where P-stranding applies, no adjunction configuration has yet been created.[24]

5 Conclusion

The Freezing phenomenon is an intriguing island phenomenon that has received relatively little attention in studies on locality effects on movement, certainly compared to such island phenomena as the Complex NP-Constraint, the *Wh*-Island Constraint, and the Subject condition. The major purpose of this chapter was to give an overview of (i) the various ill-formed movement patterns that fall under the Freezing effect and (ii) the types of explanations that have been given in the generative literature for this island phenomenon. Two major types of frozen phrases were discussed: (i) moved/displaced phrases, on the one hand, and (ii) phrases representing adjunction configurations, on the other hand. Of course, the explanation of the Freezing phenomenon depends on one's assumptions about movement (e.g., is movement really involved in construction Y?) and about derived structures (e.g., is the derived structure really an adjunction configuration?).

NOTES

I would like to thank Peter Culicover and an anonymous reviewer for helpful comments and suggestions. All errors are mine, of course.

1 The ISP is counter-exemplified by sentences like (i), in which an element is removed from one conjunct. See Ross (1986) and Lakoff (1986) for discussion of such extractions from coordinate structures:

(i) a movie WH_i that we [[$_{VP}$ sat around all day] and [$_{VP}$ watched t_i]]

2 The judgment in (5b), i.e., "??," is the one given in Ross (1974b). Wexler and Culicover (1980) assign a "*" to sentences in which a constituent is extracted from a phrase that has undergone Heavy/Complex NP-Shift.

3 The island-creating effect of movement was already hinted at in Ross (1986: 172ff.). He observes that no element of an extraposed relative clause may be relativized or questioned:

(i) *[The coat [which$_j$ [a girl t_i] came in [who had worn t_j]$_i$]] was torn.

As a first suggestion for the explanation of this ill-formed sentence, he proposes the following constraint:

(ii) **The Frozen Structure Constraint:**
If a clause has been extraposed from a noun phrase whose head noun is lexical, this noun phrase may not be moved, nor may any element of the clause be moved out of that clause.

Ross points out that the ungrammaticality of (i) can be reduced to his CNPC if the rule of Extraposition from NP (see chapter 25) follows such movement rules as

Question formation and Relative Clause formation. In other words, rule ordering makes it possible to account for the ill-formedness of example (i) in terms of the CNPC. So extraction of *which* takes place before the relative clause modifying *a girl* has been extraposed.

4 The notion of structure preservation was first incorporated into the theory of transformations by Emonds (1970). See also Emonds (1976).

5 The non-base-generable structure does not necessarily have to be a Chomsky-adjunction configuration. That is, structures containing a moved constituent that is attached via daughter-adjunction also form islands for extraction. See Wexler and Culicover (1980: 571, note 15).

6 Although in the literature, the Freezing effect is typically asscoiated with the phenomenon of movement (i.e., a constituent cannot be moved out of a dominating node that is frozen), we should point out that in Wexler and Culicover (1980) Freezing has a broader coverage. They argue, for example, that the rule of Gapping (a deletion rule) is sensitive to the Freezing effect (see chapter 29). While Gapping is allowed in a (prepositional) double object construction like (i), it is blocked after the Dative shift transformation has applied (cf. (ii)):

(i) John *gave* a book to Mary, and Bill – a magazine to Fred.
(ii) *John *gave* Mary a book, and Bill – Fred a magazine.

The VP in (ii) is a derived environment in which the non-structure-preserving operation Dative Shift has applied. As a consequence of this, the VP-node is frozen; Gapping is not permitted in such an environment. See Wexler and Culicover (1980: 276) for further discussion.

7 Chomsky and others initially assumed that only a subset of nodes, primarily S, S', and NP, were cyclic. It was Edwin Williams who, in his (1974) doctoral dissertation, proposed that all nodes were cyclic.

8 The examples (17a, b, c) are taken, respectively, from Lasnik and Saito (1992), Johnson (1986), and Wexler and Culicover (1980).

9 See, among others, Huybregts (1976), Koster (1978a), Wexler and Culicover (1980), and Johnson (1986).

10 PPs that have been extraposed from a subject noun phrase are also frozen domains for extraction:

(i) *What$_j$ did [a review t_i] came out yesterday [of t_j]$_i$?

11 Ross (1986) also observes the islandhood of clauses that have been extraposed out of a noun phrase. See note 3 for discussion.

12 The given judgments "??" are from Lasnik and Saito (1992).

13 See also Corver (1997a) for freezing effects within the AP-domain that are due to scrambling.

14 Wexler and Culicover (1980) did not treat the islandhood of A-moved NPs in terms of a (generalized) Freezing Constraint, since A-movement operations (like Passive formation) are structure preserving.

15 Huybregts (1976) observes that Freezing is also found in structures like (i), where Directional Adverb Preposing (i.e., Locative Inversion) has applied. If these locative inversion patterns are derived by movement to [Spec, IP] (see Hoekstra and Mulder 1990), we have another instance of Freezing induced by A-movement:

(i) a. Peter claimed [$_{IP}$ [$_{PP}$ near that town]$_i$ is situated [an old ruin] t_i].
b. *[That town]$_j$ he said [$_{IP}$ [$_{PP}$ near t_j]$_i$ is situated [an old ruin] t_i].

16 Torrego (1985) observes that in Spanish an NP can be extracted from a fronted *wh*-phrase in Comp (i.e., [Spec, CP]):

(i) este es el autor [del que]$_i$ no sabemos [$_{CP}$ qué libros t_i] leer (Spanish)
this is the author [by whom] we don't know [what books –] to read

Torrego further shows that the impossibility of extraction from a subject-NP is overcome by *wh*-movement of the subject to [Spec, CP]:

(ii) *esta es la autora [de la que]$_i$ [$_{IP}$ [varias traducciones t_i] han ganado premios internacionales]
this is the author by whom several translations have won international awards

(iii) [de la que autora]$_i$ no sabes [$_{CP}$ [qué traducciones t_i] han ganado premios internacionales]
by what author don't you know what translations have won international awards

17 Baltin (1984) discusses the impossibility of extracting out of an extraposed PP in terms of Huang's (1982a) Condition on Extraction Domains. See Collins (1994a) and Müller (1998) for a Barriers-type account of various Freezing effects. It should further be noted that in some marginal cases it appears that a verb L-marks a constituent moved to Spec, CP of its complement; see, for example, the Spanish examples from Torrego (1985), which are also referred to in note 16.

18 Lasnik and Saito (1992) do not adopt the VP-internal subject hypothesis. So the subject noun phrase is base generated in [Spec, IP]. As pointed out by an anonymous reviewer, it should be noted that the judgments in (40–41) are very subtle and not at all certain. For certain speakers, (41b) turns out to be as bad as (40).

19 See, e.g., Rosenbaum (1967); Emonds (1976); Stowell (1981); Safir (1982).

20 In (52), the moved element is Chomsky-adjoined. In the representation given by Wexler and Culicover (1980), daughter-adjunction is used.

21 The Dative Shift operation depicted in (57), obviously, involves lowering; i.e., the moved indirect object is placed in a landing position that is lower in the tree than its original extraction site. Lowering operations are ruled out in current theories on movement. For discussion of more recent analyses of the double object construction, see chapter 21.

22 As shown in Baltin (1978b), embedded topicalization does not always create islands:

(i) He's a man [[to whom]$_j$ [[liberty]$_i$ we could never grant t_i t_j]].

23 See also Lasnik and Saito (1992: 84ff.) for this. In Chomsky's Barriers theory (1986a), a different interpretation is given to adjunction structures: following May (1985), he assumes that the adjunction site (XP) and the node created by adjunction (XP*) form one maximal projection together. That is, XP and XP* are segments of one maximal projection.

24 If the position is taken that CP-extraposition applies at PF, the question obviously arises why it is impossible to extract from non-extraposed sentential subjects, while it is possible from extraposed ones.

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29 Gapping

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1 Introduction

Gapping is an ellipsis in which a verb is removed in one, or more, of a series of coordinations. (1) is emblematic:

(1) Some ate beans and others, rice.

The name comes from Ross (1970a), who appears to be the first to have systematically studied the process. The set of cases for which Gapping is responsible remains controversial, though there is consensus on a certain range of them. A more-or-less standard criterion is that Gapping occurs only in coordinate structures. The two main candidates that don't meet this requirement, but which nonetheless superficially appear to be instances of Gapping, are list-like answers to questions, like those in (2), and comparative constructions, like those in (3):[1]

(2) Q: Who met who?
A: Jerry, Sarah; Sally, Mark; Trish, Betsy

(3) Sally met more parents than Tom, kids.

Many treatments of Gapping – most modern ones – leave these cases out, and so shall I in what follows.

If Gapping is restricted to coordinations, then one task is to determine whether Gapping is a special instance of one of the many forms of ellipsis found in coordinations, or, if it isn't, how to distinguish it from the others. This problem looms large because Gapping is commonly credited with being able to elide more than just the finite verb. Ross, for example, gave it the ability to elide the quite remarkable set of strings in (4):

(4) a. I want to try to begin to write a novel and Mary ~~wants to try to begin to write~~ a play.
b. ?I want to try to begin to write a novel, and Mary ~~wants to try to begin~~ to write a play.
c. ?I want to try to begin to write a novel, and Mary ~~wants to try~~ to begin to write a play.
d. ?I want to try to begin to write a novel, and Mary ~~wants~~ to try to begin to write a play. (Ross 1970a: 250, (2c))

(Strike-outs will indicate elided material, from here out.) In fact, however, there is a sharp degradation in these particular examples that favors (4a) over the others. I suspect this is because in (4b–c) material left behind by Gapping matches that in the antecedent clause; in general, these 'remnants' must contrast with parallel terms in the antecedent clause, as we shall see below. If this property of (4b–c) is remedied, the result is improved:

(5) a. I want to try to begin to write a novel, and Mary ~~wants to try to begin~~ to review a play.
b. I want to try to begin to write a novel, and Mary ~~wants to try~~ to set out to review a play.
c. I want to try to begin to write a novel, and Mary ~~wants~~ to get ready to set out to review a play.

There remains some awkwardness, especially in (5b) and (5c), perhaps because of the strain involved in contrasting so many terms.

2 Ellipsis in coordinations

Nonetheless, in principle the strings in (5) are Gappable, and this raises the possibility that Gapping could figure in a wide range of coordinations. It might be responsible for creating (6a) or (6b):

(6) a. Jerry met ~~the kids from OshKosh~~ and Sally scrutinized the kids from OshKosh.
b. Sam ate and ~~Sam~~ was put to bed.

(6a) is an example of what Postal (1974) called 'Right Node Raising', which here removes the object of the first conjunct. There are two potential, non-gapping, sources for (6b). It could be that there is an elision process, as indicated, distinct from Gapping which removes material at the edges of a coordinate. That such a process – what Ross (1986) calls 'Forward Conjunction Reduction' – exists has been widely speculated. The other potential source would deny that there is any ellipsis at all, and instead let the VPs *ate* and *was put to bed* conjoin to jointly take *Sam* as subject. Both treatments have their problems, and evidence distinguishing them is difficult to find.[2]

One feature that distinguishes (1), (4), and (5) from (6) is that the clause holding the Gapped material in (1), (4), and (5) contains remnant material at the left and right edges, but this isn't so in (6). Jackendoff (1971) suggests that this should be taken as a defining trait of Gapping.

Restricting Gapping in this way, however, is not how Ross (1970a) would have done it. The goal of his paper, in fact, is to defend the thesis that the conjunct in which a verb is Gapped is determined by the linear position that that verb would have had to other terms in its sentence if it hadn't elided. Ross suggests that if the verb would have preceded its complements, then it will Gap from the second, or subsequent, conjuncts, and the first conjunct will hold the antecedent. If the verb would have followed its complements, on the other hand, then it will Gap from the initial conjuncts, and the antecedent will be found in the final one. So, for instance, he suggests that in languages like Japanese and Russian, where a complement may precede its verb, Gapping is responsible for producing sentences such as (7):

(7) a. Watakusi-wa. sakana-o ~~tabe~~ Biru-wa gohan-o tabeta. Japanese
I-Top fish-ACC eat beer-TOP rice-ACC ate
'I ate fish and Bill rice.'

b. Ja vodu ~~pila~~ i Anna vodku pila. Russian
I water drank and Anna vodka drank
'I drank water and Anna vodka.' (Ross 1970a: 251, (5b), (10b))

In such cases, of course, the Gapped verb makes up the right edge of the clause it has been elided from, and this violates Jackendoff's criterion.

Further, if Jackendoff's criterion is relaxed, then examples like (8) could also be seen as instances of Gapping:

(8) Mary left early, and Sally ~~left early~~ too.

In this case, the finite verb of the second conjunct would have Gapped along with the adverb *early*, and removed all of the second conjunct except its subject. Gapping might also be credited with (9), which could be seen as a special instance of the forward conjunct reduction case in (6b):

(9) Jill ate rice yesterday and ~~Jill ate~~ porridge today.

Note that unlike (6b), however, the analysis which denies any ellipsis in (9) is less plausible. Such an account would have to treat *rice yesterday* and *porridge today* as constituents.

In fact, Jackendoff's criterion is not generally adopted, and some of these cases are reasonably classed as Gapping. But for examples like (6a), the consensus appears to be that they are not, in fact, Gapping. Some superficial differences between cases of Right Node Raising, and canonical instances of Gapping, like those in (1), are the following.

Gapping allows a mismatch in inflectional class between the Gapped verb and its antecedent; but Right Node Raising resists this:

(10) a. He likes beans and you ~~like~~ rice.
b. *He always ~~complains~~ and you sometimes complain.

Right Node Raising is able to remove part of a word, as in (11b), but Gapping isn't:

(11) a. *Carly is overpaid and Will under~~paid~~.
b. Carly is over~~paid~~, and Will underpaid.

Right Node Raising needs the material it elides to make up a contiguous string, but Gapping can (apparently) elide discontinuous strings, as the contrast in (12) illustrates:

(12) a. Carrie gave a set of directions to me, and Will ~~gave~~ a map ~~to me~~.
b. *Carrie ~~gave~~ a set of directions ~~to me~~, and Will gave a map to me.

And Right Node Raising can strand prepositions, but Gapping can't (a point made in Neijt 1979):

(13) a. *John is confident of a successful outing and Peter ~~is~~ dependent on ~~a successful outing~~.
b. John is confident of ~~a successful outing~~ and Peter is dependent on a successful outing.

(Neijt 1979: 40, (85a), (86a))

Hankamer (1979: chapter 1) and Maling (1972) argue that finite verb ellipsis in verb-final languages, like Turkish, is actually Right Node Raising. The jury is still out on languages like Japanese; but in general, there appears to be no uniformly agreed-upon instance of Gapping applying to delete material in the first conjunct, in the way that Ross suggested.

The cases in (8) and (9), on the other hand, are better candidates for Gapping. The case in (9) can be put together with examples like (14), in which various kinds of phrases follow the left conjunct:[3]

(14) a. Did you tell John about our plans or Peter? (Ross 1986)
b. Sally talked about the meeting passionately and about its consequences too.
c. James left unhappy today and unappreciated too.

Ross (1986) analyzed these as involving extraposition of a phrase consisting of *and* or *or* and the string that follows it. (14b), for instance, would have a source like *Sally talked about the meeting and about its consequences too passionately*, and would be formed by moving the underlined phrase to the end of the sentence.[4] But Neijt (1979) argues that they derive instead from Gapping; so (14b) would come from something like (15):

(15) Sally talked about the meeting passionately, and ~~Sally talked~~ about its consequences too.

One of her arguments on behalf of the Gapping interpretation is that it could make sense of the fact that examples like (16) are blocked:

(16) *That dress has been designed by my grandma and made.
(Neijt 1979: 64, (141a))

There is no obvious reason why this shouldn't be derived from *That dress has been designed and made by my grandma*, under Ross's analysis. But if Gapping must always include the verb, and we shall see evidence for this shortly, then the ungrammaticality of (16) would be explained if its source is Gapping.

Another reason for believing that some form of ellipsis produces examples such as (9) and (14) is that it could also create examples such as (17):

(17) Betsy wanted to read a book or a magazine.

In fact, (17) has a meaning which is suggestive of such a source.[5] On one reading, (17) describes a particular desire that Betsy has: she desires to read something that is either a book or a magazine. But on another of its readings, (17) is synonymous with (18), which claims that Betsy has one or the other of two desires:

(18) Betsy wanted to read a book or Betsy wanted to read a magazine.

This second reading for (17) would be a straightforward consequence of deleting from the second disjunct of (18) *Betsy wanted to read*. Schwarz (1999) argues for this conclusion, and notes that it makes sense of the fact that (19) gets only this latter reading:

(19) Either Betsy wanted to read a book or a magazine.

This follows from the plausible thesis that *either* marks the left edge of a disjunction, which would force (19) to be a disjunction of clauses from which all but the object has Gapped in the second clause.

These are reasons, then, for believing that ellipsis can produce examples like (9), (14), and (17); and given Neijt's argument from (16), Gapping is probably the form of ellipsis responsible.[6] But note that for cases like (17), it is not necessary that Gapping be the only source. It is consistent with standard views of coordination that (17) could arise by disjoining *a book* and *a magazine* in the embedded clause. And this, or something like it, could be the appropriate representation for this sentence when it gets the first of the interpretations described (i.e., Betsy has a desire to read a book or a magazine).

3 The No Embedding Constraint

To see the reason for classifying (8) as a Gapping construction, it is necessary first to appreciate one of the constraints that controls which strings can Gap. Hankamer (1979) discovered that Gapping cannot affect a verb that is in an embedded clause, as in (20):[7]

(20) *Alfonse stole the emeralds, and I think that Mugsy ~~stole~~ the pearls.
(Hankamer 1979: 19, (23))

He noted also that the antecedent to a Gap cannot be in an embedded clause. (21) illustrates:

(21) *I think that Alfonse stole the emeralds, and Mugsy ~~stole~~ the pearls.

If (21) is understood as a (somewhat awkward) conjunction of two clauses, rather than as a single clause with an embedded coordination, it is ungrammatical. Now, when Ross's examples in (4) are considered, we can see that there is nothing wrong with a verb in an embedded clause being part of the Gapped material or its antecedent. Rather, what the contrast between (20) and (21) shows is that the Gapped material, and its antecedent, must include the verb of the conjoined clauses. In fact, it is likely that this constraint is even stronger, preventing a Gap or its antecedent from excluding the highest verb of the conjuncts, so I will formulate it as in (22):

(22) **The No Embedding Constraint:**
Let A and B be conjoined or disjoined phrases, and β be the string elided in B whose antecedent is α in A. Then α and β must contain the highest verb in A and B.

It's this constraint that forms the foundation for Neijt's argument from the ungrammaticality of (16) that (9) and (14) are created by Gapping. Because the

No Embedding Constraint requires Gapping to elide at least the verb, it'll block (16). And note too that the No Embedding Constraint would also prevent Gapping from being able to create (6b), since the verbs of the second conjunct remain in this example.

The validity of the No Embedding Constraint turns then on whether (6b) should be classed as a Gapping construction, and also on whether examples such as (23) are instances of Gapping:

(23) Some have eaten chocolate, and others might ~~eat~~ fruit.

Levin (1986) argued that cases like (23) are produced by an ellipsis process distinct from Gapping, dubbing it 'Pseudogapping', to enforce her conclusion. Pseudogapping differs from Gapping in being able to apply in contexts other than coordinations, as in (24):

(24) Sally should eat legumes because she won't ~~eat~~ broccoli.

Furthermore, there are languages which have Gapping, but which don't allow Pseudogapping. German is such a language, as the contrast between (25a) and (25b) indicates:

(25) a. Sally hat Kumquats gegessen und Dieter Bier getrunken.
Sally has kumquats eaten and Dieter beer drank
'Sally ate kumquats and Dieter drank beer.'
b. *Sally hat Kumquats gegessen weil Dieter Natto hat.
Sally has kumquats eaten since Dieter natto has
'Sally ate kumquats because Dieter natto.'

And German examples parallel to (23) are ungrammatical, again suggesting that these cases cannot be produced by Gapping:

(26) *Sally hat Kumquats gegessen und Dieter hat Natto.
Sally has kumquats eaten and Dieter has natto
'Sally ate kumquats and Dieter natto.'

For this reason, then, I'll adopt a formulation of Hankamer's constraint like that in (22), and assume that neither (6b) nor (23) arises through Gapping.

So far as is known, Gapping is the only ellipsis process constrained by the No Embedding Constraint. To the extent that the No Embedding Constraint is unique to Gapping, then, it can be used as a diagnostic for it. And, according to this diagnostic, examples such as (8) are produced from Gapping. When the second conjunct in (8) is embedded under a verb, as in (27), the result is ungrammatical:

(27) *Mary left early, and I think Sally too.

Putting together these various observations, we can formulate a preliminary definition of Gapping as follows:

(28) **Gapping:**
In a structure A *c* B, where *c* is *and* or *or*, Gapping deletes a string in B that is identical to a string in A and satisfies the No Embedding Constraint (i.e., (22)).

This captures the fact that Gapping is restricted to coordinations (with the caveat about (2) and (3)), removes material from the second of two conjuncts, and is subject to Hankamer's No Embedding Constraint. It also entails, because of the requirements in the No Embedding Constraint, that Gapping can only elide verbs. Neijt (1979) argues that this outcome is correct as well, citing examples such as those in (29) to illustrate that Gapping is prevented from applying to Prepositions, Adjectives, and Quantifiers:[8]

(29) a. *Several inches above the ground and several feet ~~above~~ sea level.
b. *A five year younger or 10 year ~~younger~~ sister.
c. *He ran a few seconds faster or a few minutes ~~faster~~ to his house.
d. *Bill drank much too much or a little bit ~~too much~~ wine.
e. *John bought a little bit more or a lot ~~more~~.
(Neijt 1979: 27, (54c, e–h))

And though there are cases, like (30), which look as though they could be achieved if Gapping applies to Nouns, she suggests that these are the products of another ellipsis process, 'Deletion', exemplified by examples such as (31):[9]

(30) One dog with five legs, another ~~dog~~ with a cow's liver, and a third ~~dog~~ with no head. (Neijt 1979: 27, (54a))

(31) One dog with five legs walked in after another ~~dog~~ with no head left.

Setting aside the issue of Nouns, it should be noted, however, that there are contexts in which Adjectives would appear to be able to Gap:

(32) a. Malfoy made Snape happy about his potions and Hagrid ~~happy~~ about his Griffons.
b. Hermoine considered Voldemort frightened of Dumbledore and Malfoy ~~frightened~~ of Harry.

So far as I have been able to determine, other categories are not susceptible to Gapping in these contexts, however:

(33) a. *Ron let Harry in the dungeon and Filtch ~~in~~ the common room.
b. *Dudley considers some witches friends of mine and others ~~friends~~ of yours.

Let us continue to restrict Gapping to strings with verbs in them, then, pending an explanation for the exceptional cases in (32).[10]

There is another, somewhat subtler, consequence of defining Gapping as (28) does. Because (28) requires that the antecedent to a Gapped string be found in the conjunct or disjunct immediately preceding, it will prevent a Gap from finding a more distant antecedent in situations in which there are more than two coordinates. It will correctly prevent examples such as (34), for instance:

(34) *John invited Sue, Peter kissed Mary, and Max ~~invited~~ Betsy.
(Neijt 1979: 71, note 7 (iv))

Because the antecedent to *invited* is not found in the immediately preceding conjunct, it cannot Gap in the final conjunct. On the other hand, an example such as (35) is permitted, as Gapping can apply from right to left, taking the conjuncts pair-wise:

(35) John invited Sue, Peter ~~invited~~ Mary, and Max ~~invited~~ Betsy.

So the Gapped *invited* in the final conjunct finds its antecedent in the immediately preceding conjunct, and this middle *invited* in turn Gaps under identity with the antecedent in the first conjunct.

4 Gapping and constituency

Let's turn next to the question of how to characterize the set of strings that Gapping can elide. As we have seen in (5a) and (12a) – repeated below as (36) – Gapping can delete strings of terms that are not typically thought to make up constituents in English:

(36) a. I want to try to begin to write a novel and Mary ~~wants to try to begin~~ to review a play.
b. Carrie gave a set of directions to me, and Will ~~gave~~ a map ~~to me~~.

Standard parses of English sentences do not form a constituent of *want to try to begin* that excludes *to review a play*; nor do they allow discontinuous strings, like the *gave to me* sequence in (36b), to form a constituent that excludes intervening material. Because syntactic processes are very typically restricted to affecting just constituents, these cases are surprising. If we think of Gapping as a rule that targets strings in a clause and deletes them, then this would be a counter-example to this otherwise valid generalization about such rules.

But it's not that Gapping can delete just any string. Hankamer (1979), for example, observes that there are contrasts like (37):

(37) a. Charley writes with a pencil and John ~~writes~~ with a pen.
b. *Charley writes with a pencil and John ~~writes with~~ a pen.
c. *Charley writes with a pencil and John ~~writes with a~~ pen.
(Hankamer 1979: 18)

It appears that Gapping is prevented from taking part of a preposition phrase and leaving the rest. And, similarly, Gapping cannot elide a portion of an object noun phrase either, as in (38):

(38) a. Charley wrote several books on syntax and Jill ~~wrote~~ several books on semantics.
b. *Charley wrote several books on syntax and Jill ~~wrote several~~ books on semantics.
c. *Charley wrote several books on syntax and Jill ~~wrote several books on~~ semantics.

There have been two broad approaches to capturing constraints such as these. In one, generalizations about the shape that the remnants may have are sought; and in the other, generalizations about the elided strings themselves are formulated.

4.1 Conditions on remnants

Hankamer's own approach was of the first kind. He described the constraint responsible for (37) and (38) in terms of a restriction that requires the remnants of Gapping to be 'Major Constituents', which he defined as phrases which are immediate daughters of S (or IP, in modern parlance). Because he held a skeptical view about the existence of VP, this meant that subjects, adverbs, PPs, and objects qualified as Major Constituents, but nothing else. If we admit the existence of VP, we might formulate this along the lines he resorts to in Hankamer (1973a: 18): "A 'major constituent' of a given sentence S_0 is a constituent either immediately dominated by S_0, or immediately dominated by VP which is immediately dominated by S_0." That we should allow Gapping to see VPs, and therefore adopt this formulation, is indicated by cases such as (39), in which an auxiliary verb has elided:

(39) Some have prepared kumquats and others ~~have~~ baked pies.

While the status of examples such as (39) is somewhat controversial – Ross (1970a) classed them as ungrammatical, and Siegel (1987), where they are marked grammatical, assumes that they are not produced by Gapping – the present consensus appears to be that they are both grammatical and Gapping. That they are Gapping is suggested by the fact that they appear to meet the criteria (28) uses to define Gapping. For example, auxiliary verbs may delete like this only in coordinations (compare (40a)), the antecedent must be in the first coordinate (witness (40b)), and it is subject to the No Embedding Constraint (as (40c) suggests):

(40) a. *Some have prepared kumquats while others ~~have~~ baked pies.
b. *Some ~~have~~ prepared kumquats and others have baked pies.
c. *Some wanted to have prepared kumquats, and others wanted to ~~have~~ baked pies.

To the extent that (39) is grammatical, then, it shows that Gapping can leave the verb+NP string as a remnant. We have already seen, however, that the auxiliary verb+NP string in (41) does not constitute a legitimate Gapping remnant (this sentence, to the extent that it is grammatical, comes about by way of pseudogapping):

(41) Some have prepared kumquats and others have ~~prepared~~ pies.

Thus, we seek a way of distinguishing these two cases. That is, in a string *have*+participle+NP, we want to allow participle+NP to be able to survive as a remnant from Gapping, but prevent *have*+NP from being a remnant. While it may not be utterly necessary, it seems reasonable to adopt the commonplace view that the participle+NP string is embedded within the *have*+participle+NP string, and distinguish them that way. (This is just what the No Embedding Constraint, in fact, does.) But this will require the existence of VPs. Thus we should adopt the definition of major constituent that recognizes the existence of VPs.

Hankamer's constraint hasn't been widely adopted. One straightforward difficulty is that the notion 'major constituent' has not been grounded in anything more general. That is, so far as other syntactic processes are concerned, major constituents don't appear to behave as a class, making their use in constraining Gapping somewhat dubious. Moreover, there seem to be counter-examples to Hankamer's constraint. Sag points out,[11] for instance, that it would not permit instances of Gapping like those in (36a), repeated in (42a), and it's hard to see how to modify the constraint so that it could distinguish (42a) from (42b):

(42) a. I want to try to begin to write a novel and Mary ~~wants to try to begin~~ to review a play.
b. *I want to try to begin to write a novel and Mary ~~wants to try to begin~~ ~~to~~ review a play.

There is, however, evidence that the remnants to Gapping must be able to be factored into constituents. And, indeed, it is likely that they must be partitionable into maximal projections. This would explain the contrast between (38a) and (38b), as well as that between (37b) and (37c). And it would extend to account for the badness of examples such as (43):

(43) a. *Some read angry letters and others ~~read angry~~ reports.
b. *Some bought books about themselves and others ~~bought~~ reports ~~about themselves~~.
c. *Some remember your mother and others ~~remember your~~ father.

d. *Some brought every package and others ~~brought every~~ wrapper.
e. *Some appeared almost happy and others ~~appear almost~~ rich.
f. *Some talked only to Smith and others ~~talked only~~ to Jones.

In each of the examples in (43), a subconstituent of the noun phrase, adjective phrase, or prepositional phrase has survived Gapping. If the material that would make these subconstituents full NPs, APs, or PPs is restored, the examples become grammatical. Let's adopt, then, this rather watered-down version of Hankamer's condition on remnants:

(44) **The Constituency Condition of Remnants:**
Let P(x) be a parse for a string x. If A is a string of words in a coordinate, from which the substring B has Gapped leaving the string C, then there must be a way of factoring C into a series of maximal projections found in P(A).

This leaves the ungrammaticality of (37b) and (38b, c) to be explained; and also fails to shed light on the contrast between (42a) and (42b). We will review below a way of deriving the Constituency Condition that extends to these cases.

Another proposed constraint on remnants is that there may be no more than two of them.[12] Jackendoff (1971) points to contrasts like the following, as evidence:

(45) a. *Arizona elected Goldwater Senator, and Massachusetts McCormack Congressman.
b. *Millie will send the President an obscene telegram, Paul the Queen a pregnant duck.

(Jackendoff 1971: 25, (23))

But this effect is probably related to the fact that the remnants in Gapping constructions are used to introduce 'new' information into the discourse, a point that Kuno (1976) draws attention to. One way this can express itself is for the remnants, and the parallel terms in the first conjunct – I will call them 'correlates' from now on – to be focused. Gapping constructions can therefore be thought of as appropriate in contexts in which there is an implicit question that the remnants and correlates serve as answers to. (46), for example, might be thought of as addressing a topic that is expressed by the question: 'Who likes what?':

(46) Jerry likes beans and Sally kumquats.

When sentences with Gaps in them are explicitly offered as answers to questions, it is much easier to have more than two remnants:

(47) Who will send who what?
Sally will send Ron pickles, and Martha Hermione kumquats.

Or when the remnants have more descriptive content to them than names do, and are therefore more suitable for introducing new information, the results also improve:

(48) Arizona elected a right-wing bastard to the Senate and Massachusetts a moderate wank to the Congress.

This property of the construction probably also plays a role in examples that Hankamer (1973a) judged unacceptable and credited to what he called the No Ambiguity Constraint. Some of his examples are in (49):

(49) a. Jack calls Joe Mike and Sam ~~calls Joe~~ Harry.
b. Jack told Harry that Nixon was a fairy, and Alex ~~told Harry~~ that Agnew had warts.
c. Max wanted to put the eggplant on the table, and Harvey ~~wanted to put the eggplant~~ in the sink. (Hankamer 1973a: 3, (57–9))

Hankamer argued that these do not get the interpretation that would result from the pattern of Gapping shown because there is another interpretation available that blocks these. This other interpretation, which might be produced by Conjunction Reduction or Gapping or both, is indicated by the ellipses shown in (50):

(50) a. Jack calls Joe Mike and ~~Jack calls~~ Sam Harry.
b. Jack told Harry that Nixon was a fairy, and ~~Jack told~~ Alex that Agnew had warts.
c. Max wanted to put the eggplant on the table, and ~~Max wanted to put~~ Alex in the sink.

Hankamer suggested that when Gapping produces ambiguous results, as in these cases, those interpretations which would place the Gap at the leftmost edge are favored, hence the interpretation in (50) but not (49). But Kuno (1976) argues that these contrasts too are an artifact of the requirement that Gapping remnants introduce new material.[13] He points out that when names are used, the tendency already present to treat the material within VP as new information will be strengthened. This will, by itself, favor the interpretation in (49) over that in (50), since in neutral contexts the subjects of the first conjunct will not be taken to introduce new material and will, as a consequence, not be suitable correlates for remnants in the second conjunct. This tendency can be overcome, however, if the correlate status of the subject is signaled lexically, as in (51):

(51) a. Some call Joe Mike and others ~~call Joe~~ Harry.
b. Some told Harry that Nixon was a fairy, and others ~~told Harry~~ that Agnew had warts.
c. Some wanted to put the eggplant on the table, and others ~~wanted to put the eggplant~~ in the sink.

Or if the sentences are uttered with appropriate stress, placed on the subjects but not the objects; or if they are uttered in a context that makes it clear which arguments are furnishing new information.[14]

Here, then, is our second condition on the remnants:

(52) **Kuno's Novelty Condition on Remnants:**
The phrases in the coordinate that are left over from Gapping introduce new information.

This and the Constituency Condition on Remnants in (44) are the best candidates for constraints on what Gapping leaves behind. The remainder of the conditions on Gapping tend to be found in constraints on the strings that can Gap.

4.2 Constraints on the Gapped string

Ross and Hankamer took ellipsis rules in general, and Gapping in particular, to be a phenomenon which deletes a 'variable' in the structural description of a transformational rule. On this conception, the remnants could be thought of as 'targets' in the transformational rule, and the variable that corresponds to the string surrounding these targets would be subject to the ellipsis process. Thus, the structural description could select maximal projections, accounting for the Constituency Condition on Remnants, and Gapping would delete the rest of the clause.[15] Now this predicts that the constraints which Ross (1986), for example, identifies as holding of these variables should play a role in defining which strings Gapping can affect. Neijt (1979) is the fullest systematic study of this prediction, and she concludes that it is largely confirmed. Ross's constraints, later incorporated into more general constraints such as Subjacency, are now typically held to govern the distance that things can move. So one way of judging this thesis is to see if there is a match between the strings past which things can move and the strings that can Gap. This is essentially what Neijt sought. Some of her examples are in (53–55):

(53) a. *John came home to find his wife sick, and Bill ~~came home to find~~ his child ~~sick~~.
*My wife, who I came home to find sick, was in a lousy mood.
b. *John must be a fool to have married Jane, and Bill ~~must be a fool to have married~~ Martha.
*The woman who John was a fool to have married was Jane.
c. *Tom went to Florida to learn to play tennis and Bill ~~went to Florida to learn to play~~ squash.
*What did Tom go to India to become?
d. ??John was upset having received A– for the course, and Bill ~~was upset having received~~ B– ~~for the course~~.
??What grade was John upset having received for the course?

(Neijt 1979: 131–2, (53))

(54) a. *John wondered what to cook today and Peter ~~wondered what to cook~~ tomorrow.
*When did John wonder what to cook?[16]
b. *John asked which candidates to interview this morning and Peter ~~asked which candidates to interview~~ this afternoon.
*When did John ask which candidates to interview?
(Neijt 1979: 138, (73))

(55) *John discussed my question of which flowers they saw and Bill ~~discussed my question~~ (of) which animals ~~they saw~~.
*Which flowers did John believe the claim that Peter saw?
(Neijt 1979: 134, (56), and 136, (64))

In (53) we see instances of the Adjunct condition which prohibits movement out of an adjunct clause and will have the consequence of preventing Gapping from including part of an adjunct. In (54) are instances of the *Wh*-Island Constraint, which prohibits movement out of indirect questions and here blocks Gaps from including part of an indirect question. And in (55) is an instance of the Complex Noun Phrase Constraint, which prevents movement out of clauses embedded within NPs, and would therefore prevent Gaps from similarly reaching into an NP.

Neijt also notes some differences between constraints on movement and those on Gapping. She notes, for instance, that Gapping cannot affect a string that reaches into a finite clause. There is a difference, then, between examples like (56) and those that Ross described (such as Ross's (57), in which Gapping reaches into a non-finite clause):

(56) a. *Charles decided that 20 boys are coming along and Harrie ~~decided that~~ 30 girls ~~are coming along~~.
b. *The first letter says that you should pay tax and the second letter ~~says that you should pay~~ V.A.T.
(Neijt 1979: 142–3, (86))

(57) I want to try to begin to write a novel, and Mary ~~want to try to begin to write~~ a play.

There is no visible corresponding constraint on movement in English; certainly *wh*-movement is not prevented from coming out of finite clauses:

(58) a. How many girls did Charles decide are coming along?
b. What did the first letter say that you should pay?

Neijt suggests that Gapping is subject to Chomsky's (1977a) Tensed S Condition, which prohibits extraction from finite clauses. When this constraint applies to movement operations, as in (58), Chomsky argued that it can be satisfied if the

moved phrase moves first into the Comp (or Specifier of CP) position of the finite clause it is going to escape. He formulated the Tensed S Condition so that it could move things out of finite clauses only if they are in Comp: descriptively, at the left edge of the clause. That this particular formulation of the Tensed S Condition is at play in the Gapping construction, Neijt argues, is indicated by the fact that when the remnant is in the Comp position of the finite clause, the result is improved. Thus, she contrasts (56) with the relatively grammatical (59):

(59) a. Charles may decided which boys are coming along and Max ~~may decide~~ which girls ~~are coming along~~.
b. The first letter says how much tax you should pay and the second letter ~~says~~ how much V.A.T. ~~you should pay~~.

(Neijt 1979: 142, (85))

But there are problems with this way of characterizing such examples. The contrast between (56) and (59) is conceivably traced back to the availability of another ellipsis process restricted to questions. This process – also first systematically studied by John Ross[17] – is known as Sluicing and exemplified by (60):

(60) I can remember which women Mary knows, but I can't recall which men ~~Mary knows~~.

In general, Sluicing elides the sentence that follows a *wh*-phrase, when that elided sentence has an antecedent previous to it, and when certain conditions on contrastiveness are met.[18] If Sluicing is capable of eliding just a portion of the sentence it affects, then examples like those in (59) could conceivably be produced through a combination of Gapping (eliding the main highest verbs of the conjunct) and Sluicing (eliding the material in the embedded interrogative).

Nonetheless, even if the examples in (59) are not produced by Gapping alone, Neijt's conjecture that Gapping obeys the Tensed S Condition remains consistent with the data. In general, then, her catalogue of facts supports the hypothesis that Gapping targets the class of strings that are allowed to lie between the target and landing site of a movement operation. In current syntactic theory, these strings are no longer characterized in terms of variables in the structural description of a transformational rule. Movement transformations are instead processes whose parts are partitioned out to independent modules of the grammar, and the constraints on the distances that movement operations may traverse are thought to emerge as a consequence of how these modules play out. A natural way of interpreting the match between what can Gap and what can be traversed by movement is that Gapping can act on the constituents that are formed by movement. This presently seems to be the consensus view: Gapping is capable of acting on the output of a movement operation that relocates remnants. Sag (1980) may have been the first to propose something along these lines. He suggests[19] that the variable which Gapping

deletes on the surface must correspond to a constituent formed at Logical Form by moving the remnants. He relates the movement of the remnants at Logical Form to their bearing focus, which he followed Chomsky (1980b) in supposing induced a kind of Focus Movement.

Pesetsky (1982), who similarly concludes that the strings which Gap are formed by movement,[20] brings forward additional data that fit this interpretation of the island effects in (53–55). He notes that not only are islands obeyed by the Gapped string, but the strength of island violations is reproduced as well. For instance, there is a strong difference in violations of the *wh*-island condition that depends on the position from which the term escaping the island originates. Extraction of objects from *wh*-islands is considerably better than extraction of subjects, as the pair in (61) illustrates:

(61) a. ??Which food does this man know why you ate?
b. *Which food does this man know why makes you sick?

This contrast is preserved in Gapping contexts:

(62) a. ??This man knows why you eat spaghetti, and that man, macaroni.
b. *This man knows why spaghetti makes you sick, and that man, macaroni.
(Pesetsky 1982: 644, (120b), and 645, (121))

Further, Pesetsky argues that other constraints on multiple questions are found in Gapping. One of those constraints, Superiority, prevents *wh*-movement from moving a term past a c-commanding interrogative phrase. This is what is responsible for the contrast in grammaticality in (63):

(63) a. Who gave what to Mary?
b. *What did who give to Mary?

Pesetsky reports a similar contrast for the remnants in Gapping. If one of those remnants is a *wh*-phrase, then it cannot have been moved past a c-commanding remnant; the contrast in (64) mirrors that in (63):[21]

(64) a. Bill asked which books I gave to Mary, and which records, to John.
b. *Bill asked which books Mary likes, and which records, John.
(Pesetsky 1982: 646, (126), (127))

It's unclear how to formulate Superiority so that it will cover both cases; but in general, the match between (63) and (64) suggests that a similar process is involved in creating both constructions. If the in situ *wh*-phrases in (63) move – a popular approach to these sorts of multiple questions – then the hypothesis that Gapping remnants move as well makes sense of the match.

Moreover, this thesis has the interesting side-effect that it explains the Constituency Condition on Remnants. To the extent that movement operations can only target constituents, they will pick out just those strings as remnants which parse as constituents. Moreover, it goes beyond the Constituency Condition and offers a method for blocking the bad examples in (37) and (38) as well. If remnants are just phrases that move, then the cases in (37b) and (38b) would have to arise by moving an NP away from its determiner, and this is not possible. To produce the ungrammatical (37c) and (38c), it would be necessary to move a DP out of a prepositional phrase, and though this is normally quite possible in English, there are movement operations which are constrained in this way. 'Scrambling' in the Germanic languages, for instance, is incapable of stranding prepositions; indeed, Scrambling in the Germanic languages is blocked from moving constituents out of embedded finite clauses as well, matching in this respect the constraint on Gapping that (56) illustrates. Finally, Scrambling in the Germanic languages is plausibly able to move infinitival clauses (the evidence is unclear), but probably cannot move VPs out of embedded clauses. This would explain why embedded infinitival clauses can be remnants (as in (42a)) but embedded VPs cannot (as (42b) shows).

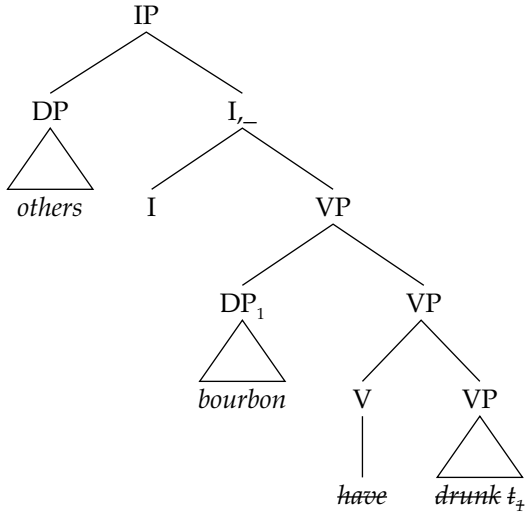
Thus, many of the constraints on remnants and on the strings that can Gap are accounted for if the thesis that Gapping can be fed by movement is given the more specific form in (65):

(65) Gapping elides an XP from which the remnants have scrambled.

Under this interpretation of the facts, examples such as (66) or (68) would have representations like (67) and (69):

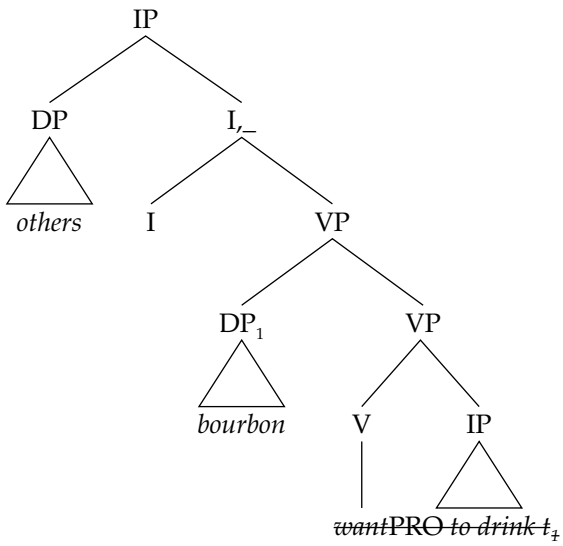
(66) Some have drunk whiskey and others ~~have drunk~~ bourbon.

(67)



(68) Some want to drink whiskey and others ~~want to drink~~ bourbon.

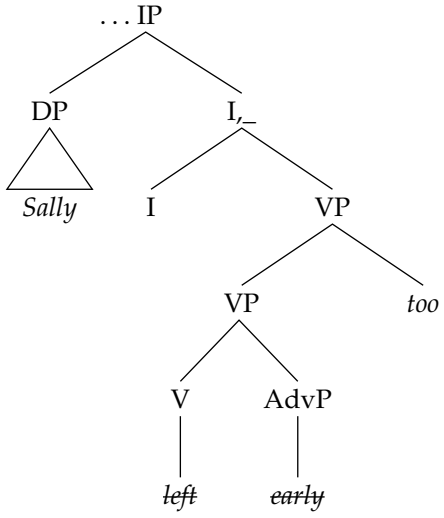
(69)



To produce examples like (8), repeated here as (70), we let Gapping elide the VP without accompanying scrambling, as in (71):

(70) Mary left early, and Sally ~~left early~~ too.

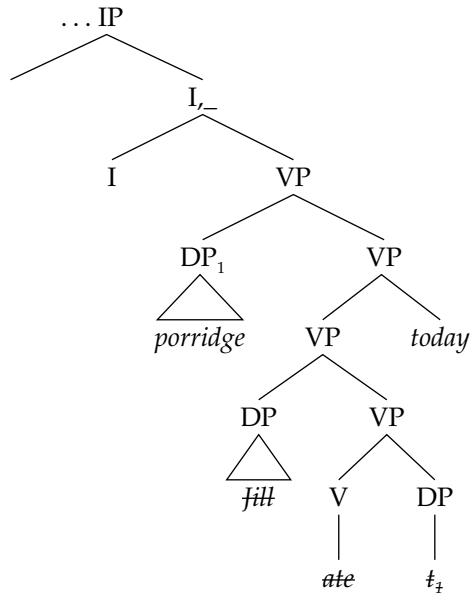
(71)



And to manufacture examples like (9), repeated below as (72), we should adopt the thesis that subjects can be generated within the VP, and let (9) arise when the subject remains in this position, as in shown in (73):

(72) Jill ate rice yesterday and ~~Jill ate~~ porridge today.

(72)



By and large, then, if Gapping can elide VPs, and can do so after terms within that VP have scrambled out, a certain range of central cases can be accounted for.

5 Parallelism and scope

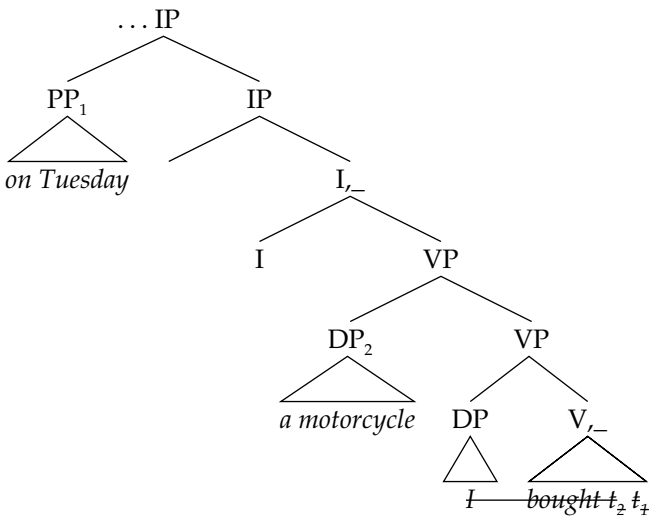
The odd property of this thesis is that it requires English surface forms to be able to be produced by the Scrambling process that is so transparently a part of, say, German or Dutch word order. English surface forms, however, do not otherwise appear to have been created by Scrambling. One of the unsolved problems of Gapping, then, is to fit the thesis in (65) to the more general syntax of English sentences, or to find a replacement for (65).

If such a fit can be found, however, the technique (65) allows can also be extended to cases such as (74), in which Gapping has elided the subject along with the verb:

(74) On Monday, I bought a car and on Tuesday ~~I bought~~ a motorcycle.
(Oirsouw 1987: 146, (158))

(Cases such as these are also found in Kuno 1976: 307, (31a) and Sag 1980: 266, (3.4.16).) If we assume that the topicalized PPs in this example are adjoined to IP, then we can combine the techniques used to manufacture (71) and (72) to give the Gap in (74) the representation in (75):

(75)



Through this case, another fact about Gapping can be observed: there is a matching requirement on the word order found in the antecedent clause and the clause with the Gap.[22] (76) is relatively ungrammatical when compared to (74):

(76) *I bought a car on Monday, and on Tuesday, a motorcycle.

This fact might be related to another requirement on Gapping: the scope of quantifiers in the antecedent clause must be parallel to those in the clause with the Gap. In (77), for example, if *some girl* has narrower scope than *every book* then *some boy* must also have scope narrower than *every pamphlet*:

(77) Some girl read every book and some boy every pamphlet.

If *some boy* has scope wider than *every pamphlet*, then *some girl* is going to have wider scope than *every book*. In other words, (77) does not support interpretations paraphrased in (78):

(78) a. There is some girl who read every book, and for each pamphlet, there is some boy or other who read it.
b. For each book, there is some girl or other who read it, and there is some boy who read every pamphlet.

The same parallelism can be demonstrated for quantificational arguments which are included in the ellipsis, as in (79):

(79) Some read a story by Grimm to every child and others a story by Seuss.

Just as in (77), the relative scopes of *every child* and *a story by Grimm* must match the relative scopes of *every child* and *a story by Seuss*. A similar parallelism is found in other forms of ellipsis – VP ellipsis, pseudogapping, and sluicing – and it is presently thought that the close relationship between ellipsis and deaccenting is responsible (see Fox 1999; Merchant 2001). To the extent that word order expresses information structure, including the focus semantics of a clause, it may be possible to relate the matching requirement that (76) illustrates with the parallelism effect found in cases such as (77) and (79).

If the parallelism constraint on the scope of arguments that (77) and (79) illustrate is something that Gapping shares with other ellipsis processes, it also displays some unique scopal properties. Oehrle (1987), Siegel (1987), and McCawley (1993) note that modals and negation in the antecedent clause sometimes behave as if they scope over the entire conjunction. For example, in (80a), *must* is understood to scope over the coordination, producing the interpretation paraphrased by (80b):

(80) a. I tried it in both positions, one of which must have been the locked position and the other one the unlocked position, but it wouldn't work either way.
b. I tried it in both positions, for which it must have been that one was locked and the other unlocked, but it wouldn't work either way.
(McCawley 1993: 249, (20g))

The same is found for *didn't* in (81a), which favors an interpretation in which it has the entire conjunction in its scope, yielding the meaning (81b) indicates:

(81) a. Kim didn't play bingo and Sandy ~~didn't~~ sit at home all evening.
b. not ((Kim played bingo) and (Sandy sat at home all evening))
(Oehrle 1987: based on 205, (28))

Siegel suggests that this fact emerges only when Gapping has affected just the modal or negation and nothing else. Thus, she points to a contrast between (80a) and (82), in which Gapping has removed *can't* along with the verb that follows:[23]

(82) Ward can't eat caviar and his guest ~~can't eat~~ beans. (Siegel 1987: 53, (3))

Indeed, unlike (80a), this sentence can be understood as synonymous with *Ward can't eat caviar and his guests can't eat beans*, in which *can't* is within each conjunct. It is also possible, however, to understand (82) so that *can't* has scope over the conjunction, that is, to be synonymous with 'It's not possible for Ward to eat caviar and his guest eat beans'.

Perhaps related to these instances of surprising wide scope are cases in which the subject of the antecedent clause takes an unexpectedly wide scope, as McCawley discovered by way of the example in (83); other examples, from Johnson (2000b), are in (84):

(83) No one's$_1$ duck was moist enough or his$_1$ mussels tender enough.
(McCawley 1993: 248, (15a))

(84) a. Not every girl$_1$ ate a GREEN banana and her$_1$ mother, a RIPE one.
b. No boy$_1$ joined the navy and his$_1$ mother, the army.

In each of these cases, the quantificational subject of the first conjunct can, as indicated by the indices, bind the pronoun found in the second conjunct. This is normally not possible, as (85) shows, presumably because the contents of the second conjunct do not normally fall within the scope of the material in the first:

(85) a. *Not every girl$_1$ ate a GREEN banana and her$_1$ mother ate a RIPE one.
b. *No boy$_1$ joined the navy and his$_1$ mother joined the army.

There is something about Gapping, then, that allows the material in the antecedent clause to have scope over the clause with the gap, and therefore over the conjunction housing both clauses.

McCawley relates these latter examples of exceptional scope to another exotic property of Gapping. It is sometimes possible, he shows, for Gapping to elide a part of the subject along with the verb. Some of his examples are (86):

(86) a. Too many Irish setters are named Kelly and German shepherds, Fritz.
b. The duck is dry and mussels, tough.
c. Your daughter is 16 and son, 17½.
d. How many states have a veterinary school or cities a zoo?
(McCawley 1993: 245, (1a, c, d), and 246, (6a))

McCawley argues that it's only terms in 'determiner position' which are able to Gap in this way, pointing to the ungrammaticality of examples such as (87):

(87) a. Italian red wines are outstanding and white wines excellent.
b. Red wines from Italy are outstanding and white wines excellent.
(McCawley 1993: 246, (10a', a''))

The reason that McCawley connects these startling instances of Gapping with the puzzling wide scope of the determiners in (83) and (84) is that, in some of these cases, the scope of the Gapped determiner also appears to be required to have wide scope. For example, he points to (88a) and notes that it has a paraphrase something like (88b) rather than (88c):

(88) a. Not enough linguists study Russian, literary scholars French, or engineers Japanese.
b. Not enough linguists, literary scholars and engineers study Russian, French and Japanese respectively.

c. Not enough linguists study Russian or not enough literary scholars study French or not enough engineers study Japanese.
(McCawley 1993: 247, (12a))

The fact that the paraphrase involves conjunctions rather than the disjunctions the sentence actually uses indicates that the negation built into *not enough* has wide scope. The same thing can be seen in (89a), whose paraphrase in (89b) perhaps makes clearer the wide scope aspect of these cases:

(89) a. No cat should eat Puppy Chow or dog, Whiskers.
b. It's not the case that any cat should eat Puppy Chow or that any dog should eat Whiskers.

It would seem, then, that the fact that quantificational determiners are capable of escaping the scope of the disjunction, or conjunction, in a Gapping context is a precondition for these instances of Gapping. This, perhaps, is why the determiner *a* seems unable to Gap in these contexts – another discovery in McCawley – since when *a* takes wide scope it does so by means quite different from other quantifiers:

(90) *A soup was too salty and pie too sweet, but otherwise the food was outstanding.
(McCawley 1993: 245, (5a))

To fit these instances of determiner Gapping into the framework in (65) for understanding the constituency of gaps is quite a challenge. It would seem to require moving all of the subject, except its determiner, along with whatever other remnants there are, out of the VP, and then Gapping that VP. For some recent attempts at just that, see Lin (2001) and Johnson (2000a, 2000b).

McCawley's paraphrase of (88a) in (88b) brings out another aspect of the Gapping construction: it has a superficial similarity to the use of *respectively* in coordinations. Not only does a Gapping sentence like (91a) mean something very like what (91b) means, they both involve focus on the related, compared, terms in a similar fashion:

(91) a. Jill ate beans and Jerry ~~ate~~ rice.
b. Jill and Jerry ate beans and rice respectively.

Moreover, the constraints on the strings that may Gap roughly match the constraints that the *respectively* construction places on the distance between the coordinated phrases that are being related. So, for instance, just as a string that includes a part of an adjunct clause cannot be Gapped (witness (92a)), so also is it impossible to relate two coordinates with *respectively* across an adjunct (as in (92b)):

(92) a. *Tom went to Florida to learn to play tennis and Bill ~~went to Florida to learn to play~~ squash.
b. *Tom and Bill went to Florida to learn to play tennis and squash respectively.

Similarly, *respectively* seems unable to relate coordinates that are separated by a finite clause in the same way as (56a) (repeated here as (93a)) indicates that Gapping cannot reach into a finite clause:

(93) a. *Charles decided that 20 boys are coming along and Harrie ~~decided that~~ 30 girls ~~are coming along~~.
b. *Charles and Harrie decided that 20 boys and 30 girls are coming along respectively.

The match isn't perfect: *respectively* can apply to a coordinated argument within a prepositional phrase, as in (94a) and, as we've seen, Gapping cannot target a remnant in this position (compare (94b)):

(94) a. John and Jill stood beside Jim and Mary respectively.
b. ?*John stood beside Jim and Jill ~~stood beside~~ Mary.

Still, to a large degree, the constraints on these two constructions are the same. This has led some to attempt to derive one construction directly from the other (see Hudson 1976 and Moltmann 1992 for extended analyses along these lines, and Dougherty 1970, 1971, Goodall 1987b, and Muadz 1991 for some relevant discussion). Another coherent approach, however, would be to give to both Gapping and *respectively* a syntax that triggers the same family of constraints.[24]

6 Conclusion

An important open question is how Gapping fits into the larger typology of ellipsis. As sketched above, it is possible to distinguish Gapping from Right Node Raising and other coordination-specific ellipses processes.[25] To the extent, however, that Gapping is restricted to coordinations, there is some reason for finding a common underlying licensing environment for all these phenomena. This is the direction that Goodall (1987b), Steedman (1990, 1996), Muadz (1991), Moltmann (1992), Munn (1993), Zoerner (1995), and many others take. Johnson (2000a, 2000b) expresses a variant of this school that attempts a reduction of Gapping to across-the-board movement. But Gapping also has similarities with the sorts of ellipses that are found in Sluicing and VP Deletion, and this has animated an attempt to overcome the difficulties sketched above for equating these phenomena; see Hartmann (1998), Coppock (2001), and especially Lin (2002).

In summary, Gapping is a process that elides VPs from which remnants have moved, sometimes by Scrambling. Unlike other ellipses processes, Gapping is found only in coordinations and is uniquely subject to the No Embedding Constraint.

NOTES

1 To see Gapping playing a role in (3), one must imagine the VP *met kids* following *than* out of which *met* has Gapped.
2 See Dougherty (1970, 1971) and Burton and Grimshaw (1992) among others.
3 See Rooth and Partee (1982) for a description of this ambiguity and an analysis that stands as an alternative to the one based on Gapping described here.
4 Chinese has the interesting property of favoring instances of Gapping like these over the more familiar ones in (1), suggesting that these two cases are not completely identical. See Paul (1999) for discussion.
5 And see Munn (1993) for a more recent treatment along these lines.
6 Though, see Sag 1980 for reasons for thinking that an independent ellipsis process is responsible (and Neijt 1979: 57ff. for counter-arguments).
7 A point also made by Chomsky (1980b: 190).
8 An anonymous reviewer points out that the *either/or* diagnostic of Gapping described above, examples like 'either in the house or the barn' would suggest that prepositions can Gap. For some indication that the placement of *either* cannot be reliably taken to mark the left edge of a disjunct, and therefore that Schwarz's analysis will have to be modified, see Johannessen (1993, 1998).
9 This issue concerning the distinction between Deletion and N Gapping is discussed in Jackendoff (1971).
10 To find contexts in which Adverbs or Complementizers (such as *whether* or *that*) Gap is not possible (because no material within an Adverbial Phrase or Complementizer Phrase can stand to the left of an Adverb or Complementizer), so whether these categories can Gap is undeterminable.
11 His examples are slightly different than mine, but not meaningfully. See Sag (1980: 273).
12 This is how the constraint is commonly framed, but Jackendoff (1971: 26) expresses it as follows: "In by far the most acceptable examples of Gapping, then, there is only one unlike constituent in the second verb phrase, and all the rest must delete."
13 In combination with various processing pressures.
14 For other problems with the No Ambiguity Constraint, see Quirk et al. (1972: 580ff.); Stillings (1975); Langendoen (1976); Sag (1980: 211ff.).
15 This is essentially how Sag (1980) formulates the process, which he then couples with a version of Bresnan's (1976c) Relativized A-over-A Condition to capture some of the cases that Hankamer's Major Constituent requirement was aimed at.
16 This, and the question corresponding to (54b), are ungrammatical on the construal in which *when* comes from the embedded clause.
17 See Ross (1969b).
18 For a recent analysis of Sluicing, see Chung et al. (1995) and Merchant (2001).
19 See Sag (1980: 288).

20 He conjectured that the movement operation occurred on the surface, not at Logical Form as in Sag's work, and that the remnants were moved into Comp position (what would in present terminology be the Specifier of CP).
21 I don't find the contrast in (64) as strong as that in (63).
22 A constraint pointed out in Hankamer (1979) and Pesetsky (1982: 658).
23 It should be noted that Gapping is not always successfully able to affect strings with negation in them. Ross (1970a), for instance, points to cases like (i) and suggests that Gapping is generally incapable of eliding *not*:

(i) *I didn't eat fish, Bill ~~didn't eat~~ rice, and Harry ~~didn't eat~~ roast beef.

See also Jackendoff (1971); Stillings (1975); Sag (1980: 195).
24 See Beck (2000) for an approach along these lines.
25 See McCawley (1998: chapter 9) for a useful canvass.

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30 Gerundive Nominalizations

GARY MILSARK

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1 Introduction

All languages are confronted with the problem of expressing propositions as arguments of larger propositions. Typically, this is done in one of two ways. The first, and by far the better researched and understood, is through finite or non-finite complement clauses, as in English examples such as (1–4):

(1) Everyone assumed *that the tree was dying*.

(2) Everyone assumed *the tree to be dying*.

(3) *That the tree was dying* saddened us all.

(4) *For the tree to be dying* would be devastating.

The second strategy is nominalization. In this device, the proposition is expressed by means of a phrase projected from a noun (or perhaps its determiner) that is related lexically or syntactically to the predicate of the corresponding clause. English examples related in this way to (1–4) are:

(5) Everyone expected *the death of the tree*.

(6) Everyone expected *the tree's death*.

(7) *The death of the tree* saddened us all.

(8) *The tree's death* saddened us all.

Many languages have a particular nominalization strategy characterized by essentially full productivity. The poster child for this sort of construction is the English *ing* construction exemplified in (9–13):

(9) The orchestra went on strike after *playing the overture*.

(10) We didn't approve of *them doing that*.

(11) We didn't approve of *their doing that*.

(12) We didn't approve of *doing that*.

(13) *Their playing the overture so badly* disgusted the audience.

In the generative literature, as well as in traditional work on many languages, constructions of this sort are referred to as the gerund or the gerundive nominalization. Generative inquiry into the properties of English gerundives dates to the origins of the discipline and has continued sporadically since then.

More recently, it has been realized that the puzzling properties of constituency, case, movement, and control that characterize the English gerundive have counterparts in many other languages as well, and the inquiry has expanded considerably. Since much of the work discussed below is concerned with the English construction, it may be appropriate in this introduction to address two potential confusions that can arise in considering the English data and their implications.

One concerns the relationship between true gerundives of the type illustrated above and a superficially similar nominalization exemplified by (14–17) below and referred to variously in the literature as the 'nominal gerundive', 'action nominalization', or 'derived nominalization in *ing*':

(14) The opera began after *the playing of the overture*.

(15) We thought that *his repeated retuning of the instrument* was unnecessary.

(16) *The constant retuning of instruments* seems to be a feature of early music concerts.

(17) *Their playing of the overture* was excruciating.

The contrast between these types of nominalization has been noted repeatedly, as in Chomsky (1970), Fraser (1970), Wasow and Roeper (1972), and Horn (1975). The derived nominalization (DN) type in (14–17) poses no particularly interesting problems. The *ing*-affixed verb form appears to be of nominal category and its projection has exactly the properties one should expect: it occurs in argument positions canonically occupied by nominal projections; it can include determiners, genitive subjects, and adjectival modification; and its internal complements require the preposition *of*. Also, the construction is limited in productivity, as shown by pairs such as (18, 19):

(18) Several factors led to *her achievement of legendary status*.

(19) *Several factors led to *her achieving of legendary status*.

Thus, one may conclude that this sort of example represents merely one of many partially productive lexical nominalization mechanisms provided by English, parallel to affixations and stem changes such as those in (20–22):

(20) We objected to *their retention of the documents*.

(21) *Her disavowal of vegetarianism* is quite recent.

(22) *The loss of his investment income* made Fred a wage slave.

True gerundives of the type shown in (9–13) (sometimes called 'verbal gerundives', 'VP gerundives', or 'sentential gerundives') are quite a different matter, and their analysis has presented difficult questions which will be taken up below.

The second potential confusion concerns the complements of certain 'perception verbs' in English:

(23) a. I saw *them climb the hill*.
b. I heard *them laugh like idiots*.

(24) a. I saw *them climbing the hill*.
b. I heard *them laughing like idiots*.

This construction has spawned a fairly long and contradictory literature in generative grammar, but its relevance in the present context resolves to the question of whether it is sensible to regard the italicized constructions in (24) as instances of the gerundive construction. Reasonable people (e.g., Reuland 1983 and Johnson 1988) have disagreed about this, but it would seem to be prudent to exclude such examples from consideration here, since they show a clear divergence from the syntactic patterns seen in true gerundives. These differences include the following.

First, the case of the apparent subject in such examples is always accusative. While accusative case subjects are sometimes possible in true gerundives, as noted in section 2.1 below, genitive is far more common. When genitive case is substituted in examples such as (24), the result is ill-formed:

(25) a. *I saw their climbing the hill.
b. *I heard their laughing like idiots.

Second, both A- and A'-extraction from the apparent subject position of examples such as (24) are easily possible:

(26) a. They were seen climbing the hill.
b. They were heard laughing like idiots.

(27) a. Who did you see climbing the hill?
b. Who did you hear laughing like idiots?

As noted in 2.2 below, A'-extraction from the subject position of true gerundives is decidedly vexed, and A-extraction (as in (28), is entirely impossible:

(28) *They were enjoyed playing the concerto.

Finally, the position occupied by *them* in (24) must be lexically filled, while true gerundives, such as that in (29c), have no such requirement:

(29) a. *I saw climbing the hill.
b. *I heard laughing like idiots.
c. I enjoyed climbing the hill.

The fact pattern shown here is compatible with an analysis in which perception verbs are ditransitive object control predicates similar in relevant respects to verbs such as *force* and *persuade*, which take nominal objects followed by infinitival complements. If this is correct, the structure of an example such as (24a) would be something like (30):

(30) I saw them$_i$ [PRO$_i$ climbing the hill].

Whether the bracketed constituent in (30) is a gerundive or something else, perhaps a 'small clause', as suggested by Reuland (1983), will not be pursued here. The only important point for present purposes is that examples such as these should be left out of consideration in the discussion that follows, since crucial factual judgments can be obscured if one confuses these rather problematic cases with the core examples of the gerundive construction.

2 Theoretical and descriptive issues in the analysis of gerundives

2.1 Constituency

The basic problem presented by the English gerundive construction, and by similar nominalizations in many languages, is that there is a contradiction between its internal structure and what would appear, on the evidence of its distribution in larger structures, to be its category type. Like the DN structures discussed above, gerundives occupy argument positions canonically assigned to nominal projections (NP) or their functional shells (DP). The most convincing examples of this are provided by structures containing psychological predicates, raising predicates, extraposition, prepositional arguments, or subject embedding, since these are the positions where there is the most unequivocal contrast between the distribution of nominal and sentential categories. In all these instances, gerundives have a distribution that parallels that of lexical nominals and contrasts with that of finite clauses:

(31) a. We were amazed that they left the city.
b. *We were amazed their leaving the city.
c. *We were amazed their decision.

(32) a. It seems that they left the city.
b. *It seems their leaving the city.
c. *It seems the departure.

(33) a. It is false that they left the city.
b. *It is false their leaving the city.
c. *It is false that story.

(34) a. *We talked about that they left the city.
b. We talked about their leaving the city.
c. We talked about the decision.

(35) a. *Fred said that that they left the city surprised him.
b. Fred said that their leaving the city surprised him.
c. Fred said that nothing surprises him anymore.

Despite this distributional evidence for nominal constituency, the internal structure of gerundives resembles in nearly all respects that of a sentence. Nominal objects are possible (36a), articles and quantificational determiners are barred (36b, c), and modification is adverbial (36d, e). Finally, as Pullum (1991) may have been the first to notice, the gerundive *ing*-form itself does not seem to be morphologically nominal, as shown by the resistance to pluralization exemplified in (36f.). The only respect in which these gerundives have an internal structure resembling that of a nominal projection is that they accept genitive case subjects, and even here the data are mixed: accusative case sometimes occurs in place of genitive under conditions that are not at all well understood (36g, h):

(36) a. Leaving the city is difficult.
b. *The leaving the city is difficult.
c. *Some leaving the city is difficult.
d. Leaving the city quickly is difficult.
e. *Rapid leaving the city is difficult.
f. *Leavings the city is difficult.
g. Their leaving the city surprised everyone.
h. ?Them leaving the city surprised everyone.

One further peculiarity of the internal structure of gerundives that has sometimes been taken as evidence of a non-sentential internal structure is that they do not permit modal auxiliaries:

(37) a. *John's must leaving was surprising.
b. *John's musting leave was surprising.

It is not clear that this fact has any structural implications, however. Modals are also barred from infinitivals, and it may be that both these facts are to be attributed to the morphological deficiency of English modals, which are restricted to finite inflectional forms.

It was once supposed that the categorial contradictions present in the English gerundive represented an unusual and highly marked phenomenon. Abney, in the course of his detailed study of gerundives (1987), remarks for instance that he was able after some effort to find a construction with the mixed properties of the English gerundive only in Turkish. This speculation was reinforced by evidence of historical instability in the properties of the construction within English.

There are literary examples ranging from the seventeenth to at least the mid-nineteenth centuries which seem to show the construction exhibiting different properties from those it has today. Typical is the following sentence from Act I, Scene 4, of Shakespeare's *Macbeth*:

(38) Nothing in his life became him like the leaving it.

The co-occurrence here between the definite determiner and the nominal object is entirely impossible in contemporary English, as shown by examples such as (36b). Wescoat (1994) notes several such instances, and a wealth of similar examples is found in Poutsma (1923) and Jespersen (1909). Emonds (1990) discusses further issues in the history of the English gerundive construction, as does Abney (1987).

More recently, however, investigations into a number of languages as historically remote from each other as Finnish, Kikuyu, and Quechua have revealed the existence of constructions with properties that closely resemble the categorial peculiarities of the English gerundive. Many of these constructions are nominalizations, as one might expect, but some are not. Taken as a whole, this work seems to show that something more general is at stake here than the analysis of a peculiar construction in a particular language, and has given rise to the term 'mixed category' to describe the problematic constructions in a more general fashion.

An example of the sort of facts that have emerged is found in Finnish. The language has four morphologically distinct non-finite verb forms, referred to in traditional grammars as the first through fourth infinitives. The first infinitive (formed with the suffix *-da*) corresponds exactly to the infinitives of Indo-European languages: it is indeclinable, and its object arguments bear the same cases as they would in a finite clause. It is, in other words, unambiguously verbal in nature. The fourth infinitive (in *-minen*) is often described (for instance in Lehtinen 1967) as a 'verbal noun', and for good reason: its characteristic suffix is morphologically related to a noun-forming suffix found in complex nominals not related to verbs, such as *Englantilainen* 'English' and *päskiäinen* 'related to excrement, foul person'; it is inflected for case, and its object arguments appear in genitive case. The form thus appears to be the exact analogue of the English DN gerundive and similar lexical nominalizations found in many other languages. In contrast to these examples of well-behaved categorial integrity, the second and third infinitives (in *-de* and *-ma* respectively) have mixed properties that are exactly analogous to those of English gerundives, within the limits of the syntactic and morphological parameters that distinguish the languages. Both forms are clearly nominal, accepting case and possessor affixes (the apparent analogue of English gerundives being restricted to cased positions), yet requiring clause-like case marking on their object arguments (the analogue of the presence of non-prepositional objects in English gerundives).

2.2 *Subject properties*

A second issue concerns the properties of the internal subject position. As noted above, lexical subjects may occur here, and genitive and accusative case alternate in the position under unclear conditions. However, gerundives also occur without audible subjects. These empty subjects are subject to control or to arbitrary interpretation, depending on their structural environment, a fact which has led most authors to assume the presence of PRO:

(39) PRO revealing one's emotions is often dangerous.

(40) Fred's revealing his emotions was tasteless.

(41) We regretted PRO performing the piece so badly.

(42) We regretted their performing the piece so badly.

This raises two issues. First, it is another respect in which the internal structure of gerundives appears to be sentence-like. While a number of people have suggested that PRO can occur in nominal categories, the evidence for this is somewhat slender. No one who acknowledges the existence of PRO at all, however, would doubt its presence in the subject position of non-finite clauses. Thus (39, 41) are exactly to be expected if gerundives are sentential. Further, Wasow and Roeper (1972) point out that control (and thus PRO) does not occur in DN gerundives, which are unquestionably nominal. Thus, (43) is not necessarily a claim about George's feelings about his own well-drilling:

(43) George regrets the drilling of all those oil wells.

This difference in control properties was exploited in a language acquisition study reported in Roeper (1982), in which it is argued that children show evidence of prior knowledge of the contrast in control between DN and true gerundives.

Second, the alternation between controlled PRO and lexical subjects in examples such as (39–42) is reminiscent of the situation in the subject position of infinitival complements of mixed control verbs such as *want* or *expect*:

(44) We expected them to understand the argument.

(45) We expected PRO to understand the argument.

Examples like these are an old source of puzzlement in generative analysis and have yet to receive a really satisfactory treatment, although they are no longer so obvious an embarrassment as they were in GB analyses incorporating the 'PRO Theorem' (Chomsky 1981).

2.3 *Extraction and interrogatives*

There is at least one minor issue concerning A'-extraction from gerundives. The construction shows a subject–object asymmetry that is unusual when compared with analogous phenomena in finite clauses and infinitivals:

(46) a. Who did she claim read the book?
b. What did she claim he read?

(47) a. Who did you want to read the book?
b. What did you want them to read?

(48) a. *Whose did you regret playing the piece?
b. *Who(m) did you regret playing the piece?
c. Which piece did you regret their playing?

The resistance to extraction of genitive subjects shown in (48a) is not in itself particularly mysterious, since genitive subjects behave the same in ordinary nominals, as noted originally by Ross (1986 (original dissertation 1967)) in his discussion of the Left Branch Condition.

(49) *Whose did you see book?

From this point of view, (48a) is at most another indication that gerundives are nominals of some sort. Interestingly, however, accusative subjects of gerundives also resist extraction, as shown in (48b), although many speakers do not find this sort of example as repulsive as those with genitive subjects, and published claims about their status differ. Reuland (1983) and Abney (1987) cite sentences such as (50) as grammatical, while Johnson (1988) assigns double question marks to analogous examples:

(50) Who(m) do you approve of studying linguistics?

A related issue raised perhaps first in Stowell (1981) and taken up later by Reuland (1983), Abney (1987), and Johnson (1988) is the absence of interrogative gerundives:

(51) I asked what she had done.

(52) I asked what to do.

(53) *I asked what (her) doing.

Stowell and Reuland took this as evidence that gerundives do not have a complementizer position that can accept interrogative elements. Abney's analysis, in which gerundives are not sentential, actually predicts this result.

2.4 Exceptional distributions

Occasionally, for instance in Battistella (1983) and Milsark (1988), it has been noticed that gerundives can in some circumstances show exceptions to the nominal distribution pattern shown in (31–35). The gerundive in (54) seems quite acceptable in a position normally allotted to sentential, rather than nominal, constituents. It is important, by the way, that these examples be read without

'comma' intonation breaks after *pleasant*. In the presence of such intonation breaks, the contrast in judgments disappears:

(54) It is pleasant walking in these woods.

(55) It is pleasant that we can walk in these woods.

(56) It is pleasant to walk in these woods.

(57) *It is pleasant this walk through the woods.

Interestingly, examples such as (56) become quite unacceptable when the gerundive has a subject:

(58) *It is pleasant our walking in these woods.

This phenomenon has been little researched, but the properties seen here would seem to indicate that if gerundives are generally nominal projections of some kind, there are nonetheless some like (54) that are not. There are additional complications, however. Michaelis and Lambrecht (1996) discuss examples such as *It's amazing the people you see here*, in which non-propositional nominals occupy a position that seems to be the same as that occupied by the gerundive in (54). The existence of such examples raises the possibility that gerundives in examples such as (54) might be nominal categories after all. As Michaelis and Lambrecht point out, however, the structures they studied always seem to carry an exclamatory force and a marked intonation contour. This is not true of gerundive examples such as (54), so it is not clear what if any relationship there is between the cases, especially since an intonation break after *pleasant* repairs examples such as (57) and (58), as noted above.

2.5 *The 'doubl-*ing*' phenomenon*

Beginning with Ross (1972b), a surprisingly copious literature has assembled around judgments of the sort shown in (59–62), showing that some, but not all, sequences of contiguous *ing*-affixed forms result in degraded acceptability. It is generally conceded that the examples in which iterated *ing*-forms are well-formed are those in which the second *ing*-form is a gerundive, while those exhibiting degraded acceptability contain some different construction in this position:

(59) They kept talking.

(60) *They were keeping talking.

(61) They enjoyed singing.

(62) They were enjoying singing.

Several approaches have been taken to the description of this phenomenon, ranging from purely descriptive statements to attempts to explain the phenomenon as a consequence of larger generalizations, such as an avoidance of morph repetition.

2.6 *How many* ings *are there and how do they arise?*

One of the enduring puzzles of English syntax is that there seem to be several affixes with the phonological shape *ing*, raising questions about how many distinct morphological elements they actually represent and how they are introduced into derivation. In addition to gerundives and the derived nominals and perception verb complements mentioned in the introduction, this affix appears in progressive aspect (63), in adverbial adjuncts (64), in a number of non-propositional nouns such as those in expressions like *fine clothing*, *wire fencing*, *wool carpeting*, *mine tailings*, and in adjectives such as *astonishing*, *terrifying*, *interesting*, *amusing*:

(63) They were walking down the street.

(64) Walking down the street, we saw a rainbow in the distance.

While most work on the gerundive and related phenomena has left this apparent syncretism unexplored, there have been some attempts (e.g., Milsark 1988; Emonds 1990; Siegel 1998) to reduce it in some way.

3 Generative literature related to the gerundive construction

Below are descriptions of a number of works which include discussion of the issues surrounding the analysis of gerundives. Many have been mentioned in passing in previous sections. Where convenient, they are grouped in thematic categories.

3.1 *Beginnings*

Early discussion of the gerundive appears in Chomsky (1975a (written in 1955–1956)), Lees (1960), and Rosenbaum (1967). The Chomsky and Lees works contain attempts to derive gerundive structures from structures underlying the 'kernel sentences' most closely approximating them by insertion of appropriate morphology and the use of generalized transformations. Rosenbaum, writing after the replacement of generalized transformations by expanded phrase structure operations (Chomsky 1965), takes gerundive complements to be present at deep structure but differentiated from other complement types by the application

of a transformation inserting the 'POSS-ing' complementizer. Emonds, in his 1970 discussion of root and structure-preserving transformations, notes the distributional differences between gerundives and complement clauses, particularly with respect to extraposition. He suggests that gerundives are generated in argument positions, while other (non-nominal) complements are generated in rightward adjunct positions and sometimes 'intraposed' to the argument positions in which they may appear in matrix structures. While these works are largely concerned with questions peculiar to their time, they still reward consultation in some ways. They introduce a number of the issues that animate later inquiry, such as the alternation between accusative and genitive case subjects, the resistance of gerundives to extraposition, the ambiguity of *of*-phrases in gerundives with respect to subject or object interpretation, the existence of gerundives with both nominal and prepositional objects, and the multiplicity of distinct constructions employing the formative *ing*. Rosenbaum's book, in particular, is laden with facts of great importance to later work.

3.2 *Chomsky (1970); Fraser (1970); Wasow and Roeper (1972); Marantz (1997); Harley and Noyer (1998)*

Jacobs and Rosenbaum (1970) contains two articles taking opposing positions on the derivational properties of DN gerundives: Chomsky's "Remarks on Nominalization" and Bruce Fraser's "Some Remarks on the Action Nominalization in English." Chomsky's paper argued on the basis of productivity and internal morphology that gerundives of the type seen in (9–13) above were sentential complements (transformationally derived, in the view current at the time), while derived nominals in general (and gerundive derived nominals such as (14–17) above) were lexically derived. Fraser's paper was an effort to refute these arguments and defend transformational derivation for both true and DN gerundives. Wasow and Roeper (1972) is primarily noteworthy for its careful discussion of the distinction between true and DN gerundives ('verbal' and 'nominal' gerundives in their terminology).

The distinction between true and DN gerundives has been revisited more recently by Harley and Noyer (1998 (a paper first presented in 1997)). Chomsky (1970) had noted that English verbal particles may occur in either their internal or their external positions in gerundive nominals, but only in the internal one in DN nominals:

(65) John's marking up the book was discourteous.

(66) John's marking the book up was discourteous.

(67) John's marking up of the book was discourteous.

(68) *John's marking of the book up was discourteous.

For Chomsky, this constituted an argument that DN gerundives were lexical nominalizations, while true gerundives were syntactically derived. Harley and Noyer attempt to provide an alternative treatment of examples like (70) that does not make use of Chomsky's distinction between lexical and syntactic derivation, since the distinction is unavailable in the theory of Distributed Morphology which they assume. On their account, DN gerundives differ from true gerundives (and from sentences as well) in that they lack certain functional projections that provide a target for movement of the object DP to the left of the particle in examples such as (66). Marantz (1997) provides a similar reanalysis of Chomsky's observations that also relies on a difference in functional content between gerundives and other nominalizations, in this case an agent-licensing category 'v-1' which is claimed to inhabit sentences and gerundives, but not other nominalizations. The goal here is to account for the distinction between examples such as (69) and (70) without maintaining a distinction between the lexicon and the syntax:

(69) *John's growth of the tomatoes . . .

(70) John's growing the tomatoes . . .

*3.3 Ross: 'doubl-*ing*' and succeeding work*

Ross's (1972b) article introduced the doubl-*ing* phenomenon to discussion. He took the facts as evidence for a 'transderivational constraint' on grammaticality related to the possibility of an overt subject occurring in the structures. Compare (71–74) with (75, 76):

(71) They kept talking.

(72) *They were keeping talking.

(73) They enjoyed singing.

(74) They were enjoying singing.

(75) *They kept our talking.

(76) They enjoyed our singing.

The facts discussed in Ross's paper form the material for a discussion that has been surprisingly long-lived. Milsark (1972) and Emonds (1973) argued independently that the doubl-*ing* phenomenon can be derived more simply from the observation that *singing* in (73, 74, 76) shows evidence of nominal constituency, while *talking* in (71, 72, 75) does not. Put otherwise, complements of *enjoy* are gerundives, while those of *keep* and other verbs that trigger doubl-*ing* are not. An account in Williams (1983a) is built on the same observation, but generalizes the descriptive mechanism in an attempt to account for certain properties of

non-gerundive complements of 'perception verbs' such as *see* and *watch* (see examples (23) through (27) above). An analysis of gerundives developed by Milsark (1988) entails that PRO subjects of gerundives carry genitive case in instances like (73, 74), allowing the doubl-*ing* phenomenon to be assimilated to the case-based analysis of restrictions on *to*-contraction suggested in Jaeggli (1980). In a number of papers, Pullum and others (Pullum 1974, 1991; Pullum and Zwicky 1999) have argued the necessity for a more intricate and purely descriptive account of doubl-*ing* incorporating structural information of greater detail than that envisioned by Milsark and Emonds. Menn and MacWhinney (1984) have attempted to embed the facts in a broader analysis of morph repetition constraints. A similar approach within an optimality theoretic framework is to be found in Yip (1998).

3.4 *Responses to the question of the sources and apparent multiplicity of* ings

In the earliest work on English complementation, the gerundive *ing* and the progressive *ing* were taken to be independent entities introduced into derivations though different syntactic processes, and other instances of the formative were left out of consideration as lexical phenomena outside the realm of the syntax. Typical are Chomsky (1957, 1964b, 1975a), Lees (1960), and Rosenbaum (1967), where the progressive *ing* is introduced as an auxiliary element by phrase structure expansion and reordered by affix movement, while the gerundive *ing* is introduced by generalized complementation or nominalization transformations (Chomsky and Lees) or as a special POSS-ing complementizer (Rosenbaum and much following work). Chomsky (1970) retains aspects of this position, in that derived nominals are regarded as lexical, while gerundives are transformationally derived. More recently, Reuland (1983), Baker (1985b), Abney (1987), Johnson (1988), Milsark (1988), Emonds (1990), and Zucchi (1993) have agreed that the gerundive *ing* takes part in a process of syntactic affixation that is in some respects reminiscent of the early work cited above. Most have been silent about the question of how many distinct *ing* affixes must be assumed for English, but Milsark and Emonds have argued that there is only one. The adjective-forming *ing* affix has come under particular scrutiny in Fabb (1984), Brekke (1988), and Borer (1990). In an interesting variation on this question, Siegel (1998) has noticed that gerundives with genitive subjects have different aspectual properties from those with PRO subjects. She proposes that this is because the progressive *ing* is morphologically related to the gerundive *ing* when the subject of the gerundive is PRO, but not when it is an overt genitive DP.

3.5 *Issues of case and lexicality in gerundive subjects*

Most work on gerundives has taken the genitive to be the usual subject case in these structures and treated accusative as an idiosyncrasy or ignored it entirely. Notable exceptions are Reuland (1983), Abney (1987), and Johnson (1988).

Early treatments of the genitive, such as Rosenbaum's (1967) POSS-ing complementizer, were stipulative in the spirit of the time, but more recent analyses have sometimes aimed at greater explanatory depth. One example is Abney (1987), in which genitive case results from agreement with the D head of the gerundive in exact analogy with the treatment of genitive specifiers in ordinary DPs. Another is Milsark (1988), where a different structural analogy between gerundives and non-gerundive nominals is exploited to the same purpose.

Reuland (1983) and Johnson (1988) have taken opposing positions on the problem of accusative case subjects. Reuland suggests that accusative case arises through transference from the inflectional head (*ing*) of a gerundive when the gerundive is governed by a matrix verb that assigns accusative case. Johnson (1988), on the other hand, holds that accusative case is assigned directly to the subject by an external case assigner in the manner of exceptional case marking in the infinitive complements of verbs such as *believe*. Abney (1987) claims that accusative case in gerundive subjects arises through internal assignment by whatever inflectional element is peculiar to these structures.

All the above attempts to grapple with the subject case problem must also deal with the alternation exemplified in (39–42) between lexical subjects of whatever case and PRO. Under the GB assumptions that underlie much of this work, this means that a way must be found to allow the subject positions of gerundives to be both governed (when lexical subjects are present) and ungoverned (when PRO is). Johnson's response is to allow gerundives to occur as both IP and CP complements (S and S' in earlier work), the former allowing external government of the subject and the latter preventing it. Reuland tries to resolve the problem by means of a particular claim about verb raising and affix movement in English. Milsark deals with it by locating the derivational recategorization of gerundive verb forms in the PF component, where, on his assumptions, the recategorization will be relevant to Case Theory but not to Binding Theory.

3.6 Approaches to the conflict between internal and external constituency in English gerundives

In early work on this issue, the recourse was to assume that verbal gerundives had a complex phrasal identity consisting of a sentence exhaustively dominated by NP, as in (77):

(77) $[_{NP}[_{S}$ Fred's asking the question]]

Thus, the conflict between the internal and external properties of these structures was resolved by main force. However, with the advent of X'-Theory, and later in the extremely impoverished and restrictive phrase structure system assumed in the Minimalist program, such an approach is rendered impossible, and the problem is red-flagged in a fairly dramatic way. A number of responses are distinguishable in the literature. Horn (1975) claims that gerundives are non-sentential; rather, he

regards them as direct NP projections of the gerundive marker *ing*, which he takes to have nominal constituency and to accept VP complements. Jackendoff (1977) suggests that the affixation of gerundive *ing* forms a deverbal noun that forms the head of a nominal projection. Schachter (1976a) suggests a somewhat similar analysis in which gerundives are NPs projected from the *ing*-affixed verb through an intermediate VP. Schachter's approach, although it dispenses with a sentential constituent in gerundives, does not resolve the X'-Theoretic difficulties that cast the earliest phrase structure analysis of gerundives into doubt. An analysis similar to Schachter's is developed within the framework of Generalized Phrase Structure Grammar by Pullum (1991). The analyses of Marantz and of Harley and Noyer mentioned in section 3.2 above also share this general approach.

At least as often, it has been assumed that verbal gerundives are sentential in nature, and means other than nominal constituency have been enlisted to derive the fact that they are distributed into positions characteristically occupied by nominal projections. Stowell (1981) contains perhaps the most ingenious and principled account of this type. He proposes a category-neutral base in which all differences in the internal structure of different phrasal categories are derived from general principles of grammar, primarily Theta-Theory and Case Theory. In this approach, so-called 'NP positions' are those to which abstract case is assigned, while a principle of case resistance bars from such positions any category headed by a category that itself assigns case. Thus, there should be a complementarity between positions occupied by nominal projections (case receivers) and those occupied by verbal or inflectional projections (case assigners). The exception presented by gerundives then can be construed as their being case-receptive (thus occupying 'NP positions'), despite being projections of the case-assigning element INFL. Stowell resolves the contradiction by claiming that case resistance further demands the presence of a tense feature which is not present in the gerundive INFL. Kornfilt (1984), discussing a propositional nominalization in Turkish that strongly parallels the English gerundive, also opts for a sentential analysis, but extends it to the point of claiming that in Turkish at least, not only the gerundive but also ordinary nominals containing possessive elements are instances of IP. Other authors adopting the sentential analysis include Reuland (1983) and Johnson (1988).

Milsark (1988) attempts to have the constituency issue both ways. Adapting ideas from Fabb (1984b) and Baker (1985b), he claims that *ing* is an affix without set categorial features, and that gerundives arise through the attachment of this affix by a process of syntactic affixation. This allows gerundives to be thought of as fundamentally sentential constructions that may exhibit either nominal or sentential (or adjectival or prepositional, for that matter) properties in larger phrase structure depending upon what sort of categorial features the affixation introduces. Emonds (1990) gets similar results by taking *ing* to be a nominalizing affix whose attachment can take place at more than a single level of derivation.

One of the most detailed and influential accounts of the constituency problem and many of its consequences is given in Abney (1987). Abney's analysis is, like

several mentioned above, one in which gerundives (at least those with genitive subjects) are not sentential constituents. It differs from those cited, however, in that it incorporates the 'DP Hypothesis', in which determiners are complement-taking heads that project a functional phrase category DP. Noting with certain previous researchers that the sentential properties of gerundives (e.g., the presence of nominal objects) are essentially confined to the VP Abney claims that gerundives are headed by a determiner whose major peculiarity is that it takes VP rather than NP complements. A secondary property of this determiner is that it undergoes an agreement relationship with its genitive specifier exactly as does whatever D head is present in non-gerundive examples with genitive specifiers, such as *Fred's book*, accounting for the one 'nominal' internal property of gerundives, the presence of genitive case subjects. Since what have traditionally been thought of as NP positions are DP positions in this theory, the structural conflict that lies at the heart of inquiry into the gerundive is neatly resolved: gerundives are simply DPs whose sentence-like properties result from the fact that their D heads agree with their specifiers and take VP complements. Essentially this analysis is adopted by Zucchi (1993), as well.

3.7 Broader issues of constituency in mixed categories

Since the mid-1980s, a number of books and papers have investigated the broader topic of 'mixed categories' that first came to the attention of the field through the study of the English gerundive. Since nearly all the instances that have been discussed concern nominalizations, a particularly useful and thorough descriptive compilation is Koptjevskaja-Tamm (1993), where nominalizations from a variety of languages are classified according to syntactic and morphological properties.

Perhaps the earliest study of mixed category phenomena in a language other than English is Hale and Platero (1985). They are concerned with a class of nominalized clauses in Navajo that exhibits sentential internal structure but is found in positions normally occupied by nominal projections, exactly as is the case with English gerundives. In order to describe this, they propose that the structures under discussion are projections of a feature complex they identify as [+N, +S], where the latter feature identifies the internal structure of the construction and the former identifies its external distribution. A very similar analysis of English gerundives is proposed within a lexicalist framework by Lapointe (1993).

Another interesting work which shares this general point of view is Lefebvre and Muysken (1988). The data they report are from Quechua, a language which exhibits a variety of morphologically and semantically distinct verbal nominalizations that do the work of a variety of clause types in languages such as English. All of them bear unmistakable signs of nominal constituency in that their heads bear case affixation, like the Finnish second, third, and fourth infinitives mentioned in section 2.1 above. The arguments of these nominalizations, however, show a striking mixture of case-selection properties. Some assume cases parallel

to those found in finite clauses; others show case selection parallel to that in projections headed by simple nouns; still others show various mixtures of properties. Lefebvre and Muysken suggest that these phenomena arise because nominalizations comprise a lexical category which is distinct from both nouns and verbs and is defined by the features [+N, +V]. In the process of phrasal projection, items of this category are subject to a neutralization whose effect is to convert them either to [+N, −V] or [−N, +V]. Depending on which option is taken, the resulting structure will exhibit either nominal or sentential internal properties.

Borsley and Kornfilt (2000) approach the mixed-categories problem by making use of the more abstract and articulated theory of phrase structure that has become familiar within the Principles and Parameters framework since the time of Lefbvre and Muysken's work. Adapting from Grimshaw (1991) the idea that particular functional heads are definitionally associated with particular lexical categories, they suggest that the properties of mixed categories arise when the functional structure dominating a verb projection is composed of one or more noun-type functional categories in a position superordinate to the verb-type functional categories normally associated with such projections. They apply this analysis to data from a variety of languages, most prominently Turkish and English, and claim that many of the particular facts about the precise ways that categories may be 'mixed' follow from their approach. As Borsley and Kornfilt note, their analysis has roots that can be traced to Abney (1987), whose analysis proceeds from the notion that gerundives contain a determiner that takes VP rather than NP complements. It also resembles in some ways those of Marantz (1997) and Harley and Noyer (1998). The common thread in this work is an attempt to explain various properties of gerundives or other mixed-category constructions by appeal to the selection and distribution of functional heads.

Still another analysis of nominalizations that depends crucially on the properties of functional heads is that of Alexiadou (2001). While her major concern is not with gerundives or mixed categories per se, responses to many of the issues that are highlighted in these structures are scattered throughout the book. Her conception of the role of functional heads contrasts with that of Grimshaw (1991) and Borsley and Kornfilt (2000), in that she adopts a position (familiar in the theory of Distributed Morphology) in which functional categories determine the categorial identity of major lexical items. In this approach, it is not that lexical heads determine the type and distribution of functional heads, but rather the opposite.

Yoon (1996) addresses a different aspect of the comparative study of mixed nominalizations. Citing an observation of Pullum (1991), Yoon notes that the *-ing* affix in English gerundives does not appear to be morphologically nominal. Thus, pluralization is impossible in examples such as (78), no matter how many excursions the dog experiences. This contrasts with the situation in DN gerundives and other lexical nominalizations, as shown in (79):

(78) a. John enjoys walking his dog frequently.
b. *John enjoys walkings his dog frequently.

(79) a. There were many outdoor readings of *Midsummer Night's Dream* last summer.
b. There seem to be more performances of Dvořak these days.

The Navajo nominalizations discussed in Hale and Platero (1985) seem to be similar to the English gerundives in (78) in this respect. In languages such as Korean, however, and in other languages mentioned above such as Quechua and Finnish, the heads of nominalizations are morphologically nominal, as shown by their ability to take nominal inflections. Indeed, in languages of the Korean–Quechua–Finnish type, this is often the strongest evidence that 'mixed' nominalizations are mixed at all. Yoon's response to this fact is to attribute the nominal properties of the English gerundive not to the affix *-ing*, as is usually done, but to a phonetically null nominalizing affix that is applied to the participial *-ing* form of a verb. This affixation is assumed to be free to apply either in the lexicon or in the syntax, as is the affixation of *-ing* in many prior analyses. Because the null affix is applied syntactically in gerundives, the nominal character of a gerundive is not visible in the lexical morphology of its head. Lexical application of the null nominalizer, as in (79a), results in a form with overt nominal properties, as does lexical attachment of nominalizing affixes in languages of the Korean–Quechua–Finnish type.

Much of the work discussed above is couched in theoretical frameworks in which syntactic derivation, movement, and empty categories assume substantial explanatory weight. Such frameworks range from the early transformationalism of the 1950s and early 1960s to recent approaches such as Government-Binding Theory and various versions of the Minimalist program. There have also been a number of investigations of mixed categories within theories that attempt to replace these notions with an expanded theory of lexical structure and/or a complex system of construction-specific phrase structure rules. Generally, this literature focuses on the English gerundive, but it is clearly intended to have implications extending into the broader world of mixed categories found in other languages.

Pullum (1991) and Lapointe (1993), both cited briefly above, are examples of this sort of work. Another is Malouf (2000). This account is typical of work within the theory of Head-Driven Phrase Structure Grammar, relying on a system of head features and construction-specific lexical rules to specify the syntactic properties of the gerundive. Malouf's article is well worth consulting for its critical summary of other analyses of the gerundive, whatever one's degree of familiarity with HPSG. Bresnan (1997) cites a number of types of mixed categories in a variety of languages and offers an analysis within the framework of Lexical Functional Grammar. Her essential insight is one that is shared to one or another degree by Abney (1987), Zucchi (1993), and Borsley and Kornfilt (2000), among others: mixed categories are not mixed randomly; rather, they exhibit a property of 'phrasal coherence' by which the characteristics of their different category types are localized in different parts of the construction. Bresnan conceptualizes

this as the result of nested categories of different types anomalously sharing a single head, and she develops a formal account for expressing this within the construct system of LFG. A somewhat similar idea is found in Wescoat (1994), where it is proposed that a single word in a terminal string may represent more than one lexical head standing in an unordered relation to one another. The effect of this is to allow the head of a gerundive construction to function simultaneously as a noun and a verb.

4 Conclusion

Like pretty much everything else in generative syntax, inquiry into the properties of gerundives and other mixed categories is very much a work in progress. The studies cited above have revealed a number of interesting facts, and some of those facts have been to some extent explained. The explanations are partial and shallow, however, and it seems clear that no theoretical approach has been able to provide a fully convincing account of the properties of these constructions. One should not be surprised at this. Explanations are always contingent and never complete, and those in linguistics are if anything more contingent and less complete than those in many fields.

It is interesting to note how this study has developed historically. It arose from an initial concern among generative grammarians with the properties of a particular, putatively rather marked construction: the English gerundive. As inquiry advanced, it became clear that the properties involved were actually more widespread than at first was believed. Thus the particular and peculiar became the general, if still rather peculiar. Many larger inquiries within generative syntax have similar pedigrees; one need only think of the way that case theory, thematic theory, and the study of argument structure grew out of an initial concern with the properties of the passive construction, or the manner in which the study of operator-variable dependencies proceeded from the study of informational questions and the crossover phenomenon.

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31 Grammatical Verbs (with Special Reference to Light Verbs)

TARA MOHANAN

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1 Introduction: scope of the chapter

Syntacticians of most persuasions would acknowledge a pre-theoretic distinction between 'lexical' (or 'content') words and 'grammatical' (or 'function') words in all languages. The conventionally accepted distinction between the

two classes seems to be that the former allows novel coinages (open class), while the latter does not (closed class). Thus, while one can coin a new noun or verb, the number of pronouns, prepositions, and auxiliary verbs in a language remains relatively fixed, not open to coinages. Following this terminology, we can use the term 'grammatical verb' to refer to special closed classes of verbs that do not permit the addition of new members, except perhaps through the process of grammaticalization.

Grammatical verbs typically include auxiliaries, indicating meanings of relative time, perfectivity, or progression, and modal auxiliaries, indicating meanings such as those of obligation or permission (see chapter 70). They also include special verbs of possession (*have*) and existence (*be*), as well as the class of words often referred to as co-verbs, especially in the literature on East Asian languages.

In a large number of languages, grammatical verbs also include a special class of verbs called light verbs. The present chapter focuses on light verbs, specifically seeking to distinguish them from the other classes when empirical evidence is presented. For detailed discussions of the other subclasses of grammatical verbs, see modals (see chapter 70), the have/be distinction, causatives (see chapter 6), verb particle constructions (see chapter 76), the Chinese *ba* construction, the East Asian passive (see chapter 12), and serial verbs (see chapter 59).

Light verbs, which form a closed class, are limited in number, but are part of a construction that is extremely productive. The examples in (1b) and (1c) below illustrate a light verb construction in Malayalam, a South Indian language:

(1) a. anu skuuLilninnə wannu.
Anu school-from came
'Anu came from school.'
b. anuwinə santooSam wannu.
Anu-DAT happiness came
'Anu became happy.' (To Anu, happiness came.)
c. anuwinə aanayooTə deeSyam wannu.
Anu-DAT elephant-to anger came
'Anu became angry with (toward) the elephant.' (To Anu, anger came . . .)

The verb in all the sentences in (1) is *wannu* 'came'. In (1a), this verb acts as a full verb. In (1b) and (1c), however, it is a light verb. It does not have the meaning of change of physical location associated with the verb *come*. Intuitively, the predicate in (1b) is *santooSam wannu* 'became happy', with a single argument, Anu. The predicate in (1c) is *deeSyam wannu* 'became angry', with two arguments, Anu and the elephant. The source of the difference in valency – that is, the number of arguments – is located in the nouns *santooSam* 'happiness' and *deeSyam* 'anger' respectively. In other words, the nouns 'host' the light verb, and bear part of the predicative burden. Together, they form a 'complex predicate' (Jespersen 1954–1958; Cattell 1984; Grimshaw and Mester 1988, among others), each incomplete as a predicate in isolation.

One may characterize a light verb as an independent grammatical verb that forms a complex predicate together with a host. This characterization obviously prompts the question of what a complex predicate is. A possible answer is that a complex predicate is a construction in which two morphs, both of which are semantically predicative, jointly head a single syntactic clause.

Stated at this level of generality, complex predicates manifest themselves in a wide range of constructions, not all of which necessarily involve a light verb. Thus, resultative constructions are analyzed as complex predicates, because they involve the combination of two predicates in a single clause (Simpson 1983; Levin and Rappaport Hovav 1995; Hale and Keyser 1997; Wunderlich 1997b). However, this construction does not have a light verb. Likewise, verbal affixes that in some way affect the valency, argument meaning, or case marking in a clause form complex predicates with their verbal host. (See Baker 1988a; Alsina 1996; Alsina et al. 1997; Ackerman and Webelhuth 1998.) However, these morphemes, though grammatical elements, are not light verbs, because they are not independent words. Other complex predicate constructions without light verbs include the verb + particle (see chapter 76) or verb + preposition structures.

A light verb, then, is a grammatical verb that functions as a member of a complex predicate construction. In this chapter, our concern is with complex predicate constructions that contain a light verb. This would exclude complex predicate constructions in which elements smaller than words, such as affixes, or constructions larger than words may serve the same semantic function as light verbs in some languages. To give an example, the applicative function – namely, that of adding an argument meaning, most commonly that of a beneficiary – is borne by a verbal affix in many languages (for instance, the Bantu languages, Indonesian, Malay, and Yimas: Foley 1997), or by special constructions, such as the dative construction in English. In yet other languages such as Malayalam and Mandarin, this function is fulfilled by a complex predicate with a light verb. Our concern is restricted to the last type.

It must be noted that Radford (1997: 264) defines a light verb as "an affixal verb (often with a causative sense, like that of *make*) to which a noun, adjective, or verb adjoins." Under Radford's definition, a causative affix, an applicative affix, and in fact any verb-forming affix that involves an operation on argument structure or event structure would be a light verb. Such a definition stands in contrast to the one we assume in this chapter, namely, that a light verb is a word-level (X^0) unit, and that while affixes in combination with nouns, adjectives, or verbs may form complex predicates, they are not light verbs.

2 'Light verb' and its host

Original use of the term 'light' verb is due to Otto Jespersen, although the phenomenon was observed long before; Gilchrist (1796) called it a 'subservient' verb. Jespersen describes it as an insignificant verb which is placed next to an

"important idea" to carry the markings of person, number, and tense (Jespersen 1954–1958: VI, 117–118).

Cattell (1984) lays out a range of relevant data on complex predicates from English, as well as issues surrounding their analysis. While complex predicates were variously explored under the guises of compound verbs, composite predicates, and serial verbs in a considerable amount of sporadic work over the years (discussions are found, for instance, in Ross 1986 (original dissertation 1967); Chomsky 1975b; Jackendoff 1972, 1974a; Higgins 1979 (original dissertation 1974); Oehrle 1976; Wierzbicka 1982), Cattell seems to have set the stage for the phenomenon of complex predicates to become a central preoccupation in most major syntactic theories, beginning with Grimshaw and Mester's (1988) analysis of the Japanese verb *suru* 'do'. (See also Ackerman 1987; Baker 1988a; Sells 1988, 1991; Krishnamurti 1989; Miyagawa 1989a; Rosen 1989; Mahajan 1990; Huang 1992a; Mohanan 1994; Butt 1995, 1997; Alsina 1996; Matsumoto 1996a; Alsina et al. 1997; Cinque 1997a, 1997b; Ackerman and Webelhuth 1998; Wilson 1999.)

Let us use examples of the light verb construction in English to develop an intuitive sense of the phenomenon. The verbs in (2a), (3a), and (4a) are full verbs; their counterparts in (b) are light verbs:

(2) a. Pat made a snowman.
    b. Pat made a dash across the puddle.

(3) a. Pat took May to the park.
    b. Pat took a bath.

(4) a. Pat gave Pip a toy.
    b. Pat gave a gasp.

The light verbs in these examples have three characteristic properties. The first is that a light verb is identical in form to a heavy or full lexical verb in the language. Thus, each of the verbs in (b) in (2–4) has a counterpart that is not a light verb, as shown in (a).

Intimately related to this is the second property: that it is typical for the light verb not to have the entire meaning content associated with its full counterpart; it is often seen as an 'incomplete predicate' (Butt 1995; Alsina 1996). Part of the predicative burden is borne by its host, as in (1b) and (1c). Meshchaninov (1982: 158) describes the loss of meaning in the grammatical verb as follows: "Having become a linking verb, the verb loses one of its obligatory meanings – lexical meaning – and preserves another meaning – syntactic meaning." A complete predicate "exists only in the union" of both meanings. The extent to which the core meaning of the verb is weakened or "bleached" (Masica 1976) in the light verb depends on the particular verb in each language. Perhaps an extreme instance of 'lightness' or semantic bleaching of a grammatical verb whose sole purpose is to bear the grammatical features of agreement and tense may be the

so-called 'dummy' verb *do* in certain '*do* support' constructions illustrated in (5) (see Grimshaw 1997b for a discussion):

(5) a. Did Pat give Pip a toy?
b. Pat gave Pip a toy, and so did May.

The dummy verb *do* in these examples is often taken to be devoid of any semantic content, even though such a position is not unchallenged (Penhallurick 1985; Hewson 1990; Hirtle 1997; also see Kroch 1989b and Stein 1990 for a historical perspective).

The third property of light verbs such as those in (2–4) is that at some level of abstraction, the verb and the following noun seem to create a single predicate-like unit that is equivalent to a single verb. Thus, *to take a bath* and *to give a gasp* are equivalent to *to bathe* and *to gasp* respectively.

In (1–4), the host of the light verb is a noun. A light verb can also take an adjectival or verbal host. In languages like Hindi (a language of northern India) and Urdu (a language spoken in Pakistan and in northern India, almost identical in structure to Hindi) we find all three types of light verb constructions, illustrated by the examples from Hindi/Urdu in (6):

(6) a. raam-ne niinaa-kii **madad kii**. (Noun + Verb)
Ram Nina's help did
'Ram helped Nina.'
b. raam-ne kamraa **saaf kiyaa**. (Adj. + Verb)
Ram room clean did
'Ram cleaned the room.'
c. raam **has paDaa**. (Verb + Verb)
Ram laugh fell down
'Ram burst out laughing.'

The light verbs that take a verbal host, as in (6c), raise difficult analytical as well as theoretical problems, brought out by a comparison of different constructions involving V–V sequences:

(7) a. raam-ne rootii **khaaii**.
Ram bread ate
'Ram ate bread.'
b. raam-ne rootii **khaaii hai**.
Ram bread ate is
'Ram has eaten bread.'
c. raam rootii **khaataa hai**.
Ram bread eats is
'Ram eats bread.'
d. raam-ne rootii **khaa lii**.
Ram bread eat took
'Ram ate the bread (all of it).'

e. raam-ne rootii **khaa Daalii**.
Ram bread eat put/flung
'Ram ate up the bread (finished all of it, forcefully).'

A Hindi/Urdu grammarian would agree, perhaps reluctantly, that in (7b), the second verb in the verb–verb sequence might be treated as an 'auxiliary' that in combination with the first verb indicates perfective aspect; in (7c), it may be a 'modal auxiliary', expressing habitual action together with the first verb; and in (7e), it is a 'light verb', expressing completion and forcefulness. But we would be hard pressed to find a justification for these labels, at least on a cross-linguistic basis if not within Hindi/Urdu. Now, how about the second verb in (7d)? It may traditionally be considered a modal, indicating completion. However, Butt (1995) argues that it must be treated as a light verb, as it contributes to the argument structure of the complex predicate.

The analytical challenge posed by examples like (7a–e) are illustrative of problems raised by complex predicate constructions in general. How do we distinguish between light verbs and modal verbs? Is such a distinction between two types of grammatical verbs necessary? How do we distinguish between complex predicates on the one hand, and serial verbs (see chapter 59) and control constructions on the other? Are there clusters of cross-linguistic generalizations that converge on these distinctions? These are not easy questions to answer. In the rest of this chapter, we will point to partial answers when there is empirical evidence to make a principled distinction. (See Butt 1995 for an extended discussion.)

Perhaps one of the sources of the problem of a cross-linguistic characterization of light verbs is the multiplicity of intuitions associated with the term 'light verb', namely, that it is a verb that (i) has a full verb counterpart; (ii) can contribute to the argument structure of the clause; (iii) does not uniquely determine the argument structure of the complex predicate; (iv) permits a non-verb to function as a predicate; and (v) forms a single syntactic predicate with its host. Thus, *be* in *John is asleep* or *The flower is red* is a light verb by (iii), (iv), and (v) but not by (i) and (ii). The second verb in (7e) is a light verb by (i), (ii), (iii), and (v), but not by (iv). By (v), a verb that involves syntactic control cannot be a light verb. Switching between these intuitions often results in inconsistent conclusions.

In the following sections, we will first look at some of the central questions (section 3) of analysis and theory that the light verb phenomena give rise to. We then go on to a survey of light verbs that take a nominal host (section 4), a verbal host (section 5), and an adjectival host (section 6), and the lightest of light verbs, *do* (section 7), examining clusters of morphological, syntactic, and semantic properties of light verbs across languages that have intrigued syntactic theories, and some of the analyses that have emerged as a response to the phenomena. Our main concern will lie with the substance of the theoretical hypotheses that have emerged, some of which are consensual, and others still controversial. Their implementation within various syntactic frameworks is only of secondary interest.

3 Central questions that light verbs raise

There are three broad questions that studies of the light verb construction, whether language-particular or cross-linguistic, must pay attention to, so as to make possible the emergence of a theory of the light verb construction. They are:

(i) What is a cross-linguistic characterization of complex predicate constructions such that they can be distinguished from other constructions involving auxiliaries, serial verbs, control/raising verbs, and (noun) incorporation?
(ii) Within the class of complex predicates, what are the similarities and differences between those that involve a light verb and those that don't? These include, on the one hand, complex predicates without an incomplete predicate, such as resultatives, and, on the other, those that involve affixation, such as morphological causatives.

Having addressed these questions, the next obvious question would be:

(iii) What are the parameters of variation among complex predicates, and what are the limits of variability?

On the basis of currently available studies, we can identify the following typological parameters of variation in terms of the various kinds of information that belong within grammar; in other words, different levels of representation within the organization of grammar. The terminology used in the formulation of the questions tries to be as framework-neutral as possible, and should be translatable into the different theories with the appropriate framework-internal vocabulary:

- In terms of **grammatical categories**, do the light verb and its host form a single constituent? Is the host a lexical (X^0) or a phrasal (X^{bar}) category? Is the light verb a lexical or phrasal category? Do the light verb and the host, when combined, form a lexical or phrasal category?
- In terms of **grammatical functions**, do the light verb and its host form a single complex predicate? Or do they remain as two separate predicates, as in control or raising constructions? Does the host have an independent function?
- As for the **argument structure** of the construction, does the light verb contribute to the valency and nature of the arguments of the complex predicate? Does the host contribute to this structure? Does the complex predicate have a single argument structure, or an embedded argument structure composed of main and subordinate argument structures?
- How do the light verb and the host contribute to the other aspects of the syntactic behavior of the complex predicate, such as **case marking** and **agreement**?

- What is the contribution of the light verb and the host to the meaning of the complex predicate? What is the relation between the meaning of the light verb and its full counterpart?
- What are the meanings that typically lend themselves to light verb formation across languages?

A comprehensive theoretical account of the light verb construction must await the availability of detailed grammars that address these questions in individual languages, to ensure the coverage of all the attested patterns.

4 Nominal hosts

4.1 Complex predicates in English

The expression in boldface in (8a) is recognized in the literature, at least beginning with Chomsky (1975b), to be somehow different from that in (8b):

(8) a. Pat **made the claim** that the snowman was innocent.
b. Pat **disproved the claim** that the snowman was innocent.

The complex expression *made the claim* in (8a) is perceived as a complex predicate; the expression *disproved the claim* is not. A number of syntactic and semantic properties distinguish the two constructions, justifying the claim that the expression in bold in (8a) is indeed a complex predicate, where a predicative noun combines with a light verb to form a single syntactic predicate.

To begin with, intuitively, *make the claim* is a single 'semantic unit' that is equivalent to the single verb *claim*. Thus, *John made the claim that . . .* is equivalent to *John claimed that . . .* In contrast, *disprove the claim* does not form a single semantic unit. This difference in semantics has correlates in syntax, for instance, in the contrast between (9a) and (9b):

(9) a. ?Who did you make the claim that Bill saw ___?
b. *Who did you disprove the claim that Bill saw ___?

In order to account for what looks like a violation of the Complex NP Constraint in (9a), Chomsky (1975b) postulates a rule of restructuring which takes the structure in (10a) as the input, yielding (10b) as the reanalyzed structure, where *make the claim* is a single V:

(10) a. $[[\text{make}]_{V}$ [the claim that $S]_{NP}]$
b. $[[\text{make the claim}]_{V}$ [that $S]_{\text{S-bar}}]$

In contrast, *disprove the claim* has only one structure:

(11) [[disprove]v [the claim that S]np]

If the representations relevant for Subjacency are (10b) and (11), the contrast between (9a) and (9b) would follow automatically. However, the reanalyzed structure in (10b) does not account for the contrast between (12a) and (12b):

(12) a. That Bill defeated Pat John did not claim ___.
b. *That Bill defeated Pat John did not make the claim ___.

The ungrammaticality of (12b) must follow from the structure in (10a), which treats *the claim that Bill defeated Pat* as a noun phrase. Thus, to account for the contrast between (9a) and (9b), one must assume the availability of the structure in (10b). However, in order to account for the contrast between (12a) and (12b), one must assume that the structure is as in (10a), and that the structure in (10b) is not available.

The need for the two conflicting groupings in (10) illustrates the 'dual' nature of complex predicates. Now, these two structures cannot both belong to the same level of representation because that would constitute a logical contradiction.

One way to capture the intuition underlying the distinction between (10a) and (10b) is as in (13), where, in (13b), *make the claim* is a single unit in its function as a predicate (equivalent to (10b)), but its categorial structure is (13a) (identical to (10a)):

(13) a. $[[\text{make}]_{V}$ [the claim that S$]_{NP}]$
b. $[[\text{make the claim}]_{PRED}$ [that S$]_{COMPL}]$

The structure relevant for relating a gap with its antecedent (governed by Subjacency or its equivalent) is the one in (13b), while the structure relevant for determining the position of the gap is the one in (13a).

The above discussion illustrates a recurrent characteristic of complex predicates with nominal hosts, namely, the mismatch between the structure in terms of grammatical categories and in terms of grammatical functions. The rest of section 4 outlines the central analytical and theoretical problems surrounding light verb constructions with nominal hosts.

4.2 *Light verbs with nominal hosts in Hindi: a case study*

In order to understand the phenomenon of light verbs with nominal hosts, and the theoretical questions they raise, it would be best to look closely at the construction in one language. As the language for illustration, we will use Hindi, where we find a duality of structure similar to that shown in English (section 4.1). Hindi offers a particularly fruitful starting point for exploring a cross-linguistic characterization of the complex predicate construction: it exhibits not only extremely productive complex predicate formation with nominal, verbal, as well as adjectival hosts (6a–e), but also a split among N+V complex predicates into two distinct types (Mohanan 1994, 1997).

Hindi has noun + verb sequences that are clear instances of constructions that are not complex predicates, as in (14). There are also instances of sequences that are uncontroversially complex predicates, as in (15). The verbs in (15) are the light counterparts of those in (14):

(14) a. kal æksiDent **huaa**.
yesterday accident happened (M)
'There was an accident yesterday.' (An accident happened yesterday.)
b. raam-ne apnaa homwark **kiyaa**.
Ram-ERG self's homework did (M)
'Ram did his homework.'
c. raam-ne niinaa-ko kitaab **dii**.
Ram-ERG Nina-DAT book gave (F)
'Ram gave a book to Nina.'

(15) a. kamre-kii **safaaii huii**.
room-GEN cleaning happened (F)
'The room got cleaned.' (Cleaning of the room happened.)
b. raam-ne kamre-kii **safaaii kii**.
Ram-ERG room-GEN cleaning did (F)
'Ram cleaned the room.' (Ram did cleaning of the room.)
c. raam-ne niinaa-kii kahaanii-par **dhyaan diyaa**.
Ram-ERG Nina-GEN story-on attention gave (M)
'Ram paid attention to Nina's story.'

In complex predicates like *madad kar* 'help do' in (6a), *safaaii ho* 'cleaning happen' in (15a), *safaaii kar* 'cleaning do' in (15b), and *dhyaan de* 'attention give' in (15c), the host noun (N) and the light verb (V), both predicative elements, combine to give a functionally single clausal nucleus. The N+V complex predicate construction in these examples exhibits certain clusters of properties that are recurrently found in the construction across languages, and can form an initial basis for a unified theory of complex predicates, including the parameters of variation available to the construction.

A striking trait of sentences with the N+V complex predicate in Hindi is that both the verb and the noun participate in determining the structure of the clause. Thus, in (15a) and (15b), the nominal host in the complex predicates is the same, but the verb is different. (15a) has one argument, (15b) has two. This difference in valency must therefore be contributed by the light verb. As for the contribution of the noun, the data involving the light verb *aa* 'come' provide a telling example. This verb in its capacity as a full verb has two arguments, as shown by (16): the entity that comes, and its locative destination:

(16) raam mere ghar **aayaa**.
Ram my house came
'Ram came to my house.'

In (17), the same verb 'come' functions as a light verb:

(17) a. mohan-ko **hasii** **aayii**.
Mohan-DAT laughter came
'Mohan had the urge to laugh.' (Laughter came to Mohan.)
b. mohan-ko kahaanii **yaad** **aayii**.
Mohan-DAT story memory came
'Mohan remembered the story.' (Memory of the story came to Mohan.)
c. mohan-ko anu-kaa **dhyaan** **aayaa**.
Mohan-DAT Anu's attention came
'Mohan thought of Anu.' (Thought of Anu came to Mohan.)
d. mohan-ko anu-par **krodh aayaa**.
Mohan-DAT Anu-on anger came
'Mohan was angry with Anu.' (Anger on Anu came to Mohan.)

In (17a), there are two arguments: the entity that comes, laughter, and its destination, Mohan. But the destination is an abstract one; it is an experiencer. In addition to the destination being an experiencer, the sentences in (17b–d) have an extra argument, not sanctioned by the verb *aa* 'come'. This argument must therefore be sanctioned by the noun. Furthermore, the case marking of the additional argument can differ depending on the noun: in (17b) it is nominative, in (17c) genitive, and in (17d) locative. (The case differences exhibited in (17b–d) on non-subjects can also appear on subjects: Mohanan 1997: 436). If we assume that differences in non-structural case marking indicate differences in argument meaning, then the meanings of the additional arguments in these sentences must also be different.

In short, the nominal host in a complex predicate can contribute to the number of arguments, their meaning, and the case assigned to them, and so can the light verb. This property of the complex predicate in Hindi is demonstrable in other languages of South Asia as well. We can state our observations so far as (18):

(18) In the N+V complex predicate, the N and V together act as a single predicate. However, both the N and the V are predicates in their own right: they can contribute to the number of arguments, argument meanings, and case marking in the clause.

Evidence from the behavior of reflexives, which at least in some varieties of Hindi take either the grammatical subject or the logical subject as their antecedent, shows that functionally, the complex predicate is a single clausal nucleus (Mohanan 1997: 443–444). Categorially, however, the N and V are concatenated phrasally, as shown by the topicalizability of the light verb (Mohanan 1997: 447–448). We can state this mismatch as follows:

(19) Functionally, the N and V form a single predicate; however, they are phrasally combined: they do not have a lexical status.

Even though the nominal host is part of the predicate, and a predicate in its own right, it is also an argument of the light verb in Hindi. This is shown by the fact that the nominal host can be the subject of a passive. Furthermore, the light verb exhibits agreement with its host in number, gender, and person; verb agreement in Hindi can only be induced by a subject or an object in nominative case. This leads to our next conclusion:

(20) Although the N is a predicate, and part of the complex predicate, it is, in some cases, also simultaneously an argument of the V.

In terms of the property in (20), the N+V complex predicates in Hindi appear to split into two classes. There is a small group of nominal hosts that are different from the rest in certain syntactic patterns. A nominal host belonging to this class cannot trigger verb agreement; it cannot be the subject of a passive; a negative word indicating syntactic negation can precede it; and it can gap and be gapped in a coordinate construction. All these differences follow naturally if we assume that the host in these instances is not an argument of the light verb.

The structural properties in (18–20) present a challenge. How must the compositionality of complex predicates be formally expressed such that the semantic and syntactic representation of the light verb and its host, together with the structural relation between the two, derives the semantic and syntactic properties of the complex predicate? What kind of syntactic and semantic theory can describe this compositionality? While framework-internal analyses of different aspects of different types of complex predicates are available, covering rich data with recurrent clustering of properties, answering the above questions requires bringing together all of the fragments into a comprehensive picture. We do not as yet have such an integrated theory of complex predicates.

4.3 Complex predicates, noun incorporation, and raising/control

As mentioned earlier, the light verb construction rose into prominence in theoretical syntax with the study of the Japanese light verb *suru* 'do' in Grimshaw and Mester (1988) (G&M). The central problem that G&M address is illustrated by the Japanese construction in (21a), and its behavioral contrast to (21b):

(21) a. John-wa Bill-to AISEKI-o shita.
John-Top Bill-with table-sharing-Acc *suru*-past
'John shared a table with Bill.'
b. John-wa Bill-to AISEKI shita.
John-Top Bill-with table-sharing *suru*-past
'John shared a table with Bill.' (G&M: 206)

In both (21a) and (21b), the verb *suru* 'do' appears to form a single unit with the preceding noun at some level of grammatical structure. The overt difference

between them is that while the preceding noun in (21a) carries accusative case marking, that in (21b) is a bare noun. G&M claim that while (21a) is an example of a complex predicate construction with *suru* as a light verb, (21b) is an example of the noun incorporation construction.

Subsequent literature (Ahn 1990; Huang 1992a; Matsumoto 1996a, 1996b; among others), however, disputes the claim that *suru* in (21a) is a light verb, and argues that (21a) is not an example of a complex predicate construction, but rather a raising/control construction involving a main verb and a complement clause. Yet other works accept that *suru* in (21a) is a light verb, but reject the G&M claim that it is an empty verb without its own argument structure. (For a detailed discussion of the issues and analyses related to *suru*, see Butt 1995: 201–221.)

In order to get a clear understanding of the issues involved in the different constructions, therefore, it would be productive to explore what properties constitute the necessary conditions for a construction to be called complex predicate (CP) or noun incorporation (NI), and how they are both different from raising/control constructions. One way to identify the parameters along which the differences can be characterized is in terms of the categorial and functional properties of the N+V sequences. The first distinction to recognize is that CP and NI constructions involve a single syntactic clause, while raising/control involve a matrix clause and an embedded clause.

Within the single-clause constructions, the relevant parameters include the categorial status of the nominal host (N), the light verb (V), and the complex predicate ([N, V]), and the functional status of the nominal host. A possible way to distinguish the two constructions is as follows:

				NI	**CP**
(22)	Categorial status	a.	of N	Lexical	Lexical or phrasal
		b.	of V	Lexical	Lexical or phrasal
		c.	of [N, V]	Lexical	Lexical or phrasal

				NI	**CP**
(23)	Functional status of N	a.	as argument	Yes	Maybe
		b.	as predicate	No	Yes

Whether the specifications in (22) and (23) should be accepted as criterial of CP and NI constructions is for future research to determine.

The parameters in (22) and (23) point to possible cross-linguistic variability in N+V complex predicates. One parameter of variation is the argumenthood of the nominal host (23a). As indicated earlier, Hindi itself distinguishes two classes, one in which the host is a syntactic argument, and another in which it is part of the predicate without any argument status. Another parameter of variation is the categorial level of the host (22a). In Hindi, it is a lexical category. In a language like Malayalam, in contrast, the host is a phrasal category (Mohanan 1983). Such typological variations deserve careful study.

Other variations in N+V complex predicates appear in languages like Korean (Ahn 1990; Sells and Cho 1991). The host noun, a lexical category, participates in three types of complex predicates, each displaying a different cluster of syntactic properties. One is lexically concatenated, and is syntactically unanalyzable; it obeys the lexical integrity principle (Ackerman 1987; Di Sciullo and Williams 1987; Simpson 1991; Sells 1994; Bresnan and Mchombo 1995; Mohanan 1995), which prohibits subconstituents of a lexical unit from undergoing syntactic reordering; examples are *kwen-hata* 'encourage' and *ceng-hata* 'decide'. The second and third types are phrasally concatenated: adverbs and negatives can intervene between the N and V. The phrasally combined complex predicates fall into two classes in terms of their behavior with respect to replies to yes/no questions, gapping, and the ability to take accusative marking. The two classes are distinguished by the fact that in contrast to the nominal hosts in examples like *phantan hata* 'judge' and *sayngkak hata* 'think', those in examples like *yenkwu hata* 'research' and *kongpwu hata* 'study' can be omitted in the reply to a yes/no question, can be gapped independently of the light verb, and can take the accusative marking *(l)ul*.

5 Verbal hosts

5.1 Causative light verbs

We now turn to the light verbs that combine with verbal hosts. Consider the English examples in (24), where (24b) is a causative (see chapter 4) version of (24a):

(24) a. Pat combed Ellen's hair.
b. Pat made Jan comb Ellen's hair.

(24b) is an example of a syntactically biclausal causative. If the object *Ellen* in (24b) is replaced with the pronoun *him*, the pronoun can take *Pat* as its antecedent. On the other hand, if we replace it with the reflexive *himself*, the reflexive cannot take *Pat* as its antecedent. These facts follow from the conditions of disjoint reference and reflexive binding (Binding Conditions B and A respectively in GB/Minimalist syntax), given that *make* and *comb* belong to different clauses in (24b).

Now consider the German sentence in (25a), and its causative versions in (25b, c):

(25) a. Ellen hat den Jungen gekämmen
Ellen has the boy combed
'Ellen combed the boy.' (Ackerman and Webelhuth 1998: 275)
b. Ellen ließ den Vater den Jungen kämmen.
Ellen cause the father the boy comb
'Ellen made the father comb the boy.'
(Ackerman and Webelhuth 1998: 279)

c. Ellen ließ den Jungen von seiner Schwester kämmen
Ellen cause the boy by his sister comb
'Ellen had the boy combed by his sister.'
(Ackerman and Webelhuth 1998: 275)

Ackerman and Webelhuth (1998) argue that (25b) behaves like a bi-clausal structure, exactly like the English example in (24b). However, the behavior of (25c) leads them to conclude that the sentence is monoclausal. Given that the verb *ließ* in (25c), which is an independent verb (not an affix), forms a single syntactic predicate with the following verb and contributes to the argument structure of the clause, it follows from our earlier characterization that *ließ* is a light verb in (25c), and that *ließ . . . kämmen* is an example of a complex predicate. In contrast, the sentence in (25b) is an example of a bi-clausal raising/control construction, and *ließ* is not a light verb.

Additional evidence from disjoint reference also points to the conclusion that (25c) is monoclausal, while (25b) is bi-clausal. Thus, if 'the boy' in (25b) is replaced with the pronoun *ihn*, the pronoun can take as its antecedent the subject *Ellen* (Miriam Butt, p.c.). But if 'his sister' in (25c) is replaced by the pronoun, it cannot take Ellen as its antecedent. Together with the rest of the evidence, then, disjoint reference shows that (25c) has a single syntactic clause. This situation illustrates the possibility, even within a single language, of an analytical causative being either a complex predicate construction with a light verb as in (25c), or a raising/control causative such as that in (24b) and (25b).

In the following sections, we will take a closer look at some more light verbs that take verbal hosts. We will see that the issues related to the analysis of N+V complex predicates discussed earlier resurface in a slightly different guise in the analysis of V+V complex predicates.

5.2 *Applicative light verbs in Malayalam*

5.2.1 *'Give' compounding*

The phenomenon of applicatives has generally been viewed as one in which an indirect object, oblique object, or non-argument appears as an object of the clause (henceforth 'applied object'). The dative construction in English, illustrated in (26b) below, can be understood as a restricted version of the phenomenon of applicatives:

(26) a. Miko sang a song for Jomo.
b. Miko sang Jomo a song.

Languages vary with respect to the theta-role of the applied object; a particular language may allow one or more of the following: beneficiaries, goals, instruments, locatives (Baker 1988a; Bresnan and Moshi 1990; Alsina and Mchombo 1993; Foley 1997). In languages with restricted instances of the applicative, including English, the applied object is typically a beneficiary.

As mentioned earlier, the applicative complex predicate may involve a light verb in some languages, for instance Malayalam. (Note that in the applicative in English, the verb bears no overt verbal marking.) The applicative in Malayalam has been described as give-compounding (Mohanan 1983, 1989), because it involves a V+V predicate in which the second V is the word for 'give'. (See Wong 1995 for a construction with similar effects in Mandarin involving the verb *gei* 'give'.)

Consider the triadic verb *koTukk-* 'give' in (27):

(27) uma ammuwinə oru pustakam koTuttu.
Uma Ammu-DAT one book gave
'Uma gave a book to Ammu.'

Applicatives in Malayalam are formed through a productive V+V compounding, where the second V is *koTukk-* 'give', as illustrated in (28b):

(28) a. uma oru paaTTə paaTi.
Uma one song sang
'Uma sang a song.'
b. uma baalanə oru paaTTə paaTi koTuttu.
Uma Balan-DAT one song sang gave
'Uma sang Balan a song.'
c. *uma baalanə oru paaTTə paaTi.
Uma Balan-DAT one song sang
d. uma baalanə-weeNTi oru paaTTə paaTi.
Uma Balan-DAT-for one song sang
'Uma sang a song for Balan.'
e. *uma oru paaTTə paaTi baalanə koTuttu.
Uma one song sang Balan-DAT gave
Intended: #'Uma sang a song and gave it to Balan.'

The verb 'sing' in (28) is dyadic. In (28b), where it occurs with 'give' in a V+V compound, 'give' contributes to the clause an additional beneficiary argument. An even more telling example of such argument addition is given in (29):

(29) a. ani aLaweTukkaan ninnu.
Ani measurement-take-INF stood
'Ani stood for the purpose of having her measurements taken.'
b. ani ammuwinə aLaweTukkaan ninnu koTuttu.
Ani Ammu-DAT measurement-take-INF stood gave
'Anu stood for Ammu to take her measurements (for Ammu's benefit).'
c. *ani ammuwinə aLaweTukkaan ninnu
Ani Ammu-DAT measurement-take-INF stood

On the basis of (28) and (29), one might be tempted to treat the syntactic effect of this compounding as one of increasing valency. However, as (30) shows, even

though it involves the additional meaning of a beneficiary, it is not necessary that give-compounding always adds an argument to the clause:

(30) a. uma aniye kuukkaan paThippiccu.
Uma Ani-ACC shout-INF taught
'Uma taught Ani to shout.'
b. uma anik'k'ə kuukkaan paThippiccu koTuttu.
Uma Ani-DAT shout-INF taught gave
'Uma taught Ani to shout.'
c. *uma anik'k'ə kuukkaan paThippiccu
Uma Ani-DAT shout-INF taught
d. *uma aniye kuukkaan paThippiccu koTuttu.
Uma Ani-ACC shout-INF taught gave

The object of 'teach' in (30a) is in the accusative case. Its counterpart in (30b), where the predicate is a give-compound, is in the dative case. Also, (30b) has the added meaning that the teaching was either desired by or beneficial to the learner. (30a) carries no such implication. In other words, the second argument in (30a) is a 'theme', while that in (30b) is both a theme and a beneficiary. There is no additional argument in (30b).

What we have here is a complex predicate construction in which the verb 'give' functions as a light verb. It adds the meaning of beneficiary to the clause, which may or may not result in the addition of an independent beneficiary argument. It also requires the beneficiary to be in the dative case. The benefit in this construction is the entire event described by the host of the light verb. Thus, in (28b), Uma is the agent, Balan is the beneficiary, and the event of Uma's singing a song is the theme that benefits Balan.

If the argument meanings of the full verb *koTukk-* 'give' in (27) are compared with those of the light verb in (28b), (29b), and (30b), an interesting difference appears. The dative argument in (27) is a recipient who is not necessarily a beneficiary. Thus, we can add *ravik'k'ə weeNDi* 'for Ravi' to (27), to mean 'Uma gave a book to Ammu for Ravi.' In other words, a beneficiary can be added to the sentence as an adjunct. In contrast, such a beneficiary adjunct cannot be added to a complex predicate construction with the light verb *koTukk-*. This suggests that the dative argument of the complex predicate V-*koTukk-* is a beneficiary, not merely a recipient.

Furthermore, the dative argument of the full verb can be the recipient of an undesirable theme. For instance, a sentence in which *pustakam* 'book' in (27) is replaced by *wiSam* 'poison', which is harmful to the recipient, is entirely acceptable. In contrast, the event that is of benefit to the dative argument in the light verb construction cannot be undesirable to the beneficiary. Thus, in a context in which Balan dislikes Uma's singing, the sentence in (28b) is unacceptable.

In sum, the special characteristics of the light verb 'give' in Malayalam can best be understood as a grammaticalization of the full verb 'give'. (31) below gives the parallel properties that bring out the effects of grammaticalization:

(31)	**Property**	**Full verb**	**Light verb**
a.	number of arguments: three	√	√
b.	Argument meanings:		
	(i) Agent	√	√
	(ii) Recipient	√	Desirable benefit
	(iii) Theme	√	√
c.	Theme:		
	(i) Concrete entity	√	No
	(ii) Event	No	√
d.	Transfer from agent to recipient	√	No
e.	Case of recipient/beneficiary: dative	√	√

The difference between the full verb and the light verb lies in their semantics: (i) the dative argument of the light verb is a beneficiary, (ii) the theme is an event, not an entity, and (iii) no transfer is involved.

It must be pointed out that the verb 'give' appears recurrently across languages as the indicator of the applicative meaning. Some examples are given below. Each of the examples appears to be an applicative with a light verb 'give':

(32) mama féng-**gèí** Xiàóqí yì tiáo qúnzi. Mandarin
mother sew-give Xiaoqi one CL skirt
'Mother sewed Xiaoqi a a skirt.' (Wong 1995: 12)

(33) i e prani a karu **gi** **yu**. Sranan
I plant the corn give you
'I'm planting the corn for you.' (Sebba 1987: 50)

(34) a séi dì wòsu **dà** dì wòmi. Saramaccan
he sell the house give the man
'He sold the house for the man.' or 'He sold the house to the man.'
(Byrne 1987: 177)

(35) nws xa ib qho khoom **pub** kuv. White Hmong
3sg send one class. goods give 2sg
'She sent me some things (as a present).' (Jarkey 1991: 244)

Heine and Reh (1983) observe that the applicative morpheme in a number of African languages developed historically from the verb for 'give'. Ahn (1990) and Matsumoto (1996b) argue that the apparently parallel construction in Japanese and Korean involving the verbs for giving and receiving are not complex predicate constructions; rather, they are constructions involving a main verb and a complement clause. Given our characterization of light verb as part of a complex predicate, we must conclude that the verbs 'give' and 'receive' in this construction in Japanese and Korean are not light verbs. However, given that these constructions resemble those of the applicative light verb constructions, an alternative

view of light verbs would be to delink their characterization from complex predicatehood, and define them as grammaticalized, bleached verbs that have a 'full' counterpart, whether or not they are part of a complex predicate. The wisdom of such a recharacterization of light verbs cannot be assessed without further investigation.

5.2.2 'Get' compounding

Another light verb construction which involves the addition of a beneficiary meaning is what may be called get-compounding. The Malayalam example in (36) is a simple sentence with the verb *kiTT-* 'get' as a full verb:

(36) anuwinə looTTari kiTTi.
Anu-DAT lottery got
'Anu won a lottery. (Anu got a lottery.)'

The verb *kiTT-* 'get' participates as a light verb in a complex predicate construction. Compare the give-compounding version of (37a) in (37b) with its get-compounding version in (37c):

(37) a. anu oru keikkə uNTaakki.
Anu one cake made
'Anu baked a cake. (Anu made a cake.)'
b. uma anuwinə oru keikkə uNTaakki koTuttu.
Uma Anu-DAT one cake made gave
'Uma made Anu a cake.'
c. anuwinə oru keikkə uNTaakki kiTTi.
Anu-DAT one cake made got
'Anu got the benefit of someone baking a cake.'

In the example of get-compounding in (37c), Anu is the beneficiary of the theme, namely, the event of baking a cake.

Consider another example of get-compounding in (38b):

(38) a. kuTTi skuuLil etti.
child school-in arrived
'The child arrived in school.'
b. ammak'k'ə kuTTi skuuLil etti kiTTi.
mother-DAT child school-in arrived got
'The mother received the benefit of the child arriving in school.'

Give-compounding requires an agent and a beneficiary; if the host does not have a beneficiary, the light verb supplies one, either as an argument or as an argument meaning. However, if the host does not have an agent, the light verb cannot combine with it. Thus, a give-compounding version of (38a) is not possible to create, because (38a) does not have an agent to begin with.

Like give-compounding, get-compounding requires a beneficiary, and the light verb adds it if one is not already available. The beneficiary in (37c) and (38b) is not an argument of the verbal host; it is contributed solely by the light verb. In contrast to 'give', however, the light verb 'get' does not permit the expression of the agent. Thus, the agent of the host in (37c) is unexpressed; expressing the agent of 'make' in any form would render the sentence unacceptable.

A comparison of the main verb *kiTT-* 'get' and its light counterpart shows the following differences:

(39)

	Property	**Full verb**	**Light verb**
a.	Number of arguments: two	√	√
b.	Argument meanings:		
	(i) Recipient	√	Beneficiary
	(ii) Theme	√	√
c.	Theme:		
	(i) Concrete entity	√	No
	(ii) Event	No	√
d.	Transfer to recipient	√	No
e.	Case of recipient/beneficiary: dative	√	√
f.	Agent cannot be an argument	√	√

The properties of get-compounding, then, are that (i) the complex predicate has two arguments; (ii) the logical subject is a beneficiary, not just a recipient; and (iii) the theme is an event, not an entity. The two complex predicate constructions, 'give'-applicative and 'get'-applicative, are parallel in that they both add a beneficiary meaning to the clause, where the benefit is an event; they differ in that the former requires an agent, while the latter prohibits one. This difference follows naturally from the argument structures of the full verbs.

The discussion of give-compounding and get-compounding in Malayalam shows that the idea of deriving the light verb through semantic bleaching of the full verb is not viable if bleaching is interpreted as implying the strong claim stated in (40):

(40) The semantic structure of the light verb is a proper substructure of the semantic structure of the full verb.

The light verbs *koTukk-* 'give' and *kiTT-* 'get', unlike their full counterparts, require that their dative argument be the beneficiary of a desirable outcome. In other words, they impose a semantic condition not found in the full verb. Hence, (40) could not be correct.

The general characteristics illustrated by the behavior of the applicative light verbs in Malayalam can now be summarized as follows. A light verb may impose a requirement on an argument of the complex predicate; if the host does not satisfy this requirement, the light verb may either contribute an additional argument (addition) or add the required argument meaning to an existing argument

(merging). A light verb may also impose a requirement that results in suppressing a semantic role of the host, thus preventing it from being expressed as an argument (suppression). Finally, it may require its host to contain a specific argument, as in the case of an agent in give-compounding. These properties support the conclusion that it is necessary to factor apart the semantic information and the valency information conflated in theta-role labels like agent, recipient, beneficiary, and theme.

5.3 *Aspectual and modal light verbs in Hindi/Urdu*

Complex predicates of the form V+V are so prevalent in the South Asian languages that a detailed description of their meanings has long been a central preoccupation of grammarians of these languages. Masica (1976) lists the varied and manifold meanings that light verbs bring to the complex predicate: they connote "completion, suddenness, directionality, benefaction, intensity, violence, stubbornness, reluctance, regret, forethought, thoroughness, etc." However, he suggests that these various modal and aspectual meanings "can all be brought under one banner: greater specification of features of the action already latent in the main verb itself or those that are compatible with it but have not yet been specified." The light verb unfolds the "latent semantics" of the host, "characterizing the manner and implications of its performance more precisely" (Masica 1976: 143).

In a detailed description of data from the various Indo-Aryan languages of South Asia, particularly Hindi and Marathi, Hook (1974) postulates a category called 'vector verb', roughly equivalent to what we have called 'light verb'. (Bahl 1967 proposes the term 'explicator' to refer to this class of verbs.) Of the two verbs V+V in a 'compound verb', the first is the host, and the second the vector or light verb. Including the less common and less productive ones, Hook catalogues 68 light verbs in Hindi (of which 24 are commonly used), as well as the various verbs that each of them accepts as its hosts.

In extensive work on complex predicate constructions with verbal hosts in Urdu, Butt (1995) lays out two constructions that she argues must be treated as complex predicate constructions, namely the permissive and the aspectual complex predicate, illustrated in (42) and (43) respectively. The sentence in (41) is the corresponding simple sentence with a single verb:

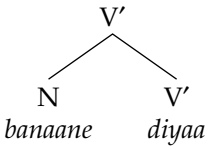
(41) anu-ne haar banaayaa.
Anu-ERG garland made
'Anu made a garland.'

(42) raam-ne anu-ko haar banaane diyaa.
Ram-ERG Anu-DAT garland to make gave
'Ram let Anu make a garland.'

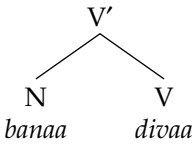
(43) anu-ne haar banaa diyaa.
Anu-ERG garland make gave
'Anu made a garland (completely).'

The permissive construction illustrated in (42) is entirely productive. The aspectual complex predicates, however, exhibit certain interesting combinatorial restrictions. The light verb can determine the case of the subject of the clause, and must be compatible with the host in terms of whether or not the subject of the clause can be volitional. The notions of the inception and completion of an event also play a role in limiting the combinatorial possibilities (Ramchand 1997); thus, a light verb may serve to pick out or focus on the point of inception. In short, the light verb brings its own semantics and argument structure to the construction, as in the N+V complex predicates.

On the basis of evidence from patterns of agreement, control, reflexive binding, and disjoint reference, Butt demonstrates that the light verb and its host form a single syntactic predicate in (42) and (43), behaving exactly like the simple predicate in (41). On the other hand, the patterns of scrambling, negation, modification, and coordination displayed by the constructions lead to the conclusion that they need not form a single constituent in phrase structure. Butt argues that in the phrase structure of (42), the infinitival verbal host is in fact nominal, and the light verb is not a lexical category; rather, it is a V^{bar}, as is the combination:



In (43), on the other hand, the light verb and the host are both V^0 sisters, their mother node being a V^{bar}:



The V+V complex predicates in Urdu, Hindi, and the other Indo-Aryan languages of South Asia raise questions about distinctions among grammatical verbs, particularly aspectual auxiliary, modal auxiliary, and light verb. In (42), the meaning is that of permission, typically found in modal auxiliary. However, as Butt argues, the construction in Urdu involves a complex predicate with a light verb which adds an argument to the clause, a property not associated with modals. Hence, we may conclude that the Hindi verb 'give' in (42) is a modal light verb, unlike the applicative light verb 'give' in Malayalam.

In (43), the verb 'give' adds the aspectual meaning of completion. One might ask if this grammatical verb should be treated as an aspectual light verb, or as an aspectual auxiliary in (43). It does not add an argument. However, it requires a particular argument meaning, namely that of conscious choice, of its subject.

This could be used as justification for classifying it as a light verb, if it were the case that all grammatical verbs that contribute/require specific argument meanings are light verbs. However, given that modal auxiliaries – for instance, *can*, *will*, *shall*, and *must* in English – generally express meanings such as volitionality, intentionality, ability, and obligation, which belong to the same class of meanings as conscious choice, it is difficult to use this property as criterial. The only reason for treating 'give' in (43) as a light verb, then, is that unlike the modal auxiliaries in English, light verbs have full counterparts. One may therefore suggest that a grammatical verb is a light verb if it has a full counterpart. However, this criterion also runs into problems when faced with examples like (44) and (45):

(44) anu us ghar-me rahtii hae.
Anu that house-in stays is
'Anu lives/stays in that house.'

(45) a. anu haar banaatii hae.
Anu garland makes is
'Anu makes garlands.'
b. anu haar banaatii rahtii hae.
Anu garland make stay is
'Anu keeps making garlands.'
c. anu haar banaa rahii hae.
Anu garland make stay is
'Anu is making garlands.'

A comparison of (44) and (45) shows that the grammatical verb *rah-* 'stay/remain/continue' in (45b, c) has a full verb counterpart in (44). By the criterion of pairing with full verbs, therefore, *rah-* in (45b) and (45c) should be a light verb. However, this verb in (45c) is viewed without question as an auxiliary. We must conclude that either the treatment of *rah-* in (45c) as an auxiliary is not viable, or that the property of pairing with a full verb is not a sufficient condition for light verbs.

It is widely agreed that auxiliaries (including modals) and light verbs, while they need not form a single phrase structure constituent, nevertheless form a single predicate with their hosts in terms of syntactic function. Now, distinguishing between auxiliaries, light verbs, and modals, Butt and Lahiri (1998) cite as an example of a modal the following sentence with an embedded structure:

(46) naadyaa xat likhnaa caahtii hae.
Nadya letter write-INF wish/want-IMPF is
'Nadya wants to write a letter.'

However, it is unclear how (46) can be distinguished from a raising construction. If we take light verbs and auxiliaries (including modals) to be grammatical verbs that involve a single functional clause, the legitimacy of (46) as a modal construction

is called into question. What (46) shares with modals is simply a modality meaning, which in this instance is expressed by a full verb.

A possible way to distinguish between auxiliaries and light verbs may be in terms of their contribution to the event structure of the clause: while auxiliaries participate in the modification of the event structure of their host, light verbs come with their own event structure, no matter how bleached. This is what makes a light verb a semantic predicate in its own right, allowing it to contribute arguments and argument meanings, and determine the case of arguments (Mohanan 1994; Butt 1995, 1997; Butt and Lahiri 1998). Though this is a possible move to make, it is unclear how one can in a non-ad-hoc way establish on an empirical basis the distinction between having an independent event and modifying an existing event.

6 Adjectival hosts

As mentioned earlier, the resultative construction in English has been treated as a complex predicate construction where the complex predicate is composed of a verb and an adjective (Simpson 1983; Jackendoff 1990b; Levin and Rappaport Hovav 1995; Hale and Keyser 1997). The construction is illustrated in (47):

(47) a. The potter baked the clay hard.
b. The elf licked the plate clean.
c. They painted the Volkswagen purple.

While (47) illustrates complex predicates made up of a verb–adjective combination, these examples are not of interest in a discussion of light verbs, because the range of verbs that participate in the construction do not form a closed class, and therefore are not grammatical verbs.

We do, however, find true light verb constructions with adjectival hosts, such as those in (48) from Hindi:

(48) a. kamraa **saaf huaa.**
room clean became
'The room became clean.'
b. raam-ne kamraa **saaf kiyaa**.
Ram room clean did
'Ram cleaned the room. (Ram did the room clean.)'

Compare (48a, b) with (15a, b), where the host is a noun; the meaning is only minimally different. Like N+V and V+V complex predicates, A+V complex predicates like those in (48) are entirely productive in Hindi.

The A+V complex predicates in Malayalam display an interesting twist. The language does not allow native adjectives to appear in the preverbal position in a complex predicate: adjectives, whether derived or underived (of which there are no more than a handful), must undergo nominalization to appear preverbally.

Alternatively, they undergo verbalization, in which case they do not require a light verb. Yet, surprisingly, there is widespread borrowing of adjectives from English to create A+V complex predicates such as those in (49), parallel to those from Hindi in (48):

(49) a. muri **kLiin aayi**.
room clean became
'The room became clean.'
b. raaman muri **kLiin aakki**.
Raman room clean caused to become
'Ram cleaned the room. (Ram made the room clean.)'

The borrowing of adjectives is productive; thus, the word 'clean' in (49a) and (49b) can be replaced by 'tidy', 'neat', 'dirty', 'dark', 'bright', or 'yellow', all with acceptable results. The A+V construction in Hindi and Malayalam reconfirms what we have observed before, namely that the light verb can determine the transitivity of the complex predicate independently of the host.

7 The ubiquitous light verb *do*

As mentioned earlier (section 4.3), Japanese and Korean have complex predicate constructions in which the light verb is 'do': *suru* in Japanese and *hata* in Korean. The equivalent of the verb 'do' appears to be one of the most pervasive light verbs across languages: *kardan* in Persian; *kar-* in the Indo-Aryan languages of South Asia, including Hindi, Gujarati, and Bengali, and *gar-* in Nepali; *ces-* in Telugu; *maad-* in Kannada; *paNN* in Tamil; and *cey* in Malayalam.

In all these languages, the light verb 'do' is completely productive, taking as its host not only native words but also words borrowed from English. An interesting quirk found in this productive complex predicate formation pattern in the South Asian languages is that typically, if the host is a native word, it is a noun; if the host is borrowed from English, it is a verb. Examples that illustrate this asymmetry are given in (50) and (51). While the illustrations are given only from two languages, the phenomenon is prevalent across the languages of the region:

(50)

	Hindi		**Malayalam**		**Gloss**
a.	puujaa	kar	puuja	cey	to worship
b.	upkaar	kar	upakaaram	cey	to do a favor
c.	madad	kar	sahaayam	cey	to help
d.	tyaag	kar	tyaagam	cey	to sacrifice

(51)

	Hindi		**Malayalam**		**Gloss**
a.	allow	kar	allow	cey	to allow
a.	edit	kar	edit	cey	to edit
c.	insist	kar	insist	cey	to insist
d.	wash	kar	wash	cey	to wash

In V+V complex predicates like those in (51), the borrowed English verb is incorporated into the language, with appropriate phonological adaptation.

In both Hindi and Malayalam, if the X in the X-*do* complex predicate is a native word, in which case X is a noun, as in (50), then the complex predicate is transitive, with an agent. If, on the other hand, the X is a borrowing from English, and hence a verb, the complex predicate may be either transitive or intransitive.

Among V+V complex predicates where the host is intransitive, Hindi and Malayalam diverge: Hindi requires that the host be unergative, while Malayalam allows both unergative and unaccusative hosts:

(52)	**Hindi**	**Malayalam**	**As in the sentences:**
a.	jump kar	jump cey	The cat jumped.
b.	jog	jog	Meg jogged.
c.	*arrive	arrive	The train arrived.
d.	*break	break	The teapot broke.

There is clearly a language-internal regularity visible in the phenomenon. However, the cross-linguistic details of the pattern of X+do, as well as the pattern of complex predicates of the form A+V (section 6), both of which involve words borrowed from English, appear at least for now to defy a principled account.

8 The relation between the full verb and the light verb

When talking about light verbs, a question that must be asked, whether or not it can be adequately answered, is: what is the relation between a lexical verb and its grammatical counterpart? Although the semantic and syntactic properties of a light verb are not identical to those of its full independent counterpart, there is clearly a systematic synchronic relation between the two. Thus, all analyses of complex predicates acknowledge that there is something light or incomplete about the light verb in relation to the full verb. Yet some central aspect of the syntax and semantics of the full verb is typically preserved in the light verb, whether it be valency, argument meanings, or case assignment. How, then, are the two verbs related? How must the relatedness be expressed by linguistic theory?

One of the explanations for the relation between full and light verbs has been in terms of the historical perspective. Historically, when a lexical form undergoes grammaticalization to become a grammatical form, the change is often manifested as a cline. (See Hopper and Traugott 1993: 103–113 for a detailed discussion of clines, and caveats.) A very general grammaticalization cline suggested for verbs is the following: full verb > auxiliary > clitic > affix. (See Bybee 1985; Bybee and Dahl 1989, for studies of cross-linguistic verbal clines, and Lord 1976 for similar grammaticalization patterns.) On this cline of grammaticalization, one

of the intermediate stages between the full verb and the auxiliary is represented by Hook's (1974) vector verb (Hopper and Traugott 1993). The large and variable repertoire of light verbs listed in the various Indo-Aryan languages of South Asia, as well as the restrictions on the semantic classes of verbs each of them accepts as its host, suggest a need to treat them as a class distinct from auxiliaries, closer to the full verbs.

Butt and Lahiri (1998), however, argue that light verbs do not belong on the grammaticalization cline mentioned above. The reasons they provide on the basis of light verbs in Urdu and Bengali are the following. First, V+V as well as N+V complex predicates have been around for at least two thousand years, and though absent in Vedic, are found in Classical Sanskrit texts, as well as in Prakrit and Pali. Interestingly, the structural ambiguity between a participial reading and a complex predicate reading found in Sanskrit is found in the complex predicate constructions in the Urdu, Bengali, and Hindi of today.

Second, while old participle forms have grammaticalized to affixes in the tense–aspect system, light verbs have remained intact. Furthermore, they interact with all the tenses and aspects, rather than forming a subclass within the system.

Finally, it is interesting to note that the basic set of verbs that appear as light verbs display a striking resemblance across languages. The languages, many of them genetically and areally unrelated to one another, range from Korean, Japanese, Chinese, Persian, and the various language families of South Asia, including Indic (Hindi, Bengali, Marathi, Sinhala), Dravidian (Malayalam, Tamil, Telugu), Tibeto-Burman, and Munda, to Amerind languages like Tepehua, African languages like Yoruba, and creoles like Sranan. The verbs that have light counterparts are typically selected from a set that includes 'do', 'become', 'have', 'make', 'come', 'go', 'move', 'give', 'take', 'put', 'throw', 'release', 'fall', 'rise', 'hit', and 'strike'. What these verbs appear to have in common is that they are the semantically simplest verbs in any language (Grimshaw 1997b). They are relatively unspecified for information, other than, for instance, movement and directionality. This absence of semantic specification renders them amenable to service in a variety of constructions (Butt and Lahiri 1998).

This brings us back to our question: how do we express the relation between the full verb and the light verb in syntactic theory? Butt and Lahiri suggest two possibilities. One is to assume that, for every verb that has a full as well as a light manifestation, there are two lexical entries: one with specification of the full verb, and the other for the light verb. The other is to postulate a single underspecified representation for each verb, which lends itself to use either as a full verb or as a light verb, depending on what is required by the larger context of the clause. Butt and Lahiri favor the latter as the more plausible assumption.

Whatever the formal solution (e.g., full specification, underspecification, or deletion of specification), the substantive challenge at the level of grammar is that of stating the general laws (rules or constraints) that relate light verbs and their full counterparts. The challenge at the level of Universal Grammar is that of capturing the cross-linguistically recurring patterns in such laws, not available at the current stage in linguistic theory.

9 Theoretical Issues and problems of analysis

9.1 Variety of structure in complex predicates

As we have seen, complex predicate constructions involving light verbs display a confusing array of structures and properties. First, the host of a light verb can be a verb, noun, or adjective. Some languages allow all three types of hosts.

In terms of the parameters of variation with respect to phrase structure, we have seen that a light verb, its host, and the entire complex predicate may be either a lexical category or a phrasal category. In N+V complex predicates in Hindi, the host is a lexical category (section 4.2), while in the parallel N+V complex predicates in Malayalam, the host is a phrasal category (Mohanan 1983). The light verb in N+V complex predicates in Hindi is a phrasal category (section 4.2), while that in the causative predicate in Catalan is a lexical category (Alsina 1997). Like the N+V (section 4.2) and V+V (section 5.3) complex predicates in Hindi, the entire causative predicate in Catalan must be treated as a phrasal category, but in Chichewa, it is a lexical category (Alsina 1997).

We have also found that in addition to being a predicate, and part of a complex predicate, a nominal host can also be an argument of the light verb. Hindi has two types of N+V complex predicates, the difference between them being precisely that the host is an argument of the light verb in one type but not in the other.

9.2 Diversity in analysis

In addition to the clear cases of the language-internal and cross-linguistic variability in the structure of complex predicates, we also find considerable divergence in the claims that have been made on complex predicates and light verbs in various languages. It is unclear at this point if the diversity of claims is a reflection of further cross-linguistic variability of the construction, or if it is a function of differences in analyses whose empirical claims need to be tested. Wherever the latter is the case, it is important to look for empirical evidence to choose from among the analyses.

Most treatments of complex predicates involve the combination of two semantic predicates into a single syntactic predicate. A brief look at the diversity of analyses of complex predicates available in the literature reveals four classes of issues.

9.2.1 'Movement' and 'restructuring' vs. multidimensionality

The first issue has to do with the problem of expressing how a light verb and its host behave like a single syntactic predicate with respect to functional structure, even though they may be two independent units with respect to categorial structure. This problem has two solutions (section 4.1). One solution involves a syntactic transformation of one representation into another. For instance, in an analysis of N+V complex predicates in English, Chomsky (1975b) employs

restructuring to transform the categorially motivated structure [[make] [the claim that . . .]] (10a) to the functionally motivated structure [[make the claim] [that . . .]] (10b). The same need for reanalysis, or 'restructuring', appears in V+V complex predicates as well. Variants of the transformational approach are employed in the treatments of complex predicates in GB, including movement in Logical Form (Baker 1988a; Jayaseelan 1988; Speas 1990; Huang 1992a; Chomsky 1995b; Cinque 1997a, 1997b). These approaches share with Relational Grammar the essential idea of 'clause union', or the hypothesis that such phenomena involve the reduction of a bi-clausal structure into a monoclausal one (Aissen and Perlmutter 1976, 1983).

The alternative solution involves two parallel linked representations. Within this approach, one structure is categorial (13a), as in the first solution, but the other is functional (13b); the two structures are related through principles of correspondence rather than the procedure of transformations. This is the strategy adopted, for instance, in the LFG-inspired treatments of complex predicates (Alsina 1992, 1996; Mohanan 1994, 1997; Butt 1995, 1997; Matsumoto 1996a; among others).

The choice between these approaches to the mismatch between functional and categorial information derives from the commitments of the particular model or framework that the individual linguist employs, and is particularly difficult (though not impossible) to test on empirical grounds. We will not pursue this issue here.

9.2.2 *How empty are light verbs?*

The second issue is that of expressing the contributions to the complex predicate by the light verb and by the host. Some approaches, such as that of Grimshaw and Mester (1988), assume that the light verb has no syntactic or semantic information to contribute, and that the relevant requirements of the host are projected up to the complex predicate. This assumption is clearly untenable in the light of the range of phenomena that we have reviewed so far, whether the host is nominal, verbal, or adjectival. Other approaches (Alsina 1992, 1996; Mohanan 1994, 1997; Butt 1995, 1997; Matsumoto 1996a; among others) assume, on the basts of large bodies of evidence, that both the light verb and its host can make a contribution to the complex predicate. The light verb can even contribute meanings to the complex predicate not found in the full verb (section 5.2).

9.2.3 *Complex predicate formation: event structure or argument structure?*

The third issue concerns the representation of the information contributed independently by the light verb and the host. In frameworks that make use of theta-role labels of the traditional sort, valency information is conflated with the semantics of the arguments. As demonstrated by the phenomena we have reviewed in applicatives in Malayalam (section 5.2), valency must necessarily be factored apart from argument meanings: a light verb can require the addition of

an argument meaning, which can be satisfied either by merging the meaning with an existing argument, or by adding a new argument.

The V+V complex predicates (section 5.3) also raise questions about argument structure. Given that a complex predicate has two semantic predicates and one syntactic (functional) predicate, how do we articulate the relation between the semantics and the syntax? In other words, how do two semantic predicates merge as a single syntactic predicate?

Differences among analyses in terms of this question crucially hinge on differences in the conception of the level of argument structure, the issue having to do with the representation of thematic role information. On the one hand, works like Rosen (1989), Grimshaw (1990), and Mohanan (1994) argue for a skeletal argument structure that represents valency and argument hierarchy information, without any semantic content. Butt (1995), on the other hand, incorporates semantic information at the level of argument structure, adopting Jackendoff's (1990b) Lexical Conceptual Structure representations directly into argument structure. Alsina's (1996) argument structure is less elaborated than that in Butt, but richer than the skeletal argument structure in that it includes proto-role information (Dowty 1991).

Given these differences, variants of at least two possible views of complex predicate formation emerge, yielding two types of analyses. In one type, Alsina (1996), for complex predicates in the Bantu languages and in Romance, and Butt (1995), for V+V complex predicates in Urdu, formulate complex predicate formation in terms of the correspondence of two argument structures and a single functional structure. In other words, each of the two semantic predicates has its own argument structure, with an embedded a-structure representation.

Mohanan (1994), in contrast, formulates N+V complex predicate formation in Hindi as a correspondence of two semantic structures and a single argument structure. The crucial difference between the two approaches is that the complex a-structure hypothesis implies the possibility of two logical subjects (highest argument in a minimal a-structure) in a single functional clause, while the simple a-structure hypothesis entails a single logical subject. In Hindi, evidence on the basis of which to choose between the two comes from facts of reflexive binding, which is sensitive to logical subjecthood: a reflexive in this language takes as its antecedent either a grammatical subject or a logical subject. It is extremely difficult to find examples of complex predicates in which, given a compositional argument structure, the logical subjects of the embedded predicate and the matrix predicate would be distinct. However, in the rare examples that can be found among N+V complex predicates, only one of them can bind the reflexive. This points to a representation with a single argument structure without embedding (Mohanan 1994). The hypothesis of dual logical subjects is therefore untenable at least for the N+V complex predicates in Hindi. Whether this is true of the V+V complex predicates in the literature remains to be seen.

In the absence of relevant evidence, we may entertain a parametric choice between simple and complex argument structures available to languages in complex predicate formation. How do we decide which choice is appropriate in

a particular instance? What is the kind of empirical evidence, such as that described above from reflexive binding in Hindi, that would allow for the choice between the alternative analyses? Or are they empirically equivalent variants, resulting from minor individual differences in the conception of the organization of grammar? These are questions for future research.

10 Conclusion

We hope that it is clear that research since the early 1980s, whether descriptive or theoretical, and regardless of specific frameworks, has contributed considerably to our understanding of the phenomenon of complex predicates and their formation. While unanswered questions abound, the wealth of data keeps growing.

In the preceding sections, we have addressed the questions outlined at the beginning of the chapter, here briefly summarized:

(i) How can we characterize the complex predicate construction in such a way that it can be distinguished from other constructions involving grammatical elements?
(ii) How can we characterize the light verb construction as a special case of complex predicates, to be distinguished from other types of complex predicates?
(iii) How do complex predicates vary, and what are the limits of their variability?

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32 Honorifics

NOBUKO HASEGAWA

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1 Introduction

Every language is equipped with some means to make speech polite, less offensive, less assertive, or less direct.[1] One typical way to do so is to employ an interrogative or a subjunctive in place of a command or an imperative sentence. For example, the interrogative (1b) and the subjunctive (1c) are considered to be more polite expressions than the imperative (1a):

(1) a. Pass me the salt.
b. Will you pass me the salt?
c. Would you pass me the salt?

Similarly, a statement can be made less direct if it is converted to a negative question or a tag question. (2b) and (2c) sound softer and less pushy than (2a):

(2) a. It is expensive.
b. Isn't it expensive?
c. It is expensive, isn't it?

Another typical way to make speech polite is to designate particular expressions or words as polite versions for certain referents. For example, many European languages have two forms that refer to the second person, and one is considered to be more polite or less intimate than the other. In French, *vous* is used rather than *tu* when the speaker feels a need to show some distance from the addressee. Similarly, in polite speech, less direct expressions or euphemisms are preferred to direct ones: *pass away* for *die*, *bathroom* for *toilet*, etc.

Having observed these cases, polite speech may be characterized in terms of how a certain idea or referent is expressed, and what is at issue is how certain words are used in addition to their original or primary functions. Then polite speech may be considered to be better investigated in the realm of the use of language or pragmatics rather than in that of formal grammar. However, there are languages that exhibit particular grammatical constructions that are productive and primarily just for polite speech. Japanese is such a language and in what follows, I will describe the constructions in Japanese that have to do with honorifics.[2]

2 Honorific forms in Japanese: overview

For making speech polite, Japanese makes use of the strategies described above as well. That is, questions can be used in place of requests, interrogative forms are considered less direct than straight declaratives, pronouns have several forms which are used differently depending on who they refer to, who the addressee is, and under what sociological situation the utterance is made; particular euphemisms are available for certain expressions, etc. However, what makes the polite speech of Japanese different from these strategies is that it possesses a productive system that is primarily for honorifics. In Japanese grammar, it is widely accepted that Japanese exhibits (at least) three types of honorifics: Performative Honorific (PH) or Hearer Honorific (HH), Subject Honorific (SH), and Object Honorific (OH) or Non-Subject Honorific (NSH).[3] Each honorific type exhibits its own peculiarities, and honorifics are to be considered in terms of the following three conditions; (i) morphological conditions, (ii) grammatical conditions, and (iii) contextual or pragmatic conditions. To illustrate, let us take (3) as an example:[4]

(3) Sato-san-ga Honda-san-ni hon-o kasi-ta.
Sato-Nom Honda-Dat book-Acc lend-Past
'Sato lent a book to Honda (Sato let Honda borrow a book).'

This sentence has the plain or basic form of the predicate *kas(u)* 'lend'. However, the predicate may take any of the three 'honorific' forms; *V-mas-u*, *o-V-ni nar-u*, and *o-V-su-ru*, without altering the 'logical' meaning, that is, 'Sato lent a book to Honda (Sato let Honda borrow a book).' These forms represent the three types of Japanese honorifics:

(4) a. HH: Sato-san-ga Honda-san-ni hon-o kasi-*masi*-ta.
Sato-Nom Honda-Dat book-Acc lend-polite-Past
'Sato lent a book to Honda.'
b. SH: Sato-san-ga Honda-san-ni hon-o *o*-kasi-*ni nat*-ta.
Sato-Nom Honda-Dat book-Acc HP-lend-SH-Past
'Sato lent a book to Honda.'
c. NSH: Sato-san-ga Honda-san-ni hon-o *o*-kasi-*si*-ta.
Sato-Nom Honda-Dat book-Acc HP-lend-NSH-Past
'Sato lent a book to Honda.'

The HH form indicates that the speaker presents her speech in a polite way, being respectful to the hearer or addressee. With the SH form, the speaker elevates the referent of the subject without degrading anyone else including the speaker. NSH, on the other hand, downgrades or demotes the subject, which in effects elevates the referent of a non-subject. Thus, if the speaker utters (4a), she intends to show that she feels it appropriate to express her respect for the addressee, when expressing the logical content of the sentence that is the same as (3). (4b) indicates that the speaker is respectful to the subject of the predicate, *Ms./Mr. Sato*, while her attitude toward the addressee and the indirect object, *Ms./Mr. Honda*, is neutral or unspecified. With (4c), on the other hand, the speaker expresses her respect for a non-subject, the indirect object *Ms./Mr. Honda* in this case, but does not show any particular respect for the addressee or the subject of the sentence. HH and the other honorifics, SH or NSH, are not mutually exclusive and if the speaker considers it appropriate to show her respect for both the addressee and the subject of the sentence, the logical content of (3) is expressed in the form (5a), where the *o-V-ni nar(i)* part involves the SH marking and the *mas(i)* part the HH marking. In (5b), the speaker is respectful toward both the addressee, being marked by *mas(i)*, and the (indirect) object of the sentence, which has to do with the *o-V-si* morphology:

(5) a. HH & SH: Sato-san-ga Honda-san-ni hon-o *o*-kasi-*ni nari-masi*-ta.
b. HH & NSH: Sato-san-ga Honda-san-ni hon-o *o*-kasi-*si-masi*-ta.

One may wonder how the speaker expresses her respect for both the subject and the object, which is certainly a possible situation sociologically. However, it is impossible to do so grammatically: one predicate cannot take the SH and NSH forms at the same

time.[5] The speaker must put one higher than the other and choose an honorific form accordingly. It seems that when the speaker's respect is to be directed toward both the subject and the object, SH is used, since NSH has the function of making the subject humbler (lower than the object), while SH simply elevates the subject, leaving the status of the object intact (neutral or possibly respectful).

The honorific markings appear not only on verbs, as in (4) and (5), but also on adjectives and on the copulative predicate, as shown in (6–7):

(6)	**Adjectives**	***yasasi-i***	**'kind-pres.'**
	a. Plain:	Yamada-san-wa 'Yamada is kind.'	yasasi-i.
	b. HH:	Yamada-san-wa	yasasi-i-*des*-u.
	c. SH:	Yamada-san wa	*o*-yasasi-i / *o*-yasasi-ku-te-*irassyar*-u.
	d. NSH:	Does not apply	

(7)	**Copula**	***da***	**'be-pres.'**	
	a. Plain:	Hanako-san-wa 'Hanako is a teacher.'	sensei	da.
	b. HH:	Hanako-san-wa	sensei	*des*-u /de *gozaimas*-u.
	c. SH:	Hanako-san-wa	sensei	de *irassyar*-u.
	d. NSH:	Does not apply		

The basic functions and morphological forms of the three types of honorifics are summarized in (8–10):

(8) **Hearer Honorifics (HH) – respect is due to the addressee:**

a. Verbs: The polite predicate *mas-u* is attached to the connective form of a verb.[6]

b. Adjectives: *Des-u* is attached to the indicative form of an adjective.

c. Copula: The polite form of the copula, *des-u* or *de gozaimas-u*, is used instead of the plain *da*.

(9) **Subject Honorifics (SH) – respect is due to a subject:**

a. Verbs:[7] Either (i) or (ii), where (i) is considered to be more polite than (ii):

(i) *HP-V-ni nar-u*; the sequence of the honorific prefix (HP) (*o-* or *go-*), the connective form of a verb, the particle *ni*, and the predicate *nar-u* 'become'.[8]

(ii) The form equivalent to the passive morpheme *(r)are-ru* is attached to a verb stem.

b. Adjectives:[9] An HP is prefixed, as in *o-utukusi-i* 'beautiful'. Optionally, the SH suppletive form of the verb *ir-u* 'be, exist' (*irassyar-u*) attaches to the connective form of an adjective, as in *o-utukusiku-te-irassyar-u*, which makes the form politer than the one without.

c. Copula: The connective form of the copula (*de*) is followed by the SH suppletive form of the verb *ir-u* 'be, exist', *irassyar-u*.

(10) **Non-Subject Honorifics (NSH) – respect is due to a non-subject:**
a. Verbs:[10] HP-V *su-ru*: the sequence of HP, the connective form of a verb, and the predicate *su-ru* 'do' or its suppletive NSH form *itas-u*.
b. Adjectives: No NSH forms
c. Copula: No NSH forms

The formation of honorifics given above applies only to native words. There is a large number of Sino-Japanese (SJ) predicates that necessarily involve a native predicate to hold a tense morpheme: SJ verbs consist of a verbal noun (VN) and the light verb *su-ru* 'do', as in *ryokoo su-ru* 'travel' and *dokusyo su-ru* 'read', and SJ adjectives are made up of an adjectival noun (AN) and the copula *da*, as in *byooki da* 'be sick', *kirei da* 'beautiful'.[11] Examples follow:

(11) **SJ verbs, e.g., *syookai su-ru* 'introduce-Light Verb-Pres.':**
a. HH: Hayasi-san-ga Ito-san-ni Jun-o syookai si-masi-ta.
Hayasi-Nom Ito-Dat Jun-Acc introduce-LV-Polite-Past
'Hayashi introduced Jun to Ito.'
b. SH: Hayasi-san-ga Ito-san-ni Jun-o go-syookai ni nat-ta.
go-syookai nasat-ta
go-syookai s-are-ta.
introduce-Hon-Past
c. NSH: Hayasi-san-ga Ito-san-ni Jun-o go-syookai si-ta.
go-syookai itasi-ta.

(12) **SJ adjectives (Nominal Adjectives) – *genki-da* 'fine-copula':**
a. HH: Ono-san-wa genki {desu./ de gozaimas-u.}
'Ono is sick.'
b. SH: Ono-san wa o-genki {da./ de irassyar-u.}
c. NSH: No NSH form

The formation of the SJ honorific forms is summarized in (13) and (14):

(13) **HH:**
a. SJ verbs: The same as (8a); i.e., the polite predicate *mas-u* is attached to the infinitive form of the light verb *su-ru*, as in *si-mas-u*.
b. SJ adjectives: The same as (8c); i.e., the copula is converted to the polite form.

(14) **SH:**

a. SJ verbs: Either (i), (ii), or (iii), and the hierarchy of the politeness goes (ii) > (i) > (iii):
   (i) HP-VN-*ni nar-u*; basically the same as (9ai), but a VN is used in place of the connective form of the verb.
   (ii) HP-VN *nasaru*: *nasaru* is the suppletive SH form of the verb *su-ru* 'do'.
   (iii) HP-VN *s-are-ru*: basically the same as (9aii) and the passive morphome is attached to the verb *su-ru*.

b. SJ adjectives: The same as (9c); i.e., the connective form of the copula, *de*, is followed by the suppletive SH form of the verb *ir-u* 'be, exist', *irassyar-u*.

Besides predicates, nouns can be prefixed by an HP, as in *go-kazoku* 'family', *o-tegami* 'letter', *o-udon* 'Japanese noodles'. These form may mark HH as in (15a), in which *o-* is attached to the plain form *hana* 'flower', which indicates that the speaker is most probably female, and SH as in (15b), where the respect is paid to the genitive-marked noun *Sato-sensei*, which serves as the subject of the SJ noun, *kooen* 'lecture':[12]

(15) a. Hanako-ga o-hana-o kat-ta.
Hanako-Nom PH-flower-Acc buy-Past
'Hanako bought flowers.'

b. Sato-sensei-no go-kooen-ga mamonaku hazimar-u.
Sato-teacher-Gen PH-lecture-Nom soon begin-Pres
'Professor Sato's lecture will soon begin.'

In the above, I have presented a rather detailed description of the honorific forms, intending to show that honorific processes in Japanese are not just peripheral phenomena but involve various grammatical aspects of Japanese. To properly understand them, lexical, morphological, syntactic, and pragmatic considerations are called for. In what follows, I will mainly discuss SH and NSH, since they involve not only the honorific form of a predicate but the grammatical presence of an item to the referent of which the speaker's respect is due. The occurrence of HH, on the other hand, is triggered by the addressee and does not grammatically affect other items in a sentence, and vice versa. For this reason, I will not discuss HH any further in the following. See Harada (1976) and Ide and McGloin (1990) for relevant discussion on the use of HH.

3 Subject Honorification (SH)

As briefly mentioned in the previous section, SH forms are licensed by the subject of the sentence, which clearly indicates that SH is to be described within

sentence grammar. Within generative grammatical studies, Harada (1976) proposes an analysis of honorific processes in terms of transformational rules. His rules for SH not only specify under what syntactic condition SH is triggered but also derive the morphological forms described in (9a). In a more recent framework, Toribio (1990) and Ura (1999) present an analysis in terms of feature checking between the subject and the SH form of a predicate. In both approaches, the key to SH is the syntactic presence of a particular type of subject.

3.1 The conditions on the subject

As the above description of SH indicates, the SH form is allowed only when the subject refers to a person to whom the speaker's respect is due. Observe the following examples:

(16) a. Sensei-ga warat-ta.
teacher-Nom laugh-Past
'The teacher laughed.'
b. Sensei-ga o-warai-ni nat-ta.
teacher-Nom HP-laugh-Hon-Past
'The teacher laughed (honorific).'
c. {*Watasi-ga/ *Imooto-ga} o-warai-ni natta.
I-Nom sister-Nom HP-laugh-Non-Past
'{I/My sister} laughed (honorific).'

(17) a. Sensei-ga gakusei-ni hon-o watasi-ta.
teacher-Nom student-Dat book-Acc pass-Past
'The teacher passed a book to students.'
b. Sensei-ga gakusei-ni hon-o o-watasi-ni nat-ta.
teacher-Nom student-Dat book-Acc HP-pass-Hon-Past
'The teacher passed (honorific) a book to students.'
c. *Gakusei-ga sensei-ni hon-o o-watasi-ni nat-ta.
student-Nom teacher-Dat book-Acc HP-pass-Hon-Past
'The student passed (honorific) a book to the teacher.'

The subject of the (b) sentences is *sensei* 'teacher', who is considered to be looked up to in ordinary social circumstances, and the use of the SH forms is appropriate. The subject of (16c), on the other hand, is the speaker herself or the speaker's family member. Since pragmatic conditions on honorifics involve (18) as a basic rule, (16c) is inappropriate:

(18) The speaker may not pay respect to or show contempt for herself or the members of her in-group.[13]

Similarly, (17c) is inappropriate, since *gakusei* 'student' is ordinarily not subject to respect. Note that *sensei* 'teacher' as the object of the sentence does not trigger SH.[14]

On the basis of these facts, Harada proposes an analysis where the feature of the subject triggers SH, which involves a set of lexical, morphological, and syntactic transformations that give rise to the forms described in (9) and (14). Details aside, under his analysis, the predicate takes (i.e., is converted into) its SH form, if the subject is an NP that refers to a person "socially superior to the speaker (SSS)" to whom respect is due. He proposes (19) as the first rule of the set of SH transformations:[15]

(19) **Subject Honorific Marking:**
Mark the predicate as [Subject Honorific] if its subject is an SSS.

Though (19) is a transformational rule, it is clear that Harada considers it a kind of agreement process, triggered by the SSS subject. In a more recent framework, where agreement is considered to be a feature-checking relation between the two items in question, (19) can be restated as in (20):

(20) The SSS feature of the subject NP must be checked by the SSS feature of the predicate.

This is the direction that has recently been pursued by Toribio (1990) and Ura (1999) within the Minimalist framework.

3.2 SH as agreement

Toribio (1990) accounts for SH in terms of agreement between specifiers and heads. As will be reviewed in more detail in section 3.3, Toribio analyzes the regular SH form of a predicate – i.e., *HP-V-ni nar-u* – in the following way: (i) the connective form of a verb, which she considers gerundive, is a nominal whose category is D; (ii) an HP attaches to D, just as ordinary nouns (Ds) undergo HP prefixation (cf. section 2); (iii) *-ni* is the oblique case assigned by the verb *nar-u*; (iv) *nar-u* is a raising verb (see also Suzuki 1989).

Given this morphological analysis of the SH form, the checking of the features relevant to SH proceeds as follows: the subject generated at the Spec of a predicate phrase (equivalent to *v*P in the sense of Chomsky 1995c) stops at the Spec of gerund DP (and at the Spec of the VP of *nar-u*) on the way to the Spec of TP and has its SH feature checked against the honorific feature of D, which is specifically marked by the presence of HP. That is, the SH feature is considered as an agreement feature that resides in the subject DP, and it is checked independently of its Case feature. In Toribio's system, the Case feature is checked against T, while the SH feature is checked against D of the gerund.[16]

Toribio's analysis is not only plausible but seems essentially on the right track. However, it is necessary to closely examine the mechanisms she seems to assume in more detail before adopting it as the right analysis. For example, she does not provide any direct evidence that shows that the SH feature and the nominative

Case feature of the subject are checked independently by different heads or at different sites. That is, as far as the data she presents are concerned, it seems possible to analyze the predicate *nar-u* with the tense feature as possessing all the relevant features that can check the features of the subject. In Toribio's system, the SH feature is checked at the Spec of gerundive (i.e., connective) D, which is marked by an HP. Thus, if no HP is involved in the SH form, which is possible in some suppletive SH forms, she wrongly predicts that the SH feature of the subject is not checked, or she has to assume that the SH form itself checks the SH feature of the subject. To see this point, observe (21) with suppletive SH predicates, which involve only predicates without an HP:

(21) a. {Sensei-ga/ *Gakusei-ga} soo ossyat-ta.
teacher-Nom student-Nom so say(Hon)-past
'{The teacher/The student} said so.'
b. {Sensei-ga/ *Gakusei-ga} Kobe-ni irassyar-u.
teacher-Nom student-Nom Kobe-to go(Hon)-past
'{The teacher/The student} went to Kobe.'

The SH forms of the verbs *iw(u)* 'say' and *ir(u)* 'be, exist' are not of the expected *o-V-ni nar-u* form (i.e., *?*o-ii-ni nar-u*, **o-i-ni nar-u*), but the suppletive forms *ossyar(u)* and *irassyar(u)*, respectively, which cannot be analyzed into a sequence of separate items. That is, in (21), the SH verbs themselves involve the features responsible for checking the features of the subject. It thus seems reasonable to assume that the checking of the relevant features take place all at once at TP, the subject being at the Spec of TP and the verb at the head of T. In order to argue that the SH feature is an agreement feature independent of the Case feature, which Toribio assumes, we need to examine the cases where Case and SH are clearly triggered by different elements. Ura (1999) examines such cases.

The sentences examined so far all involve a subject marked by Nominative *ga*. However, Japanese also allows Dative subjects. Observe (22):

(22) a. Sensei-ga eigo-ga {wakar-u/ o-wakari ni nar-u.}
teacher-Nom English-Nom understand-Pres HP-understand-Hon-Pres
'The teacher understands English.'
b. Sensei-ni eigo-ga {wakar-u/ o-wakari ni nar-u.}
teacher-Dat English-Nom understand-Pres HP-understand-Hon-Pres
'(the same as (22a))'

Certain stative predicates take a Dative subject, provided that the object is marked Nominative (cf. Kuno 1973c). Dative-marked subjects, just like Nominative-marked subjects, trigger SH, as the examples in (22) show (cf. Harada 1976; Shibatani 1977). It is clear from the examples in (23) that what triggers SH is not a Nominative-marked NP (DP) but the item that serves as a subject, irrespective of whether it is marked Nominative or Dative:

(23) a. Taro-ga sensei-ga {wakar-u/ *o-wakari ni nar-u.}
Taro-Nom teacher-Nom understand-Pres HP-understand-Hon-Pres
'Taro understands the teacher.'
b. Taro-ni sensei-ga {wakar-u/ *o-wakari ni nar-u.}
Taro-Dat teacher-Nom understand-Pres HP-understand-Hon-Pres
'(the same as (23a))'

In (23), the subject is *Taro* and the object is *sensei* 'teacher'. Though *sensei*, which is SSS in Harada's sense, is marked Nominative, it cannot trigger SH.

To account for this phenomenon, Ura proposes the system described in (24) within the Minimalist framework:

(24) (i) The EPP-feature (or D-feature) of T is strong.
(ii) The dative subject of the Dative Subject Construction (DSC) is generated at the Spec of VP (more precisely, at the Spec of *v*P) and assigned the inherent Dative Case *-ni*, which the stative predicates that exhibit DSC can assign to a DP.
(iii) Agreement (i.e., SH) is independent of Nominative Case.
(iv) T's agreement feature is strong, but its Nominative Case feature is weak.
(v) T's Nominative Case feature can check more than one Nominative Case.

Ura's system assumes the basic mechanisms of the Minimalist program: (24i) guarantees the syntactic presence of a nominal at the Spec of TP. With respect to (22), the phrases *sensei-ga* in (22a) and *sensei-ni* in (22b) satisfy this requirement. (24ii) applies only to a Dative subject. The subject *sensei* occurs at the Spec of VP (rather *v*P) but can be marked Dative if the predicate is of the type that allows DSC. With other types of predicates, a subject is marked Nominative. Regardless of its Case types, the subject is raised to the Spec of TP to check the EPP feature of T. The subject at the Spec of TP can also check T's agreement feature, which is strong (to be checked before Spell Out). The well-formedness of SH is relevant to this agreement checking. The subject *sensei* in (22) properly meets the SH feature of the predicate, while *Taro* in (23) does not. (24iv) and (24v) are necessary assumptions to account for a Nominative object. The Dative subject, being at the Spec of TP, checks T's EPP feature and agreement feature but not T's Case feature. Thus, some DP that is not a subject must be present to check T's Nominative Case feature. The Nominative object DP does it in (22b) and (23b). Furthermore, given (24v), T's Case feature can check the Nominative Case of more than one DP, which accounts for the multiple occurrences of Nominative DPs in (22a) and (23a); the Case features of not only the subject DP but also the object DP are checked by T's Case feature. Thus, to account for the cases of Dative subjects, (24iii) plays a crucial role. Without this assumption, the fact that a Dative subject triggers SH cannot be easily explained.

Another piece of evidence for considering the agreement (or SH) feature independent of the Case feature obtains in tenseless complements with an SH predicate. Observe the following examples:

(25) a. Sensei-ga sake-o nomi-sugi-ru.
teacher-Nom sake-Acc drink-exceed-Pres
'The teacher drank sake too much.'
b. Sensei-ga sake-o o-nomi-ni nari-sugi-ru.
teacher-Nom sake-Acc HP-drink-Hon-exceed-Pres
'(the same as (25a))'

(26) a. Sensei-ga kankokugo-o hanas-e-ru.
teacher-Nom Korean-Acc speak-can-Pres
'The teacher can speak Korean.'
b. Sensei-ga kankokugo-o o-hanasi-ni nar-e-ru.
teacher-Nom Korean-Acc HP-speak-Hon-can-Pres
'(the same as (26a))'

The predicate *sugi-ru* 'exceed' in (25) is a raising predicate and its complement takes the connective form, which presumably does not involve the tense feature. (25b) is derived in the following way: the complement subject *sensei-ga* checks the SH of the embedded predicate and then moves to the Spec of the matrix T to check its Nominative Case feature. Thus, the Case feature and the SH feature are checked by separate heads. The matrix predicate of (26) is the potential *-(rar)e* and exhibits the control construction. The predicate of the complement clause is of the root form and its subject is PRO. Whatever Case PRO may assume, it is not Nominative (or PRO may not have any Case), but the SH feature of the embedded predicate should be checked against PRO. Thus, (26) also indicates that the SH feature may be independent of the Nominative Case feature.

Thus, Dative subjects of DSC and tenseless complements of the Raising and Control constructions support the claim that the checking between the subject and the SH-marking on the predicate is done independently of the Case feature, and the feature involved between the two may be some kind of agreement. In Ura's system, it is simply assumed that the SH (or agreement) feature of T, which is inherited from the SH form of the predicate via head-to-head movement, is checked against the subject. Let us now go back to Toribio (and also Suzuki 1989) to examine the structure and morphology of the SH predicate and see exactly what is responsible for checking the SH (or agreement) feature of the predicate.

3.3 The structure of the SH construction

Now that it is established that the SH feature checking is independent of the Nominative Case checking, let us see which head is really responsible for SH checking. In section 3.2, we have briefly reviewed Toribio's analysis, in which the

SH feature of SH predicates resides in the connective (i.e., 'gerundive' in her terms) V with an HP, rather than *nar-u*, the predicate that actually carries the tense feature. Let us examine this claim more closely.

Both Suzuki (1989) and Toribio (1990) claim that the honorific predicate that has the sequence *HP-V-ni nar-u* is to be analyzed as having a complex structure where *nar-u* is a higher predicate, taking a connective verb as its complement. Suzuki presents several arguments for analyzing the *HP-V-ni* part of the SH form as a 'gerundive' nominal.

First of all, as discussed in section 2, an HP attaches not only to the connective form of a verb but also to a noun and an adjective. Assuming that nouns and adjectives in Japanese are categorically [+N], if the connective form of a verb is in fact nominal, i.e., [+N], the HP attachment is generalized: an HP attaches to the head of [+N].[17] Beside the simplicity in the description of the HP attachment process, the nominal nature of the connective form of the SH predicate is syntactically attested. As described in section 2 ((9a) in particular), the connective form is followed by *-ni*, which can be analyzed as Dative Case or the connective form of a copula. Whichever it may be, *-ni* attaches to a nominal category. This is seen in (27):

(27) a. Sensei-ga sinbun-o o-yomi-*ni* nat-ta.
teacher-Nom newspaper-Acc HP-read-Hon-past
'The teacher read (honorific) the newspaper.'
b. *Sensei-ga sinbun-o o-yomi nat-ta.
c. Hanako-ga isya-*ni* nat-ta.
Hanako-Nom doctor-NI became
'Hanako became a doctor.'
d. *Hanako-ga isya nat-ta.
e. Seito-ga sizuka-*ni* nat-ta.
Pupil-Nom quiet-NI became
'The pupils became quiet.'
f. *Seito-ga sizuka nat-ta

The distribution of *-ni* of the SH form, exemplified in (27a, b), is the same as that of the noun (27c, d) or of the nominal adjective (27e, f). If it is assumed that the category that precedes *-ni* is a nominal category, the status of *-ni* being Dative Case seems justifiable. The nominal nature of the connective form is also supported, even if *-ni* is taken to be a copula. As shown in (28), the copula takes a noun or an adjective, but crucially not a verb:

(28) a. Hanako-ga isya {da./desu.}
Hanako-Nom doctor copula (plain/polite)
'Hanako is a doctor.'
b. Seito-ga sizuka {da./desu.}
Pupil-Nom quiet copula (plain/polite)
'The pupils are quiet.'

c. * Sensei-ga sinbun-o yom-u {da./desu.}
teacher-Nom newspaper-Acc read copula (plain/polite)
'The teacher read a newspaper.'

As compared to the ungrammaticality of (28c), the copula can directly take the SH predicate without *-ni* or *-ni nar-u*, as shown in (29):[18]

(29) a. Sensei-ga sinbun-o o-yomi da. (=o-yomi-ni nat-te i-ru)
teacher-Nom newspaper-Acc HP-read copula HP-read-Hon-exist-Pres
'The teacher is reading the newspaper.'
b. Sensei-ga biiru-o o-nomi da. (=o-nomi-ni nat-te i-ru)
teacher-Nom beer-Acc HP-drink copula HP-drink-Hon-exist-Pres
'The teacher is drinking beer.'

Sentences in (29) are SH but the meaning of the sequence of the *HP-V-copula* differs from the *HP-V-ni nar-u* one. The former is equivalent to that of the *HP-V-ni nat-te iru*. The presence of *-te-ir-u* after a V indicates either the progressive aspect, like *be V-ing* in English, or the perfective aspect, similar to the function of *have V-en*. If the connective form in (29) is [+N], we can generalize the above fact as follows: the copula takes a [+N] category.

What is of particular interest is that not all the occurrences of the connective form are considered nominal, but only those of the SH predicate (i.e., the connective form with an HP prefixed to it). Thus, replacing *(te)-iru* with a copula in non-SH expressions gives rise to ungrammatical sentences:

(30) a. Sensei-ga sinbun-o yon-de-i-ru.
teacher-Nom newspaper-Acc HP-read-Hon-exist-Pres
'The teacher is reading the newspaper.'
b. *Sensei-ga sinbun-o yomi- da.
teacher-Nom newspaper-Acc read copula

The ungrammaticality of (30b) seems due to the verb status of the connective form here. In short, the connective form can be followed by a copula only when it is nominal. The presence of an HP and *-ni* and the replaceability of *-ni nar-u* with a copula are both owing to the nominal nature of the connective form of SH.

Another instance where the connective form of SH behaves differently from other occurrences of the connective form is observed in conjoined sentences, as in (31):

(31) a. Tanaka-sensei-wa otya-o o-nomi-ni nari, Kato-sensei-wa coffee-o
Tanaka-teacher-Top tea-Acc HP-drink-Hon Kato-teacher-Top coffee-Acc
o-nomi-ni nat-ta.
HP-drink-Hon-Past
'Prof. Tanaka drank tea and Prof. Kato drank coffee.'

b. Tanaka-sensei-wa otya-o o-nomi-ni, Kato-sensei-wa coffee-o o-nomi-ni nat-ta.
c. *Tanaka-sensei-wa otya-o o-nomi, Kato-sensei-wa coffee-o o-nomi-ni nat-ta.
d. Tanaka-sensei-wa otya-o nomi, Kato-sensei-wa coffee-o non-da.
drink-past

These are conjoined sentences, and the predicate of the first conjunct is not marked with a tense morpheme. As seen in (31a) and (31d), a typical way to conjoin sentences is to make the verb of the first conjunct into the connective form. SH sentences such as (31b) exhibit another way to conjoin sentences; i.e., delete the *nar-u* part and end the first conjunct with *-ni*. Note crucially that the connective form with an HP cannot serve the function of conjoining sentences, as the ungrammaticality of (31c) shows. The behavior of 'HP-V (connective)' here (i.e., (31b)) is exactly parallel to nouns and adjectives, as shown in (32) and (33):

(32) a. Taro-ga sensei-ni nari, Hanako-ga isya-ni nat-ta.
Taro-Nom teacher-Cop become Hanako-Nom doctor-Cop become-past
'Taro became a teacher and Hanako became a doctor.'
b. Taro-ga sensei-ni, Hanako-ga isya-ni nat-ta.
c. *Taro-ga sensei, Hanako-ga isya-ni nat-ta.

(33) a. Mati-ga kirei-ni nari, mura-ga benri-ni nat-ta.
town-Nom clean-Cop become village-Nom convenient-Cop become-past
'The town became clean and the village became convenient.'
b. Mati-ga kirei-ni, mura-ga benri-ni nat-ta.
c. *Mati-ga kirei, mura-ga benri-ni nat-ta.

The generalization seems to be that the [+N] category cannot function as a sentential conjunction. This generalization can be maintained if the HP-V (connective) is considered as [+N], which accounts for the ungrammaticality of (31c) along with that of (32c) and (33c).

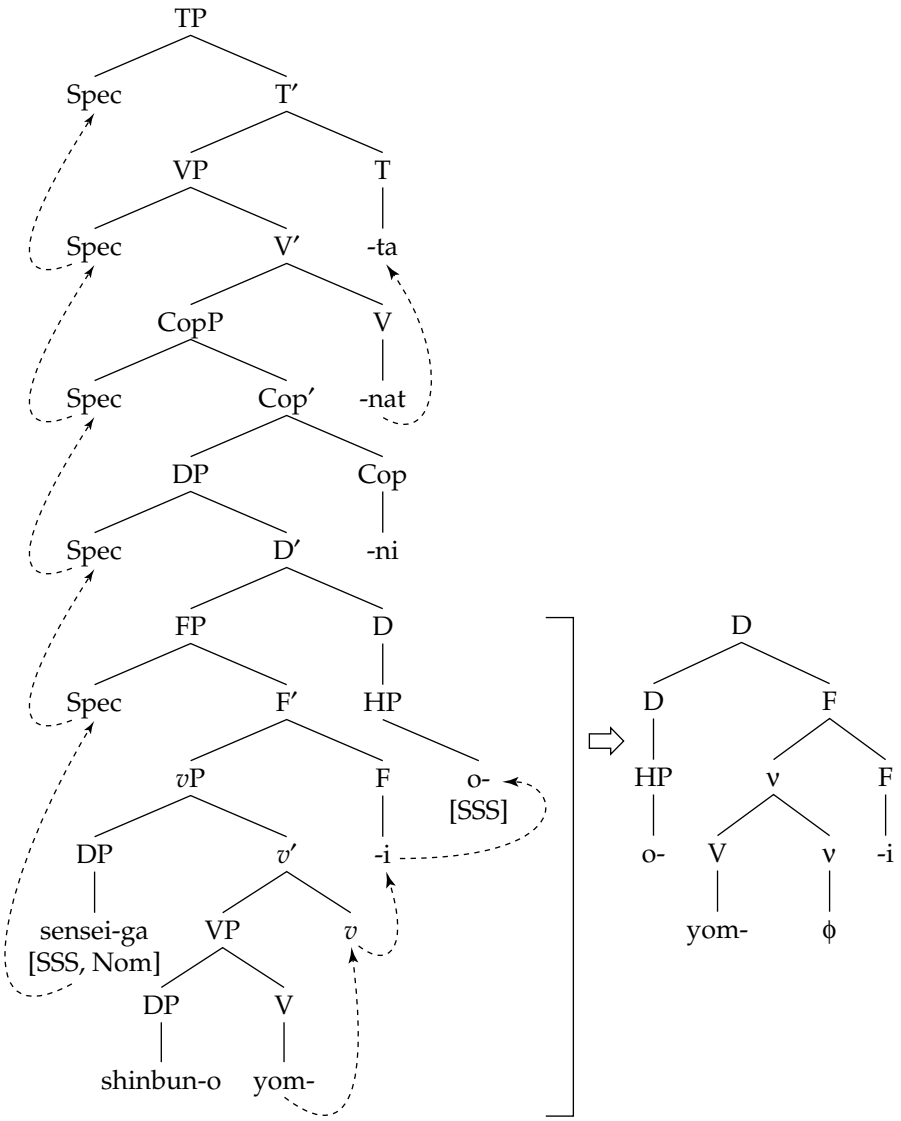
Given these facts, Suzuki (1989) analyzes the HP-V part of the SH predicate as a gerundive DP, *-ni* as Dative Case that is assigned to a gerundive DP, and the predicate *nar-u* as a higher predicate that takes a gerund as its argument. Toribio's (1990) analysis is essentially the same.[19] Taking it that these two analyses are essentially on the right track, in the following discussion I would like to propose a structure that is a modified version of the two analyses. I consider *nar-u* a raising predicate rather than a control predicate, adopting Toribio's claim, since the behavior of *nar-u* in other instances clearly indicates *nar-u* is a raising verb.[20] As for where the [+N] property of SH verbs lies, I would like to assume that it is at the head of D and what resides at D is an HP. That is, an HP, being a bound morpheme with an agreement feature (i.e., an SSS in the sense of Harada), attracts a verb and forces a DP with SSS to be raised to the Spec of DP. As for the connective form, if the generalization that an HP attaches only to a [+N] category

must be maintained, we need to assume that the connective *-i* morpheme has the category feature [+N]. I leave it open exactly what category it may be: some kind of functional category that selects a VP. Note, however, that the connective form itself is not always a nominal, as the data in (31) suggest, and it can be [+N] or [–N]. We will come back to this issue when we discuss NSH in section 4.

To summarize, sentence (34), for example, is analyzed in the way described in (35):

(34) a. Sensei-ga sinbun-o o-yomi-ni nat-ta.
teacher-Nom newspaper-Acc HP-read-Hon-past
'The teacher read the newspaper.' (honorific)

(35)



The main predicate *yom-* 'read' is a transitive and I assume that it has a VP-shell (*v*P-VP) structure. The *v*P is a complement of *-i*, which gives rise to the connective form. As just mentioned, I consider the category of *-i* to be some kind of functional category (FP), and it has the [+N] feature when used for SH. The FP is a complement of DP whose head is an HP. The HP requires an item with the SSS feature at its Spec. Due to this requirement, the subject of *yom-*, *sensei-ga* 'teacher-Nom', is attracted and moves to the Spec of DP. As discussed above, *-ni* may be analyzed as Dative Case, assigned by *nar-u* 'become'. However, in (35) I take it as a copula. *Nar-u* takes a copula phrase (CopP). The subject, whose Agreement feature (SSS) has checked off at the Spec of DP, finally moves to the Spec of TP to have its Case feature checked. As for the Accusative Case of the object, following the general practice, it is covertly checked off by the Accusative Case feature of *v*.

3.4 On honorific prefixes

In the previous section, an HP of the SH form is analyzed as a kind of agreement feature, which attracts the connective form of a verb to its head and a DP. This analysis of an HP is not merely motivated by SH-verbs but supported by honorific or polite forms of nouns and nominal adjectives. As briefly stated in section 2, an HP attaches to a noun as in *o-heya* 'room', *go-hon* 'book', *go-syumi* 'hobby', *o-kao* 'face', *o-karada* 'body, health condition', *o-kuruma* 'car'. The presence of an HP makes speech polite in the sense of HH and is used more often in female speech. It has another function when its occurrence is related to honorifics, SH and NSH; that is, the referent of the noun with an HP is made specific and identifiable in the sense that the possessor of the referent is taken to be a target of the speaker's respect. Note that nouns without an HP can be definite or indefinite, specific or non-specific, depending on given contexts.[21] Thus, in the context of (36), the noun *hon* 'book' most probably refers to an indefinite, non-specific book:

(36) Hanako-ga hon-o kat-ta.
Hanako-Nom book-Acc buy-Past
'Hanako bought a book.'

Nouns with an HP, however, often refer to specific items which can be identified in a given discourse. In (37a) and (37b), the meanings change depending on whether the HP *go-* is attached to *hon* 'book'. Without the HP *go-*, *hon* would refer to any book, but with *go-*, it would most probably refer to the one that the teacher wrote or owns (i.e., the teacher's book).[22] Because of this function of an HP, the use of *go-hon* in (37c) and (37d) sounds somewhat funny, since people do not usually return their own books to the library or borrow them from it:[23]

(37) a. Sensei-ga hisyo-ni (go)-hon-o o-watasi-ni nat-ta.
teacher-Nom secretary-Dat HP-book-Acc HP-pass-Hon-Past
'The teacher passed (his) book to the secretary.'

b. Sensei-ga (go)-hon-o o-sagasi-ni nat-te i-ru.
teacher-Nom HP-book-Acc HP-search-Hon-Prog-Pre
'The teacher is looking for (his) book.'
c. *?Sensei-ga tosyokan-ni go-hon-o o-kaesi-ni nat-ta.
teacher-Nom library-to HP-book-Acc HP-return-Hon-Past
'The teacher returned his book to the library.'
d. *?Sensei-ga tosyokan-de go-hon-o o-kari-ni nat-ta.
teacher-Nom library-at HP-book-Acc HP-borrow-Hon-Past
'The teacher borrowed his book from the library.'

If an HP is in fact a head D and has a definite (and/or specific) feature, this fact naturally follows.

This function of an HP seen in nouns is carried over to the use of an HP in the SH form. That is, the presence of an HP in the SH construction indicates that the event that is described by an SH predicate refers not to any indefinite event but to a definite/specific one. The event must be identifiable, and only a particular individual is to be predicated of the SH predicate. That is, an SH predicate is an open predicate that must be closed by the subject with SSS. The presence of an HP in the SH predicate guarantees this. It is pragmatically natural (and perhaps mandatory) that those that carry the SSS feature are to be identifiable individuals or classes in a given context. Perhaps due to this, the sentences in (38), where the subject is non-specific and indefinite, are not quite felicitous:[24]

(38) a. ?*Misiranu hito-ga hon-o o-kai-ni nat-ta.
stranger-Nom book-Acc HP-buy-Hon-Past
'The stranger bought (his) book.'
b. ?*Dareka-ga o-warai-ni-natta.
teacher-Nom HP-laugh-Hon-Past
'Someone laughed.'

The definite/specific nature of HPs is distinctively observed in the following examples:

(39) a. Watasi-ga o-heya-o soozi si-ta.
I-Nom HP-room-Acc clean-Past
'I cleaned {SSS's/*my} room.'
b. O-kuruma-ga koware-ta.
HP-car-Nom HP-break-Hon-Past
'{SSS's/*my} car got broken.'
c. Go-syumi-wa sakanaturi des-u.
HP-hobby-Top fishing-Cop-Pres
'{SSS's/*my} favorite pastime is fishing.'

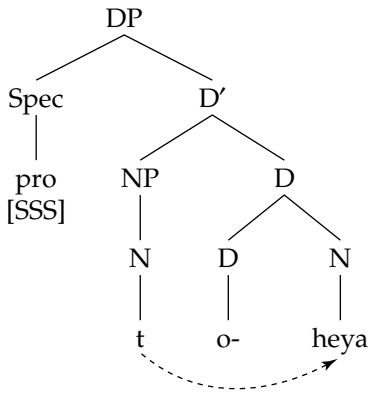
(40) a. Zisin-ni-tuite-no go-kenkyuu-ga syoo-o uke-ta.
earthquake-about-Gen HP-research-Nom prize-Acc receive-Past
'{SSS's/*my} research on earthquakes received a prize.'

b. Asia-e-no go-ryokoo-ga kizi-ni nat-ta.
Asia-to-Gen HP-trip-Nom article-Cop become-past
'{SSS's/*my} travel to Asia was put in an article.'
c. Go-seityoo-ga tanosimi da.
HP-growth-Nom pleasure Cop
'We are looking forward to {SSS's/*my} (process of) growing up.'

In (39), the possessors of the common nouns are not expressed; however, with the presence of an HP, they are to be SSSs and not those owned by the speaker (or her in-group members) or someone who is not worthy of respect. Similarly, the actor/undergoer of the actions/processes expressed in (40) is to be an SSS. Note that if these nouns are used without an HP, the possessor/actor/undergoer can be anyone including the speaker or someone in the speaker's in-group. Thus, it is clear that an HP has the function of making the head noun specific and identifiable, demanding some kind of agreement.

The analysis provided for the SH construction in terms of an HP is applicable to nominals. That is, an HP is a head of D, which takes an NP as its complement, and requires an item with SSS to be at the Spec of D, so that the SSS feature of D is checked off through Spec–Head agreement with the item in Spec. The HP agreement in DPs is illustrated in (41), where pro (null pronominal cagetory) is tentatively posited at the Spec of D, which carries the feature [SSS]:

(41)



3.5 SH-like processes

3.5.1 Honorific passives

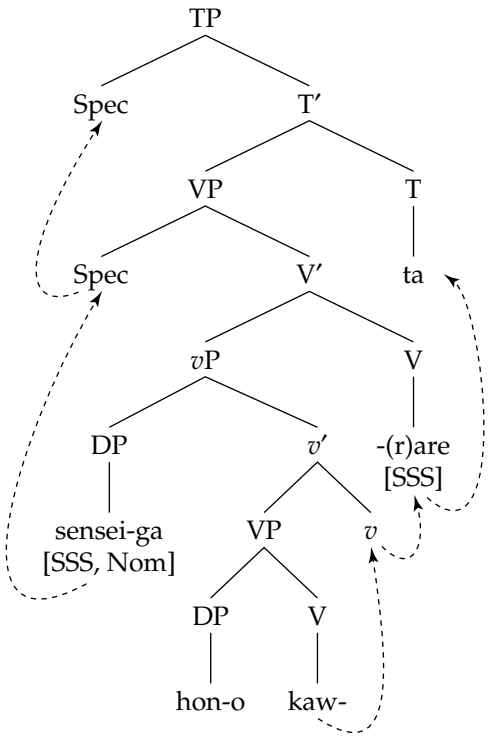
The SH process discussed above is with the morphological form of *HP-V-ni nar-u* (i.e., (9ai)) and it is described as a process of agreement between a subject and a DP-head which is an HP. However, as briefly touched upon in (9aii), there is another type of SH that makes use of the passive morpheme *-(r)are*. Some examples are given in (42):

(42) a. {Sensei-ga/ *watasi-ga} hon-o kaw-are-ta.
teacher-Nom I-Nom book-Acc buy-Pass-Past
'{The teacher/I} bought a book.'
b. {Sensei-ga/ *watasi-ga} kodomo-o sikar-are-ta.
teacher-Nom I-Nom child-Acc scold-Pass-Past
'{The teacher/I} scolded the child.'
c. {Sensei-ga/ *watasi-ga} taore-rare-ta.
teacher-Nom I-Nom fall-Pass-Past
'{The teacher/I} fell down/ill.'

As the grammaticality contrast between *sensei* 'teacher' and *watasi* 'I' on the subject shows, the presence of *-(r)are* is allowed only with an SSS subject, the same condition as for SH with the form of *HP-V-ni nar-u*. To distinguish these two types of SH, let us call them *Rare*-SH and *Naru*-SH, respectively.

Given the facts in (42), it may be natural to account for *Rare*-SH along similar lines to those for *Naru*-SH. That is, *-(r)are* is taken as some kind of predicate that requires an SSS subject. To ensure it, let *-(r)are* have the SSS feature which is to be checked off by an item with the same feature via Spec-Head agreement. This is done if a subject with the SSS feature moves into the Spec of *-(r)are* on the way to TP-Spec, where its Nominative Case feature is checked off. In this analysis, the derivation of (42a) proceeds as described in (43):

(43)

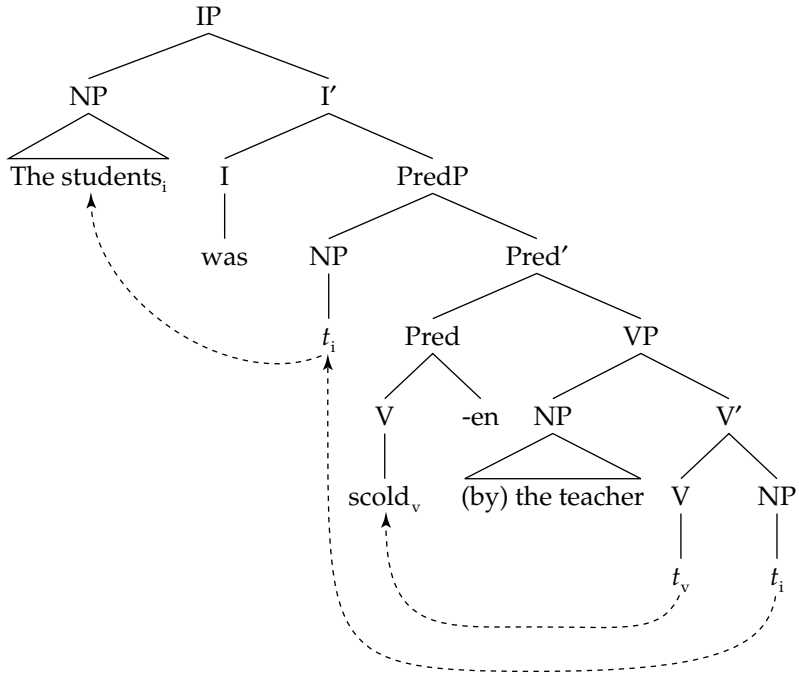


This accounts for the fact that *Rare*-SH requires an SSS subject; however, this analysis cannot explain why the predicate *-(r)are* is used for both passives and SH. The analysis (43) suggests that it is a mere coincidence that *-(r)are* is used for both SH and passives.

Hasegawa (1988), on the other hand, claims that *-(r)are* in passives and *-(r)are* in SH are essentially the same predicate. Before presenting her analysis of *Rare*-SH, let us briefly review how she accounts for passives. In her system, the passive morpheme (including *-en* in English) is a predicate that takes a VP complement. The category of this predicate may be [+N], as in the case of English *-en*, or [–N], which is the case of *-(r)are* in Japanese. The [+N] passive predicate requires Case and absorbs (or is Case-assigned by) the (object) Case feature of the complement predicate. This is done when the complement predicate head-moves to the passive predicate. This gives rise to the typical passive construction, where Object Case is not assigned to the logical object, and the logical object is raised to subject position to receive Nominative Case. The derivation is shown in (44), where an English passive is exemplified:[25]

(44) a. The student was scolded by the teacher.

b.



It is well known that Japanese exhibits (at least) two types of passives; one is called the direct passive, basically equivalent to typical passives like passives in English, and the other is called the indirect passive, where the logical object, if there is one, is marked with Object Case as in actives, but the extra argument

shows up as the affectee or experiencer of the event expressed by the complement VP. Observe the examples given in (45):

(45) a. Sensei-ga kodomo-o sikat-ta.
teacher-Nom child-Acc scold-Past
'The teacher scolded the child.'
b. Kodomo-ga sensei-ni sikar-are-ta.
child-Nom teacher-Dat scold-Pass-Past
'The child was scolded by the teacher.'
c. Taro-ga sensei-ni kodomo-o sikar-are-ta.
Taro-Nom teacher-Dat child-Acc scold-Pass-Past
'Taro got his child scolded by the teacher.'

(45a) is an active sentence, (45b) is a direct passive, and (45c) an indirect passive. Hasegawa's system, which accounts for these passives, is summarized in (46):[26]

(46) a. *-(R)are* is [–N] and may or may not absorb Case.
b. *-(R)are* can be either a two-place predicate, requiring an experiencer subject and a complement VP, or a one-place predicate, without a subject.
c. Direct passives obtain when *-(r)are* is a one-place predicate and absorbs Case.
d. Indirect passives result when *-(r)are* is a two-place predicate and does not absorb Case.

The direct passive, the case of (46c), is basically the same as the passive of English illustrated in (44). The indirect passive, the case of (46d), is described in (47), which illustrates the derivation of (45c):

(47) $[_{TP}$ Taro$_i$-ga $[_{VP1}$ t_i $[_{VP2}$ sensei-ni kodomo-o sikar]-(r)are] ta.]

The experiencer *Taro* is the subject of *-(r)are* and raised to TP-Spec to receive Nominative Case. The object of the complement verb receives Object Case just like the object of the active counterpart. The complement subject, *sensei*, receives *-ni*, which is a sort of default case given to an argument DP that receives neither Nominative nor Objective Case.[27] This accounts for both direct and indirect passives.[28]

Given (46a) and (46b), there must be two other possible cases to be examined besides (46c) and (46d), however: (i) *-(r)are* is a one-place predicate and does not absorb Case, and (ii) *-(r)are* is a two-place predicate and absorbs Case. Case (ii) can be ruled out easily; the object of the complement ends up not receiving any Case; Nominative Case is given to the matrix subject and Object Case absorbed by *-(r)are*. What is relevant to the present discussion is case (i). If *-(r)are* does not absorb the Object Case of the complement verb, a complement object should be able to receive Object Case, as in (47), while the subject of the complement moves

to the Spec of the matrix TP to receive Nominative Case. What this gives rise to is (42b), repeated here as (48). This is in fact the case of SH with *-(r)are*:

(48) a. Sensei-ga kodomo-o sikar-are-ta.
teacher-Nom child-Acc scold-Pass-Past
'The teacher scolded the child.'
b. [$_{TP}$ Sensei$_i$-ga [$_{VP1}$ t_i [$_{VP2}$ t_i kodomo-o sikar]-(r)are] ta.]

Thus, in Hasegawa's system, *Rare*-SH is a kind of passive, which she calls honorific passive, and is derived as a natural consequence of her analysis of passives.

What is not accounted for in Hasegawa's analysis is the agreement between the subject and *-(r)are*. If *-(r)are* in SH is the same as the one in passives, why does only the former require a particular type of subject, namely an SSS subject? Note that the subjects of direct and indirect passives do not have to be SSS. There seem to be two ways to go about this. One is rather ad hoc but assumes that the intransitive *-(r)are* that does not absorb Case is marked SSS, which is essentially the same as saying that *-(r)are* in *Rare*-SH is an honorific verb different from the passive *-(r)are*: there is no explanation of why the same morpho-phonological form of *-(r)are* is used in SH and in passives. The other, which Hasegawa suggests, is to consider the SSS condition on the subject of *Rare*-SH to be a matter of language use and not a matter of formal grammar. That is, the basic function of *-(r)are* as a one-place predicate is to quantify an event so as to conceal or make vague the agentivity of the event; a function similar to modals or predicates like *seem*, *likely*, etc. In the case of the direct passive, the object becomes the subject, and the agenthood of the logical subject is set in the background of the event in question. In the case of the honorific passive (*Rare*-SH), the logical subject remains as a subject, receiving Nominative Case. Pragmatically, however, the subject becomes a target of respect with the presence of *-(r)are*, which has a function of presenting the event as if the referent of the subject was put in the situation where she (involuntarily) ends up acting in a certain way or undergoing certain changes. It is considered in Japanese that presenting an activity or event as a natural occurrence is more polite and respectful to the referent of the subject than doing so as a willful act of the subject, as many traditional Japanese grammarians maintain (cf. Tokieda 1941; Ohno 1966; Hashimoto 1969; Kikuchi 1994). Note that the one-place *-(r)are* that gives rise to *Rare*-SH is a raising predicate just like *nar-u* 'become', which appears in *Naru*-SH. If this view is in fact on the right track, what is common in *Rare*-SH and *Naru*-SH is the presence of a raising predicate but not the process of agreement, which is possible only when an HP is present.

A piece of indirect evidence that supports the view that *-(r)are* does not necessarily require a subject with SSS is seen in another use of *-(r)are*: the one-place *-(r)are* takes place in the so-called *zihatu* 'voluntary, spontaneous, circumstantial' mood, which is considered to be the original use of *-(r)are* among traditional grammarians:[29]

(49) a. (Watasi-ni-wa) sore-ga kuyam-are-ru.
I-to-Top it-Nom regret-Pass-Past
'I regret it./The given circumstances make me regret it.'
b. (Sensei-(ni)-wa) doo omow-are-masu-ka.
teacher-to-Top how think-Pass-Polite-Past
'How do you think, Professor?'

In this construction, the subject of the complement verb is usually marked by *-ni* (rather than *-ga*) and the presence of *-(r)are* indicates, as the gloss suggests, that the subject cannot help but end up feeling or thinking in a certain way or that given circumstances put the referent of the subject in a particular feeling/thinking mood. The predicates that can appear in this construction are confined to feeling/thinking verbs. If such verbs are used with *-(r)are* and take an SSS subject, it is not clear if it is to be taken as an instance of the SH construction or of the voluntary construction. This seems to suggest that the interpretation or function of *-(r)are* is not lexically or grammatically fixed but that its syntactic structure is uniform regardless of how it function is interpreted. Whether a certain occurrence of *-(r)are* functions as passive, SH, or voluntary mood depends on the context. Therefore, it seems reasonable to conclude that no formal process of agreement is involved in *Rare*-SH.[30]

3.5.2 *The* yagar-u *construction*

As opposed to honorifics, there is a construction where an agreement process similar to SH is observed between the subject and the predicate, but the relevant feature is not SSS or honorific but the opposite of it; something like contempt, disgust, or repugnance. Observe (50):[31]

(50) a. {Aitu-ga/ *ano kata-ga/ *ore-ga} kane-o
he(Vul)-Nom that person(Hon)-Nom I(Vul)-Nom money-Acc
nusumi-yagat-ta.
steal-Vul-Past
'{He/That person/I} stole money.'
b. {Aitu-ga/ *ano kata-ga/ *ore-ga} kaeri-yagat-ta.
he(Vul)-Nom that person(Hon)-Nom I(Vul)-Nom leave-Vul-Past
'{He/That person/I} went back home.'
c. {Aitu-ga/ *ano kata-ga/ *ore-ga} kaze-de
he(Vul)-Nom that person(Hon)-Nom I(Vul)-Nom cold-with
taore-yagat-ta.
fall-Vul-Past
'{He/That person/I} came down with a cold.'

In (50), both *aitu* and *ano kata* refer to a third person individual but they differ in vulgar/honorific features: *aitu* with the feature of vulgarity and repugnance vs. *ano kata* with SSS. When the predicate is followed by *yagar-u*, the item with SSS or the first person, even in its vulgar form like *ore*, cannot be a subject.

Pragmatically and sociologically speaking, the use of the predicate *yagar-u* is limited and disfavored, since this expression is considered vulgar, offensive, and ill-mannered. For example, it is extremely rare for a woman to use it and it is never used in formal situations. However much suppressed the use of *yagar-u* may be, its morphological and syntactic conditions are clear and rigid: *yagar-u* attaches to the connective form of a verb and requires the syntactic presence of someone/something toward which the speaker feels disgust or repugnance. Thus, it may appear to be appropriate to capture this process in a way similar to SH, but the relevant feature is not SSS but repugnance (RPG for short).

As for SH, we have observed two types: *Naru*-SH and *Rare*-SH. The former is analyzed in terms of agreement between the subject and the head of a gerundive DP, an HP. As for the latter, as I suggested just above, the requirement on the SSS subject, though it is possible to analyze it in terms of agreement as shown in (43), is not syntactic but pragmatic in nature. Let us see which type *yagar-u* is to be analyzed as. If it is like *Naru*-SH, it involves a syntactic agreement. That is, (50a) can be analyzed in a way like (51), where the relevant feature is RPG, not SSS:

(51) $[_{TP}$ Aitu$_i$-ga $[_{VP1}$ t_i $[_{VP2}$ t_i hon-o nusumi] -yagat] ta]
[RPG] [RPG]

Here, *yagar-u* is analyzed as a raising predicate that takes a VP complement. The complement subject passes through the Spec of *yagar-u* on its way to Spec of TP. If *yagar-u* in fact requires agreement with the subject with RPG process, it can check the feature of the subject when the subject stops at the Spec of *yagar-u*. This analysis is plausible; however, the existence of the following types of sentences suggests that what is at issue is not agreement between the subject and *yagar-u*, but what semantic or pragmatic function *yagar-u* has in relation to its complement VP:

(52) a. Ame-ga furi-dasi-yagat-ta.
rain-Nom fall-start-Vul-Past
'Rain started to fall down (vulgar). (It started to rain.)'
b. Kuruma-ga koware-yagat-ta.
car-Nom break-Vul-Past
'The car broke down (vulgar).'

In (52), the subject is inanimate and the complement predicate is unaccusative. What the speaker expresses with *yagar-u* in these examples is contempt or repugnance not toward the subject but rather toward the entire event expressed by the complement. That is, what (52a) expresses is the speaker's repugnance toward the fact that it started to rain, but not toward the rain itself. The same explanation applies to the examples in (50): what the speaker is disgusted about is not just the subject but the entire event. If so, the syntax of *yagar-u* is more like *Rare*-SH (cf. (47)): there is no syntactic agreement between *yagar-u* and the subject, and what *yagar-u* does is to quantify or modify the event expressed by a complement

VP toward which the speaker feels repugnance. Note in passing that if the event is agentive, the *yagar-u* construction may appear to express the speaker's repugnance toward the subject rather than the entire event, as observed in examples like (50). This is due to the pragmatic fact that the responsibility of the occurrence of an agentive event would most probably fall on an agentive subject, which gives rise to the interpretation that the subject is a target of the speaker's repugnance. That is, though the *yagar-u* construction itself does not require a particular subject, unlike SH, as long as agentive events are concerned, it appears that *yagar-u* agrees with the subject. To conclude, however much *yagar-u*, *Rare*-SH, and SH look similar to each other with respect to the fact they all (often) involve particular types of subjects, only SH involves syntactic agreement between the predicate and the subject; the other two processes, *yagar-u* and *Rare*-SH, merely involve predicates, *yagar-u* and *rare*, that qualify over events expressed by their complement VPs.

3.6 On the optionality of agreement

The above discussion has been developed under the assumption that SH is a syntactic agreement process. Namai (2000), however, argues against considering SH as syntactic agreement, claiming that some characteristics of SH do not go along with what syntactic agreement should exhibit. That is, typical syntactic agreement, such as subject–verb agreement in European languages, takes place in a one-to-one fashion without exception as long as structural conditions are met. SH in Japanese, on the other hand, seems to take place optionally, sometimes involving more than one item and sometimes not being triggered. He provides the following examples:

(53) a. Sensei-ga go-seisiki-ni o-yame-ni nat-ta.
teacher-Nom HP-officially HP-resign-Hon-Past
'The teacher officially resigned.'

b. [A sensei to B sensei]-ga [otagai-ga kyoogisita koto]-o
and -Nom each other-Nom discuss fact-Acc
o-mitome-ni nat-ta.
HP-admit-Hon-Past
'Teacher A and Teacher B admitted that they (each other) discussed.'

c. C sensei-ga wakaku-te o-utukusi-i.
teacher-Nom young-and HP-beautiful-Pres
'Teacher C is young and beautiful.'

d. C sensei-ga o-wakaku-te utukusi-i.

e. C sensei-ga o-wakaku-te o-utukusi-i.

f. Sensei-ga o-zyoobu/*o-yuumei/yuumei da.
teacher-Nom HP-tough/HP-famous/famous Copula
'The teacher is tough/famous.'

g. Sensei-ga o-katai/*o-tadasii/tadasii.
teacher-Nom HP-strict/HP-right/right
'The teacher is strict/right.'

Let us first consider (53b) and (53c–e), which seem to indicate that SH is optional. In (53b), the subject of the complement predicate and that of the matrix predicate refer to the same individual, but only the matrix predicate appears in the form of SH. Similarly in (53c–e), the conjoined predicates, which refer to the same subject, can be in the form of SH, but need not be so. These facts seem peculiar, as Namai argues, if the honorific process is an agreement process triggered by the presence of an SSS subject: how come the same item sometimes triggers honorifics and other times does not? This criticism does not apply to the analysis presented above, however. What triggers is not an SSS item but the presence of D, whose head is HP. Under this view, the process is not optional but mandatory whenever an HP is present. That is, the SH predicate requires the presence of an SSS item that checks off its SSS feature, but not the other way around: an SSS subject does not require the presence of an SH predicate. Hence, (53b) and (53c–e) do not pose any problem.

Similarly, (53f, g) are not problematic to the proposed analysis, either. All there is to be said is that not all adjectives or nominal adjectives take an HP and consequently SH cannot be formed with adjectives that do not allow an HP. If a predicate has no honorific form, no honorification is observed.

The problem that (53a) raises is concerned with the fact that the SSS subject agrees both with the predicate and with the adverb: how can a single subject agree with more than one item? The fact in (53a) is basically the same as the fact in (54), where both the predicate and the object are in the honorific form, referring to the SSS subject:

(54) Sensei-ga gakusei-ni go-hon-o o-kasi-ni nat-ta.
teacher-Nom student-Dat HP-book-Acc HP-lend-Hon-Past
'The teacher lent her/his book to the student.'

As discussed in section 3.4, the honorific form of a noun is a DP whose head is an HP, which is checked by the possessor of the noun. The possessor may be a phonologically null pronominal (pro) which may be controlled by the subject of the sentence. If so, the subject *sensei* in (54), which agrees with the predicate, does not syntactically agree with the object but merely controls the null pronominal that resides at the possessor position of the object. This analysis of (54) can apply to the adverb in (53a). Suppose that the adverb, which is an adverbial form of a nominal adjective, is headed by D, which is an HP. The HP requires a phonologically null item at its Spec, which is controlled by the subject of the sentence.

Thus, all the arguments that Namai presents against considering honorification as syntactic agreement do not apply to the proposed analysis, where honorification is considered not as a process that is triggered by an SSS nominal, but as a process through which the honorific form of a predicate (or rather an HP head of the DP which is a part of the honorific predicate) demands agreement. The proposed analysis can maintain that agreement is one-to-one and mandatory, as long as the predicate in question is of the honorific form. What may need to be

considered is what triggers the presence of the honorific form to begin with. We will speculate on it in section 5.2 below.

4 Non-Subject Honorification (NSH)

As briefly touched upon in section 2, when the speaker wants to express her respect for the referent of a non-subject, the verb appears in the NSH form, which is *HP-V(connective)+su-ru* (or *HP-V(connective)+ita-su*, with the NSH form of *su-ru* in place of *su-ru*). Some examples follow:

(55) a. Hanako-ga sensei-o o-yobi si-ta.
Hanako-Nom teacher-Acc HP-call do-Past
'Hanako called the teacher.'
b. Taro-ga sensei-o o-tasuke si-ta.
Taro-Nom teacher-Acc HP-help do-Past
'Taro helped the teacher.'
c. Hanako-ga sensei-ni go-yotei-o o-kiki si-ta.
Hanako-Nom teacher-Dat HP-schedule-Acc HP-ask do-Past
'Hanako asked the teacher about his/her schedule.'
d. Taro-ga sensei-ni hon-o o-kaesi si-ta.
Taro-Nom teacher-Dat book-Acc HP-return do-Past
'Taro returned the book to the teacher.'

The relevant feature that triggers NSH is the same as SH, namely SSS, and *sensei* 'teacher', which is the object in (55a) and (55b) and the indirect object in (55c) and (55d), is considered to be marked with this feature. The verb form for NSH and the one for SH are quite similar; i.e., both have an HP and the connective form of the verb. Thus, it may appear that the only difference between SH and NSH is what triggers this particular verb form: the subject for SH and the object for NSH. However, there are some crucial differences between the two honorifics.

4.1 Characteristics of NSH

Let us examine the characteristics of NSH in relation to SH. The first and obvious difference between NSH and SH has to do with predicate forms: the honorific form of the predicate, the sequence of an HP and the connective form of the verb, is followed by *su-ru* 'do' in the case of NSH, whereas it is followed by *-ni nar-u* 'become' in SH. We will discuss the function of *su-ru*, in contrast to *nar-u*, in section 4.2.1.

Second, as noted by Harada (1976), the occurrence of NSH is conditioned not only by the presence of SSS but also by predicate types. That is, NSH is allowed only when the predicate is agentive (i.e., when the subject serves as an agent role). Compare SH and NSH below:

(56) a. Sato-sensei-ga/ni gakusei-ga o-wakari-ni nar-u.
Stato-teacher-Nom/Dat student-Nom HP-understand-Hon-Pres
'Prof. Sato understands the students.'
b. *Gakusei-ga/ni Sato-seisei-ga o-wakari su-ru.
student-Nom/Dat Sato-teacher-Nom HP-understand do-Pres
'The students understand Prof. Sato.'

(56) has the predicate *wakar-u* 'understand', whose subject is not an agent (probably an experiencer). The grammaticality of (54a) shows that the non-agentive subject *Sato-sensei* triggers SH, while the same referent when used as an object cannot make a well-formed NSH. Recall that adjectives do not have NSH forms but SH forms (cf. the contrast between SH in (57a)/(58a) and NSH in (57b)/(58b)), and this is due to this condition. Adjectives are not agentive predicates:

(57) a. Sato-sensei-{ga/ni} obake-ga o-kowa-i
o-kowakute irassyar-u.
Sato-teacher-Nom/Dat ghost-Nom HP-afraid-Hon-Pres
'Prof. Sato is afraid of ghosts.'
b. *Gakusei-{ga/ni} Sato-sensei-ga o-kowa-i
student-Nom/Dat Sato-teacher-Nom HP-afraid-Pres
'Students are afraid of Prof. Sato.'

(58) a. Sato-sensei-ga gakuseitati-ga o-suki da.
o-suki de-irassyar-u.
Sato-teacher-Nom students-Nom HP-like-Copula-Hon-Pres
'Prof. Sato is fond of the students.'
b. *Gakuseitati-ga Sato-sensei-ga o-suki da.
student-Nom Sato-teacher-Nom HP-like-Pres
'Students are fond of Prof. Sato.'

Third, the trigger of NSH is not limited to an (indirect) object. As seen in (59), the possessor of the (indirect) object gives rise to NSH. Note that the possessor of the subject cannot trigger SH. Compare (59) and (60):[32]

(59) a. Kyoko-ga sensei-no-(o)-kaban-o o-moti-si-ta.
Kyoko-Nom teacher-Gen-HP-bag-Acc HP-hold-do-Past
'Kyoko held the teacher's bag (for her/him).'
b. Taro-ga sensei-no-(o)-kata-o o-momi-si-ta.
Taro-Nom teacher-Gen-HP-shoulder-Acc HP-massage-do-Past
'Taro massaged the teacher's shoulders (for her/him).'
c. Hanako-ga sensei-no-o-taku-ni hana-o o-todoke-si-ta.
Hanako-Nom teacher-Gen-HP-house-to flower-Acc HP-deliver-do-Past
'Hanako delivered flowers to the teacher's house.'

(60) a. *Sensei-no-(o)-kaban-ga o-koware-ni nat-ta.
teacher-Gen-HP-bag-Nom HP-break-Hon-Past
'The teacher's bag got broken.'
b. *Sensei-no-(o)-kata-ga o-kori-ni nat-ta.
teacher-Gen-HP-shoulder-Nom HP-stiff-Hon-Past
'The teacher's shoulders got stiff.'
c. *Sensei-no-o-taku-ga o-yake-ni nat-ta.
teacher-Gen-HP-house-Nom HP-burn-Hon-Past
'The teacher's house got burnt down.'

The mere presence of the SSS possessor of the (indirect) object is not enough for NSH to take place, however. As will be seen in section 4.3, there must be some beneficial effects observable on the side of the SSS referent. Compare (59), which is grammatical, with ungrammatical (61):

(61) a. ?*Kyoko-ga sensei-no-(o)-kuruma-o o-tukai-si-ta.
Kyoko-Nom teacher-Gen-HP-car-Acc HP-use-do-Past
'Kyoko used the teacher's car (for her/him).'
b. ?*Gakusei-ga sensei-no-(go)-hon-o o-yomi-si-ta.
student-Nom teacher-Gen-HP-book-Acc HP-read-do-Past
'The students read the teacher's book (for her/him).'

To carry a bag is an act favorable to the possessor of the bag, but to use her car or read her book may not necessarily be a beneficial act for its owner (or designer/author). Thus, the key to the well-formedness of NSH is, as Matsumoto (1997) extensively discusses, benefactivity on (or 'benefit transfer' to, in her terms) the referent to whom the speaker's respect is due, which results from the described event. The same point can be made by the following examples, where NSH is observed but no obvious SSS item seems present:

(62) a. Kyoko-ga syasin-o o-tori-si-ta.
Kyoko-Nom photo-Acc HP-take-do-Past
'Kyoko took a picture (for SSS).'
b. Hanako-ga biiru-o o-nomi-si-ta.
student-Nom beer-Acc HP-drink-do-Past
'Hanako drank beer (for SSS).'

The acceptability of (62) depends on whether the activity expressed by the NSH form is beneficial to an SSS, which is implicit in the given context. That is, (62a) is acceptable, if Taro took the SSS's portrait or if Taro's act of taking a picture is of benefit to the SSS. Similarly, (62b) is appropriate, if the beer Hanako drank is the SSS's beer and her drinking it is considered to be of benefit to the SSS.[33] If we assume that the NSH form indicates that there should be an agreement process, we expect there to be an item with SSS syntactically present somewhere in a

structure, as a null possessor of the (indirect) object or a null beneficiary argument. In what follows, we will defend such an analysis.

A piece of evidence that suggests that NSH is sensitive to syntactic structure is seen in a fact that Harada (1976) points out. Observe (63), modified from Harada's example (67). *Syookai-su-ru* 'introduce' is a three-place predicate and requires both an object and an indirect object, both of which are possible candidates for a trigger of NSH. If NSH simply requires the pragmatic presence of an SSS, we may expect there to be ambiguity in (63). This prediction is not borne out, however:

(63) a. Hanako-ga Yamada-san-ni Sato-san-o go-syookai-si-ta.
Hanako-Nom Yamada-Dat Sato-Acc HP-introduce-do-past
'Hanako introduced Sato to Yamada.'
b. *Taro-ga otooto-ni Yamada-sensei-o go-syookai-si-ta.
Taro-Nom brother-Dat Yamada-teacher-Acc HP-introduce-do-past
'Taro introduced Prof. Yamada to his younger brother.'
c. Taro-ga Yamada-sensei-ni otooto-o go-syookai-si-ta.
Taro-Nom Yamada-teacher-Dat brother-Acc HP-introduce-do-past
'Taro introduced his younger brother to Prof. Yamada.'

In (63a), the speaker has respect for *Yamada*, the indirect object, not for *Sato*, the direct object. This difference is more clearly seen in the contrast between (63b) and (63c): the speaker's close relative is not subject to the speaker's respect and cannot be an indirect object when the predicate is of the NSH form. The fact in (63) suggests that there should be a structural condition on the choice of a relevant SSS, to which we will turn in section 4.2.

The following summarizes the characteristics of NSH observed in the above:

(64) a. NSH is triggered by an item with SSS.
b. The NSH involves *su-ru* 'do', not *ni-nar-u* 'become', which is used for SH.
c. The NSH is possible only with a predicate that has an agentive subject.
d. A trigger of NSH is either a direct object, an indirect object, a possessor of an (indirect) object, or an implied beneficiary.
e. NSH is possible only when the event expressed by the NSH predicate favorably affects its trigger; i.e., the trigger must be the beneficiary of the event.
f. When both a direct object and an indirect object are SSS, no ambiguity is observed, but an indirect object wins out and is considered to be the beneficiary.

4.2 An analysis of NSH

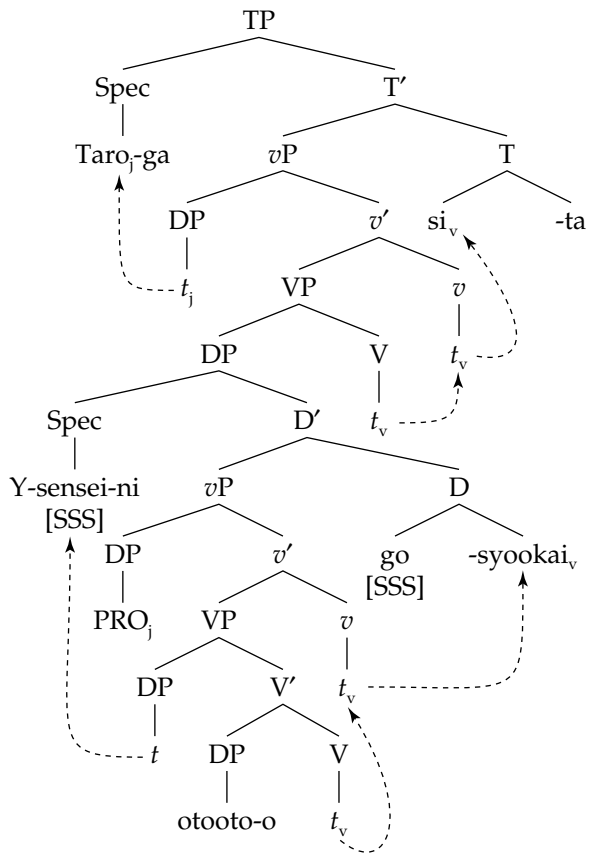
Given (64), in particular the fact that NSH is sensitive to SSS and involves an HP, which SH also exhibits, it seems plausible to consider NSH as some kind of agreement process just like SH, *HP-V-ni nar-u*. Harada's (1976) analysis is along this line and is presented in (65):[34]

(65) **Harada's Object Honorific marking:**
Mark the predicate as [Object Honorific] when an SSS is included in (a) the indirect object, if the predicate is ditransitive, or (b) the direct object, if the predicate is transitive. (Harada 1976: 530)

In Harada's system, since there was no principled way to express (64f) in the given framework (i.e., Standard Theory), the rule (or agreement process) is disjunctively stated. In a more recent framework, Toribio (1990) attempts to account for (64f) in terms of a condition on the distance of movements, assuming that an indirect object resides structurally higher than a direct object.

Toribio's analysis for NSH is essentially the same as her analysis for SH, except that the higher predicate that takes an NSH predicate is a control verb, namely *su-ru* 'do', not a raising verb *nar-u* 'become', which SH makes use of. That is, the honorific part (i.e., *HP-V(connective)*) is a DP and D attracts an item with SSS. When both an object and an indirect object exist, as in ditransitives, the higher one, the indirect object, moves to the Spec of D. According to this analysis, sentence (63c) is derived in a way shown in (66). Compare this with the derivation of SH, namely (35):[35]

(66)



Toribio's analysis, presented here, seems to work; however, some discussion is called for concerning the predicate *su-ru*, the categorical status of the honorific part of the predicate (i.e., *HP-V(connective)*), and a possessor of an (in)direct object.

4.2.1 Su-ru *in NSH*

As stated in (64b), NSH involves *su-ru* 'do', not *nar-u* 'become', which SH employs, but the honorific part (i.e., *HP-V(connective)*) is the same for both SH and NSH. It is thus natural to consider that the difference between *su-ru* and *nar-u* is responsible for the functional difference between SH and NSH. *Su-ru* and *nar-u* are not used exclusively for honorifics but have their independent uses; they function as main verbs. Typical uses of *su-ru* and *nar-u* as main verbs are exemplified in (67) and (68), respectively:

(67) a. Taro-ga tenisu-o. su-ru.
Taro-Nom tennis-Acc do-Pres
'Taro plays tennis.'
b. Gakusei-ga syukudai-o su-ru.
student-Nom homework-Acc do-Past
'The students did their homework.'

(68) a. Ha-ga akaku nat-ta.
leaf-Nom red become-Past
'The leaves turned red.'
b. Hanako-ga isya-ni nar-u.
Hanako-Nom doctor-Cop become-Pres
'Hanako will become a doctor.'

Su-ru and *nar-u* as independent predicates can be analyzed in a way similar to 'do' and 'become' in English, respectively. That is, *su-ru* is transitive and requires an agentive subject, while *nar-u* is a raising predicate. This difference between *su-ru* and *nar-u* as an independent predicate is reflected in the honorific structures, as seen in (35) for SH and (66) for NSH: for SH, which uses *nar-u*, the raising structure is posited and for NSH, which uses *su-ru*, the control structure is assumed and the subject is agentive.

The functional difference between SH and NSH is due to this structural difference between *su-ru* and *nar-u*. That is, SH expresses the speaker's respect toward the subject of the predicate, and it does not matter whether the subject initiates an action or simply undergoes changes. No condition is placed on the subject, which is characteristic of the raising predicate *nar-u*.

NSH, on the other hand, involves *su-ru* 'do'. Though we have been calling NSH 'honorific', the function of NSH is not really to indicate respect for the referent of the SSS item, but rather to present the subject (the one who affects the SSS) and her action in a humble way. As mentioned in note 3, section 2, NSH is called the 'humble form' in traditional Japanese grammar. That is, by presenting the subject in a humble way, it relatively elevates someone who is affected by the

subject's action. Thus, the subject in NSH is considered to be responsible for the occurrence of the event, which explains why NSH is possible only with activity predicates. In terms of structure, the subject of *su-ru* in NSH is an agent, initiator, or controller of the event expressed by the NSH predicate.

The characterization of *su-ru* in contrast to *nar-u* mentioned above suggests that *su-ru* in NSH is essentially the same as the transitive *su-ru* exemplified in (67). However, there is one crucial difference between *su-ru* in NSH and the main verb *su-ru* in (67). As is clear from the above examples, *su-ru* in (67) takes a DP marked by Accusative *o*, whereas what precedes *su-ru* in NSH does not take any Case marker. If a DP must be Case marked, the fact that the honorific predicate is not followed by a Case marker requires some explanation.

In section 3.3, referring to Suzuki (1989), we have seen that the honorific part of the predicate, HP-V(connective), is a DP. The evidence for its DP (or nominal) status includes (69):

(69) a. It is prefixed by an HP, which is a D head.
b. It is followed by *-ni*, which may be a Case marker (or postposition) or the connective form of the copula, *da* (cf. (27)).
c. It can be followed by the copula, *da/des-u* (cf. (28–30)).
d. It cannot end the first conjunct in the conjoined structure (cf. (31–33)).

In short, it is only nominals ([+N] categories) that can be preceded by an HP and followed by a Case marker (postposition) or a copula. And nominals cannot end the first conjunct.

If the honorific part of NSH is also nominal, it is expected to behave in a similar way. However, as is clear from the above examples, the honorific part of NSH never appears before *-ni* (or any case marker or a copula); hence, (69b) and (69c) do not apply to NSH. Let us see if criterion (69d) is relevant. Observe (70):

(70) a. Hanako-ga Sato-san-o miokuri, Taro-ga Kida-san-o demukae-ta.
Hanako-Nom Sato-Acc see-off Taro-Nom Kida-Acc meet-Past
'Hanako saw Sato off and Taro went to meet Kida.'
b. Hanako-ga Sato-sensei-o o-miokuri-si, Taro-ga
Hanako-Nom Sato-teacher-Acc HP-see-off-do Taro-Nom
Kida-sensei-o o-demukae-si-ta.
Kida-teacher-Acc HP-meet-do-Past
'Hanako saw Prof. Sato off and Taro went to meet Prof. Kida.'
c. *Hanako-ga Sato-sensei-o o-miokuri, Taro-ga Kida-sensei-o
Hanako-Nom Sato-teacher-Acc HP-see-off Taro-Nom Kida-teacher-Acc
o-demukae-si-ta.
HP-meet-do-Past
'Hanako saw Prof. Sato off and Taro went to meet Prof. Kida.'

(70a), which is a simple conjoined sentence with the plain verb form, does not involve NSH, and the first conjunct ends with the connective form of the predicate.

When the NSH form is used, as shown in (70b) and (70c), the honorific form alone cannot end the first conjunct, even though it is in the connective form. The presence of *si-* (the connective form of *su-ru*) is needed to end the first conjunct. Thus, if (69d) is a characteristic of [+N] categories, the honorific part of NSH is most probably [+N].

In view of the behavior of *su-ru*, however, the nominal status of the honorific part of NSH is not quite obvious. As mentioned above and also in section 2, *su-ru* can be used not only as a main verb, as exemplified in (67), but also as a light verb, which often appears with an SJ nominal (cf. (11)). Observe the following examples, (71) with the main verb *su-ru* and (72) with the light verb *su-ru*:

(71) a. Hanako-ga {syukudai-o su-ru./ ?*syukudai su-ru.}
Hanako-Nom homework-Acc do-Pres homework-do-Pres
'Hanako will do her homework.'
b. Kyoko-ga {eigo-no benkyoo-o su-ru./ *eigo-no benkyoo su-ru.}
Kyoko-Nom English-Gen-study-Acc do-Pres English-Gen-study do-Pres
'Kyoko studies English.'

(72) a. Syorui-ga {hunsitu si-ta/ *hunsitu-o si-ta.}
document-Nom disappear-do-Past disappearance-Acc do-Past
'The document got lost.'
b. Kyoko-ga {eigo-o benkyoo su-ru./ *eigo-o benkyoo-o
Kyoko-Nom English-Nom study-do-Pres English-Acc study
su-ru.}
do-Pres
'Kyoko studies English.'

The main verb *su-ru* is a transitive predicate, taking an agentive subject and a theme object that is marked by Object Case *o*. The light verb *su-ru*, on the other hand, takes place with an expression that represents an action or change of state (e.g., an SJ nominal), which is crucially not marked by the Object Case *o*; i.e., the light verb *su-ru* itself does not have a Case-assigning property, unlike the main verb *su-ru*.

Taking into consideration these facts about the two types of *su-ru*, *su-ru* in honorifics seems to behave ambiguously between the main verb *su-ru* and the light verb *su-ru*. It is like the main verb *su-ru* in that it requires an agentive subject, but it is like the light verb *su-ru* in that the NSH form of the predicate that precedes *su-ru* is not (Accusative) Case-marked. As for the behavior in the conjoined structure, NSH is similar to the case of the light verb *su-ru* construction, to the extent that the connective form of *su-ru* is required in the first conjunct, as observed in the grammatical contrast between (73) and (74):

(73) a. Kyoko-ga eigo-no benkyoo-o si,
Kyoko-Nom English-Gen-study-Acc do
Taro-ga kankokugo-no kenkyuu-o su-ru.
Taro-Nom Korean-Gen-research-Acc do-Pres
'Kyoko studies English and Taro researches Korean.'

b. Kyoko-ga eigo-no benkyoo-o, Taro-ga
Kyoko-Nom English-Gen-study-Acc Taro-Nom
kankokugo-no kenkyuu-o su-ru.
Korean-Gen-research-Acc do-Pres
'(the same as (73a))'

(74) a. Kyoko-ga eigo-o benkyoo-si, Taro-ga kankokugo-o
Kyoko-Nom English-Acc study-do Taro-Nom Korean-Acc
kenkyuu su-ru.
research-do-Pres
'(the same as (73a))'
b. *Kyoko-ga eigo-o benkyoo, Taro-ga kankokugo-o
Kyoko-Nom English-Acc study Taro-Nom Korean-Acc
kenkyuu su-ru.
research-do-Pres
'(the same as (73a))'

It is clear that the Accusative Case-marked item with the main verb *su-ru* is a DP, but the categorical status of what precedes the light verb *su-ru* remains controversial. It is analyzed as verbal in Hasegawa (1991), as nominal in Terada (1990), and as category-neutral (verbal noun) in Kageyama (1993) (cf. also Grimshaw and Mester 1988). The exact analysis of the honorific part (*HP-V(connective)*) of NSH seems to depend on how *su-ru* is analyzed or whether *su-ru* in NSH is a main verb or a light verb, or of yet a different kind. It is beyond the scope of this chapter to discuss *su-ru* further, however. See also Miyamoto (1997) and Takahashi (2000).

In short, the honorific part of NSH behaves differently from that of SH, which is clearly nominal. It does not positively exhibit the nominal characteristics listed in (69), but there is not enough evidence that indicates otherwise, either.

4.2.2 Possessor ascension

Toribio does not discuss the case of NSH triggered by a possessor of an (in)direct object and it is not clear from her analysis, which is illustrated in (66), how such a case is accounted for. If NSH is in fact an agreement process, the possessor must somehow be detached from the (in)direct object DP and raised to the Spec of DP whose head is an HP. That is, there must be a process of possessor ascension involved in the NSH of this type.

Possessor ascension, as a matter of fact, is widely observed in Japanese. See the following examples:

(75) a. Sengetu *Hanako-no* musuko-ga kekkon-si-ta.
last month Hanako-Gen son-Nom marry-do-past
'Hanako's son got married last month.'
b. **Hanako-no* Sengetu musuko-ga kekkon-si-ta.
Hanako-Gen last month son-Nom marry-do-past
c. *Hanako-ga* (Sengetu) musuko-ga kekkon-si-ta.
Hanako-Nom last month son-Nom marry-do-past
'(the same as (75a))'

(76) a. Taro-ga nakanaka *tyuugokugo-no* tango-ga oboer-are-na-i.
Taro-Nom easily Chinese-Gen word-Nom memorize-can-not-Pres
'Taro cannot memorize Chinese words easily.'
b. *Taro-ga *tyuugokugo-no* nakanaka tango-ga oboer-are-na-i.
Taro-Nom Chinese-Gen easily word-Nom memorize-can-not-Pres
c. Taro-ga *tyuugokugo-ga* (nakanaka) tango-ga oboer-are-na-i.
Taro-Nom Chinese-Nom easily word-Nom memorize-can-not-Pres
'(the same as (76a))'

The possessor of the subject in (75a) and that of the object in (76a) can be detached from the head noun and receive *-ga*, as in the (c) examples above. Note that the head noun and its possessor cannot be separated by a sentential adverb, such as *sengetu* 'last month' or *nakanaka* 'easily', if the possessor is marked Genitive *no*, which indicates that the possessor and the head noun form a constituent, while they can be separated if the possessor is marked Nominative *ga*. This fact can be described in terms of possessor ascension; namely, when a possessor overtly moves out of a DP, it receives a sentential structural Case, Nominative *ga*.[36]

If we assume that possessor ascension takes place not only overtly but also covertly, the NSH triggered by the possessor of an (in)direct object can be accounted for: the possessor (or its SSS feature) is raised to the Spec of the DP whose head is an HP. A possible problem with this analysis is that SH would never be triggered by the possessor of a subject, as the following sentences show (see also (60)):

(77) a. *Sensei-no* o-kuruma-ga koware-ta.
teacher-Gen HP-car-Nom break-down-past
'The teacher's car broke down.'
b. *Sensei-ga* o-kuruma-ga koware-ta.
teacher-Nom HP-car-Nom break-down-past
'It is the teacher whose car broke down.'
c. **Sensei-no* o-kuruma-ga o-koware-ni nat-ta.
teacher-Gen HP-car-Nom HP-break-down-Hon-past
d. **Sensei-ga* o-kuruma-ga o-koware-ni nat-ta.
teacher-Nom HP-car-Nom HP-break-down-Hon-past

Regardless of whether possessor ascension occurs overtly or covertly, *sensei*, the possessor of the car, cannot trigger SH. This remains a problem as long as SH and NSH are considered essentially the same agreement process. We have to leave this problem open.

4.3 An NSH-like process: the benefactive predicate age-ru

In the above, we have observed that NSH is possible only when the referent of the SSS, (the possessor of) the (in)direct object, is affected in a favorable way, or is to be taken as the beneficiary of the event. If non-favorable effects are expected

on the possessor of the (in)direct object, NSH is not allowed. Relevant examples are given below:

(78) a. Gakusei-ga Yamada-sensei-o uttae-ta.
student-Nom Yamada-teacher-Acc sue-Past
'The student sued Prof. Yamada.'
b. *Gakusei-ga Yamada-sensei-o o-uttae-si-ta.
student-Nom Yamada-teacher-Acc HP-sue-do-Past

(79) a. Gakusei-ga Tanaka-sensei-o party-ni sasot-ta.
student-Nom Tanaka-teacher-Acc party-to invite-Past
'The students invited Prof. Tanaka to the party.'
b. Gakusei-ga Tanaka-sensei-o party-ni o-sasoi-si-ta.
student-Nom Tanaka-teacher-Acc party-to HP-invite-do-Past

(80) a. Kyoko-ga sensei-no kuruma-o nusun-da.
Kyoko-Nom teacher-Gen-car-Acc steal-Past
'Kyoko stole the teacher's car.'
b. *Kyoko-ga sensei-no (o)-kuruma-o o-nusumi-si-ta.
Kyoko-Nom teacher-Gen-HP-car-Acc HP-sue-do-Past

(81) a. Kyoko-ga sensei-no kaban-o mot-ta.
Kyoko-Nom teacher-Gen-bag-Acc hold-Past
'Kyoko held the teacher's bag.'
b. Kyoko-ga sensei-no (o)-kaban-o o-moti-si-ta.
Kyoko-Nom teacher-Gen-HP-bag-Acc HP-hold-do-Past

In (78–79), the SSS is the object, but NSH in (78) is inappropriate. Similarly in (80–81), the possessor of the object is SSS, but of the two (b) examples here, only (81b) is allowed. The difference in grammaticality (or acceptability) seems to relate to how favorable the action is to the SSS object. 'Suing' or 'stealing' is not beneficial to the one who is sued or whose property is stolen, and NSH is not appropriate in such situations. This fact suggests that the structural presence of an SSS is not enough to trigger NSH. One way to deal with this problem is leave it to the realm of how NSH is used, maintaining that syntax allows NSH to be triggered freely in non-beneficial situations such as (78) and (80) but the pragmatic condition regarding beneficial transfer rules them out. This may well be a correct way to consider the above contrast, and in fact Matsumoto (1997) advocates such a direction.

In the following, however, I would like to explore a more syntactically oriented possibility. Let me first point out that there is a construction in Japanese which behaves similarly to NSH; i.e., both express beneficial effects on the (in)direct object (or someone in the context). Observe (82):

(82) a. Hanako-ga Taro-o tasukete age-ta.
Hanako-Nom Taro-Acc help-give-past
'Hanako helped Taro.'

b. Hanako-ga Taro-ni syasin-o misete age-ta.
Hanako-Nom Taro-Dat photo-Acc show-give-past
'Hanako showed Taro the photo.'
c. Hanako-ga Taro-no-kaban-o motte age-ta.
Hanako-Nom Taro-Gen-bag-Acc hold-give-past
'Hanako held Taro's bag (for him).'

The sentences in (82) do not involve NSH, but the presence of the predicate *age-ru* in addition to the main predicate indicates that the action is done in favor of the object in (82a), the indirect object in (82b), and the possessor of the object in (82c), characteristics shared by NSH.[37,38] When beneficial effects are not expected on these constituents, the use of *age-ru* is inappropriate, just like the case of NSH observed in (78b) and (80b):[39]

(83) a. *Hanako-ga Taro-o uttaete age-ta.
Hanako-Nom Taro-Acc sue give-Past
'Hanako sued Taro (for him).'
b. *Hanako-ga Taro-no kuruma-o nusunde age-ta.
Hanako-Nom Taro-Gen-car-Acc steal-give-past
'Hanako stole Taro's car (for him).'

The similarity of NSH and the *age-ru* construction is striking, and it seems desirable that this similarity should be captured. So let us assume that the two constructions involve the same structure. That is, NSH always involves *age-ru* or its null counterpart. Let us suppose that *age-ru* (or its null counterpart) is a predicate that takes a VP complement and obligatorily assigns a beneficiary role to the item that moves into its Spec. The predicate of the VP may be of the NSH *o-V-su* form, which gives rise to the NSH construction, or of the basic form, which renders sentences like (82). This approach predicts that the NSH and *age-ru* should be able to co-occur, and this prediction is borne out, as seen in (84), where *age-ru* in its suppletive NSH form, *sasiage-ru*, takes its place with the NSH complement:[40]

(84) a. Gakusei-ga sensei-o o-tasuke si(te sasiage)-ta.
student-Nom teacher-Acc HP-help-do-give-Past
'The student helped the teacher.'
b. Hanako-ga sensei-ni syasin-o o-mise si(te sasiage)-ta.
Hanako-Nom teacher-Dat photo-Acc HP-show-do-give-past
'Hanako showed the photo to the teacher.'
c. Hanako-ga sensei-no-(o)-kaban-o o-moti-si(te sasiage)-ta.
Hanako-Nom teacher-Gen-HP-bag-Acc HP-hold-do-give-past
'Hanako held the teacher's bag.'

Irrespective of whether *sasiage-ru* is present, the meaning and function of the sentences remain basically the same. This state of affairs can be explained along the lines suggested above. Suppose that the benefactive predicate *age-ru* has two

NSH forms, *sasiage-ru* and its phonologically null counterpart, and the NSH *o-V-su* form always requires the presence of the NSH benefactive predicate (or to put it the other way around, the complement VP of the NSH benefactive predicate, *sasiage-ru* or its null counterpart, must be of the NSH *o-V-su* form). Then, regardless of whether *sasiage-ru* is present, the two versions of (84) are considered to be equally NSH examples, and (84) without *sasiage-ru* (an instance of ordinary NSH) in fact involves the null counterpart of *sasiage-ru* in the structure. What is crucial here is that the two forms of NSH in (84), either with *sasiage-ru* or without it, both involve the same syntactic structure.[41] Then the requirement of beneficial effects on the SSS, which may be an (in)direct object, its possessor, or someone identifiable in the context, can be subsumed under the requirement on the item checked by the benefactive predicate, *age-ru*, *sasiage-ru*, or the phonologically null counterpart of *sasiage-ru*. The benefactive predicate, irrespective of its form, requires a beneficiary item in its Spec. The beneficiary item may be raised from inside the complement VP or may be directly generated at its Spec independently of the VP. When it is raised from inside the complement VP, we obtain sentences where a syntactic argument (or its possessor) appears as a beneficiary. If it is directly generated (or merged) at the Spec of the benefactive predicate, the beneficiary is interpreted as being someone in the context. Since the beneficiary itself can be phonetically null in Japanese, just as any argument identifiable in discourse may (cf. note 38), we obtain NSH (and the *age-ru* construction) where no obvious beneficiary item is present. In this way, we can maintain that NSH always involves an SSS item that is syntactically present.[42]

5 Related issues

5.1 Honorifics and pro-drop

The descriptions and analyses of honorific phenomena presented above are basically along the lines of Harada's (1976) proposal. In particular, it is his insight that SH and NSH are viewed as agreement processes, and we have so far been concerned mainly with how agreement processes are accounted for, mainly referring to Toribio (1990) and Suzuki (1989). There is another interesting phenomenon that seems to have to do with the agreement of SH and NSH, namely, pro-drop.

In the linguistic literature, the phenomena of pro-drop or null arguments have been captured in two ways: licensed (i) by agreement (Chomsky 1981; Rizzi 1982a) or (ii) by (null) topic (Huang 1984; Hasegawa 1984).[43] Japanese has been considered as the latter type, and Huang and Hasegawa analyze null arguments (*e*) in (85) as variables bound by null topics:

(85) a. Taro-ga *e* tasuke-ta.
Taro-Nom help-Past
'Taro helped (her/him).'

b. *e* Hanako-o tasuke-ta
Hanako-Acc help-Past
'(She/He) helped Hanako.'

These sentences are acceptable only when the null arguments (the object in (85a) and the subject in (85b)) refer to the items registered (as topics) in a given discourse, as pointed out by Kuno (1973c). Due to the variable status of null arguments, an object of a complement sentence cannot be null if it refers to the matrix subject:[44]

(86) Hanako$_i$-ga [watasitati-ga $e_{*i/j}$ tasuke-ru] to omot-ta.
Hanako-Nom we-Nom help-Pres Comp think-Past
'Hanako$_i$ thought that we will help *her$_i$/him$_{j'}$.'

In (86), if the *ec* is in fact a variable, it cannot be locally A-bound by *Hanako*, the matrix subject, due to Condition C of Binding Theory. Once honorifics are involved, however, a null object that refers to the matrix subject is allowed:

(87) Sensei$_i$-ga [watasitati-ga $e_{i/j}$ o-tasuke-su-ru] to o-omoi ni nat-ta.
teacher-Nom we-Nom help-Pres Comp HP-think-Hon-Past
'The teacher$_i$ thought that we will help her$_i$/him$_{j'}$.'

The contrast here seems to suggest that the *e* that is not agreement-related is a variable and needs to be topic-bound, but the one that is agreement-related can be a pronominal and can refer to a matrix constituent, as any pronominal can.

Note in passing that the benefactive predicate can also license a null object in a complement sentence, as is shown in (88):[45]

(88) Hanako$_i$-ga [Taro-ga $e_{i/j}$ tasukete-kure-ru] to omot-ta.
Hanako-Nom Taro-Nom help-give-Pres Comp think-Past
'Hanako$_i$ thought that Taro will help her$_i$/him$_j$.'

If the benefactive predicates *age-ru* and *kure-ru* involve syntactic agreement, as was suggested above, the grammaticality of (88) can naturally be accounted for along with the grammaticality of (87).[46]

5.2 Honorific concordance

With reference to sentences (53b) and (53c–e), we saw that what is responsible for honorific processes is not the presence of an item with SSS but rather the presence of the honorific form of a predicate. Because of this, it appears that honorific marking on predicates is optional and an SSS subject or object does not always give rise to honorific forms. Thus, as discussed in section 3.6, what matters is whether an SSS item is present when the predicate is of the honorific form, and not whether predicates are in the honorific form when an SSS item is present.

This does not mean that the use of honorific forms is completely arbitrary, however. Observe the following data:

(89) a. Sensei-ga *?aitu-o/ano kata-o o-home-ni nat-ta.
teacher-Nom the guy(Vul)-Acc/that person-Acc HP-drink-Hon-Past
'The teacher praised that guy/that person.'
b. Taro-ga *go-hon-o/hon-o nakusi-yagat-ta.
-Nom HP-book-Acc/book-Acc loose-Vul-Past
'Taro lost the book.'

What (89a) shows is that if the predicate is of the honorific form, other items in the sentence cannot be of the vulgar form. The opposite is also true, as (89b) shows: when the predicate is of the vulgar form, the honorific or polite form for the object noun is inappropriate. Thus, there seems to be some kind of honorific or politeness concordance among items in a sentence. This does not mean that concordance should always be strictly observed, however:

(90) a. Sensei-wa go-zibun-o seme-ta.
teacher-Top HP-self-Acc blame-Past
'The teacher blamed herself.'
b. Sensei-wa zibun-o o-seme-ni nat-ta.
c. Sensei-wa go-zibun-o o-seme-ni nat-ta.

(91) a. Sensei-wa go-zibun-de o-kuruma-o araw-u.
teacher-Top HP-self-Acc HP-car-Acc wash-Pres
'The teacher washes her car by herself.'
b. Sensei-wa zibun-de kuruma-o o-arai-ni-nar-u.
c. Sensei-wa go-zibun-de o-kuruma-o o-arai-ni-nar-u.

These sentences are honorifics, and they all express the speaker's respect for the subject *sensei*. Only in the (c) examples is the concordance observed, however. In the (a) examples, the predicates are of the plain form but the object and the adverb are of the honorific form. In the (b) examples, only the predicate is of the honorific form and other items are of the plain form. The situation here is basically the same as in (53b) and (53c–e) in section 3.6, where only one predicate is in the honorific form while the other is of the plain form, even though both predicates refer to the same SSS subject.

This fact may be considered in the following way. Suppose that the speaker's intention to indicate her respect for an SSS subject or object is a kind of operator over a sentence, and this operator requires at least one item in the sentence to be in the honorific form. If the sentence contains more than one item that is of the honorific form, the operator unselectively binds it, which in effects explains the partial concordance observed in the above. The ungrammatical cases in (89) are due to the conflict between the two such operators: the honorific operator and the vulgar operator cannot take place at the same time.[47]

6 Conclusion

It was Harada (1976) who first extensively discussed the phenomena of honorifics in Japanese in generative grammar, considering SH and NSH to be agreement processes that involve the feature [SSS], socially superior to the speaker. Following this basic insight of his and referring to my more recent predecessors along the same lines (Suzuki 1989; Toribio 1990; Ura 1999), I have worked out in more detail how 'agreement' happens within the framework of checking theory. It is shown that the morphosyntactic characteristics of SH and NSH play an important role in accounting for exactly how agreement takes place. In particular, I have shown that the presence of an HP and the connective form of a predicate, which is characteristic of SH and NSH, is not just a mere indication of honorifics but is the key to the agreement between the honorific predicate and the SSS item, a subject for SH and a beneficiary non-subject for NSH.

This chapter started out with a rather detailed description of the morphology of Japanese honorifics. Such details have often been glossed over in syntactic studies on this phenomenon that pay attention mainly to the syntactic relation between the items relevant to this process, disregarding exactly what shape the honorific predicate exhibits. However, I have shown in later sections that the morphological details of the honorific predicate – such as the presence of an HP, the connective form of the predicate, the presence or absence of *ni*, and the existence of the predicate *nar-u* for SH and *su-ru* for NSH – are all crucial for a better understanding of how honorifics work in this language. For example, the existence of an HP is responsible for the 'definite' interpretation of the event expressed in SH and NSH, which incidentally explains why a noun with an HP is taken to be 'definite' if it is used in honorific context.

In addition to SH and NSH, I have examined the cases which behave similarly to these honorifics: *rare*-honorifics and the *yagar-u* construction, in relation to SH, and the *age-ru* 'give' benefactive construction, with regard to NSH. I have argued that the differences in morphological shape between SH and the above two cases are not accidental and that these are in fact different syntactic processes. The similarity results from the pragmatic uses of the constructions in question, not from their syntactic structures. As for NSH, I have shown that it and the *age-ru* construction exhibit strikingly similar behaviors, which are the very characteristics that are to be captured in NSH: the obligatory presence of a beneficiary and its structural position. I have suggested that NSH actually involves the predicate *age-ru*, which may show up as its humble (or NSH) form, *sasiage-ru*, or as its null counterpart.

Because it appears that honorific processes take place 'optionally', allowing a subject (or beneficiary non-subject) with [SSS] to occur without a honorific predicate, it has sometimes been claimed that they are not 'agreement' processes, which are characterized as being 'mandatory' and 'one-to-one' (cf. Namai 2000). If one considers that the occurrence of an [SSS] noun phrase 'triggers' honorification, which has been the view often assumed since Harada (1976), its application

certainly looks 'optional', and the 'one-to-many' or 'one-to-zero' relations appear to be allowed. If the presence of an honorific form is taken to be responsible for requiring an item to 'agree' with it in terms of [SSS], however, the process can be regarded as 'mandatory' and 'one-to-one', meeting the characteristics of 'agreement'. This is the view that this chapter specifically advocates.

NOTES

1 In what follows, we will not be concerned with pragmatic or semantic notions of 'politeness', nor will we get into the discussion on what constitutes 'politeness in speech'. See Brown and Levinson (1987) for relevant discussion.

2 Though there are other languages, such as Korean, Tibetan, Javanese, etc. that have a grammatical system of honorifics, only Japanese is examined in this chapter.

3 The terms 'Perfomative Honorifics' (PH), 'Subject Honorifics' (SH), and 'Object Honorifics' (OH) are due to Harada (1976). Kuno (1987b) uses 'Hearer Honorific' (HH) instead of PH and 'Non-Subject Honorific' (NSH) for OH. In the traditional grammar of Japanese, PH or HH, SH, and OH or NSH are called *teinei-go* 'polite forms', *sonkei-go* 'respect forms', and *kenzyoo-go* 'humble forms', respectively. In the following discussion, I will follow Kuno's tgerminology; namely, HH, SH, and NSH, since it seems to express the phenomena more accurately than Harada's.

4 The affix *-san* that follows a person's name is a kind of courtesy title, similar to Mr., Ms., Miss or Mrs., but can be used for the second person as well, being equivalent to 'you, Mr./Ms. Sato'. The use of *-san* is obligatory in plain and polite speech, but strange in vulgar speech, when referring to a second or third person adult. Those that are due special respect, such as teachers, doctors, lawyers, are customarily addressed and referred to with *sensei* 'teacher, professor' rather than *-san*. Neither *-san* nor *sensei* is used in reference to the speaker herself or members of her in-group when talking to her out-group members. See section 3.1 for relevant discussion, and note 13 for more on in-groups and out-groups.

   The following abbreviations are used in glosses: Nom for the nominative case marker, *-ga*; Acc for the accusative case marker *-o*, Dat for the dative case marker *-ni*, Gen for the genitive case marker -no, Past for the past tense marker *-ta*/*-da*, Pres for the present tense marker *-ru*/*-u* (*-ru* after a consonant stem verb and *-u* for a vowel stem verb), Pass for the passive predicate, *-rare* (for a consonant stem verb)/*-are* (for a vowel stem verb), and Cop for the copulative predicate. For morphological items related to honorifics, HP is used for the polite prefix *go-*/*o-*, Hon for the SH form, Vul for the vulgar form.

5 A reviewer of this chapter pointed out to me that Sells and Iida (1991) provide the following example where the referents of both the subject, *sensei* 'the teacher', and a non-subject, the indirect object *Yamada-san* 'Mr./Ms. Yamada', are supposed to be elevated with the use of the predicate that involves both SH and NSH forms. (With the use of *masi-ta*, the address is also respected.)

   (i) Sensei-ga Yamada-san-ni hon-o o-sasiage-ni nari-masi-ta.
   teacher-Nom Yamada-Dat book-Acc HP-give(NSH)-SH-polite-past
   'The teacher gave a book to Mr. Yamada.'

The grammaticality of this example, however, is quite dubious. Sells and Iida incidentally note that this type of construction is not possible for some speakers, a group to which I certainly belong. It seems to me that this type of sentence 'derivatively' results given the pragmatic need to express the respect for the referents of the subject and the object. However, as mentioned in the above, as far as the grammar is concerned, SH and NSH function in the opposite directions for expressing the speaker's respect – SH elevates the subject directly by making use of the SH form, while NSH elevates a non-subject by downgrading the subject – and the presence of the SH and NSH forms on a single predicate thus gives rise to a contradiction. Thus, I consider that sentences such as (i) are not allowed grammatically but may take place under certain pragmatic situations.

6 The verb form used in honorifics is sometimes referred to as 'infinitive' or 'gerundive' in the literature. For example, Harada (1976) calls it 'infinitive' and Toribio (1990) takes it to be 'gerundive'. However, the terms 'gerundive' and 'infinitive', are misleading, since it is hard to tell in Japanese what morphologically, semantically, or syntactically constitutes 'infinitive' or 'gerundive', and it does not seem too meaningful to argue whether some form is infinitive or gerundive without addressing this question. Verbs in Japanese conjugate in terms of various functions (present tense, perfect tense, conditional, volitional, etc.), and the form that appears in honorifics is traditionally called *renyoo-kei* 'connective form', the form that connects to another predicate. To avoid unnecessary confusions, I will use the term 'connective form' in the following to refer to the form of the verb that is used in honorifics. The term 'gerundive' is saved for phrases (not for a particular form of predicates) that are nominal in structure (i.e., DPs) and involve a VP inside.

The connective form is identical to the root form if the verb belongs to the class of vowel verbs (verbs whose stem ends with either /i/ or /e/). But if the verb belongs to the class of consonant verbs (verbs whose stem ends with a consonant), the connective form has the form of the stem with the vowel /i/. See McCawley (1968b) for the morpho-phonology of the conjugation system of Japanese predicates.

7 There are quite a few suppletive SH forms for commonly used verbs (such as *irassyar-u* for *ik-u* 'go', *omesiagari-ni nar-u* for *tabe-ru* 'eat', *goran-ni nar-u* for *mi-ru* 'see', *ossyar-u* for *i-u* 'say', *nasa-ru* for *su-ru* 'do', etc.), which are to be learned item by item. Though some suppletive forms exhibit sub-regularities that may be of some interest to the morphosyntax of Japanese, I will not get into details here. See Harada (1976).

8 Though there are exceptions, the distribution of the honorific prefix (HP) *o-* and *go-* is mainly determined by the etymological characteristics of the item that they attach to; *o-* for native words and *go-* for Sino-Japanese words. Most loan words from European languages do not take any honorific prefix. The honorific prefixes *o-* and *go-* are not solely for predicates and they attach to adjectives and nouns. Some examples are given in (i). We will consider the honorific forms of Sino-Japanese (SJ) predicates in (11) and (12):

(i)				
	Native verbs:	yom-u	o-yomi-ni nar-u	'read'
	SJ verbs:	kenkyuu su-ru	go-kenkyuu ni nar-u	'research'
	Native adjectives:	utukusi-i	o-utukusi-i	'beautiful'
	SJ adjectives	rippa da	go-rippa da	'fine'
	Native nouns:	kao	o-kao	'face'
	SJ nouns:	kazoku	go-kazoku	'family'

9 As will be discussed in section 3.6, there are some adjectives (and Sino-Japanese adjectives) that do not take an honorific prefix (HP), *o-* or *go-*:

(i)	Adjectives:	tadasi-i	*o-tadasi-i	'right'
		hiku-i	*o-hiku-i	'low'
		yawaraka-i	*o-yawaraka-i	'soft'
	SJ adjectives:	mutyuu-da	*go/o-mutyuu-da	'crazy about'
		nigate-da	*go/o-nigate-da	'bad at'
		yuumei-da	*go/o-yuumei-da	'famous'

For these adjectives, the form Adj-*te/de-irassyaru*, the connective form of an adjective followed by the suppletive honorific form of *i(ru)* 'exist, be', can optionally be employed, as in *tadasiku-te irassyaru* 'right', *mutyuu-de irassyaru* 'crazy about', etc.

10 Just like SH forms, there are suppletive NSH forms such as *itas-u* for *su-ru* 'do', *moos-u* for *i-u* 'say', *ukagaw-u* for *kik-u* 'ask' or *ik-u* 'go', etc.

11 For characteristics of Sino-Japanese predicates, see Kageyama (1976, 1991, 1993), Grimshaw and Mester (1988), Hasegawa (1991), Terada (1990), Miyamoto (1997), Takahashi (2000), etc.

12 The presence of an HP does not always indicate honorifics. For some common nouns, such as *o-hasi* 'chopsticks', *o-soba* 'noodles', *o-syooyu* 'soy sauce', etc., the use of the HP *o-* is not particularly taken as a polite or honorific marker, but rather as a part of the words themselves. Without the HP *o-*, they may sound rough, especially in female speech. See section 3.4 for more discussion on the use of HP.

13 The concept of the speaker's 'in-group' and 'out-group' has to do with the social and psychological distance or closeness that the speaker feels toward other individuals around her. The speaker's close relatives, like parents and siblings, belong to her in-group, while strangers are considered to be out-group members. Whether one belongs to the speaker's in-group or out-group is relative and constantly shifts depending on conversational contexts. For example, the speaker's colleague can be an in-group member with respect to those who do not belong to their workplace (i.e., customers, employees of other companies, etc.) but she can be an out-group member with respect to the speaker's family members. In today's Japanese, close relatives are almost invariably considered to be 'in-group' members, as (19) suggests; however, the higher status of family members like parents or grandparents can be subject to honorification under formal situations and/or in the families of the upper class, where classical standards in the use of the language are preserved (or recommended).

14 NSH is possible in the context of (17c) and (i) is grammatical. NSH will be discussed in section 4 below:

(i) Gakusei-ga sensei-ni hon-o o-watasi-si-ta.
student-Nom teacher-Dat book-Acc HP-pass-NSH-Past
'The student handed the book to the teacher.'

15 In Harada's system, if the predicate is marked [Subject Honorific] via (19), the following transformations apply that give rise to appropriate SH forms: the honorific prefixation of an HP; the honorific infinitivization, which brings about the connective form; the particle *-ni* attachment to the connective form of the verb; the predicate *nar-u*-attachment; the Spell Out of an HP to either *o-* or *go-*, etc. The structure of the SH form will be discussed in sections 3.2, 3.3, and 3.4 below.

16 It is not quite clear in Toribio's analysis what triggers this Spec–Head agreement. She states: "it appears that predicates in Japanese can agree with the honorific feature of noun phrases, just as in some languages predicates agree with the person, number and gender features of their arguments" (1990: 537). "The subject also raises to SpecD where it triggers honorification through Spec–Head agreement, under the assumption that all specifiers and heads are involved in an agreement relationship which may be realized morphologically" (1990: 539). I do not provide a tree structure that shows Toribio's analysis here. We will discuss her system more closely in section 3.3, and the tree structure (35) below represents our analysis, which is a modified version of her analysis.

As will be discussed in section 3.6, to account for the optional realization of honorifics, it is necessary to consider that the honorific predicate requires the SSS subject but not the other way around.

17 Not all the occurrences of connective forms take an HP. For example, *sugi-ru* 'exceed', as in (25a), cannot take an HP, unless it is part of an SH as in (25b). Thus, if the existence of an HP is an indication of [+N], the connective form must assume either [+N] or [–N], just as the *-ing* form of English may. See Harada (1976) and Kuno (1987b) for relevant discussion. See also the discussion concerning (30–33) below.

18 Though *-ni* in the SH predicate is often considered to be a case particle (as in Toribio 1990 and Suzuki 1989), the facts in (27–29) strongly suggest that it is a copula. To the extent that nominal adjectives (NAs) never occur independently without a copula, or with a case marker other than *-ni*, *-ni* that follows an NA seems most probably a copula. This in turn suggests that the *-ni* of the SH predicate may also be a copula.

19 However, there are minor differences between Suzuki's analysis and Toribio's: Suzuki considers *nar-u* to be a control verb, while Toribio analyzes it as a raising verb; in Suzuki's analysis, the [+N] status of gerunds lies in I, which consists of an HP and the gerundive morpheme *-i*, and agreement checking takes place between the head I and the subject in the Spec of IP, while in Toribio's analysis, it is D that gives rise to the [+N] status of the gerund and the head D has the nominalizing morpheme *-i*. When the subject is raised to the Spec of DP, Spec–Head agreement takes place, which triggers the attachment of an HP to *V-i* in the D head.

20 *Nar-u* occurs in the copulative construction and the predicate adjective/nominal adjective construction, which are exemplified below as well as in (32) and (33). Just like *become* in English, *nar-u* in these constructions is best analyzed as a raising predicate rather than a control predicate:

(i) Hanako-ga isya-ni nat-ta.
Hanako-Nom doctor-copula become-Past
'Hanako became a doctor.'

(ii) Ryoori-ga tumetaku nat-ta.
dish-Nom cold become-Past
'The dishes became cold.'

(iii) Gakuseitati-ga sizuka-ni nat-ta
students-Nom cold become-Past
'The students became quiet.'

21 As briefly mentioned in section 2 (note 12 in particular), some nouns ordinarily involve an HP without specifically marking honorifics (especially in female speech),

as in *o-soba* 'noodles', *o-sara* 'dish', *o-sake* 'sake', etc. In such examples, the presence of an HP does not necessarily make the noun identifiable in the sense that is discussed in this section. The types of nouns that are particularly relevant to the discussion of this section include those that refer to body parts, such as *kao* 'face' and *karada* 'body, health'; SJ activity nouns, such as *kooen* 'lecture', *ryokoo* 'travel', *kenkyuu* 'research'; and picture nouns, like *syasin* 'photo', tegami 'letter'.

22 That is, as briefly stated above, the HP on a noun not only helps identify its referent but specifies it in terms of its possessor, to whom the speaker's respect is due. As will be discussed in section 5.2, there is some kind of concordance among the occurrences of honorific expressions. Thus, when the noun is with an HP as in (37b), the predicate is expected to be in the form of honorifics, either SH or NSH, and the possessor of the noun is the target of the speaker's respect, which the predicate form indicates by making use of SH or NSH.

23 The indefinite use of *go-hon* in (37c) and (37d) may be acceptable in hyper-polite speech, where the presence of an HP on nouns simply marks the speech polite, as briefly mentioned in section 2. See note 21 above. Cf. Ide and McGloin (1990).

24 This does not mean that indefinite DPs cannot be a subject of SH predicates. As (i) shows, indefinite DPs are acceptable as long as they represent a class or a kind of people to whom respect is due:

(i) a. Misiranu sensei-ga hon-o o-kai-ni nat-ta.
unknown teacher-Nom book-Acc HP-buy-Hon-Past
'Some teacher bought a book.'
b. Donataka-ga o-warai-ni nat-ta.
someone(Hon)-Nom HP-laugh-Hon-Past
'Someone laughed.'

In (ia), the subject is a stranger but the speaker knows that whoever she may be, her social status is that of a teacher; therefore, respectable. Similarly, in (ib), the subject is someone not identifiable. But *donataka* 'someone (honorific)' is the honorific form of *dareka* 'someone', and the speaker knows that whoever she may be, she belongs to a class of people to be looked up to.

25 In Hasegawa's system, the preposition *by* is inserted to give Case to an agent as the last resort when it cannot receive structural Case.

26 In Hasegawa's original analysis, whether the complement object receives Object Case is determined by whether the complement verb moves to *-(r)are* at (or before) S-structure or at LF. I assume (46a) here, since the same result obtains if *-(r)are* optionally absorbs Case.

27 See Hasegawa (1988) for details. See also Takezawa (1987) for *ni* Case.

28 (46) also accounts for indirect passives with an intransitive verb, exemplified in (i):

(i) Hanako-ga ame-ni hur-are-ta.
Hanako-Nom rain-Dat fall-Pass-Past
'Hanako got rained on.'

The subject of *-(r)are*, the affectee of the complement event, moves to the Spec of TP to receive Nominative Case.

29 Thus, Hasegawa's claim that *Rare*-SH, voluntary-*(r)are*, and Passive-*(r)are* are different manifestations of the same *-(r)are* accords with the historical developments of *-(r)are*;

the most basic use of *-(r)are* is taken to be its voluntary use, from which the SH use and the passive use are derived. See Hashimoto (1969).

30 If the subject is phonologically present and appears with *-ni* as in (49b), the construction is most probably an instance of the *zihatu* 'voluntary' use of *-(r)are*. Marking the subject with *-ni* is characteristic of this construction.

31 As will be mentioned immediately below, *yagar-u* is used only in vulgar speech, and other expressions involved in sentences with *yagar-u* must equally be vulgar. Because of this requirement, (50) has vulgar pronoun forms, *aitu* instead of ordinary *anata* 'you', *ore* instead of *watasi* or *boku* 'I', which are neutral in terms of level of speech. See section 5.2 for discussion of politeness concordance among the items in a sentence.

32 As noted in section 3.4, a noun and its possessor agree, and when the possessor is an SSS, the noun may take an HP. See (41).

33 Given this state of affairs, there seem to be two ways to deal with NSH: (i) NSH is taken to be a syntactic process and the syntactic presence of the beneficiary (i.e., the item with SSS) is posited even if its presence is not too obvious; or (ii) NSH is a pragmatic process and the existence of a beneficiary is implied in the context but not necessarily in a syntactic structure. The second approach is suggested in Matsumoto (1997) and Mori (1993), among others; however, I would like to pursue the syntactic approach, (i), in the following discussion.

34 Harada (1976) notices that the trigger of NSH does not have to be an (indirect) object but can be 'included' in it. He speculates that there may be a hierarchy like the following that is responsible for determining the applicability of honorification:

(i) a. Subject
    b. Indirect object
    c. Direct object
    d. 'Non-terms' of grammatical relation

35 Thus, Toribio's account of the facts in (64f) is along the line of the Minimal Link Condition. In order to make her analysis go through, she needs to assume a version of the specified subject condition; that is, PRO, the subject argument, does not prevent the checking of the SSS feature of the (in)direct object.

36 In Japanese, Nominative *ga* can be multiply assigned. There are several ways to account for this fact. I assume that *ga* is given to a DP that is governed by Tense (i.e., at (inner or outer) Spec of TP, at outer Spec of VP whose head is stative) (cf. Hasegawa 1984; Tada 1992; Takezawa 1987). Nominative *ga* given to a subject, which is at inner Spec of TP, is one instance of this process.

37 *Age-ru* can be an independent predicate that means 'give':

(i) Hanako-ga Taro-ni hana-o age-ta.
    Hanako-Nom Taro-Dat flower-Acc give-past
    'Hanako gave flowers to Taro.'

38 The unmarked interpretation of (82) is, as has just been stated, to take Taro as a beneficiary; however, this is not the only interpretation; the beneficiary may not be Taro but an individual phonologically unexpressed but understood in the given discourse. That is, (82a) for example, may be interpreted as 'Hanako helped Taro for someone implicit in the context.' As will be discussed immediately below, I will

present an analysis where *age-ru* involves a beneficial role which can be identical with an argument of the predicate to which *age-ru* attaches, or implicit (i.e., a null pronominal category) but identifiable from the discourse. See note 42 for relevant discussion.

39 If the action of 'suing' or 'stealing' is considered to be for the benefit of someone (who may be the object), (83) is allowed, a reading with which we are not concerned here.

40 If *age-ru*, not in its honorific form *sasiage-ru*, is used with NSH, the sentence is inappropriate:

(i) *Gakusei-ga sensei-o o-tasuke si-te age-ta.
student-Nom teacher-Acc HP-help-do-give-past
'The students helped the teacher.'

As will be discussed in section 5, there must be some concordance ensured among the items in honorific sentences.

41 Though the two versions of (84), either with *sasiage-ru* or without, have basically the same meaning and function, the version with *sasiage-ru* sounds more polite. This fact does not follow from the analysis here, however.

42 This is what Hasegawa (2000) presents as an analysis of the *age-ru* construction and NSH. In order to make this analysis go through, we have to allow an item to be doubly theta-marked; once inside the complement VP and the second time at the Spec of the benefactive predicate. Within the Government and Binding framework, the theta-criterion prohibits an item from receiving a theta-role multiple times. However, in view of the recent developments of the theory where a theta-role is identified by a particular syntactic position, it seems probable that we may pursue the direction where multiple theta-role assignment is allowed under certain circumstances (e.g., when a theta-assigning head requires feature checking), and the proposal here falls under such a case. (Cf. Hornstein 1999.)

43 Another possibility that is often assumed in Japanese syntax is to allow a null pronoun rather freely. Under this assumption, the interpretation and distribution of null pronouns are taken care of in pragmatics, not in formal grammar. Cf. Kameyama (1988) and Nakamura (1991).

44 When the complement subject is an empty category (*ec*), it can refer to the matrix constituent, as shown in (i), suggesting that it can be pronominal. In Huang's analysis, as long as Binding Condition B is observed, a null argument can be a pronominal and is co-indexed with the closest nominal element, the matrix subject in (i). In Hasegawa's analysis, PRO, a kind of pronominal, is allowed at the subject position. Thus, in either analysis, the null complement subject can be a variable or a pronominal but the null object can only be a variable, which is responsible for the contrast between (86) and (i):

(i) Taro$_i$-ga [*ec*$_i$ Hanako-o tasuke-ru] to tikat-ta.
Taro-Nom Hanako-Acc help-Pres Comp swear-Past
'Taro swore that he will help Hanako.'

45 *Kure-ru*, rather than *age-ru*, is used here. The meanings and functions of *kure-ru* and *age-ru* are the same, but the use of *kure-ru* indicates that the speaker's empathy is with the object of the sentence, while *age-ru* indicates it is with the subject. Since the speaker tends to have empathy with the subject in active sentences, the speaker's empathy is with *Hanako*, the subject of the matrix clause, in (88). The intended reading

on the *e* is *Hanako*, which is the object of the complement sentence; hence, *kure-ru* must be used rather than *age-ru* (cf. Kuroda 1965; Kuno 1978a; Kuno and Kaburaki 1977 for relevant discussion).

46 It was Kuroda (1965) who first pointed out that the process of zero pronominalization (i.e., the interpretation of empty pronominals) is affected by the presence of benefactive predicates like *age-ru* and *kure-ru*; the same contrast seen in (86) and (88). As stated above, how empty pronominals are analyzed is a rather controversial issue in Japanese syntax, and it is beyond the scope of this chapter to settle this problem. Thus, the analysis presented here must be taken as a case study that attempts to capture the phenomena that involve both pronominals and honorifics (benefactive predicates) within the framework of Hasegawa (1984).

47 I owe to Jacquline Guéron (p.c.) the idea that the occurrence of honorifics may be due to some kind of politeness operator over a sentence.

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33 Icelandic Logophoric Anaphora

ERIC REULAND

1 Introduction
2 Subjunctives
3 Infinitives
4 Summary of the facts
5 The interpretation of *sig*: binding vs. coreference
6 Conclusion: issues for further research

1 Introduction

As outlined in Thráinsson (1976a),[1] *sig* in Icelandic may take a long-distance antecedent, when the clause that contains *sig* is infinitive or subjunctive (i.e., the antecedent may be beyond the nearest c-commanding subject), in violation of Condition A of the Binding Theory. However, if *sig* is contained in an indicative clause, it can only refer to the local antecedent. This is exemplified in (1):[2]

(1) a. Jón_j skipaði Pétri_i [að PRO_i $\text{raka}_{\text{infinitive}}$ $\text{sig}_{i,\,j,*k}$ á hverjum degi].
John ordered Peter to shave SIG every day
b. Jón_j segir [að Pétur_i $\text{raki}_{\text{subjunctive}}$ $\text{sig}_{i,\,j,*k}$ á hverjum degi].
John says that Peter shaves SIG every day
c. Jón_j veit [að Pétur_i $\text{rakar}_{\text{indicative}}$ $\text{sig}_{i,*j,*k}$ á hverjum degi].
John knows that Peter shaves SIG every day

The proposals in the literature to account for the long-distance use of *sig* in sentences like (1a) and (1b) can be divided into two groups. One group assumes a unified Binding analysis of long-distance *sig* in subjunctives and infinitives. One of these analyses is Anderson's (1986) 'Tense-Agreement' account of Icelandic anaphora. Anderson postulates an 'anaphoric domain' in which *sig* has to be bound by a 'superordinate subject'.[3] Infinitive complements always constitute an anaphoric domain whereas in subjunctives an anaphoric domain is established

when a rule of 'Tense-Agreement', which copies the tense of the matrix clause onto the subjunctive complement, has applied. It follows that *sig* can take a long-distance antecedent out of infinitives and subjunctives, given that an anaphoric domain has been established in subjunctives. Thus, the same account, stated in terms of an anaphoric domain, is given for long-distance *sig* in infinitives and subjunctives.[4] Also, both the Parameterized Binding Theory, developed in Wexler and Manzini (1987),[5] and the head movement analysis of anaphors, proposed in Pica (1985, 1987),[6] treat long-distance *sig* in subjunctives and infinitives in a parallel fashion. Within the Wexler and Manzini (1987) Parameterized Binding Theory, the governing category for *sig* is determined by [+indicative mood], and thus the antecedent possibilities for *sig* should be the same out of infinitives and subjunctives. Similarly, Pica (1987) proposes that *sig* undergoes head movement out of infinitives and subjunctives at the level of Logical Form, again predicting parallel antecedent possibilities on the two conditions.

The other approach to long-distance anaphora in Icelandic maintains that the long-distance use of *sig* out of subjunctives is ruled by discourse factors rather than syntactic principles. Thráinsson (1976a, 1990, 1991), Maling (1984), Sells (1987), Sigurðsson (1990), and Sigurjónsdóttir (1993) observe that the antecedent possibilities of long-distance *sig* in subjunctives are not constrained by structural conditions such as c-command but rather by discourse factors such as perspective or point of view. Also, as pointed out by Thráinsson (1976a, 1990), the presence of a subjunctive complement is not enough to license long-distance use of *sig*. Thus, only a certain type of subjunctives allow *sig* to take a long-distance antecedent, in particular, subjunctives which imply "a report from the higher subject's 'point of view.'" (Thráinsson 1976a: 229). Subjunctives which state a fact about the matrix subject and do not convey the higher subject's perspective or point of view, on the other hand, do not allow *sig* to be co-indexed with the matrix subject. Thus, the long-distance use of *sig* is not uniquely determined by the presence of a subjunctive complement. Rather, it seems as if discourse information can only be accessed if there is a subjunctive. If it can, it still has to be of the 'right kind'.

Hagège (1974) and Clements (1975) subsume the use of long-distance *sig* in subjunctives under logophoricity (see chapter 38). This idea was further pursued in Maling (1984). A semantic characteristic of logophoric pronouns is that they are used in 'reportive contexts' to refer back to an individual (other than the speaker-narrator) whose speech, thought, feeling, or point of view is reported on in the sentence (from Maling 1984: 211, 231). As discussed most extensively by Sigurðsson (1990), this more or less sums up the semantic properties of *sig* when it takes a long-distance antecedent out of subjunctives.

These two approaches to long-distance anaphora in Icelandic make different predictions regarding the antecedent possibilities of *sig*. According to the first approach, long-distance *sig* should be subject to the same constraints in subjunctive and infinitive clauses; i.e., structural conditions such as c-command and discourse factors should play the same role in both domains. The second approach predicts that long-distance *sig* in subjunctives and infinitives is governed

by different factors. Whereas discourse factors should be relevant for the logophor *sig* in subjunctives, such factors should not play a role in the infinitive case, where the interpretation of *sig* should only be constrained by structural principles.

Such a difference between infinitival and subjunctive domains does not by itself exclude the possibility that strictly grammatical factors play a role. For instance, it could be that some grammatical factor associated with subjunctives, but not with infinitives, entails that logophoric interpretation is in principle admissible, whereas discourse factors determine whether the ensuing interpretation is well-formed. This possibility will be discussed later. Until then the two approaches will be discussed at a more general level.

In the literature, the focus of research has been the subjunctive domain and how it differs from the indicative. Much less attention has been paid to the infinitive case, and until now the different tests for discourse vs. syntactic principles have not been applied systematically to the two domains. This calls for a more detailed analysis of the mechanisms governing *sig* in subjunctives and infinitives, and an attempt will be made to give the relevant data for each case.

2 Subjunctives

It is a well-known fact that long-distance *sig* in subjunctives in Icelandic can take as its antecedent a non-c-commanding DP. Thus, as first observed by Maling (1984), the DP *Jón* can serve as the antecedent for *sig* in sentences like (2), although it does not c-command the anaphor.

(2) a. $[_{DP}$ Skoðun Jóns$_i$] er [að sig$_{i,acc}$ vanti$_{subj}$ hæfileika].[7]
opinion John's is that SIG lacks talents
'John's opinion is that SIG lacks talents.' (cf. Maling 1984: 222)

b. $[_{DP}$ Álit Jóns$_i]_j$ virðist [t_j vera [að ég hati$_{subj}$ sig$_i$]].
belief John's seems be that I hate SIG
'John's belief seems to be that I hate SIG.'

c. Björn sagði Pétri frá $[_{DP}$ ósk Jóns$_i$] um [að Ari sýndi$_{subj}$ sér$_i$
Björn told Peter about wish John's about that Ari showed SIG
virdingu].[8]
respect
'Björn told Peter about John's wish that Ari showed SIG respect.'

Furthermore, *sig* in subjunctives can refer to a non-c-commanding matrix object, as illustrated in (3):

(3) ?Jón$_i$ er masókisti. Þad gledur Jón$_i$ [að ég muni$_{(subj.)}$ lemja sig$_i$ í hausinn med spýtu á morgun].
'John is a masochist. It pleases John that I will hit SIG in the head with a stick tomorrow.' (cf. Sigurjónsdóttir 1993)

These sentences show that the antecedent possibilities of *sig* in the long-distance subjunctive case are not constrained by a c-command requirement. (There may some ill-understood variation among speakers. Sigurðsson 1990 presents another case showing the same point.) By comparing these sentences to the ones in (4), we see that the antecedent–anaphor relations are discourse-dependent. The antecedent of *sig* must be the person (distinct from the speaker-narrator) whose perspective or point of view is reported in the sentence:

(4) a. *[$_{DP}$ Skoðun Jóns$_i$] fær mig til að halda [að sig$_{i,\ acc}$ vanti$_{subj}$ hæfileika].
opinion John's leads me to to believe that SIG lacks talents
'John's opinion leads me to believe that SIG lacks talents.'
(cf. Maling 1984: 222)

b. *[$_{DP}$ Vinur Jóns$_i$] telur [að ég hati$_{subj}$ sig$_i$].
friend John's believes that I hate SIG
'John's friend believes that I hate SIG.'

c. *Þetta vandamál$_i$ krafðist þess [að við hugsuðum$_{subj}$ stödugt
this problem demanded it that we thought constantly
um sig$_i$].
about SIG
'This problem demanded that we constantly thought about SIG.'
(cf. Sigurðsson 1990: 335)

In the ill-formed sentences in (4), the co-indexed DP bears the same structural relation to *sig* as in the well-formed sentences in (2). The difference between these two sets of sentences is that in (2), *Jón* is the person (distinct from the speaker) whose opinion, belief, or wish is reported in the sentences. In (4a, b), on the other hand, the sentences are not reported from *Jón*'s point of view; rather it is the first person pronoun 'me' in (4a) and the DP 'John's friend' in (4b) which carry the perspective of these sentences. This analysis is further supported by the example in (4c), which shows that an inanimate DP, which cannot possibly be a perspective holder, cannot serve as the antecedent for *sig* in subjunctives.[9]

Also, it has been noted in the literature (Maling 1984: 232; Sigurðsson 1990: 336) that passives in Icelandic do not in general allow their subject to serve as a long-distance antecedent for *sig* in the cases considered. If *sig* in embedded subjunctives is ruled by discourse factors, the derived subject of a passive should not be able to serve as an antecedent for *sig*, since a derived subject does not carry the perspective or point of view of the sentence. This is illustrated in (5):

(5) a. Jón$_i$ sagði Pétri$_j$ [að ég elskaði$_{subj}$ sig$_{i,*j}$].
'John told Peter that I loved SIG.'

b. Pétri$_j$ var sagt (af Jóni$_i$) [að ég elskaði$_{subj}$ sig$_{*i,*j}$].
'Peter was told (by John) that I loved SIG.'

In (5a) *sig* takes the perspective-holding subject *Jón* as its antecedent, but in the passive sentence in (5b), where neither *Jón* nor *Pétur* bears the perspective of

the sentence, *sig* cannot refer to the c-commanding subject or to the object of the *by* phrase.[10]

The minimal pair in (6), reported in Sells (1987: 451), is further evidence that the antecedent possibilities of *sig* in subjunctives are determined by discourse factors:

(6) a. Barnið$_i$ lét ekki í ljós [að það hefði$_{subj}$ verið hugsað vel
the child put not in light that there had been thought well
um sig$_i$].
about SIG
'The child didn't reveal that SIG had been taken good care of.'

b. *Barnið$_i$ bar þess ekki merki [að það hefði$_{subj}$ verið hugsað
the child bore it not signs that there had been thought
vel um sig$_i$].
well about SIG
'The child didn't look as if SIG had been taken good care of.'

The difference in grammaticality between (6a) and (6b) can be attributed to the fact that in the (a) sentence, the report is made from the child's point of view; i.e., it is the child, and not the speaker, who didn't reveal that he/she had been taken good care of, whereas in the (b) sentence, it is the speaker who reports that the child didn't look as if he/she had been taken good care of. Hence, *sig* in subjunctives demands an antecedent that bears the perspective or point of view of the sentence, and whether or not this DP c-commands the anaphor is irrelevant.

3 Infinitives

In contrast, *sig* in infinitives can only take a matrix subject and not a matrix object as an antecedent (cf. Thráinsson 1979, 1991; Sigurjónsdóttir 1993). This is illustrated in (7):

(7) a. Jón$_i$ skipaði mér$_j$ [að PRO$_j$ lemja$_{inf}$ sig$_i$].
John ordered me to hit SIG

b. *Eg$_j$ hótaði Jóni$_i$ [að PRO$_j$ lemja$_{inf}$ sig$_i$].
I threatened John to hit SIG

Note that the contrast between (7a) and (7b) could follow from the difference in perspective these sentences show, but it could also follow from the difference in c-command. If *sig* in infinitives must be c-commanded by its antecedent, it follows that *sig* can take the c-commanding subject in (7a) as an antecedent but not the non-c-commanding object in (7b).[11] (8), however, shows that in infinitives c-command is crucial. These sentences contain a constituent that is a possible perspective holder, but does not c-command *sig*. These sentences are ruled out:[12]

(8) a. *[$_{DP}$ Skoðun Jóns$_i$]$_j$ virðist [t$_j$ vera$_{inf}$ hættuleg fyrir sig$_i$].
opinion John's seems be dangerous for SIG
'John's opinion seems to be dangerous for SIG.'
b. *[$_{DP}$ Ósk Jóns$_i$]$_j$ er líkleg til [t$_j$ að hafa$_{inf}$ slæmar afleidingar fyrir sig$_i$].
wish John's is likely to to have bad consequences for SIG
'John's wish is likely to have bad consequences for SIG.'
c. *[$_{DP}$ Álit Jóns$_i$]$_j$ er sagt [t$_j$ hæfa$_{inf}$ sér$_i$ vel].
belief John's is said suit SIG well
'John's belief is said to suit SIG well.'

Thus, the sentences in (8) show that for *sig* in infinitival clauses, discourse factors are unable to compensate for the lack of c-command. This contrasts with the situation in subjunctives discussed earlier, where we saw the antecedent possibilities of *sig* are determined by discourse properties (cf. (2) and (3)). Moreover, if the antecedent of *sig* in infinitives is only constrained by structural conditions, one expects that the derived subject of a passive should be a possible antecedent for *sig*, since the subject c-commands *sig*, even if it is not a perspective holder. This is indeed the case, as witnessed by the examples in (9) and (10):

(9) Jón$_i$ sagði [Maríu$_j$ hafa$_{inf}$ látið [mig þvo$_{inf}$ sér$_{i,j}$]].
John said Mary have made me wash SIG
'John said Mary to have made me wash SIG.'

(10) María$_j$ var sögð (af Jóni$_i$) [t$_j$ hafa$_{inf}$ látið [mig þvo$_{(inf.)}$ sér$_{j,*i}$]].
Mary was said (by John) have made me wash SIG
'Mary was said (by John) to have made me wash SIG.'

As exemplified in (10), *sig* in an infinitive complement can take the subject of a passive sentence as an antecedent, although this subject does not carry the perspective or point of view of the sentence. This shows that only c-command determines the antecedent possibilities of *sig* in infinitives.[13]

4 Summary of the facts

There are consistent differences between the conditions on long-distance antecedents for *sig* in subjunctive and infinitive complement clauses. *Sig* in subjunctives is constrained by discourse factors; in particular, the antecedent of *sig* has to be the person (other than the speaker-narrator) whose perspective or point of view is presented in the sentence, and whether or not this antecedent c-commands *sig* is irrelevant (cf. examples (2), (3), and (4)). The antecedent possibilities of *sig* in infinitives, on the other hand, are uniquely governed by the structural condition of c-command, and discourse factors are not reflected in this domain (cf. example (8)). Thus, *sig* in subjunctives cannot refer to an inanimate DP (cf. example (4c)) or normally to the derived subject of a passive (cf. example (5b)), since these DPs

cannot serve as perspective holders. Although non-local inanimate antecedents of *sig* are considered dubious (presumably since *sig* is marked for person), subjects of passive sentences (cf. example (10)) can serve as antecedents for *sig* in infinitives, just on the basis of c-command. Moreover, *sig* in infinitives cannot take a non-c-commanding matrix object as an antecedent (cf. example (7b)), whereas *sig* in subjunctives can, given that the object bears the perspective or point of view of the sentence (cf. example (3)).

If the mechanisms governing *sig* in subjunctives and infinitives were of the same type, as proposed by Anderson (1986), Wexler and Manzini (1987), and Pica (1985, 1987), among others, these differences would be unexpected. Non-c-commanding antecedents should then be equally available in infinitives and in subjunctives, and non-perspective-holding DPs (such as inanimate and passive subjects) should be able to serve as antecedents for *sig* in subjunctives just as in the infinitive case. It appears that the Icelandic data are only consistent with analyses that differentiate between the mechanisms governing long-distance *sig* in subjunctives and infinitives.

5 The interpretation of *sig*: binding vs. coreference

Since Reinhart's work on anaphoric relations, it has been established that syntactic binding requires c-command (see Reinhart 1983a for detailed discussion of the properties of the c-command relation). One might, of course entertain the possibility that, nevertheless, syntactic binding of some sort is involved in cases such as (2), since certain types of binding, such as variable binding, appear to allow violations of c-command (as in *every boy's mother loves him*).[14]

However, as discussed in Thráinsson (1991: 60), the strict/sloppy identity ambiguity typically associated with pronouns also shows up with *sig* in the long-distance subjunctive case and is sensitive to differences in c-command. (11) shows the strict/sloppy ambiguity:

(11) Jón$_i$ telur [að prófessorinn muni fella$_{subj}$ sig$_i$ á prófinu] og Ari$_j$ telur það líka.
'John believes that the professor will fail SIG on the test and Ari believes so too.'
a. = Ari believes that the professor will fail Ari on the test.
b. = Ari believes that the professor will fail John on the test.

Where *sig* in subjunctive contexts is not c-commanded by its long-distance antecedent, the sloppy reading is much harder to obtain. This is illustrated in (12):

(12) Skoðun Jóns$_i$ er [að sig$_i$ vanti hæfileika] og það er skoðun
opinion John's is that SIG lacks talents and that is opinion
Péturs$_j$ líka.
Peter's too
'John's opinion is that SIG lacks talents and that is Peter's opinion too.'

a. ??Peter's opinion is that Peter lacks talents.
b. = Peter's opinion is that John lacks talents.

This is evidence that the relation between *Jón* and *sig* in a subjunctive context such as (12) must be one of co-reference, rather than syntactic binding.[15]

The conclusion is strengthened by the fact that *sig* may occur, and be interpreted, without any linguistic antecedent whatsoever:

(13) María var alltaf svo andstyggileg. Þegar Ólafur$_j$ kæmi segði hún sér$_{i/*j}$ áreiðanlega að fara. (Thráinsson 1991)
'Mary was always so nasty. When Olaf would come, she would certainly tell himself [the person whose thoughts are being presented – not Olaf] to leave.'

In such cases *sig* must be able to get its interpretation just as pronominals do. If in subjunctive contexts *sig* and its antecedent may be related not by binding, but by coreference, this is at variance with the canonical view of anaphors (Bouchard 1984; Reinhart and Reuland 1991), requiring the underspecified element to obtain its missing phi-features, directly or indirectly, from its antecedent in the syntax by chain formation of some sort.[16] It would still be possible to develop a theory in which *sig* acquires its phi-features from a covert source, for instance a null-operator. If one allows *sig* is to pick up its phi-features from a discourse antecedent in (13) one must be careful not to make the theory of syntactic relations vacuous. Construing a contentful analysis along these lines is a non-trivial matter.

Another, perhaps more straightforward, interpretation is that there is no intrinsic necessity for anaphors to be syntactically linked to their antecedent in order to be interpreted.

6 Conclusion: issues for further research

Consistent differences are found between the conditions on long-distance antecedents for *sig* in subjunctive and infinitive complement clauses. The interpretation of *sig* in subjunctives is constrained by discourse factors; the interpretation of *sig* in infinitives involves a structural relation with its antecedent.

Ideally, these differences should follow from a general theory about the interplay between structural conditions and discourse factors, and about the nature of logophoric interpretation. Developing such a theory is still one of the concerns of current Binding research.

One of the starting points for such a theory is what is known about the nature of logophoric interpretation. Another starting point is what is known about other languages. Napoli (1979) observes that Italian *se/si* can only have a long-distance antecedent in positions where it cannot cliticize. In Reuland (1990) it is argued that cliticization leads to the syntactic encoding of an interpretive dependency. In English, *himself* can have a logophoric interpretation in positions where establishing

a syntactic dependency by head movement of SELF to the verb would be blocked (Reinhart and Reuland 1991). What is observed in these languages appears to be governed by a regularity: free reflexives are syntactically licensed not by what is the case, but by what is blocked. Insofar as Icelandic logophoric *sig* requires a subjunctive, ideally, Icelandic also should fall under this pattern. If so, the role of the subjunctive should be that of blocking a syntactic connection between *sig* and its antecedent. This possibility is pursued in Reuland (2001). Yet this issue cannot be considered to be settled. As pointed out by Halldor Sigurðsson, there are speakers who accept logophoric reflexives in indicative environments provided the indicative can be interpreted as having perspective semantics. This is reminiscent of the conditions on long-distance anaphors in Faroese (Barnes 1986), discussed in chapter 40. A more extensive discussion would lead us beyond the scope of this chapter, though.[17]

NOTES

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1 See also Thráinsson (1979, 1990, 1991); Maling (1984, 1986); Anderson (1986); Rögnvaldsson (1986); Sells (1987); Sigurðsson (1990); Sigurjónsdóttir (1993); among others.

2 One may abstract away from the two different verb classes which have different effects on the interpretation of *sig*. With one class of verbs, like the verb *raka* 'shave' exemplified in (1), *sig* can take either a local or a long-distance antecedent in the infinitive and subjunctive domain, whereas with the other class of verbs, *sig* can only refer to the long-distance antecedent. These facts will not be discussed, since the class of verbs only affects the interpretation of *sig* in the local domain, which is not the domain that concerns us here. These lexical effects in Icelandic (first noted by Thráinsson) are described by Hyams and Sigurjónsdóttir (1990); Sigurjónsdóttir and Hyams (1992); and Sigurjónsdóttir (1993). Similar lexical effects have been discussed by Everaert (1986b) and Reinhart and Reuland (1989, 1991, 1993) for Dutch and by Hellan (1988) for Norwegian.

3 Anderson (1986: 76) gives the following definition of an anaphoric domain: "The ANAPHORIC DOMAIN of A is the minimal S or NP containing A, a governor of A, and a subject of either tensed S or NP which c-commands A."

4 Anderson's proposal accounts for the fact that in embedded infinitives in Icelandic, *sig*, but (normally) not the pronouns, can take the matrix subject as its antecedent, whereas both *sig* and the pronouns can refer to the matrix subject in subjunctives. The obligatoriness of *sig* in this domain in infinitives follows from Anderson's analysis, since an infinitive and its matrix clause always constitute an anaphoric domain. The rule of Tense-Agreement, on the other hand, optionally applies to the subjunctive clause, and hence either an anaphoric domain is established and *sig* refers to the matrix subject, or there is no anaphoric domain, in which case a pronoun is used

to refer to the long-distance antecedent. An alternative analysis for these facts is proposed in Sigurjónsdóttir (1993).

5 See also Manzini and Wexler (1987); Koster (1984); and Yang (1984).

6 See also Lebeaux (1983, 1985) and Chomsky (1986b).

7 Note that *sig* in Icelandic does not have a nominative form (see Everaert 1990a). Hence, *sig* can occur in subject position only with those verbs that select a non-nominative subject, i.e., with the so-called 'quirky' case verbs in Icelandic. The verb *vanta* 'to lack, need', which appears in example (2a), is one of these verbs and takes an accusative subject. Quirky subjects in Icelandic have been discussed by a number of authors: see, for example, Andrews (1976); Thráinsson (1979); Bernódusson (1982); Zaenen et al. (1985); and Sigurðsson (1989, 1992).

8 Note that there are two DPs in this sentence whose perspective or point of view are being reported, i.e., *Jón* and *Björn*. Hence, *sig* could also take *Björn* as its antecedent.

9 Objects are generally not the perspective-holding DP of a sentence, and hence rarely qualify as antecedents for the logophor *sig* (see Sigurðsson 1990: 334).

10 As observed by Sigurðsson (1990: n. 22), the exceptions to this generalization show that the passive as such does not block long-distance coreference of *sig*. Thus, as illustrated in (i), the derived subject of a passive (*honum* 'him' in this case) can serve as an antecedent for *sig* in subjunctives, given that it carries the perspective or point of view of the sentence. As pointed out by Sigurðsson: "made x to believe" implies "x believes":

(i) Honum$_{i\ (dat.)}$ var talin trú um [ad sig$_{i\ (acc.)}$ vantadi$_{(subj.)}$ hæfileika].
Him was made belief about that SIG lacked talents
'He was made to believe that SIG lacked talents.'
(cf. Maling 1984: n. 28)

11 I am making the standard assumption here that in (7b) *hótaði* is first merged with its theme object *Jóni*. Subsequently, the subordinate clause is merged.

12 These and other non-attributed examples are from Reuland and Sigurjónsdóttir (1997).

13 As Halldor Sigurðsson points out, under the copy theory of movement some of the infinitival cases discussed here fall under a clause-internal scenario. He also points out that to his ear (i) is only slightly less natural than (2a):

(i) Krafa Jóns$_i$ til okkar$_j$ um [að PRO$_j$ styða sig$_i$ við þessar
demand John's to us about to support SIG under these
aðstæður] er skiljanleg.
circumstances is understandable
'John's demand that we support him under these circumstances is understandable.'

If so, this indicates that perspective may play some role in non-subjunctive domains as well, under conditions that are so far ill-understood. Furthermore, in the case of long-distance binding *sig* appears also to favor an animate antecedent in infinitives. This is reflected in the fact that the sentences in (ii) are not as good as their counterparts in (9) and (10) (in contrast to what is reported in Reuland and Sigurjónsdóttir 1997):

(ii) a. ??Jón$_i$ sagði [þetta vandamál$_j$ hafa$_{inf}$ neytt okkur$_k$ til [að PRO$_k$ leysa$_{inf}$ sig$_j$]].
John said this problem have forced us to to solve SIG
'John said this problem to have forced us to solve SIG.'
b. ??Þetta vandamál$_j$ var sagt [t$_j$ hafa$_{(inf.)}$ neytt okkur$_k$ til [að PRO$_k$ leysa$_{inf}$ sig$_j$]].
this problem was said have forced us to solve SIG
'This problem was said to have forced us to solve SIG.'

The sentences in (iii) are perfect, however:

(iii) a. Jón sagði [þetta vandamál$_i$ hafa minnt á sig$_i$].
John said this problem have reminded of SIG
b. Þetta vandamál$_i$ var sagt [t$_i$ hafa minnt á sig$_i$].
this problem was said have reminded of SIG

Further discussion will be left to another occasion.

14 Note, that even in these cases appearances may be deceptive, since binding is only allowed under the reading where *every boy* also scopes over *mother*, which is compatible with an adjunction structure, such that under a definition of c-command that reflects the segment–category distinction *every boy* does c-command *him* (see Reuland 1998 for discussion).

15 Locally bound *sig* does not allow a strict reading. This is illustrated in (i):

(i) Jón$_i$ rakaði sig$_i$ og Pétur$_j$ gerði það líka.
'John shaved SIG and Peter did so too.'
=/= Peter shaved John.

Yet in the long-distance infinitive case both readings are possible:

(ii) Jón$_i$ skipaði prófessornum$_j$ [að PRO$_j$ fella$_{inf}$ sig$_i$ á prófinu] og Ari gerði það líka.
'John ordered the professor to fail SIG on the test and Ari did so too.'
a. = Ari ordered the professor to fail Ari on the test.
b. = Ari ordered the professor to fail John on the test.

This may indicate that what forces the sloppy reading in (i) is not a property of the antecedent–anaphor relation, but a property of the predicate. In (i) the copied predicate is intrinsically reflexive, whereas (ii) has no reflexive predicate (see Sigurjónsdóttir 1993) for discussion of intrinsic reflexives in Icelandic).

16 According to Reinhart and Reuland (1991) *sig* is, therefore, covertly moved to I/AgrS. In this position, it is proposed, it not only copies the phi-features from Agr, but also the index that Agr receives by agreement with the subject. Hence the subject orientation of this type of anaphor.

17 For relevant discussion see Sigurðsson (2004).

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34 Implicit Arguments

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1 Introduction

Reference to non-overt arguments has been made in the description of a wide range of syntactic phenomena. Some of them (PRO, *pro*, A/A'-traces) are relatively well understood and there exists a certain consensus regarding their analysis. There is another class of non-overt arguments, often referred to as implicit arguments, for which no such consensus prevails. Implicit arguments do not seem to form a unified class. To appreciate this, let us examine some cases which have been argued to involve implicit arguments:

(1) **Implicit arguments of passives (vs. middles and unaccusatives):**
  a. This ship was sunk [PRO to collect the insurance]. (passive)
  b. # This ship sank [PRO to collect the insurance]. (unaccusative)
  c. *This ship sinks easily [PRO to collect the insurance]. (middle)

(2) **Implicit arguments of nouns:**
   a. the negotiations [PRO to achieve a peaceful settlement]
   b. the use of drugs [PRO to fall asleep]
   c. the playing of the game [PRO to prove a point]

(3) **Null objects (cf. Rizzi 1986a):**
   a. Questo conduce (la gente) alla seguente conclusione.
      this leads the people to-the following conclusion
      'This leads (people) to the following conclusion.'
   b. Questo conduce (la gente) a [PRO concludere quanto segue].
      this leads the people to conclude what follows
      'This leads people to conclude what follows.'

(4) **Implicit arguments of adjectives (from Roeper 1987a):**
   a. It is necessary/*inevitable [PRO to go].
   b. It is wise/*probable [PRO to go].

(5) **The bearer of the obligation of a deontic modal:**
   a. The books can be sold [without PRO reading them].
      (from Chomsky 1982 via Williams 1985)
   b. *The books might have been sold [without PRO reading them].
      (from Kratzer 1991)

(6) **Implicit arguments of agentive suffixes (e.g., *-able*):**
   Goods are exportable [PRO to improve the economy].

The above list includes the implicit argument of a passive (section 2), the implicit argument of a noun (section 3), null objects (section 4), the implicit argument of an adjective (section 5), the bearer of the obligation argument of a deontic modal (section 6), and the implicit argument associated with agentive suffixes like *-able*.[1] What unifies this class? It is felt that all of these examples involve a missing nominal element. The evidence for this missing nominal element comes from the fact that (1–3) all involve an infinitival with a PRO subject. Something, it is argued, must be controlling these PROs. There is no NP argument in the relevant structures that could be doing so. The element held responsible for Control is the implicit argument.

In principle, null subjects (PRO, *pro*) could have been called implicit arguments, given that they are non-overt and indisputably arguments. Furthermore there have been analyses in the literature according to which PRO/*pro* are not syntactically expressed (for PRO see Partee and Bach 1980; Chierchia 1984b; Klein and Sag 1985, among others; for *pro* see Alexiadou and Anagnostopoulou 1998, etc.). However, by convention, PRO/*pro* are not grouped together with the cases of implicit arguments in (1–3). This is why in this chapter we do not discuss PRO/*pro*.

From its inception, the literature on implicit arguments has defined them as syntactically active elements that nevertheless do not occupy a syntactically projected position.[2] Consider, for example, the following definitions for implicit arguments that have been proposed in the literature:

(7) Implicit arguments are not the mysterious shadowy presences they are sometimes made out to be. They are really nothing more than the argument slots in the argument structure . . . A 'weak' theta-criterion is all that is needed to give implicit arguments, since these are nothing more than unlinked argument roles. (Williams 1985: 314)

(8) An implicit argument is a conceptual argument that is neither expressed syntactically nor bound to an argument that is expressed syntactically. (Jackendoff 1987: 409)

(9) An argument is implicit only if it is in a structural position to license a thematic PP but no thematic PP occurs. (Roeper 1987a: 274)

However, not all researchers have followed this understanding of implicit arguments. Some have proposed that what they call implicit arguments are realized as *pro* (cf. Epstein 1984; Rizzi 1986a; Borer 1998) and PRO (cf. Roeper 1987a). But even if it is assumed that all of the non-overt arguments in (1–3) are syntactically realized as *pro*/PRO, given that (1–3) are not the canonical environments for *pro*/PRO, it is justifiable to include them in a discussion of implicit arguments. By general assumption, then, the term 'implicit arguments' is reserved for those covert elements about whose syntactic representation we still have doubts.

In (1–6), we have a list of environments which have been claimed to involve implicit arguments. That these different environments have been argued to involve implicit arguments should not, by itself, be taken to indicate that they should receive a uniform analysis. It has been questioned whether some of the members of the list in (1–6) are truly implicit. For example, Baker et al. (1989) argue the passive suffix *-ed is* the agent of the passive, i.e., it is not implicit. Even if an argument is implicit, the question of how it is to be represented stays open. The implicit argument may be represented at a level of thematic structure, or as a null PRO/*pro* subject or object. In what follows, the cases in (1–6) and the analyses proposed for them will be discussed one by one. Throughout we will focus on the diagnostics that have been proposed for detecting the presence of an implicit argument. We will examine what exactly these diagnostics test.

2 Implicit arguments in passives and middles

2.1 Implicit arguments in passives

A classic case where an implicit argument has been argued to be present is that of a passive. Passives have been contrasted with unaccusatives, which in contrast to passives have been argued to not involve an implicit agent:

(10) a. The ship was sunk.
b. The ship sank. (Roeper 1987a)

Intuitively, it seems clear that the passive in (10a) has implied agency as part of its meaning while the unaccusative in (10b) does not. In case the ship sprang a leak on its own and sank, (10b) would be true but not (10a). For (10a) to be true, there must have been someone who was responsible for sinking the ship.[3]

If by implicit argument we mean a non-overt element that is nevertheless part of the interpretation of a predicate, then the facts about the interpretation of (10a) are enough to show that passives involve an implicit agent and unaccusatives do not. However, the literature on implicit arguments aims to go beyond just showing that a particular non-overt argument is part of the semantic representation. It attempts to show that implicit arguments take part in syntactic processes and that therefore implicit arguments are syntactically real. Once it is granted that implicit arguments are syntactically real, additional questions arise that pertain to the representation of these arguments.

The primary tests used to demonstrate the syntactic reality of the implicit agent of a passive are licensing of *by* phrases, the ability to control, and compatibility with adverbs like *deliberately*. The argument from *by*-phrase licensing goes as follows. Passives allow for an overt *by* phrase while unaccusative verbs do not (cf. 11). The implicit agent in the passive is taken to be responsible for this licensing:

(11) a. The ship was sunk by Bill.
b. *The ship sank by Bill. (Roeper 1987a)

Next we turn to the argument from Control. The implicit agent of a passive can control the PRO subject of a rationale clause. Unaccusatives do not have an implicit agent argument and so Control is not possible:

(12) a. *The boat sank to collect the insurance.
b. The boat was sunk to collect the insurance. (Manzini 1983a)

If we take it as given that only syntactically active elements can control PRO then it follows that the implicit agent of the passive must be syntactically real.[4]

A related point is made by the fact that adverbs like *deliberately* can appear in a passive sentence and be associated not with the syntactic subject but with the implicit agent. In contrast, in (13b) there is no implicit argument and *deliberately* can only be associated with the lone argument of *sink*, namely *the boat*. Consequently (13b) is perceived as pragmatically deviant:

(13) a. The boat was sunk deliberately.
b. # The boat sank deliberately.

If we assume that adverbs like *deliberately* can only be associated with syntactically real elements, it follows that the implicit agent of the passive is syntactically real.

The argument for the syntactic reality of implicit argument therefore rests upon our acceptance of the assumptions behind the argument from *by*-phrase licensing, the ability to control, and compatibility with adverbs like *deliberately*. We already know that passives have implicit agents as part of their semantics. It is not clear that postulating that this implicit agent is represented syntactically is necessary for explaining the possibility of *by* phrases. It may be the case that syntactically unexpressed agentivity is all that is needed for licensing a *by* phrase.

Next we turn to the argument from the acceptability of *deliberately*. Again it is not clear that anything more than the presence of an implicit agent in the semantic representation is needed. We are left with the argument from Control. The implicit argument is able to control the PRO subject of a rationale clause. So the question is whether the ability to control requires the controller to be syntactically realized.

Williams (1985) provides several arguments in support of the claim that controllers need not be syntactically realized. The first argument is based on the observation that the implicit agent of a noun like *attempt* controls the PRO subject of the complement clause in both (14a) and (14b):

(14) a. Attempts [PRO to leave]
b. Yesterday's attempts [PRO to leave]

If it is assumed that the implicit agent of *attempt* in (14a) is a PRO that occupies the position occupied by *yesterday* in (14b), we expect the PRO to be absent in (14b). However, the implicit agent of *attempt* controls the PRO subject of the infinitival clause in both (14a) and (14b). Williams (1985) takes this to suggest that the implicit agent in (14b) is able to control the subject of the infinitival clause without being syntactically realized. Williams's argument depends upon the assumption that the PRO that realizes the implicit agent would appear in the position occupied by *yesterday*. However, this is by no means a necessary assumption, given the acceptability of (15):

(15) yesterday's teachers' strike (Tom Roeper, p.c.)

If the implicit agent can be generated in a position lower than *yesterday*, both (14a) and (14b) can have implicit agents and the parallelism between (14a) and (14b) with respect to Control follows. In other words, the argument against realizing the implicit agent as a PRO subject vanishes.

Williams (1985) argues that Control of rationale clauses does not require the controller to be syntactically realized. In fact, the examples that he provides demonstrate that even the presence of an implicit argument is not necessary:

(16) Grass is green [to promote photosynthesis].
(from Williams 1974 via Williams 1985)

In (16), *grass* is not a sensible controller. *Green* does not have any implicit argument either. Instead what promotes photosynthesis is the circumstance of grass being green. Williams (1985) also points out that in the right context the ungrammatical *the boat sank in order to impress the king* becomes acceptable. Consider a situation where a playwright is rationalizing the design of his play and utters:

(17) The boat sank in order to impress the queen and move her to murder her husband by the end of Act iii. (from Williams 1985)

Since Williams's examples show that the PRO subjects of rationale clauses can be controlled even in the absence of any implicit argument, the proposal that all controllers must be syntactically realized is weakened.

2.2 Implicit arguments in middles

The contrast between passives and unaccusatives carries over to middles. Middles are incompatible with overt *by* phrases:

(18) a. Bureaucrats were bribed by managers.
b. *Bureaucrats bribe easily by managers.
(Keyser and Roeper 1984: 406, ex. 75)

Either they lack an implicit agent argument, or the implicit argument of a middle is unable to control the understood subject of a rationale clause or a subject-oriented adverb:

(19) a. This bureaucrat was bribed [PRO to avoid the draft].
b. *This bureaucrat bribes easily [PRO to avoid the draft].
(Baker et al. 1989)

(20) a. This bureaucrat was bribed deliberately.
b. *This bureaucrat bribes deliberately. (Baker et al. 1989)

Despite these tests, the English middle construction has been assumed to involve an implicit agent. For example, Fiengo (1980), Condoravdi (1989), Fagan (1992), Zribi-Hertz (1993), and Ackema and Schoorlemmer (1995) argue that the implicit agent of the middle is present at a (lexical)-semantic level, while Stroik (1992a) and Hoekstra and Roberts (1993b) propose that the agent of the middle is syntactically realized. Of course any theory which proposes that an agent is present in middles needs to provide an account of why middles fail the tests for agentivity shown in (18–20), all of which the implicit agent of the passive passes.

There are several reasons that have been advanced for assuming that middles involve an implicit agent. The first is the contrast in meaning that is perceived between (21a, b):

(21) a. The clothes hang easily. (from Keyser and Roeper 1984)
b. The clothes are hanging on the line. (from Marantz 1981)

Keyser and Roeper (1984) observe that (21a) implies that it is easy for someone to hang clothes, whereas there is absolutely no implied agent in the unaccusative (21b).[5]

The second reason for postulating an implicit agent in the middle is that even though middles do not license *by* phrases, they can contain a *for*-PP whose argument seems to be identical to the agent of the middle verb:

(22) a. French books read easily for educated people.
b. Latin texts do not translate easily for Bill.

The licensing of agentive *for*-PPs has been used to argue for the syntactic presence of an agent in the middle. For Stroik (1992a), the *for*-phrase is an overt realization of the agent argument that for him is always syntactically present in the middle as PRO.

The third argument for agentivity comes from the incompatibility of middles with a phrase like *all by itself*:

(23) a. *This kind of bread cuts easily all by itself.
b. *This wood carves easily all by itself.
c. *This ice crushes easily all by itself.

The ungrammaticality of (23a–c) has been used by Keyser and Roeper (1984) and Fagan (1992) as an argument in favor of the middle's agentivity.

However, Rapoport (1999a) challenges the conclusion that the middle necessarily involves agentivity, noting that the above tests for agentivity do not hold for all middles. As Ackema and Schoorlemmer (1995) noted, not all middles allow for *for*-phrases:

(24) a. These books don't sell (*for the average shopkeeper).[6]
b. (On shoe chest:) Stows on floor or shelf (*for tidy people).

Rapoport (1999a) further points out that many middles are in fact compatible with *all by itself*:

(25) a. This kind of glass breaks easily all by itself.
b. Milk chocolate melts smoothly all by itself.
c. These heavy windows open easily all by themselves.
d. These comic books sell (easily) all by themselves.

Rapoport (1999a) therefore concludes that middles do not have an implicit agent. The fact that the implicit agent of the middle is syntactically inactive (cf. 18–20) receives a very natural explanation under Rapoport's (1999a) proposal – there

simply isn't an implicit agent in the English middle. The English middle is not inherently agentive.

The licensing of *for*-phrases in (22) and the unacceptability of *all by itself* with certain middles in (23) are related by Rapoport (1999a) to the Instrumental/Manner (I/M) component in the meanings of certain verbs. Inherent in the meaning of *cut*, *carve*, and *crush*, the verbs in (23), is the means or manner involved in the action described by the verb (the I/M component). Rapoport argues that the I/M component brings along with it an implication of a proto-agent and this implication is responsible for the agentivity effects discussed above. Not all verbs have an I/M component as part of their meaning, and with such verbs there is no agentivity effect (cf. 24, 25).

To sum up, we do not need to postulate an implicit agent in middles across the board. Some middles don't have any agentivity effects, and the agentivity effects in the one that do can be accounted for without postulating an implicit argument.

Rapoport's conclusions, however, can be challenged on the following grounds. The predicates which demonstrate the absence of agentivity (cf. 18–20) also have unaccusative counterparts. This makes it possible to analyze (18–20) not as middles but as generic unaccusatives.[7]

3 Implicit arguments of nouns

One argument for the syntactic visibility of implicit arguments of nouns comes from the fact that they participate in Binding Theory.

(26) a. **Condition A:**
Respect for oneself is important. (from Williams 1985)
b. **Condition B:**
Admiration of him (*admirer* ≠ *admiree*) (from Williams 1985)
c. **Condition C:**
The realization that John was unpopular (*realizer* ≠ *John*)
(from Ross 1969c via Williams 1987b)

A natural way to account for the syntactic visibility of implicit arguments involves projecting them syntactically as PRO subjects. If we do that, the Binding effects in (26) follow directly. In addition to participating in Binding, implicit arguments are also able to control and be controlled/bound themselves (cf. 27a, b respectively):

(27) a. The attempt [PRO to leave] (*attempter* controls the PRO)
b. John made an attempt [PRO to leave]. (*John* is the attempter.)

Williams (1985, 1987b) notes that the Binding and Control judgments stay unchanged even if the noun in question has an overt NP in its specifier position:

(28) a. Yesterday's attempt [PRO to leave] (*attempter = leaver*)
b. Yesterday's decision [that John was the best candidate] (*decider ≠ John*)

Williams assumes that a PRO agent would occupy the position occupied by *yesterday's*. Thus a PRO should be blocked in (28a, b). Since the Binding and Control judgments stay unchanged, Williams argues that Binding and Control do not require a syntactically projected NP. He proposes that non-syntactically projected implicit arguments are also visible to Binding and Control. Non-syntactically projected implicit arguments are made visible to syntax by statements like the following:

(29) For *attempt*, and similar nouns, the Agent controls (or is associated with) the subject of the embedded clause. (Williams 1985: 302, ex. 14)

(30) An implicit argument c-commands X if the verb (or noun) of which it is an implicit argument c-commands X.
If an implicit argument is coindexed with X and c-commands X, then it binds X. (Williams 1985: 303, ex. 17)

The result of these statements is that the Binding and Control effects discussed above follow naturally.

With his system, Williams (1985) is able to derive the fact that Condition C effects surface with respect to all the implicit arguments of triadic predicates:

(31) a. *The promise that John would win was made to him yesterday.
b. *The promise that John would win was made by him yesterday.

Since Williams (1985) is arguing against a PRO subject of NP, he takes the facts in (31) to correctly show that just syntactically representing the agent is inadequate. This is so because in (31a) the Condition C effect is triggered by the goal-implicit argument and not by the agent-implicit argument. Then Williams goes on to conclude that the implicit agent should not be syntactically represented at all. This latter move is not forced by the facts. The facts are equally compatible with the syntactic projection of the implicit arguments of *promise* as null pronouns. Both the subject and direct object of *promise* would c-command into the complement of *promise* and yield the observed Condition C effects.

Moreover, Williams's conclusion that implicit arguments are not syntactically projected is based on the assumption that an agent projected as PRO would necessarily be occupying the location occupied by *yesterday's*, which is presumably [Spec, DP]. If we assume, as is plausible, that the agent projected as PRO could occupy the [Spec, NP] position (assuming that PRO needs no case), then the facts in (28) do not come as a surprise and Williams's argument against the syntactic projection of implicit arguments is defused. To be sure, the facts are compatible with Williams's proposal. They are also, however, compatible with the syntactic projection of implicit arguments as null pronouns.

3.1 Optionality of implicit arguments of nouns

The treatment of anaphors within NPs in Chomsky (1986b) assumes that NPs have implicit agents that are projected as subjects which are visible for the Binding Theory:

(32) a. They$_i$ told [$_{NP}$ stories about each other$_i$].
b. *They$_i$ told [$_{NP}$ my stories about each other$_i$].
c. *They$_i$ told [$_{NP}$ stories about them$_i$].
d. They$_i$ told [$_{NP}$ my stories about them$_i$]. (Chomsky 1986b: 166)

(33) a. They$_i$ heard [$_{NP}$ stories about each other$_i$].
b. *They$_i$ heard [$_{NP}$ my stories about each other$_i$].
c. They$_i$ heard [$_{NP}$ stories about them$_i$].
d. They$_i$ heard [$_{NP}$ my stories about them$_i$]. (Chomsky 1986b: 166)

Chomsky (1986b) argues that the object of *tell* and *hear* in (32, 33a, c) has an implicit subject on a parallel with the overt subject in (32, 33b, d). Since there is an overt subject in the object of *tell* and *hear* in (32, 33b, d), the object constitutes the Binding domain of the anaphor/pronoun. (32, 33b) are ruled out because the anaphors are not bound in their Binding domain and (32, 33b) are acceptable because the pronouns are free in their Binding domain.

(32, 33a) by themselves are compatible with there being an implicit subject in the *story* NP bound by the matrix subject and the anaphor bound by this implicit subject, or with there being no implicit subject and the Binding domain of the anaphor being large enough to include the matrix subject, which is its binder. The relevant evidence in favor of postulating an implicit subject comes from the contrast between (32c) and (33c).

The verbs *tell* and *hear* differ in how they combine semantically with their object *story*. Consider the contrast in interpretation between (34a) and (34b):

(34) a. John told [stories about Mary].
b. John heard [stories about Mary].

In (34a), the subject of *tell* has to be interpreted as the 'agent'/narrator of the story. It is claimed that there is no such requirement in (34b). The process by which the implicit arguments of a noun receive their interpretation will be discussed in section 3.2. For now, we can represent the difference between *tell* and *hear* by stipulating that the 'agent'/narrator argument of the complement of *tell* must be the same as the agent of *tell*. *Hear* does not bring in such a requirement. This is shown in (35):

(35) a. John$_i$ told [IMP$_{i/*j}$ stories about Mary].
b. John$_i$ heard [IMP$_{i/j}$ stories about Mary].

The contrast between (32c) and (33c), repeated below in (36), now follows.

(36) a. They$_i$ told [IMP$_{*i/*j}$ stories about them$_i$]. (IMP$_i$ is ruled out by Condition B; IMP$_j$ is ruled out by *tell*.)
b. They$_i$ heard [IMP$_{j/*i}$ stories about them$_i$]. (IMP$_i$ is ruled out by Condition B; IMP$_j$ is allowed by *hear*.)

The presence of the implicit argument as the subject in (36a, b) makes the object NP become the Binding domain for *them*. Since in (36a), the implicit argument is obligatorily coreferent with the matrix subject, we have a violation of Condition B in (36a). Since *hear* in (36b) does not require obligatory coreference, (36b) has a representation where the 'agent'/narrator of the story is different from the subject of *hear*. This representation does not trigger a violation of Condition B. Condition B is still relevant for (36b) – it blocks the interpretation of (36b) where the hearers are the narrators.[8]

Let us now re-examine the analysis of anaphors inside the NP complements of anaphors in (32, 33a), repeated here as (37a, b):

(37) a. They$_i$ told [IMP$_{i/*j}$ stories about each other$_i$].
b. They$_i$ heard [IMP$_{i/*j}$ stories about each other$_i$].

The analysis makes the right predictions concerning the grammaticality of (37a, b). However, it seems to make the wrong prediction concerning the interpretation of (37b). As Williams (1985) notes, the representation in (37b) suggests that *each other* can be bound by *they* only if *they* also bound the 'agent'/narrator argument of *story*. This seems wrong, since it seems possible for *they* to bind *each other* even when someone other than *they* are narrating the stories.

For this reason, Chomsky (1986b) concludes that the presence of implicit arguments as subjects is optional. The optionality of implicit arguments needs to be further constrained. The presence of implicit arguments as subjects cannot be optional everywhere. If we assume full optionality, we lose our explanations for cases like the following:

(38) a. *They$_i$ told [IMP$_i$ stories about them$_i$]. (Condition B)
b. *The IMP$_i$ realization [that John$_i$ was sick] upset him$_i$. (Condition C)

A possible line of attack is to assume that implicit arguments are obligatorily present in nominal complements when the semantics of the embedding verb requires them (as in (38a), discussed in section 3.2) and in nominalizations (as in 38b). In other circumstances, as is the case with *hear*, we could assume either optionality or even complete absence of the implicit agent of the noun.

3.2 Control of implicit arguments of nouns

We have seen evidence that implicit arguments participate in Binding and Control. This evidence shows that the implicit agent of a passive and of certain noun

phrases can control PRO subjects. We also saw that the implicit arguments of nouns were subject to the Binding Theory. Next we see that not only can implicit arguments of nouns bind/control, they can also be bound/controlled. We also see that the implicit agent of a passive differs from the implicit arguments of nouns in that it cannot be bound/controlled.

Williams (1985) discusses a set of facts which show that the Binding/Control of implicit arguments differs considerably from the Control of PRO subjects of infinitival clauses. We know that depending upon the verb, we can have either subject or object control:

(39) a. Gillian persuaded Stuart$_i$ [PRO$_i$ to leave]. (*Persuade* is an object control verb.)
b. Gillian$_i$ promised Stuart [PRO$_i$ to leave]. (*Promise* is a subject control verb.)

The choice depending upon the verb is which argument of the verb will control the PRO subject of the infinitival clause. There is no choice regarding what is controlled, which is always the PRO subject. Control of implicit arguments of nouns displays a markedly different pattern:

(40) a. John made an attempt to leave. (*John* is agent of *attempt*.)
b. John took a picture of Mary. (*John* is maker of *picture*.)
c. John performed an operation on Harry. (*John* is agent of *operation*.)
d. Mary underwent an operation. (*Mary* is theme and not agent of *operation*.)

While in (40a–c), the matrix subject controls/binds the implicit agent of *attempt/picture/operation* respectively, in (40d), the matrix subject controls/binds the implicit theme of *operation*. The difference clearly lies in the meaning of *undergo* vs. *make/take/perform*.[9]

As discussed above, this kind of choice concerning what is controlled is not found in cases where it is the subject of an infinitival clause that is being controlled.

Control of implicit arguments of nouns also allows for so-called double Control, as in (41):

(41) Mary gave John a kick. (*Mary* is the agent and *John* the patient of *kick*.)

The existence of a choice concerning what is controlled (cf. 40) and the possibility of double Control (cf. 41) has been argued by Williams (1985) to show that implicit arguments should not be realized as PRO subjects. We think that these facts are actually agnostic about the issue of syntactic projection.

To see this, let us examine how Williams derives the contrast between (40c) and (40d):

(42) a. John performed an operation on Harry. (Agent of *perform* must be the same as the agent of its theme.)
b. Mary underwent an operation. (Agent of *undergo* must be the same as the patient of its theme.)

Williams proposes that verbs can specify associations between arguments and their argument structures. Thus *perform* takes two arguments, an agent and an event, and requires that its agent be the agent of the event which is its complement. *Undergo* also takes an agent and an event, but it identifies its agent with the patient of its complement event. Clearly every theory needs to specify such associations.

Now let us also assume that all the implicit arguments of *operation* are syntactically projected as null pronouns. For *operation* to successfully appear with *perform* and *undergo*, its agent and theme arguments will have to be identified with the agent of *perform* and *undergo* respectively. We do not take Williams's arguments as having demonstrated that the implicit arguments are not syntactically projected. The question of whether these implicit arguments are syntactically projected stays unresolved. Note also that the possibility of double Control, as in *Mary gave John a kick*, is not problematic once we recognize that the process by which the implicit arguments of *kick* are associated with the arguments of *give* is not a syntactic process along the lines of PRO-Control.

3.3 Differences between implicit arguments of nouns and passives

3.3.1 Controlling implicit arguments of passives

Unlike the implicit arguments of nouns, which can be bound/controlled by c-commanding NPs, the implicit agent of a passive seems to be resistant to being bound by a c-commanding NP. Baker et al. (1989) note that the implicit argument of a passive cannot be interpreted as coreferential with the syntactic subject of the passive. Thus (43) is not equivalent to (44) under any interpretation:

(43) a. They were killed.
b. They were admired.

(44) a. They committed suicide.
b. They admired themselves.

This point is further demonstrated by (45), where the *by* phrase is bound by the syntactic subject of the passive. Since the *by* phrase is co-indexed with the implicit argument of the passive, this forces the implicit argument of the passive to be co-indexed with the syntactic subject of the passive. This in turn is responsible for the ungrammaticality of (45):

(45) * They$_i$ were killed by themselves$_i$.

For Baker et al. (1989), the implicit agent of the passive is overtly realized by *-ed*. Therefore if the syntactic subject of the passive were to be co-indexed with the agent, we would have the following configuration:

(46) They$_i$ . . . -ed$_i$ . . . t$_i$ (where *they* c-commands *-ed* and *-ed* c-commands the t$_i$)

Baker et al. (1989) argue that the configuration in (46) is to be ruled out. It seems, though, that the facts are more general. The implicit agent of the passive cannot be taken as referring to any c-commanding NP. This point is made by (47), where we find a disjoint reference effect even though there is no crossover:

(47) John wants Mary to be seen. (Williams 1987b)

As Williams (1987b) notes, the implicit agent of the passive is disjoint from *John*, or at the very least is vague in the same way as *John wants Mary to be seen by somebody* is. Neither sentence can mean *John wants to see Mary*. Williams's (1987b) suggestion is that the implicit agent of the passive is existentially quantified over. Consequently it cannot be bound by a c-commanding NP and acts like an R-expression for the purposes of Binding Theory.

Williams (1987b) argues that passive implicit arguments differ from other implicit arguments in that passive implicit arguments cannot be controlled/bound. This intuition is developed and made explicit in independent work by Lasersohn (1997). Lasersohn (1997) notes that implicit arguments come in at least two distinct types, existentially quantified (as in 48a) and deictic (as in 48b, c):

(48) a. John was killed. ($\approx \exists x$ kill(x,J))
b. John is stronger. ($\neq \exists x$ stronger-than(J,x))
c. John arrived. ($\neq \exists l$ arrive(J,l))

Lasersohn (1997) notes that existential quantification seems to represent the semantics of the passive quite well. However, existential quantification seems to give very weak truth-conditions for (48b). For (48b) to be true, John must be stronger than some contextually salient person. It is not enough that he be stronger than someone. Similarly, Lasersohn notes that (48c) doesn't just mean that John arrived *somewhere*. It means that he arrived at the pragmatically relevant location.[10]

3.3.2 *Differences in Control by implicit arguments of nouns and passives*

That an implicit agent of a noun is able to control the PRO subject of the infinitival complement of the noun is uncontroversial:

(49) the attempt [PRO to leave] (*attempter* = *leaver*)

We have also seen instances where implicit arguments seem to control the PRO subjects of infinitival adjuncts:

(50) a. The destruction of the city [PRO to impress the general] (*destroyer* = *impresser*)
b. The game was played nude.

There is disagreement in the literature concerning whether (50) involves Control of the PRO subject by the implicit argument or whether it involves some other mechanism. Roeper (1987a) argues for the former position. In support of his position, Roeper (1987a) notes the contrast in (51):

(51) a. *The boat sank to impress the king.
b. The boat was sunk to impress the king.

The unacceptability of (51a) and the acceptability of (51b) are correlated by Roeper (1987a) with the availability of a potential controller in (51b) in the form of the implicit agent of the passive. No such implicit agent is available in (51a) and hence the former is unacceptable.

Roeper (1987a) offers another set of examples that argue more specifically for a particular syntactic representation of the implicit argument:

(52) a. The destruction of the boat to collect the insurance.
b. *The boat's destruction to collect the insurance.

Roeper argues that in (52a) the implicit agent of *destruction* occupies a position from which it can control the PRO subject of the infinitival adjunct. He takes the presence of *the boat's* in (52b) as blocking the implicit agent from appearing in the position where it appears in (52a). Therefore the implicit agent is not able to control the PRO subject of the infinitival adjunct.

Roeper's account for the ungrammaticality of (52b) leaves unexplained why (53) is grammatical:

(53) Yesterday's attempt [PRO to leave]

Williams (1985) suggests that whatever blocks the implicit argument from being syntactically projected in (52b) should also block it from being syntactically projected in (53). Yet Control by the implicit argument is possible in (53).

For this reason among others, Williams (1985) argues against a uniform analysis of the examples in (54):

(54) a. The attempt [PRO to leave] (Control into a complement)
b. The destruction of the city [PRO to impress the general] (Control into an adjunct)

Williams (1985) argues that only the PRO in (54a) is controlled by the implicit argument of *attempt*. The PRO in the adjunct clause in (54b) is controlled by other mechanisms. The theoretical motivation for doing so is that for Williams, implicit

arguments are invisible beyond the first projection of their predicate. Thus while the implicit agent of *attempt* is visible to the infinitival complement, the implicit agent of *destruction* is not visible to the infinitival adjunct.

The empirical motivation comes from examples like (55), which show that the implicit agent of a passive is not always able to control the PRO subjects of infinitival adjuncts:

(55) a. *The boat was sunk [PRO to become a hero]. (Lasnik, p.c., via Williams 1985)
b. *Mary was arrested [PRO to indict Bill]. (Williams 1974)
c. *The game was played [PRO mad at Bill]. (Williams 1985)

If the two kinds of Control seen in (54) are handled by the same mechanism, then Williams argues that it is not clear why the implicit argument is unable to control PRO in (55). Therefore Williams provides an alternative account according to which the controller of the PRO in (56) is not the implicit agent of the passive:

(56) a. The game was played [PRO nude].
b. The ship was sunk [PRO to impress the general].
c. The boat was destroyed [PRO to collect the insurance].

He proposes that the controller of the PRO in (56a) is the subject *the game* and not the implicit agent of the passive. The predicate *nude* is predicated of *the game*. Williams suggests that this is plausible since "one may call a game nude if it is played by nude people" (p. 309). If we modify the adjunct predicate suitably to make such a predication unreasonable, the sentence becomes unacceptable. This is why (55c) is ungrammatical. While nudity can be derivatively predicated of a game, the property of being mad at Bill cannot be.[11]

This leaves us with (56b, c). In (56b), the inanimate subject *the ship* cannot be the agent of the infinitival adjunct. Here Williams suggests that the entire clause controls the subject of the infinitival adjunct. He refers to this kind of Control as S-Control. The entire clause *the ship was sunk* controls the PRO in the infinitival adjunct – it is the fact that the ship is sunk which is to impress the general. Similarly, Williams relates the acceptability of (56c) to the (marginal) acceptability of *That will collect you some insurance*. The ungrammaticality of (55a, b) is related by Williams to the incoherence of the boat's sinking becoming a hero and Mary's arrest indicting Bill.

On a parallel with S-Control, Williams suggests that cases of apparent Control of the subject of an infinitival adjunct by the implicit agent of a noun be analyzed as involving N'-Control:

(57) [the $[_{N'}$ destruction of the boat]$_i$ [PRO$_i$ to impress the general]]

The ungrammaticality of **the boat's destruction to impress the general* is analyzed by Williams in terms of the attachment site of the infinitival adjunct. The infinitival

adjunct, Williams assumes, must be attached in an NP-internal position. As a result, *the boat's destruction* cannot serve as a controller because under the relevant structure, it does not even form a constituent:

(58) *[[the boat's] [$_{N'}$ [$_{N'}$ destruction] [PRO to impress the general]]]

Williams does not indicate why *destruction* by itself cannot control the PRO.

The initial examples in (51) that were taken to demonstrate the role of implicit arguments in controlling the PRO subjects of infinitival adjuncts are argued by Williams to demonstrate not the role of implicit arguments but the presence of a purposeful agent. He offers (16), repeated here as (59a), where there is no obvious implicit argument, and (17), repeated here as (59b), which shows that the unacceptable (51b) becomes acceptable given the right context:

(59) a. Grass is green [PRO to promote photosynthesis].
b. The boat sank in order to impress the queen and move her to murder her husband by the end of Act III.

As for why the ergative *sink* requires an elaborate context to participate in (apparent) Control, Williams suggests that this is so because the use of the ergative *sink* strongly implies that there is no theta-theoretic agent for *sink*. Hence to make (51b) acceptable we need a context where the absence of a theta-theoretic agent does not contradict the existence of a purposeful agent. These requirements are satisfied in (59b), but not in (51a).

Williams (1985) is able to provide an explanation for a puzzling contrast noted in Chomsky (1982: 46):

(60) a. *The books were sold without PRO reading them.
b. The books can be sold without PRO reading them.

(60a) is ungrammatical because the event of book-selling cannot serve as the controller of the PRO subject of the infinitival adjunct. Why then is (60b) grammatical? Williams suggests that *can* has an implicit argument and that the *without* clause is an argument of the modal *can*. Therefore the implicit argument of *can* is able to control the PRO subject of the *without* clause. It is able to do so because the *without* clause in (60b) is the complement of *can* and not an adjunct clause as in (60a).

The above generalizations notwithstanding, it is worth noting that the constraints on Control into adjuncts by implicit (and even overt) arguments are poorly understood. A number of additional factors enter into the picture that influence whether an implicit argument is able to control into the adjunct. A nonexhaustive list of relevant factors includes:

- the role of modality (see section 6);
- the location of the theme (e.g., **the boat's destruction to collect the insurance* vs. *the destruction of the boat to collect the insurance*; see Roeper 1987a);

- the nature of the rationale clause (e.g., *the ship was sunk to collect the insurance* vs. *??the ship was sunk to become a hero* vs. **the vote was taken to be elected president*; see Roeper 1987a);
- the +/–human nature of the implicit argument and the overt subject (*The stairs were washed before entering the apartment*, where the 'washer' must be +human, and not –human like rain, and controls the adjunct clause, vs. *Mary was washed before entering the apartment*, where both the +human washer and Mary are potential controllers; see Manzini 1986a; Kawasaki 1993; Landau 2001);
- the need for a discourse topic, which can remove the requirement for a grammatically represented controller altogether:

(61) a. After collecting some money, a bank account was opened by the/ *a businessman.
b. After pitching the tents, darkness fell quickly.
(from Kawasaki 1993 via Landau 2001)

Williams's photosynthesis cases can be seen as a limiting case of the factors discussed above. Because of these confounds, the import of the data concerning Control by implicit arguments into infinitival adjuncts remains unclear.

4 Null objects

In the introduction, we discussed the question of what non-overt arguments would be covered in our discussion of implicit arguments. In particular, we decided not to cover the silent subjects of non-finite clauses. This was because we assume that the subjects of non-finite clauses are actually syntactically projected (possibly due to the Extended Projection Principle) and realized as PRO. The question then arises of how null objects like in (62) are to be analyzed:

(62) a. This leads (people) to the following conclusion.
b. Italian:
Questo conduce (la gente) alla seguente conclusione.
this leads the people to-the following conclusion
'This leads (people) to the following conclusion.'
(from Rizzi 1986a)

Given the projection principle one might conclude that in both (62a) and (62b), the null object is syntactically projected and occupied by some null pronominal element. However, Rizzi (1986a) provides several arguments against giving the English (62a) and the Italian (62b) a uniform analysis. The primary theoretical motivation for providing a non-uniform analysis for null objects in English and Italian comes from the fact that English does not seem to have *pro*, the kind of null pronominal that could serve as a null object. In contrast, Italian is known to

be a null-subject language; i.e., it has *pro*, at least in the subject position of finite clauses, and it is plausible that *pro* can also appear in other case-marked positions.

The empirical motivation comes from the fact that null objects in Italian, in contrast to null objects in English, seem to be syntactically active. They can control, bind, and be modified by adjuncts, while null objects in English seem to be able to do none of the above.

We have already seen in (62a) that certain verbs in English do not require overt realization of the object. (63a) shows that if there is an infinitival clause with a PRO subject, then the object needs to be overt. In other words, the null/implicit object cannot serve as a controller. This is, of course, an instantiation of Bach's Generalization that object controllers in English cannot be omitted (see Bach 1979; Bresnan 1982a):[12]

(63) a. English:
  i. This leads people [PRO to conclude what follows].
  ii. *This leads [PRO to conclude what follows].
  b. Italian:
  i. Questo conduce (la gente) alla seguente conclusione.
  this leads the people to-the following conclusion
  'This leads (people) to the following conclusion.'
  ii. Questo conduce (la gente) a [PRO concludere quanto segue].
  this leads the people to conclude what follows
  'This leads people to conclude what follows.' (from Rizzi 1986a)

In Italian, as (63bii) shows, an object controller can be omitted. Null objects in Italian can bind reflexive pronouns, as shown by (64):

(64) a. La buona musica riconcilia ___ con se stessi.
  the good music reconciles with oneself
  'Good music reconciles one with oneself.'
  b. Un bravo psicanalista puó restituire ___ a se stessi.
  a good psychoanalyst can give back oneself
  'A good psychoanalyst can give one back to oneself.'
  (from Rizzi 1986a)

The third diagnostic for the syntactic activeness of null objects in Italian is that they can be modified by adjunct small clauses (cf. 65):

(65) a. Di solito, Gianni fotografa ___ seduti.
  in general Gianni photographs seated.Pl
  'In general, Gianni photographs one (when one is) seated.'
  b. Di solito, quel famoso pittore ritrae ___ vestiti di bianco
  in general that famous painter portrays dressed.Pl in white
  'In general, that famous painter portrays one (when one is) dressed in white.' (from Rizzi 1986a)

There is also a difference in the productivity of the null-object option in English and Italian. In English, the possibility of omitting the object seems highly restricted and subject to seemingly idiosyncratic restrictions. For example, the verb *incite* allows for its object to be omitted while the nearly synonymous *push* (cf. 66) does not:

(66) a. ?An unpopular law can incite ___ against the government.
b. *An unpopular law can push ___ against the government.

In Italian, in contrast, null objects with *arb* interpretation seem to be generally available in generic contexts across a wide range of verbs.

The above differences between English and Italian with respect to the omission of the object lead Rizzi (1986a) to conclude that in Italian, an omitted object is syntactically projected and realized as a *pro*, while in English, an omitted object is not syntactically projected. Instead it is realized as an implicit argument. Rizzi (1986a) assumes that arguments can be lexically saturated, and suggests a modification of the Projection Principle according to which only lexically unsaturated arguments need to be syntactically projected (see also Manzini 1992b). For Rizzi, Italian therefore does not constitute a violation of Bach's Generalization that object controllers cannot be omitted, because in Italian, they are not omitted. They are just realized as *pro*. A background assumption here is that the implicit argument corresponding to the omitted object cannot serve as a controller. In not being able to serve as a controller, the implicit argument corresponding to the omitted object differs from the implicit arguments of passives (section 2) and nouns (section 3).

The absence of syntactically realized null objects in English seems to be a relatively recent phenomenon. Visser (1969) notes that (as in Italian) in Old English, Middle English, and Early Modern English, arbitrary null objects could function as controllers (examples from Visser 1969 via Rizzi 1986a):

(67) a. thet uerste . . . *somoneth to worthsipie* god (1340, *Ayenbite of Inwit*)
b. When he *commaunded to receiue* the man . . . into the church again, in what church *commaunded* he *to receiue* him? (1532–1533, Thomas More, *Works*)
c. I then *advised to fly.* (1725, Alexander Pope, *Odyssey*)

5 Implicit arguments of evaluative predicates

Evaluative predicates have been argued to have implicit arguments. The evidence for the presence of implicit arguments comes from the interpretation of the infinitival complements of evaluative predicates like *fun*:

(68) It is fun [PRO_{arb} to play basketball].

Epstein (1984) notes that the interpretation of (68) is (69a) and not (69b):

(69) a. $\forall x$ It is fun for x [x to play basketball]. (For everyone it is the case that if they play basketball, it is fun for them.)
b. It is fun $\forall x$ [x to play basketball]. (If everyone plays basketball, it is fun.)

The fact that (68) can only mean (69a) and not (69b) reveals that the PRO_{arb} in (68) is not an instance of uncontrolled PRO. Instead it is controlled by a non-overt benefactive/experiencer argument of *fun* (see also Safir 1991). (70) shows that this implicit argument of *fun* can also be overtly realized:

(70) It is fun **for Lucy** [for Joe to play basketball]. (Epstein 1984: ex. 9)

Epstein (1984) assumes that the implicit argument of the evaluative adjective is syntactically projected as a null pronoun *pro*. He proposes that this *pro* is very similar in interpretation to the pro_{arb} discussed for Spanish in Suñer (1983). Spanish, in contrast to English, is a *pro*-drop language. Bhatt and Izvorski (1998) develop Epstein's basic insight and reduce several instances of 'uncontrolled' PRO to instances of Control by an implicit argument. They provide further evidence for the role played by the implicit argument in the Control of the PRO subject of the infinitival clause. PRO without an overt controller is only found in the complement of an adjective if the adjective allows for an implicit argument:

(71) a. [PRO to dance] is fun.
b. *[PRO to dance] is uncertain/unlikely.
(from Bhatt and Izvorski 1998)

Fun allows for an implicit argument which specifies who something is fun for. *Uncertain/unlikely* lack such an argument. They do not allow us to express who something is unlikely/uncertain for. (71b) is ruled out because, unlike *fun* in (71a), *uncertain/unlikely* do not have an implicit argument that could serve as a controller.

Bhatt and Izvorski (1998) further point out that the quantificational force/arbitrary nature of PRO_{arb} does not need to be stipulated. Instead, they propose the quantificational force comes from the presence of genericity. Evidence comes from the fact that 'uncontrolled' PRO does not always have a universal/arbitrary (= *arb*) interpretation. The *arb* interpretation is only available in generic environments. In episodic environments, the 'uncontrolled' PRO picks its interpretation from the local context:

(72) a. It is difficult [PRO_{arb} to dance the dance].
b. This morning, it was difficult [PRO to dance the tango] since the floor was slippery and we were all hungover.

In (72a, b), the PRO is controlled by the implicit argument of *difficult*. However, in (72a), the implicit argument is bound by a generic operator, and this is why the PRO in (72a) has an *arb* interpretation. (72b) receives an episodic interpretation and there is no a generic operator to bind the implicit argument. Consequently the implicit argument picks up its reference from the local discourse context. This is part of the general context-sensitivity of implicit arguments. See Condoravdi and Gawron (1996) for details.

There are locality constraints on the relation between the implicit argument and the PRO it controls. The implicit argument that controls the PRO needs to be in the immediately higher predicate. This is shown by the contrast in (73):

(73) a. *It is easy to be likely to dance the tango.
b. It is likely to be easy to dance the tango.
(from Bhatt and Izvorski 1998)

In (73b), the implicit argument of *easy* can act as a local controller. In (73a), however, the implicit argument of *easy* is unable to act as a controller for the PRO because of the intervening predicate *likely*, which does not provide a controller. On the basis of the above data, Bhatt and Izvorski (1998) conclude that PRO can receive an *arb* interpretation iff there is a generically bound implicit argument in the immediately higher predicate.

6 Arguments of modals

Since Ross (1969a), Perlmutter (1971), Jackendoff (1972), and Kratzer (1991), among many others, we have known that modals fall into two two classes with respect to whether or not they have a non-propositional argument, which has sometimes been called their external argument. Epistemic modals are semantically monadic; they only take a proposition as an argument. In contrast, deontic modals may be semantically monadic, taking a proposition, or semantically dyadic, taking a proposition and an individual. In Brennan's (1993) terms, this is the contrast between *ought to be* deontic modality and *ought to do* deontic modality.

Bhatt and Izvorski (1998) argue that cases of PRO_{arb} in infinitival questions can also be assimilated to control of PRO by an implicit argument:

(74) a. Bill knows [how PRO_{arb} to behave onself].
b. $Matt_i$ knows [what $PRO_{i/arb}$ to do with his_i/one's life].

Infinitival questions are always modal and the covert modality that surfaces in them is never epistemic. This is shown by the fact that (75) cannot be paraphrased as 'Hafdis know how fast it is possible to drive on I-95':

(75) Hafdis knows [how fast PRO to drive on I-95]. (from Bhatt 1999)

Since the covert modality in infinitival questions is always deontic, the modal can have implicit arguments, and these implicit arguments can control the PRO. When the implicit arguments are bound by a generic operator, we get what is usally called PRO_{arb}, and when it is associated with the matrix subject, we have Control.

The role of modality in contributing an implicit argument that can participate in Control is also shown by the paradigm in (76):

(76) a. *The books were sold [without PRO reading them].
(from Chomsky 1982 via Williams 1985)
b. The books can be sold [without PRO reading them].
(from Chomsky 1982 via Williams 1985)
c. *The books might have been sold [without PRO reading them].
(from Kratzer 1991)

The contrast between (76a) and (76b) has already been discussed in section 3.3.2. Let us focus on the contrast between (76b) and (76c). The modal in (76b) is a deontic modal and so it can have an implicit argument that can serve as a controller. This possibility is unavailable in (76c), where the modal is epistemic and does not have implicit argument. Consequently (76c) is ungrammatical.

As with other instances of implicit arguments, there seems to be no consensus regarding whether the implicit arguments need to be syntactically projected. Ross (1969a), Perlmutter (1971), and Jackendoff (1972), among many others, proposed that what we have been calling the implicit argument of a deontic modal is really not implicit at all. They assume a Control structure like in (77):

(77) $John_i$ must [PRO_i leave].

The subject of the modal is taken to be the bearer of the obligation. In recent work, this assumption has been questioned in Bhatt (1997) and Wurmbrand (1999a). Both authors argue that there are environments where the bearer of the obligation is not syntactically represented (cf. 78):

(78) There must be fifty chairs in this room by 5 p.m. (said to a caterer)

In (78), it is clear that the caterer is the bearer of the obligation, and yet the bearer is not part of the syntactic representation. This is enough to show that at least in some cases, the so-called external argument of a deontic modal does not have an obvious syntactic realization. Both Bhatt (1997) and Wurmbrand (1999a) provide additional arguments that modals, deontic or epistemic, never have external arguments; i.e., the bearer of the obligation is never represented syntactically. The bearer of the obligation (= the implicit argument) does have a role to play in the semantics and is identified pragmatically.

7 Conclusion

In sections 2–6, we saw a range of syntactic environments which have been argued to involve implicit arguments. In each of these environments, we investigated whether the putative implicit arguments were syntactically active and whether they were syntactically realized. That implicit arguments are syntactically active was shown to be the case – implicit arguments can control, they are subject to Binding Theory, and some of them can be bound/controlled. The evidence concerning the question of whether implicit arguments are syntactically realized or not is, however, more equivocal. Unlike Williams (1985, 1987b), we are unable to conclude that implicit arguments are not projected syntactically. However, we are also unable to conclude that the environments discussed in sections 2–6 must involve syntactic projection of the implicit arguments.

We find the existence of elements that are syntactically active but not syntactically projected conceptually problematic. In order to allow for elements that are syntactically active without having a syntactic realization, Binding Theory and Control Theory need to be modified. Otherwise, implicit arguments would be invisible to these modules of the grammar. Assuming syntactic realization in the form of a null pronoun (PRO/*pro*) allows us to keep Binding Theory and Control Theory unchanged. This can be taken as an argument in favor of syntactic realization of implicit arguments. Indeed this proposal has been made by several of the scholars working on implicit arguments – for passives see Borer (1998), for null objects in Italian see Rizzi (1986a), for evaluative adjectives see Epstein (1984), and for implicit agents of nouns see Roeper (1987a).

Toward the beginning of this chapter, we noted that implicit arguments did not form a unified class. This point continues to hold even if we assume that implicit arguments are uniformly syntactically projected. Implicit arguments differ in their interpretation. Implicit arguments of passives receive an existential interpretation, while the interpretation of implicit locative arguments of unaccusatives and implicit comparison classes is context-dependent. In section 5, it was noted that implicit arguments of evaluative predicates can receive both context-dependent and *arb*/generic interpretation. Finally, while null dative objects in English (*John said to leave*) are context-dependent, the null objects in Italian discussed in section 4 can only receive *arb* interpretation.

This difference in interpretation has consequences for whether an implicit argument can be bound or not. Partee (1989) notes that certain implicit arguments of nouns can be bound:

(79) **Implicit contextual variables (cf. Mitchell 1986; Partee 1989):**
   a. John visited a local bar.
   b. Every sports fan in the country was at a local bar watching the playoffs.
   c. Every participant had to confront and defeat an enemy.

She also notes that these implicit variables pattern with overt bound pronouns in displaying weak crossover effects:

(80) a. #?The leader of the local union wrote a letter to every untenured professor in the state.
b. Every untenured professor in the state received a letter from the leader of the local union.

(from Partee 1989)

(81) **Implicit arguments (from Partee 1989):**
a. Only the nearest photographer got a good picture of Reagan.
b. #?Only the nearest photographer got a good picture of every senator.
c. Every senator directed a smile at the nearest photographer.

(82) **Overt pronouns (from Partee 1989):**
a. Only his top aide got a good picture of Reagan.
b. #?Only his top aide got a good picture of every senator.
c. Every senator directed a smile at his top aide.

If lexical representations do not contain free variables, the existence of bound readings is an argument for the structural representation of the above implicit arguments.[13]

What is of particular interest here is that the implicit agent of a passive cannot be bound at all:

(83) a. Every journalist wants [Kylie to be interviewed].
b. Every journalist wants [Kylie to be interviewed by him].
c. Every journalist wants [Kylie to be interviewed by someone].
(83a) ≠ (83b), (83a) ≈ (83c)

The absence of the bound reading is further brought out in (84):

(84) a. Every journalist wants [Kylie to be interviewed], # not anyone else.
b. Every journalist wants [Kylie to be interviewed by him], not anyone else.
c. Every journalist wants [himself to interview Kylie], not anyone else.
(# indicates that the contrast cannot be with the journalist.)

The absence of a bound reading follows once we note that these implicit arguments are existentially bound. It is worth noting here that a proper treatment of the implicit argument of a passive as existentially bound will need to account for the fact that these implicit arguments do not support discourse anaphora. The proposal developed by Koenig and Mauner (1999) handles this property of passive implicit arguments. An analysis will also need to handle cases where there is an overt *by* phrase as well as cases like *Attention needs to be paid to oneself*, where the implicit argument has arbitrary interpretation and is probably bound by a generic operator.

The case of implicit arguments of nouns is tricky. At first it seems that variable Binding of the implicit argument is possible:

(85) John/Every student made an attempt [PRO to leave]. (*John* is the attempter, *every student* binds the implicit argument.)

But note that unlike variable Binding, there is no optionality here. No one else could have been the *attempter*. This is more akin to *Control*. There also seem to be locality considerations: Binding/Control of the implicit argument only seem to be possible when the noun in question is a co-argument of the binder/controller, as in (85):

(86) a. Annie believes that the attempt [PRO to leave] was unsuccessful.
b. Annie believes that her attempt [PRO to leave] was unsuccessful.
c. Annie believes that the unique contextually salient attempt by someone to leave was unsuccessful.
(86a) ≠ (86b), (86a) ≈ (86c)

The general pattern found here can be described as follows. The implicit arguments of nouns can be combined with the embedding predicate. If this does not happen, the arguments are existentially quantified and cannot be bound from above.

Even though we will not report on the bindability of the other cases of implicit arguments discussed in this chapter, on the basis of our examination of these cases we can nevertheless say that implicit arguments do not form a unified class with respect to variable Binding. Whether a particular implicit argument can be bound and, if it can, what the exact conditions under which it can be bound are depends upon the particular properties of the implicit argument under study.

NOTES

1 The above list is not intended to be exhaustive. Larson (1988a) uses the term 'implicit argument' more generally to cover, in addition to the cases discussed in the main text, optional but non-iterable phrases such as phrases of source, path, goal, and instrumentality:

(i) a. John ran ($_{Source}$ from the house) ($_{Goal}$ to the store) ($_{Path}$ along the river).
b. John cut the salami ($_{Instrument}$ with a knife).

Also relevant are cases of possessor raising, which have been analyzed as involving nominals with an implicit possessor argument (cf. Hole 2005), degree arguments of adjectives, implicit contextual variables (cf. Mitchell 1986; Partee 1989), and implicit contextual restrictions/situation variables (cf. Kratzer 2004).

2 Approaching this question from a more semantic angle, Engelberg (2002: 375) offers the following characterization:

(i) a verb's predicate constant has an implicit argument iff either (i) the verb has a variant with an explicit argument (i.e., an argument that gets syntactically realized) in the same semantic realization or (ii) there is a morphologically related verb with an explicit argument in the same semantic relation.

This is perhaps a good place to point out that the focus of this chapter will be limited to syntactic and, to a more limited extent, semantic properties of implicit arguments. We will not delve into the rich psycholinguistic literature on this topic, such as Härtl (2003), and in particular a vital body of work developed by Jean-Pierre Koenig and Gail Mauner (see Mauner and Koenig 2000 as a point of entry), which has important implications for the question of whether there are implicit arguments in passives, middles, and unaccusatives respectively.

3 Our attention here is restricted to passives whose implicit argument is an agent. Implicit arguments of passives are not restricted to being agents, e.g., experiencers (cf. i):

(i) The noise was heard at a great distance.

4 The following example reveals that the notion of agency relevant here needs to be broad enough to include non-animate causers:

(i) The part was automatically rotated to insert four screws. (Tom Roeper, p.c.)

5 It might seem that it is the adverb *easily* in (21a) that contributes the agentive interpretation. That this is not the case is shown by (i):

(i) The ship sank easily.

The presence of *easily* in (i) does not force an agentive interpretation.

6 The example improves considerably with the addition of *well*: 'These books don't sell well for the average shopkeeper.' Further, there are also speakers for whom (24a) is grammatical.

7 There is a rich literature on middle and passive constructions involving *si* in the Romance languages. The discussion in Cinque (1988) seems to suggest that *si* constructions in Italian, which can be both middles and passives, allow Control when the *si* construction can be passive but not when it can only be a middle. See Cinque (1988), Vinet (1988), and Dobrovie-Sorin (1994a, 1998) for details.

8 It is likely that the hearers-as-narrators reading is ruled out by the pragmatics of the verb *hear*. It is hard to construe *John heard a story about Mary* as John hearing a story about Mary where John is the narrator of the story. Presumably whatever makes it hard to construe the hearer as the narrator here can be used to block this reading in (36b). Then we can dispense with the implicit argument in (36b) or equivalently assume it to be fully optional. This point is relevant for the discussion of optionality at the end of this section.

9 Note that all these examples are plausibly analyzed as involving 'light' verbs, e.g., *take*, *perform*, *undergo*, *give*. Arguably the noun-phrase complement of a light verb contributes to the argument structure in a way that is different from what its contribution would be if it were an ordinary argument DP.

10 Lasersohn (1997) shows that the semantic contribution of existentially quantified implicit arguments differs from the semantic contribution of deictic implicit arguments with regard to distributivity.

11 We find *The movie was watched nude*, which is parallel to (56a), acceptable. However, it seems a much greater stretch to refer to a movie that is watched nude as a nude movie.

12 Closely related to Bach's Generalization is Visser's Generalization that verbs do not passivize when they involve subject Control. (cf. i):

(i) a. *It was preferred [PRO to leave]. (vs. He_i preferred [PRO_i to leave].)
b. *It was tried [PRO to leave]. (vs. He_i tried [PRO_i to leave]).

That the reason behind the ungrammaticality of (ia, b) is subject Control can be demonstrated by considering a verb like *promise* that takes both finite and infinitival complements:

(ii) a. $John_i$ promised Mary [PRO_i to be on time].
John promised Mary that he would be on time.
b. *Mary was promised by $John_i$ [PRO_i to be on time].
Mary was promised by John that he would be on time.

When there is no problem associated with Control, it is possible to passivize *promise*, as the contrast in (iib) shows.

As Bresnan (1982a) points out, Visser's Generalization is to subjects what Bach's Generalization is to objects. Certain counter-examples to both Visser's Generalization (cf. iii) and Bach's Generalization (cf. iv) have been noted in the literature:

(iii) a. Mary was never promised to be allowed to leave.
b. It was decided to leave. (from Bresnan 1982a)

(iv) Louise signaled (Tom) to follow her.

Bresnan (1982a) suggests that the exceptions in (iii, iv) involve *anaphoric* Control, a form of Control that is distinct from *functional* Control. Bach's Generalization and Visser's Generalization, she argues, follow from the properties of functional Control, but not of anaphoric Control.

The ungrammaticality of (iib) could be due to the failure of a passive implicit argument to control the subject of its infinitival complement, but alternatively it could be due to the failure of certain subject Control predicates to passivize, for currently unknown reasons. The latter seems more likely because some subject Control predicates can in fact passivize and with them the implicit argument can control (cf. iiia/b).

13 This is not, however, the conclusion that Partee (1989) comes to herself.

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35 Inalienable Possession

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1 Introduction: what is inalienable possession (IA)?

1.1 Definition of IA

Inalienable possession (IA) is a construal associated with certain structures which contain two nominals, one which denotes a body part and another which denotes the possessor of the body part.

These two nominals form a single constituent when a DP denoting the possessor (POSS DP) is embedded in a DP denoting the body part (BP DP). The respective order of POSS DP and BP N head varies over languages and over morphosyntactic classes. In Romance, a pronominal POSS DP is prenominal while the full form is postnominal (1). In English the POSS DP is usually prenominal whether it is a pronoun or a full DP (2):

(1) a. le bras de Jean
b. son bras

(2) a. *the arm of John
b. John's arm
c. his arm

In this configuration, the IA construal is a subcase of the possessive construal. An N denoting a concrete object can replace the BP N:

(3) a. le livre de Jean
b. son livre

(4) a. *the book of John
b. John's book
c. his book

Structures like (5) and (6) are thus ambiguous: the head N denotes either an object physically disjoint from its possessor, such as the cast of a hand by Rodin which the owner bought (alienable possession), or a part of the possessor's body (inalienable possession, IA):

(5) la main de Jean/sa main

(6) John's hand/his hand

In some languages, however, the IA construal is associated with a structure containing disjoint BP and POSS nominals. French has a number of such structures, the best known of which are listed below.

In structure I (7), the direct object denotes a body part and the subject denotes the possessor:

(7) Structure I
  a. Jean lève la main.
     Jean raises the hand
  b. Jean donne la main à Marie.
     Jean gives the hand to Marie

In Structure II (8), the direct object denotes the body part but a Dative nominal, clitic or full DP, denotes the possessor.

(8) Structure II
  a. Je lui prends la main.
     I him take the hand
     'I take his hand.'
  b. Je prends la main à la petite fille.
     I take the hand to the little girl
     'I take the little girl's hand.'

In Structure III (9), the direct object denotes the POSS DP while the BP DP is embedded in a PP adjunct to VP:

(9) Structure III
  a. Marie a frappé Jean sur la main.
     'Mary hit John on the hand.'
  b. Marie a tiré Jean par les cheveux.
     'Mary dragged John by the hair.'

Such structures, which contain disjoint POSS and BP DPs, are referred to as 'inalienable possession structures'. This is a misnomer, as there seem in fact to be no structures, in French or in any other language examined from this point of view, which are exclusively associated with the IA construal. Either IA is a subcase of the possessive construal of a DP with genitive (or dative) modifier, or it is construed on certain sentential structures which happen to contain a DP denoting a human being and another DP denoting a body part.

For example, French has a 'double object' structure which contains an ACC and a DAT DP. The construal of the Dative DP depends on the lexical choice of verb and direct object. The Dat is construed as GOAL in (10a), SOURCE in (10b), BENEFACTIVE (BEN) in (10c), inalienable possessor in (10d), alienable possessor in (10e), and LOCATION in (10f):

(10) a. J'ai donné un livre à Pierre.
     I gave a book to Pierre

b. J'ai pris un livre à Pierre.
I took a book 'to' (from) Pierre
c. J'ai cassé sa tirelire à Pierre.
I broke his piggy-bank to Pierre
d. J'ai tordu le poignet à Pierre.
I twisted the wrist to Pierre
e. Je ne connais pas de maîtresse à cet homme.
I do not know (of) any mistress to that man
f. J'ai connu Pierre à Paris.
I met Pierre in Paris

The multiplicity of construals does not motivate referring to the double object structure as an 'inalienable possession structure' any more than as a 'goal structure', etc.

However, just as we will misleadingly refer to the relation between the BP DP and the POSS DP in Structures I–III as 'inalienable possession' (IA), we will, also misleadingly, refer to structures with disjoint DPs which permit this construal as 'Inalienable possession structures' (IA-structures) in quotes, to designate the single one of their possible construals which interests us. When discussing theories which do posit special IA structures, we will use the term without quotes.

1.2 Constraints on IA in English

Structures I and II do not allow the IA construal in English:

(11) Structure I
a. *John raised the hand. (cf. (7a))
b. *John gave the hand to Mary. (cf. (7b))

(12) Structure II
a. *I took him the hand. (cf. (8a))
b. *I took the hand to/for the girl. (cf. (8b))

Structure I becomes grammatical in English – and ambigous between the alienable and inalienable construals – if we replace 'the hand' by 'his hand':

(11') a. John raised his hand.
b. John gave his hand to Mary.

As the only difference between (11) and (11') is the form of the determiner, the contrast between them suggests that the grammatical status of the definite determiner is crucial for the IA construal on disjoint DPs. The French definite determiner permits a construal in (7) which its English counterpart excludes in (11).

Extrapolating from the contrast between French (7) and English (11) in Structure I, we may attribute the ungrammaticality of the English counterpart of Structure II in (12) in part to the construal of the definite determiner. Only in part, however, for Structure II does not allow the IA construal in English even if we replace 'the hand' in (12) by 'his/her hand' in (12'):

(12') a. *I took him his hand.
b. *I took her hand to/for the girl.

The contrast between French (8) and English (12) seems to be attributable to a different syntactic distribution of theta-roles in the double object structure. In the French structure, the DAT DP may be construed as either GOAL or SOURCE, as in (10a, b) above. Under the IA construal, however, the DATIVE may be construed as the POSS DP only if it is SOURCE rather than GOAL, as in (13a). If the DAT is GOAL, only the subject may be construed as POSS DP, as in (13b):

(13) a. Ils lui ont pris/arraché la main.
they to-him took/pulled out the hand
b. Ils lui ont donné/tendu la main.
they to him gave/extended the hand

In the English double object stucture, for some reason, the indirect object is always Goal, never Source:

(14) a. J'ai donné/prêté/vendu un livre à Jean.
'I gave/lent/sold a book to John.'
'I gave/lent/sold John a book.'
b. J'ai pris/volé/arraché un livre à Jean.
*'I took/stole/snatched a book to John.'
*'I took/stole/snatched John a book.'

Other French structures which allow the IA construal may be assimilated either to Structure I, with subject as POSS DP, or to Structure II, with DAT POSS DP. They all exclude the IA construal in English:

(15) a. Jean a les yeux bleus. (I)
b. *'John has the blue eyes.'[1]

(16) a. Marie est entrée, la tête haute. (I)
b. *'Mary entered, the head held high.'

(17) a. Jean a fait un geste de la main. (I)
b. *'John made a gesture with the hand'.

(18) a. Je lui ai mis de l'eau sur la tête. (II)
b. *'I put (to) him water on the head.'

Like genitive DPs or double object sentences, these structures allow the IA construal by accident, not by design: none of them is devoted exclusively to IA:

(19) John a un livre.
'John has a book.'

(20) Marie est entrée, furieuse.
'Marie entered, furious.'

(21) Jean a fait un succès de son affaire.
'John made a success of his business.'

(22) Je lui ai mis de l'eau sur ses chassures.
*'I put to him water on his shoes.'

1.3 Questions to answer

The IA construal raises the same syntactic questions as any other construal involving disjoint nominals, such as anaphora, predication, or quantification:

(i) What are the structural constraints on the IA construal?
(ii) How is the IA construal associated with the structures which allow it? In particular, how can the POSS DP be construed simultaneously as a syntactic and semantic argument of V and as a semantic argument of N?
(iii) What determines the difference between languages with respect to the IA construal? Can one predict which natural languages are like French, and allow IA in Structures I–III, and which are like English, allowing it only in Structure III? In terms of acquisition, what information does a child need in order to conclude that her/his grammar contains sentences like (7) and (8)?

We will review the major literature in the generative framework which attempts to answer these questions. We will first examine syntax-oriented theories. While these theories more or less adequately express the syntactic constraints on the IA construal, they turn out to be inadequate with respect to apparent semantic constraints. We then review theories of IA which integrate an explicit semantic filter in their syntactic analyses. We will comment both on the empirical adequacy of these theories and on their status with respect to the principle of economy of the grammar.

2 Syntax-based theories of IA

2.1 The binding hypothesis (Guéron 1983, 1985)

2.1.1

The IA construal is subject to syntactic constraints:

(i) The possessor is obligatory.

(23) a. Jean a les yeux bleus.
Jean has the eyes blue
'Jean has blue eyes.'
b. (Marie, en admirant Jean) *Les yeux bleus sont charmants.
'(Marie, admiring Jean) The blue eyes are charming.'

(ii) Locality. The POSS DP must be in the same minimal sentential domain as the BP DP. (In (24) below, indices indicate an IA relation between Poss and BP DPs. In (25), indices indicate both the IA relation within the embedded sentence and control of the subject of the embedded infinitival by an argument of the matrix sentence.)

(24) a. Jean_j semble [t_j lui_i prendre la main_i].
Jean_j seems [t_j to her/him_i to take the hand_i
'Jeans seems to take her/his hand.'
b. *Jean_j lui_i semble [t_j prendre la main_i].
Jean_j seems to him/her_i [t_j to take the hand_i)
'Jean seems to him/her to take the hand.'

(25) a. Jean_j a persuadé Marie_i de [PRO_i lever la main_i].
'Jean persuaded Mary to raise her hand.'
b. *Jean_j a persuadé Marie_i de [PRO_i lever la main_j].
'Jean persuaded Marie to raise his hand.'

(iii) Asymmetric c-command. The Possessor must c-command the body part nominal or its trace:

(26) a. Jean_i lève la main_i.
'Jean raised the hand.'
b. L'ennemi lui_i a arraché la main_i.
the enemy to-him pulled out the hand
'The enemy pulled out his hand.'
c. La main_i lui_i a été arrachée t_i par l'ennemi.
the hand to him was pulled out by the enemy

(27) a. Jean_i tourne la tête_i.
John turns the/his head

b. La tête$_i$ lui$_i$ tourne t$_i$.
the head to him turns
'His head is spinning.'

(28) a. *Les cheveux$_i$ entourent Marie$_i$.
the hair surrounds Marie
b. *Le frère de Jean$_i$ a levé la main$_i$.
the brother of John raised the hand

(29) a. Marie$_i$ a les yeux bleus$_i$.
Mary has (the) blue eyes
b. *Les yeux bleus$_i$ sont à Marie$_i$.
the blue eyes are to Mary/Mary's

These same properties characterize the independently established relation of anaphoric binding.

(i) Obligatory antecedent:

(30) a. John hates himself.
b. *I hate himself.

(ii) Locality:

(31) a. John persuaded Mary$_i$ [PRO$_i$ to wash herself]
b. *John$_j$ persuaded Mary$_i$ [PRO$_i$ to wash himself$_j$]

(iii) C-command:

(32) a. John perjured himself.
b. *John's mother perjured himself.

On the basis of the identity of the structural constraints on anaphora and on the IA construal of disjoint nominals, Guéron (1985) reduces the latter to a case of the former. The IA construal corresponds to one form of anaphoric binding, that of obligatory control. In sentences like (5) or (6), the determiner of the BP DP is construed as PRO, a pronominal anaphor controlled by a c-commanding argument of the immediately dominating sentential domain.

The (a) and (b) sentences of (33) and (34) are thus parallel:

(33) a. Jean$_i$ veut [PRO$_i$ venir]
b. Jean$_i$ lève [LA$_i$ main]

(34) a. Je lui$_i$ dis de [PRO$_i$ venir]
b. Je lui$_i$ prends [LA$_i$ main]

And just as PRO may have a generic or arbitrary (ARB) construal in the absence of a controller, a PRO determiner may have a generic or ARB interpretation under the same circumstances (cf. Authier 1990; Authier and Reed 1992):

(35) a. [PRO vivre] seul est désagréable.
'[PRO to live alone] is disagreable.'
b. Il est important [PRO de savoir ce que l'on veut].
'It is important [PRO to know what one wants].'

(36) a. Avec ces gants, [les doigts] ne gèlent jamais.
'With these gloves, the fingers never freeze.'
b. Un peu de natation muscle souvent [le dos].
'A little swimming often develops the back muscles.'

2.1.2

Guéron accounts for the difference between French and English with respect to Structures I and II on a morphological basis. The French determiner *le*, *la*, or *les*, marked for number and gender, is homophonous with third person pronominal clitics marked for number, gender and person. Anaphoric binding may be assimilated to agreement in that it relates the theta-features of disjoint constituents. Guéron formulates the hypothesis that only a determiner marked with theta-features may be identified in syntax as an anaphoric pronominal bound by an antecedent, deriving the IA construal.

Her hypothesis makes the strong and testable prediction that the IA construal exists in Structures I and II only in languages in which the definite determiner has variable theta-features which identify it as a pronominal, and that it is lacking in languages in which the definite determiner is invariable. IA is thus predicted to exist in Romance, where the definite determiner is morphologically identical to a pronominal, as well as in languages like Russian, which has both null pronouns with abstract phi-features and null determiners. But it is predicted not to exist in languages like English, Arabic, or Hebrew, in which the definite determiner is invariable.

Support for the hypothesis that the grammaticality of the IA construal in I and II depends on the existence of phi-features in the determiner of the BP DP comes from English itself. Whereas IA is excluded in English when the BP DP has a definite determiner, it is possible with an indefinite determiner:

(37) a. John wouldn't lift a finger to help.
b. Can you give me a hand?
c. Raise one hand for 'aye', two hands for 'nay'.

(38) a. We held hands/linked arms/rubbed noses.
b. She entered the room, arms akimbo.

Unlike the definite determiner *the*, the indefinite determiner has a feature for number in English: 'a' is singular and zero is plural. Its number F suffices to identify the indefinite determiner as a pronominal subject to the binding relation which underlies the IA construal in I and II.

2.1.3

Syntactic and morphological constraints on the IA construal do not suffice to identify the set of grammatical 'IA structures', however. Lexical choice plays a crucial role.

Although Guéron identifies the IA construal with anaphoric binding, many verbs which allow reflexive anaphora reject IA in Structure I:

(39) Jean se lève.
Jean self raises

(40) Jean lève la main.
Jean raises the hand

(41) Jean se lave/se gratte/se chatouille.
Jean self washes/scratches/tickles

(42) *Jean lave/gratte/chatouille la main.
Jean washes/scratches/tickles the hand

To account for these constraints on choice of verb, Guéron (1983, 1985) proposes that under the IA construal, in addition to their anaphoric relation, the POSS DP and the BP DP constitute two links of a LEXICAL CHAIN. The notion of lexical chain is weaker than that which characterizes a chain formed by A or A' movement. Whereas the latter imply referential identity of antecedent and trace, a lexical chain requires only non-distinctness of the referents of its links. Under the IA construal, the BP being included in the body, the antecedent DP and bound DP have overlapping reference. They may thus constitute two links of a lexical chain. The assumption that two links of a chain obey the same constraints as anaphora accounts for the locality restriction on the IA construal. Independent constraints on chains automatically exclude certain IA structures which anaphora alone could not filter out.

Every chain is asociated with a single theta-role. It follows that IA is ungrammatical whenever the body part DP and the possessor DP are assigned two different theta-roles by the verb. The chain hypothesis thus accounts for the ungrammaticality of sentences like (42b) above ('Jean lave la main') in which the POSS DP is AGENT while the BP DP is THEME.

A subset of such sentences is acceptable, however. This subset has been described in semantic terms by Hatcher (1944) and Kayne (1975): the subset of sentences of type I which are acceptable under the IA construal denote a natural physical gesture.

Guéron proposes that in the acceptable structures, verb and direct object are reanalyzed in syntax as a single verb. Under reanalysis the case and theta-features of the DO are absorbed by the verb. At the level of construal, the subject binds the determiner of the body part N but, its theta-role having been absorbed at an earlier stage, the direct object is not associated with a theta-role, and the IA construal does not violate the theta condition on chains.

Reanalysis of verb and DO occurs in the grammar independently of IA. 'Light verbs' reanalyze with their object to create an idiomatic complex verb:

(43) a. John took his time/a shower/ten/a leak.
b. John had a fit/a ball/a hard time.
c. Mary made an error/an omission/her way through the crowd.

(44) a. Jean a pris la fuite/une douche/son pied.
John took flight/a shower/his foot, i.e. had fun
b. Jean a fait une scène/une erreur/l'idiot.
John made a scene/an error/the idiot = played the fool

Reanalysis between verb and object deriving an idiomatic meaning may also occur in reflexive structures. While the reflexive construal of V + DO is more or less transparent in (45), it is less so in (46b), as Kayne has pointed out (class lectures in the seventies):

(45) a. John washed himself.
b. John hates himself.

(46) a. John threw Bill out the window (with his bare hands)
b. John threw himself out the window (*with his bare hands)

Reanalyzed V + direct object characteristically has a special meaning. 'Natural gesture' is the special meaning which corresponds to syntactic reanalysis of an action verb + a direct object denoting a body part.

Structure II (8), in which the indirect object rather than the subject is the POSS DP, accepts a greater variety of lexical choices than Structure I:

(47) a. *Jean lave/gratte/chatouille la main. (= (42))
Jean washes/scratches/tickles the hand
b. Je lui lave/gratte/chatouille la main.

Guéron proposed the notion of lexical chain in order to exclude non-reanalyzed cases of Structure I. The proposal that theta-roles do not form a unified class makes it possible to use the same notion to account for the greater lexical span of Structure II. Guéron distinguishes PRIMARY theta-roles, assigned lexically by the verb, from SECONDARY theta-roles, which are not lexically assigned. Only

PRIMARY theta-roles count for the theta-role condition on lexical chains as stated in (48):

(48) A lexical chain is associated with a single primary theta-role.

AGENT, PATIENT, THEME are primary theta-roles selected by V. The sentences of (47a) above are excluded by (48) because two primary theta-roles are associated with a single lexical chain.

The sentences of Structure III (example (9)) III all contain a dative DP construed as a BENEFACTIVE (BEN) argument. The BEN theta-role is not selected by the verb: it is acceptable in any structure containing a direct object (DO) and a verb which denotes an action (cf. Leclère (1978) for a detailed account).

The transitive verb of (49a) and the unaccusative verb of (49b) license a BENEFACTIVE argument because they select a direct object and denote an action. But unergative (50), which lacks a DO, excludes the BENEFACTIVE dative, as does any structure like (51) in which VP denotes a state rather than an action:

(49) a. Jean lui a cassé sa poupée (à la petite fille).
Jean to-her broke her doll (to the little girl)
b. Il lui est arrivé quelque chose.
it to-him happened something = something happened to him

(50) *Je lui cours.
I run on him

(51) *Je lui aime sa bicyclette.
I like her bicycle to her

A DAT DP may be construed as inalienable possessor of a definite direct object denoting a body part in the very same syntactic environments in which it is construed as a BENEFACTIVE when the DO does not denote a BP or has a genitive determiner. Transitive (52a) and unaccusative (52b) are acceptable but unergative (53) and stative (54) are not:

(52) a. Je lui ai pris la main.
I to-him took the hand
b. Les bras m'en tombent t.
the arms to-me fall over that

(53) *La tête lui bouge.
the head to-him moves

(54) *Je lui aime les mains.
I to-her like the hands

Guéron identifies the POSS DP with the BENEFACTIVE DP. Only the lexical content of the direct object distinguishes the two construals. Being non-selected, the benefactive has only a secondary theta-role. A lexical chain containing dative BEN plus nom. or acc. THEME is therefore compatible with the chain criterion (48).

An argument in favor of the hypothesis that the POSS DAT is a subcase of BEN DAT in French is the fact that any difference of acceptability between full NP and clitic dative under the BEN construal of the dative also pertains under the possessor construal. In French, the BEN and the POSS DP preferably or obligatorily take the form of a clitic (cf. Dorel 1980; Nicol 1997).

(55) a. Je lui ai pris la main.
b. ?? J'ai pris la main à Pierre.

(56) a. Le bandeau lui enveloppe la tête.
b. *Le bandeau enveloppe la tête à ce garçon.

(57) a. Je lui ai mis de l'eau sur la tête.
b. *J'ai mis de l'eau sur la tête à Jean.

In languages such as Hebrew, in which either the full dative DP or the clitic is an acceptable BENEFACTIVE, the same is true of the DAT POSS DP under the IA construal (Landau 1999).

2.1.4

Any analysis of IA must account not only for the contrast between French and English in Structures I and II, but also for the lack of contrast between them with respect to Structure III. Guéron (1985) proposes that III illustrates not A- but A'-binding. In (58) below, the BP DP contains an empty category (ec) argument of the relational head N. The e.c. is construed as a variable A'-bound by the possessor DP outside the nominal domain:

(58) I hit John$_i$ [PP on [DP the head e$_i$]]
J'ai frappé Jean$_i$ [PP sur [DP la tete e$_i$]]

As suggested above, A-binding may be reduced to feature-agreement. In particular, it depends on the existence of phi-features in the bound nominal. A'-binding links not phi-features but rather operator Fs such as +*wh*, NEG, or Focus. It therefore does not manifest phi-feature dependencies.

A-binding, a form of phi-feature agreement, occurs, like other forms of agreement, within a single argument domain. A'-binding, on the contrary, links an argument within an argument domain to an operator on the periphery of this domain. There is thus a complementary distribution between the IA construal in I and II, in which both DPs are in a single argument domain, and that in III, in which the body part DP is within an adjunct to the VP or sentence which contains the POSS DP.

IA is thus predicted to occur freely in Structure III in all languages which manifest A'-binding, including those in which, as in English or Hebrew, an invariable determiner blocks the A-binding IA construal in I and II.

2.1.5

Guéron's hypothesis simplifies the grammar by reducing the unknown, the principles governing the IA construal, to the known, the grammatical principles governing A- and A'-binding.

The analysis has a number of problems, however:

(i) Guéron claims that the relation between the disjoint DPs in I and II is anaphoric binding, like reflexivization or control. Yet in sentences like (59), the number and gender Fs of the BP DP do not match those of the POSS DP. This situation creates ungrammaticality in reflexive or control structures, as shown in (60). So it is not clear what motivates the proposed binding relation between the subject and the direct object in (59):

(59) Le jeune homme$_i$ a levé les mains$_i$.
sg. m. pl. fem.
'The young man raised his hands.'

(60) a. *Le garçon$_i$ s$_i$'est levé elles-memes$_i$.
m. sg. pl. fem.
the boy self raised themselves
b. *Jean$_i$ veut [PRO$_i$ partir seules$_i$]
John wants PRO to leave alone
m. sg. m. sg. f. pl.

(ii) Guéron's analysis has recourse to ad hoc auxiliary hypotheses. As Koenig (1999) points out, Guéron pays for the simplicity of reducing IA to anaphora in I and II with a new and otherwise unnecessary type of chain, which does not imply identity but only non-distinctness of its links.

(iii) The distinction between PRIMARY and SECONDARY theta-roles, which Guéron uses to exclude most cases of lexical chain in Structure I, while including a larger number of cases in Structure II, is another unwelcome innovation. Furthermore, it wrongly predicts that structures like (61), which contain two predicates each of which presumably assigns a Primary theta-role to its subject, are ungrammatical.

(61) a. Elle$_i$ est entrée [la tête$_i$ haute].
b. Marie$_i$ a [les cheveux$_i$ blonds].

(iii) The hypothesis that Verb and DO are reanalyzed as a single verb in Structure I is plausible, but no explanation is given for the semantic constraint

on the output. Why is reanalysis limited to VPs which denote gestures, rather than, say, thoughts, feelings or intentions? Reanalysis of verb and object in idioms often denotes, on the contrary, feelings:

(62) a. Mon coeur n'a fait qu'un bond.
'My heart made but one leap = I reacted strongly.'
b. J'ai les boules.
'I have the balls = I'm nervous.'
c. Ce spectacle m'a arraché des larmes.
'This show ripped out tears from me.'

(63) a. She wears her heart on her sleeve.
'She reveals all her feelings.'
b. My heart fell t.

Subsequent syntax-based analyses of IA assimilate the IA construal to other independently established syntax-sensitive construals such as binding or predication.

2.2 The A'-binding hypothesis (Tellier 1990)

2.2.1

Tellier proposed that IA structures, like Topicalization, Relative Clause or Tough-movement, reduce to A'-binding plus Predication:

(64) a. $John_i$ [OP_i I like t_i].
b. $Mary_i$ is tough [Op_i PRO to talk to t_i].
c. The man [$Whom_i$ you met t_i].

Tellier proposes that DP, like CP, is an argument domain. An ec argument of the head N may be construed as a variable bound by an operator at the periphery of the domain. The operator is identified by a referential DP outside the domain, deriving a predication construal.

Whereas virtually all verbs take arguments, only some Ns do. Tellier distinguishes (non-deverbalized) Ns which take arguments, such as body-part or kinship terms, from Ns such as *dog*, which do not.

In (65), the ec complement of the relational N *main* is construed as a variable A'-bound by an operator in Spec DP. This operator is identified by the closest DP, *lui*, construed as subject of the predication:

(65) Je lui_i prends [Op_i la main e_i].

Tellier cites the occurrence of parasitic gaps in IA to support the A'-binding hypothesis not only for Structure III, as Guéron did, but also for Structures I and II:

(66) This is a book that I read t before buying e.

(67) a. Jean$_i$ a mis [la main t$_i$] sur [la tête t$_i$].
John has put the hand t on the head t
b. Les cheveux$_i$ lui descendent t$_i$ de [la tête t] aux [pieds t].
the hair to-her descends from the head e to the feet t

2.2.2

Tellier was one of the first linguists to argue for the hypothesis that non-deverbalized Ns may have an argument structure and that DP functions, like CP, as a domain for A'- binding and predication.

The A'-binding hypothesis overgenerates with respect to IA, however. While all relational Ns can project argument ecs subject to A'-binding, not all of these admit the IA construal. Kinship terms, for example, which are intrinsically relational and allow A'-binding and parasitic gaps, cannot replace a BP DP in an 'IA structure':

(68) a. un garçon dont je connais le père.
a boy of-whom I know the father
un garçon [CP dont$_i$ [IP je connais [DP Op$_i$ le père t$_i$]]]
b. un garçon dont le père se dispute avec la mère.
a boy of whom the father quarrels with the mother
un garçon [CP dont$_i$ [Op$_i$ le père t$_i$] se dispute avec [Op$_i$ la mère e$_i$]].

(69) a. *Je lui ai frappé [le père t].
I to-him hit the father
b. *Je lui ai poussé [la mère t] contre [le père e].
I to-him pushed the mother against the father

Nor does *wh*-type A'-binding into a DP obey the same lexical constraints as the IA construal:

(70) a. une fille dont Jean admire [le corps t] plus que [l'âme e].
a girl of whom Jean admires the body more than the soul
b. *Jean lui admire le corps/l'ame.
Jean to-her admires the body/soul

Moreover, Nouns which do allow an 'extended IA' construal, such as items of clothing and objects held in the hand, typically lack lexical arguments:

(71) a. Jean a tombé la veste.
'Jean dropped the jacket.'
b. Ho perduto l'ombrello. (Italian)
'I have lost the umbrella.'

Finally, the A′-binding + Predication hypothesis does not account for the contrast between English and French in 'IA structures'. English has the same relational Ns and sentential A′-binding and Predication structures as French. Therefore the theory incorrectly predicts that it will have the IA construal in Structures I and II, just as it has it in Structure III.

2.3 The Predication hypothesis (Vergnaud and Zubizarreta 1992)

2.3.1

Vergnaud and Zubizarreta (V&Z) also assimilate IA to predication but without an A′-binding component. For V&Z, the body-part N functions as a predicate which contains an implicit empty category construed as a variable. This variable can be bound by a determiner functioning as an operator or else by a DP external to the predicate domain, construed as subject of a predication. In (72), the predicate variable in N is bound by the dative DP:

(72) a. Je lui prends la main.
je lui_i prends [DP la [NP main]]
vbl_i

According to V&Z, Predication is subject to the structural constraint of M-Command (Williams 1980): the subject DP and the predicate NP must mutually c-command each other.

It appears at first glance that M-command does not hold in (72), where dative *lui* c-commands the predicate NP *main* but DP, a maximal projection, blocks c-command of *lui* by *main*. V&Z propose, however, that D projects a maximal projection DP only if it has a construal. If the determiner is identified as an expletive, a dummy element, then it does not project a DP, and the nominal is analyzed as NP. The assumption that *la* in (72) is an expletive allows M-command between *lui* and the N *main*, deriving the predicational IA construal.

M-command also seems to be lacking in (73), where *la main* c commands *Marie* but the latter is embedded in a maximal projection, PP, which blocks c-command of the BP NP by the POSS DP:

(73) J'ai pris la main à Marie.
J'ai pris la main [PP à Marie]

V&Z propose that *à* not being a lexical P but merely a case assigner, it does not project a PP capable of blocking c-command of the BP NP by the Poss DP; once again predication obtains.

For V&Z, as for Guéron, the construal of the determiner of the BP DP underlies the difference between French and English in Structures I and II. For them, the crucial factor is not the morphology of the determiner but its semantic

construal. The contrast in (74) shows that, in French, the definite determiner can function as an expletive element, while in English it cannot:

(74) a. Jean admire la beauté, la charité et la bonté.
b. *'John admires the beauty, the charity and the kindness.'

V&Z further argue that the syntactic distinction between NP with expletive determiner and DP with meaningful determiner has semantic consequences. NPs denote types while DPs denote tokens. Under the IA construal, the BP NP denotes a type. This is why it does not allow non-restrictive adjectives, which only modify tokens:

(75) a. Je lui ai pris la main.
I to-her took the hand
b. *Je lui ai pris la belle main.
I to-her took the beautiful hand

According to V&Z, the claim that the BP NP has a type reference under the IA construal is supported by the fact that it is subject to backward pronominalization. Backward pronominalization is a property of coreference, not of anaphora or binding:

(76) Parce qu'elle est fragile, le médecin leur a couvert la tête d'une cagoule.
because it is fragile, the doctor to-them covered the head with a hood

V&Z identify an NP with a type construal as a target of distributivity. They further seem to identify distributivity with inalienable possession.

In (77), the plural subject triggers a distributive construal of the type BP NP. Although the N *estomac* is singular, it is construed as having plural reference:

(77) a. Le médecin a examiné l'estomac aux enfants.
b. Le médecin leur a examiné l'estomac.

In English, where D functions as an operator, not as an expletive, and the body-part Noun is construed as a token, not a type, the distributive interpretation would not be available:

(78) a. The doctor examined the children's stomachs.
b. *The doctor examined the children's stomach.

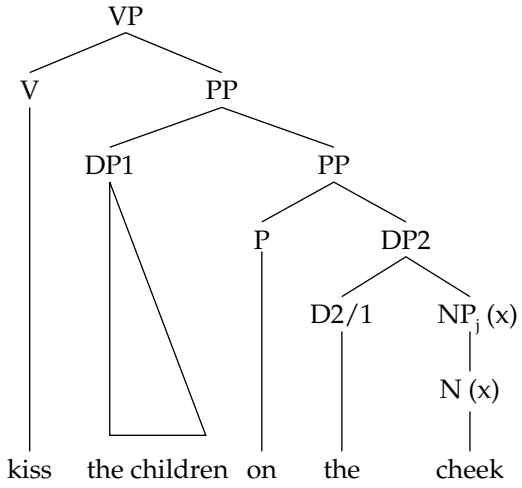
V&Z suggest that NPs which denote types and are subject to a distributive construal, as in (79), define a class of 'extended IA structures':

(79) On a donné le même ordinateur, à Marie, Jeanne, et Suzanne.
'We gave the same computer to Mary, Jean, and Sue.'

For Structure I, V&Z adopt the reanalysis proposal of Guéron (1983, 1985).

For Structure III, acceptable in both French and English, V&Z propose that the BP DP and the POSS DP form a 'metonymic binding chain'. In (80) below, the plural direct object binds the determiner of the BP NP containing the semantic variable. This binding relation is licensed by semantic metonymy:

(80) I kissed the children on the cheek.
J'ai embrassé les enfants sur la joue.



2.3.2
This hypothesis, like all the others reviewed here, has empirical and theoretical problems.

(i) The M-command requirement on predication incorrectly rules out structures in which the BP NP is embedded in a PP with a lexical P head. In (81), the dative DP c-commands the BP NP but the PP projection of the lexical P *sur* blocks c-command of the dative by the BP DP:

(81) Je lui$_i$ ai mis de l'eau [PP sur [NP la tête$_i$]].

In (82), a small clause (sc) projection prevents M-command:

(82) Il a [sc la main heureuse]/[les epaules larges]/[la taille fine].
he has [the hand happy] [the shoulders large] [the waist thin]

In (83), the sc containing the BP NP is adjoined to VP. But c-command between an argument of a sentence and an element in an adjunct is never symmetrical, as (84) shows:

(83) Elle est entrée, [sc la tête haute]/[les cheveux en desordre].
she is entered [the head high] [the hair disheveled]

(84) a. $Mary_i$ entered the room [PP without PRO_i smiling].
b. *[[PRO_i to enter the room [PP without $Mary_i$ smiling]] is unusual.

(ii) V&Z propose that Predication depends on the structural relation of M-command. However, as Koenig (1999) points out, they subject M-command to an interpretive constraint: the BP NP c-commands the POSS DP only if its determiner is construed as an expletive. To define a semantic condition on a syntactic relation is to abandon the autonomy of syntax hypothesis and thus to weaken the grammar.

(iii) Koenig (1999) also points out an empirical problem with the analysis: distributivity is not in fact excluded from nominals with genitive DP in English. He cites (85a, b), which for me are slightly marginal. However I find (86a, b) perfect:

(85) a. ?The doctor examined the children's stomach.
b. ?The children all raised their hand.

(86) a. Children, before speaking in class, you must raise your hand.
b. The guests are having trouble finding their place at the dinner table.

Distibutivity into a possessive DP with prenominal genitive is perfect in French:

(87) a. Le médecin a examiné leur estomac.
'The doctor examined their stomach.'
b. Les messieurs ont enlevé leur chapeau.
'The gentlemen took off their hat.'
c. Les invités cherchent leur place à table.
'The guests are looking for their place at the table.'

As a DP with a genitive determiner denotes a token, not a type, distributivity cannot in general require a type interpretation of the target nominal.

V&Z are no doubt correct to identify distributivity as a property of predication, but apparently wrong to identify distributivity with the IA construal.

Distributivity may target a VP whose direct object, if present, need not refer at all, not even to a type. Distributivity is a property of all sentences with idiomatic VPs, in which the direct object has no reference (it does not lend itself to leftward pronominalization), neither token nor type:

(89) a. The children threw a fit/*?fits.
'The children had a tantrum.'
b. The explorers gave up the ghost/*ghosts.
'The explorers died.'
c. We'll hit the road/*roads now.
'We'll leave now.'
d. OK you guys, take a powder/*powders.
'Ok you guys, leave!'

When not lexically triggered by an operator such as *each*, distributivity is semantically triggered whenever a plural DP is subject of a predicate which can only apply to one individual at a time. The predicate may or may not contain an object:

(90) a. John, Sam, and Bill died/were born in 1940/got married last year.
b. My children love me.
c. Three dogs bit Bill.

Finally, the distributive interpretation of a DP does not imply that it is subject to the IA construal. Structure (91), in which *le même ordinateur* is construed distributively is not an 'IA structure' at all. Under the IA construal of a double object structure, the dative DP must be SOURCE not GOAL (cf. (13) above). (91) and (92) show that a non-BP DP object has a distributive reading only if the IO is GOAL not SOURCE. The conditions underlying the distributive reading of a non BP-DP are thus distinct from those underlying the same reading of a BP DP:

(91) a. On a donné le même ordinateur à Marie, Jeanne, et Suzanne.
b. *On a donné la main à Marie, Jeanne, et Suzanne.

(92) a. On leur a ecrasé la main (à Marie, Jeanne et Suzanne).
b. *On leur a acheté le même ordinateur (à Marie, Jeanne, et Suzanne).

2.3.3

Neither Guéron nor V&Z accounts for the fact that the IA construal is not always excluded in English when the BP DP has a definite determiner. In English, IA is excluded in Structure I if the BP N has no modifier, as in (92), but is acceptable, as in French, if N has a restrictive modifier, as in (93) and (94):

(92) a. Jean lève la main.
b. *John raises the hand.

(93) a. Jean a levé la main droite (pas la main gauche).
b. Jean a levé la main qui etait blessée.

(94) a. I asked John to raise the right hand (not the left one).
b. John raised the hand which was wounded.

If the definite determiner functions as an operator in (92), as both theories claim, it must not so function in (93) and (94).

The lack of contrast between English and French in (93) and (94) recalls structure III, which has the same status. Can the two groups of examples have something in common which has so far been overlooked?

2.4 The Possessor-Raising hypothesis (Szabolsci 1983; Landau 1999)

If IA is the name of a construal associated with a variety of structures, there is nothing to say about the derivation of 'IA structures': there is no such grammatical object.

There is a respectable literature devoted to an alternative theory, however. Under the Possessor-Raising hypothesis, a POSS DP is generated within a DP denoting a possessed item, and raises out of its host to a position in VP in syntax. This hypothesis has been advanced for possessive structures in general in both relational grammar and in generative grammar.

2.4.1

Szabolsci (1983) claims that in Hungarian a dative POSS DP generated within the DP denoting a possessed object can and sometimes must move out of its host.

Hungarian has two possessive structures. In both of them, the possessed object agrees in phi-features with the possessor. The structures differ in that the lexical POSS DP is marked NOM in one case (95) and DAT in the other (96). The possessed DP may denote a BP or any other nominal such as 'a guest', 'a hat', etc.:

(95) a. az en-0 kar-ja -i - m
the I-NOM arm-poss-pl-1sg.
'my arms'

b. az en-0 vendeg-e-m
the I-NOM guest-poss-1sg.
'my guest'

(96) a. en -nek- e - m a kar-ja -i - m
I-dat-poss-1sg. the arm-poss-pl-1sg.
to me DAT the arms
'my arms'

b. en -nek-em a vendeg- e- m
I dat -1sg. the guest-poss-3sg.
to me DAT the guest
'my guest'

A NOM POSS DP is located to the right of the definite determiner *az* while a DAT possessor is to its left. Szabolsci proposes that the NOM DP is in Spec Infl within DP while the DAT DP is in a type of Spec COMP position, Spec Komp. Thus DP and CP have analogous structures, with both subject and peripheral Spec positions.

Support for this hypothesis comes from *wh*-movement, where Comp functions as an escape hatch for movement in both the nominal and the sentential domain. A DAT DP located in Komp may raise out of its nominal host to a higher position in the sentence, while a NOM DP in Spec IP may not.

In Hungarian, all FOCUS elements, including *wh*-elements, obligatorily move to a Comp-like Focus position in the sentence. So whenever the possessor is a *wh*-word it must be marked dative, as in (97), and raise to the Focus position. The *wh*-marked DP may raise as a whole (98), or else the Dative POSS DP in KOMP may raise independently (99):

(97) ki-nek a kar-ja-0
who-dat the arm-poss-3sg.

(98) [FOCP kinek a karja]$_i$ hosszu t_i
to-who the arm (is) long?

(99) [FOCP kinek]$_i$ hosszu [DP t_i a karja]
to-who (is) long the arm?

2.4.2

Landau (1999) makes a similar claim for structures containing a POSS DATIVE in both Hebrew and French.

Landau proposes that in both languages, the POSS DP is generated in the Spec position of the DP which denotes the possessed object. In Modern Hebrew, Dative case cannot be checked in this position, so the DAT Poss DP obligatorily raises to Spec VP, the only position in which DAT case can be checked:

(100) a. Gil sataf le-Rina et ha-panim.
Gil washed to-Rina ACC the face
Gil sataf [VP le-Rina$_i$ [DP t_i et ha panim]]
b. Gilles lui a lavé la figure.
Gilles lui$_i$ a lavé [DP t_i la figure]

As in Hungarian, the possessed object may denote not only a body part but any concrete object:

(101) a. ha-yalda kilkela le-Dan et ha-radio.
the girl spoiled to Dan acc. the radio
b. Gil savar le-Rina et ha-miskafayim.
Gil broke to Rina acc. the glasses

Again as in Hungarian, topicalization and *wh*-movement show that the POSS DP and the BP DP can be disjoint, as expected uner the Possessor-Raising hypothesis (cf. Borer and Grodzinsky 1986):

(102) [li] hem kilkelu [et ha-radio], ve-[laxem] hem kilkelu [et ha-televizia].
to me they spoiled acc. the radio and-to-you they spoiled acc. the-tv

(103) [le-mi] ha-yalda kilkela [et ha-radio]?
to who the girl spoiled acc. the radio
'Whose radio did the girl spoil?'

The Possessor-Raising hypothesis neatly accounts for locality, obligatory antecedent, and C-command constraints on IA as properties of movement.

Furthermore, the Possessor-Raising hypothesis accounts for locality constraints on IA better than Guéron's control hypothesis. Control occurs not only into an argument but also into an adjunct:

(104) a. Jean a voulu [PRO danser].
b. Jean est venu [pour PRO danser].
c. Jean a dansé [sans PRO tomber].

In Hebrew, however, although the POSS DP can bind a trace within either a direct object DP or one embedded in a locative, directional or instrument PP, it cannot bind into a purpose or privative adjunct:

(105) a. Gil yasav le-Rina ba-mitbax. LOC PP
Gil sat to Rina in the kitchen
b. Gil ganav le-Rikna me-ha-tik. DIR PP (SOURCE)
Gil stole to Rina from the bag
c. Gil hitkaleax le-Rina im ha-sabon. INSTR PP
Gil bathed to Rina with the soap

(106) a. *Gil pitpet le-Rikna lem'an ha-hofa'a. PURPOSE
Gil chatted to Rina for the performance
'Gil chatted for the benefit of Rina's performance.'
b. *Gil hitaleax le-Rikna bli ha-sabon. PRIVATIVE
Gil bathed to Rina without the soap
'Gil bathed without Rina's soap.'

As A-movement is blocked from an adjunct, the Possessor-Raising hypothesis automatically accounts for the ungrammaticality of the sentences of (106), while the control hypothesis incorrectly predicts their well-formedness.

Construal is also simpler under a movement hypothesis than under the binding hypothesis. Under the movement hypothesis, the POSS DP is construed in the position of its trace, movement having been triggered for formal reasons alone. The semantic relation of possession is explained by whatever accounts for the same relation within a DP: Landau proposes that the POSS DP receives a possessor theta-role from the D head. The possessor construal need not be derived from binding or from the notion of 'lexical chain'.

Landau makes an interesting attempt to account for lexical constraints on IA in purely structural terms. Recent theories propose the existence of both a VP and a vP node in the sentence (cf. Chomsky 2000). While the VP node is always

projected, vP, situated directly above VP, is projected only if the verb selects an Agent argument.

Landau assumes that dative case can only be checked in Spec VP, and that Hebrew lacks VP shells (cf. Larson 1988b). So Possessor Raising must fail if Spec VP is already occupied by an argument in d-structure. Agentive transitive verbs like *wash* or *spoil* accept Possessor Raising because they select an Agent argument merged in Spec vP. Spec VP is free to lodge the raised dative possessor:

(107) Gil sataf le-Rina et ha-punim.
Gil washed to Rina the face
[IP Gil_j sataf [vP t_j [VP le-$Rina_i$ tv [DP t_i et ha panim]]]]

Spec VP can also host a POSS DAT when V is unaccusative:

(108) ha-kelev ne'elam le-Rina.
the dog disappeared to Rina
[DP t_i he-kelev]$_j$ ne'elam le-$Rina_i$ [t_j]

But a transitive verb such as like or see, with two internal arguments, THEME and EXPERIENCER or PERCEIVER, excludes possessor raising. In (109), for example, the second internal argument occupies Spec VP, and there is no position in which dative case can be checked. In terms of the Minimalist framework of Chomsky (1995c), (109) crashes because it contains an unchecked uninterpretable case feature:

(109) *Gil ra'a le-Rina et ha-punim.
Gil saw to Rina the face
[IP Gil_j [VP t_j ra'a [DP le-Rina et ha panim]]]
NOM *DAT ACC

If Landau's analysis of the POSS DAT in Hebrew extends, as he claims, to IA structures in French, then Guéron's analysis of IA as anaphoric binding must be incorrect. Under her analysis, the acceptability of IA in French II, which is parallel to POSS DAT structures in Hebrew, requires a determiner with phi-features. Languages like Hebrew or Arabic, with invariable definite determiner, should not have the 'IA Structures' I and II, but, like English, only Structure III.

The Possessor-Raising analysis encounters both theoretical and empirical problems, however.

Chomsky (2000) tightens the grammar by eliminating case checking as a motivation for movement. If one adopts this approach, then POSS DP raising is not forced by case checking, and there must be another F which triggers it, at least when the moved element is not *wh*-marked. But it is not clear what this F could be, since the DP is construed in its original position.

In Hungarian and Russian, as well as, apparently, in earlier Hebrew, a POSS DP with oblique case generated within DP can stay in situ rather than raise to

VP or CP. The fact that a (non-*wh*-) possessor DP can remain in the position in which it is generated and construed sheds doubt on the Possessor-Raising hypothesis altogether. If a POSS DP can check its FFs in the Spec DP which includes it, then it must do so, for reasons of economy, by the Principle of Last Resort (Chomsky 1995c).

Possessor Raising violates a well-established constraint on extraction: extraction from a DP with a definite determiner is grammatical only if DP is construed as non-specific (cf. Enç 1991). This construal usually requires that the main verb have existential force, thus, that it does not presuppose the referentiality of its direct argument. Verbs which imply physical change of the denotatum of the direct object exclude extraction to the degree that they presuppose the existence of the physically affected object:

(110) a. Who did you meet/see/recognize/look for [the brother of t]?
b. *Who did you wash/beat/kill/spit at [the brother of t]?

Yet the same type of sentence which excludes *wh*-extraction because the object is bodily affected by the action of the verb, is the only type which allows the IA construal. Verbs with an existential construal, which do not affect the object and therefore allow *wh*-extraction, reject the IA construal.

(111) a. Je lui ai lavé/pincé/écrasé le bras.
b. *Je lui ai cherché/vu/reconnu le bras.

The fact that Possessor Raising violates the well-established specificity constraint on extraction from DP sheds further doubt on its existence.

Nor is there any necessity for a DAT DP to raise to Spec VP in Hebrew in order to check its case there. A DAT DP is already merged in Spec VP under its other, non-possessive, construals. Borer and Grodzinsky (1986) distinguish three construals of the dative in Hebrew: reflexive, benefactive, and possessive. Each construal is subject to syntactic and thematic constraints. Only the possessive DAT functions as an argument undergoing movement. The possessive and the benefactive may take either full or clitic form but the reflexive only has clitic form. Under the possessive construal, the dative is obligatorily associated with an object in VP; under the reflexive construal, it is obligatorily associated with the external argument; while under the benefactive construal it takes scope over the VP as a whole. These properties suffice to distinguish three construals of the same syntactic object. As none of them can be shown to depend on movement, the simplest theory generates the DAT DP in VP as a single syntactic constituent subject, in Hebrew as in French, to a variety of construals at the syntax–semantics interface.

The hypothesis that perception verbs block raising of the POSS DAT DP on the basis of their theta-grid leads Landau to exclude grammatical (112) from the data to be explained by his theory:

(112) Gil ra'a le-Rina et ha-pupik.
Gil saw to-Rina acc. the belly-button

Landau notes that sentences like (112) are acceptable under a possessive construal only if the acc. DP denotes a body part or an item of clothing. He considers such structures 'quasi-idiomatic': they are acceptable only if they involve embarrassment to the possessor of the body part. The more intimate the body part, the easier it is to have Possessor-Raising with a perception verb.

Instead of eliminating such structures from consideration, one may, on the contrary, consider them as crucial evidence that the IA construal is not determined by the theta-grid of the verb.

Cheng and Ritter (1987), among others, proposed, on the basis of contrasts like that between between (109) and (112), that the acceptability of IA structures depends on the semantic notion of affectedness: the referent of the BP DP must be affected by the action the verb denotes. Landau challenges this claim with a list of examples in which the possessed object is clearly not affected. A ring which one seeks is not affected by the action; it may not even exist. A kitchen is not affected by people laughing in it:

(113) a. Gil xipes/maca le-rina et ha-taba'at.
Gil sought/found to Rina acc. the ring
b. Gil madad/cilem le-Rina et ha gina.
Gil measured/photographed to Rina acc. the garden

(114) a. Gil caxak le-Rina ba-mitbax.
Gil laughed to-Rina in the kitchen
'Gil laughed in Rina's kitchen.'
b. Gil histakel le-Rina al ha-kova.
Gil looked-at to Rina on the hat
'Gil looked at Rina's hat.'

The evidence provided in (113) and (114) to show that the POSS DAT structure in Hebrew lacks an affectedness constraint suggests that the analysis of this structure cannot be extended to the French 'IA structure' II, which is subject to such a constraint.

The data suggest that the Hebrew structure is not in fact an 'IA structure' at all, but, rather, a 'possessive structure', which, like all possessive structures, can denote IA if it happens to contain both a [+human] DP and a BP nominal. The examples of (113) and (114), which show the absence of affectedness, crucially do not contain body-part DPs. The discussion of (112) shows that affectedness does apply whenever the DP happens to be a body part (or an article of clothing). Only those Hebrew structures which contain body-part objects are comparable to Structure II in French. Hebrew possessive structures with non-body-part DPs don't even exist in French with a possessive rather than a benefactive reading:

(115) a. Je lui ai cherché/trouvé la bague.
I to her looked for/found the ring
b. Je lui ai photographié la cuisine.
I to-her photographed the kitchen
c. *Je lui ai ri dans la cuisine.
I to-her laughed in the kitchen

In French, the IA construal of Structure II is a subcase of the benefactive construal of the same sentence. In Hebrew, the IA construal of Structure II is a subcase of the possessive construal of the same structure, just as for French *son bras/son livre* or English *his arm/his book*, except that the POSS DP and the BP nominal are disjoint in Hebrew.

That the IA construal is not a subset of BEN construals in Hebrew is shown by the ordering of constituents. In French both BEN and POSS DP may follow the possessed object DP:

(116) a. J'ai cassé sa poupée à Marie. BEN
I broke her doll to Marie
b. J'ai pris la main à Marie. POSS
I took the hand to Marie

In Hebrew, however, the DAT DP precedes the possessed object under the possessive construal but follows it under the BEN construal. Thus the possessor interpretation is obligatory only in (117a). In (117b), *le-Rina* has a Benefactive interpretation, and the face can be either Rina's or Gil's, according to Landau:

(117) a. Gil sataf le-Rina et ha-punim. (= (107))
Gil washed to-Rina the face
b. Gil sataf et ha-panim le-Rina.
Gil washed the face to-Rina

Similarly, when a non-body part, the dative DP is construed as benefactive in (118a), where it follows the object, and possessive only where it precedes the object, as in (118b):

(118) a. Gil lakax et ha-tik le-Rina.
Gil took acc. the bag for Rina
b. Gil lakax le-Rina et ha-tik.
Gil took Rina's bag

Whether the IA construal is a subset of the set of BEN construals, as in French, or of the set of possessive construals, as in Hebrew, the data show that affectedness is pertinent for the IA subset whether or not it is a property of the non-IA superset.

3 Semantic or conceptual based theories of IA

The structure-based theories of IA presented above do not filter out all the ungrammatical IA construals. Affectedness is one type of semantic constraint on some cases of IA. Other, apparently lexical, constraints also turn out to involve a semantic calculation.

(i) *Constraints on verbs* In structure I, it is not so much the choice of verb which is restricted as the interpretation of the structure. As mentioned above, Hatcher (1944) and Kayne (1975) note that the VP must describe a simple physical gesture. (119a) contrasts in grammaticality with (119b) because 'lever la main' denotes a physical gesture while 'laver la main' does not.

(119) a. Je leve la main.
I raise the hand
b. *Je lave la main.
I wash the hand

In most cases of IA, the VP must denote an action, not a state.

(120) a. Je leve la main.
I raise the hand
b. *Je regarde la main.
I look-at the hand

(121) a. Je lui prends/gratte/chatouille la main.
I to-her take/scratch/tickle the hand
b. *Je lui aime/admire/adore la main.
I to-her like/admire/adore the hand

(122) a. I hit Bill on the hand.
b. *I admired Bill on the hand.

The contrasts between (109) and (112) in Hebrew and between (123a) and (123b) in French show that the notion of action goes beyond lexical definition:

(123) a. *Je lui vois la figure/la tête/le nez.
I see to-him/her the facé/the head/the nose
b. ?Je lui vois les jambes/le ventre/le cul!
I see to-him/her the legs/the stomach/the ass

Under the IA construal, the action of the verb must affect the body part DP. (123b) is better than (123a) because in traditional society, a look at a person's private body parts is experienced as a quasi-physical attack. (123) should be less

acceptable in a nudist colony, or when discovering a body buried under an avalanche, where there is presumably no embarrassment and no 'affect'.

(ii) *Constraints on adjectival modifiers* Under the IA construal, the BP DP may not contain a non-restrictive adjective, which does not restrict the set of objects which N denotes, as in (127) below, but represents, rather, the point of view of the speaker, as in (124b):

(124) a. Jean a levé la main.
b. *Jean a levé la belle main.

This constraint is a general property of DPs containing a bound variable:

(125) a. un homme dont j'ai rencontré [la belle-fille t]
a man I met [the daughter-in-law of t]
b. *un homme dont j'ai rencontré [la belle fille t].
*a man I met [the beautiful daughter of t].

(126) a. Everyone loves his son.
b. *Everyone loves his intelligent son. (OK if restrictive)

The reference of a DP with a semantic free variable, whether it is syntactically PRO, a *wh*-item, or a covert predicate variable, depends on the successful construal of a binding relation at the syntax–semantic interface. The insertion of an evaluative adjective like 'belle' in (125) or 'intelligent' in (126) presupposes the referentiality of the evaluated object independent of the truth value of the sentence. This creates a semantic contradiction.

The insertion of a restrictive modifier, on the other hand, as in (127), does not create a presupposition of referentiality but merely adds a restriction to the definition of the set of objects N denotes:

(127) a. Jean a levé la main gauche.
b. Jean a levé la main qui a été blessée.

That it is its (non-) restrictive construal, not the adjective itself, which is crucial for IA is shown in (128) below, from Nicol (1997):

(128) a. Je lui ai lavé la main sale.
b. *Je lui ai lavé le nez sale.

(iii) *Only body part DPs participate in IA* This constraint on the IA construal is largely correct. Although it is possible to extend the IA construal to a limited class of objects in contact with the body, such as clothing or objects held in the hand, in no case may a physically separate object such as a member of the family participate in a structure construed as IA rather than Benefactive:

(129) a. Jean tombe la veste.
b. Ho perduto l'ombrello.
c. *Elle lui lave le fils.
d. *Elle soulève le cousin.

Italian, unlike French, appears to allow kinship terms under the IA construal:

(131) a. Gianni e Maria non hanno aiutato neppure la (propria) figlia.
b. *Jean et Marie n'ont meme pas aidé la (propre) fille.

However, as Delfitto and D'hulst (1995) point out, Italian, unlike French, allows a genitive pronoun between the det and the head N:

(132) a. la sua figlia
b. *la sa/sienne fille

Moreover Italian, unlike French, has null pronominals. (132) is not an 'IA construction' at all, but a standard possessive structure, equivalent to *sa (propre) fille* in French.

In order to account for these apparent semantic factors, some linguists have incorporated explicit semantic conditions into their analyses of IA. These analyses happen to target mainly structure II.

3.1 Cheng and Ritter (1987)

Cheng and Ritter posit the same IA structure for Mandarin Chinese and for French. The structure contains P and V heads which assign an 'affected theme' theta-role. This theta-role functions indirectly as a lexical-semantic filter on the construal.

(133a) and (b) in Mandarin correspond to (134a) and (b) in French.

(133) a. Ta ba Lisi da-shang-le shou.
he BA Lisi hit-wounded-ASP hand
'He (prt) wounded Lisi's hand.'
b. Ta ba juzsi bo-le pi.
he BA orange peel-ASP skin.
'He (prt) peeled the skin from the orange.'

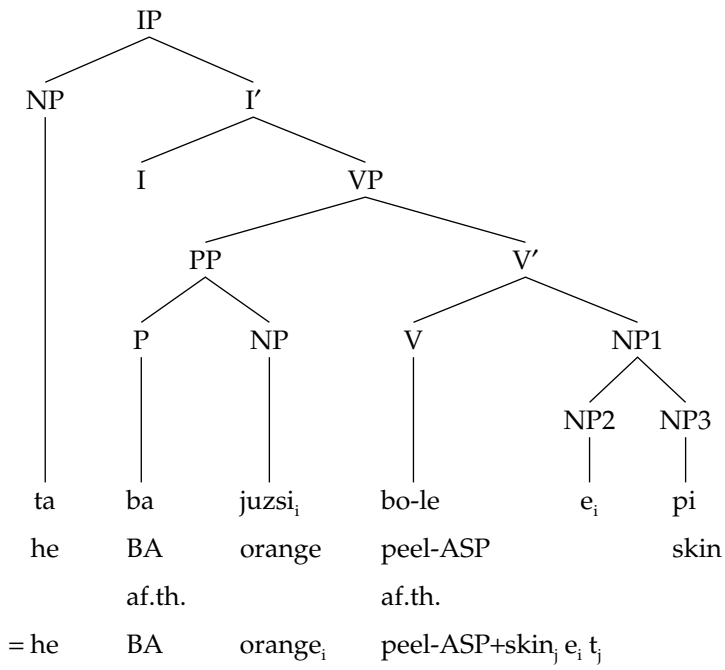
(134) a. Il a lui blessé la main (à Marie).
b. *Il lui a epluché la peau (à l'orange).

Although French admits only body part DPs under the IA construal whereas Chinese allows part–whole relations in general, the relevant structure is subject to the same constraints in both languages. Locality must be respected. The DP cannot contain a non-restrictive adjective. The relation excludes kinship terms

and alienable possession: *son* may not replace the BP NP *hand* in (133a) nor may a pronoun replace *orange* in (133b). The DP must be affected by the verb.

(133c) shows the structure of (133b) in Mandarin:

(133) c.



In (133c), both the particle *ba* and V *peel* assign the theta-role "affected theme" (af.th). The complement of the verb is a small clause (NP1) whose subject (NP2) is an ec bound by the preverbal NP and whose predicate (NP3) denotes the possessed nominal. Lack of non-restrictive adjectival modification in IA automatically follows from the predicative status of NP3.

In Logical Form, NP3 raises onto the verb, forming a complex predicate. In (133), the verb *peel* and the sc predicate *skin* jointly assign the theta-role of 'affected theme' to the preverbal NP *orange* which binds the small clause subject.

This syntactic analysis of Structure II does not extend to other 'IA structures', however. In (135a), two Ns would raise to V, one of which is embedded in a PP, which is a barrier to syntactic raising in French. In (135b) the two raised Ns are predicates of different NPs; but no verbal predicate, not even a complex one, can have two subjects:

(135) a. Je lui$_i$ ai mis la main$_i$ sur la tête$_i$.
b. Je lui$_i$ ai mis la main$_j$ sur la tête$_i$.

Unlike French II, the Mandarin structure is not limited to body parts but includes part–whole relations, while eschewing kinship terms. Interestingly, Structure III in English and French has the same property:

(136) a. I took the baby by the arm.
b. I took the pot/the knife by the handle.
c. We sang the song from the beginning (to the end).
d. We climbed the mountain to the top.

(137) a. *I wounded him on/through/via the son.
b. *I dragged him with the daughter.

(138) a. J'ai pris le bébé par le bras.
b. Je lui ai lu l'histoire du début à la fin.
c. J'ai pris le couteau par le manche.

(139) a. *Je l'ai blessé par le fils.
b. *Je l'ai pris avec la fille.

Instead of taking IA as the construal of disjoint DPs shared by Structure III in English and French and Structure II in Mandarin, we may instead take the less lexically restricted part–whole construal of the disjoint DPs as basic. Then, just as IA is a subconstrual of possession in genitive DPs in general and in structures with disjoint DPs in Hebrew, and a subconstrual of BEN structures in French II, it is a subconstrual of the part–whole interpretation of disjoint DPs in Mandarin II and in English and French III. No structure is limited to the IA construal.

3.2 Koenig (1999)

Koenig adopts anaphoric control as the syntactic theory of IA, and adds to it a semantic constraint based on a kind of affectedness.

An IA structure would be one which contains a body-part NP with a lexically inserted covert reflexive possessor subject. The covert subject is construed as PRO and is subject to anaphoric binding, as in Guéron (1983, 1985). All structures containing the configuration (140), in which a DP with anaphoric possessor is bound by an antecedent, are subject to a semantic constraint involving the denotatum of NP1 and that of NP2 with respect to the situation the sentence describes:

(140) $NP1_i \ldots NP2\ Poss_i$

(141) Semantic Constraint on the Antecedent of a Body Part NP in the Inalienable Possession Construction: An NP1 can only be the antecedent of the (unexpressed) possessive anaphor of a BP NP2 if the BP is the active zone of the referent of NP1 (Koenig 1999: 238).

Let *x* and *y* be two entities filling the argument postions O1 and O2 in the same sentence. *x* is the active zone of *y* iff the semantic role entailments which characterize O2 are true of *x* (Koenig 1999: 239)

(141) accounts for the grammaticality of (142–144) below:

(142) Jean a poussé la balle de la main.
Jean pushed the ball with the hand

(143) a. Marie lui a lavé les pieds.
Mary to-him washed the feet
b. Marie a lavé les pieds au saint homme.
Mary washed the feet to the holy man

(144) Les pieds nous demangent.
the feet us itch

In (142), the NP *Jean* (= *y* in (141)) has the theta-role of ACTOR. The theta-role entailment of an ACTOR is that it causally initiates the action in which it participates. The active zone of *Jean* is that part of his body which bears that same entailment. Since *Jean* may not initiate the action of pushing the ball without the hand also causally initiating the action, the actor entailment holds of both the hand (= *x* in (141)) and *Jean*. So (142) passes the semantic filter (140).

In (143) *lui/le saint homme* has the BENEFICIARY/MALEFICIARY theta-role whose theta-role entailment is that the bearer profit/suffer from the occurrence of the event. In (143) both *lui/le saint homme* and *les pieds* profit from the event.

In (144), both *nous* and *les pieds* have the theta-role entailment of the PATIENT of the action (*les pieds* having an additional role of cause).

In ungrammatical (145), however, *Marie* is ACTOR but *les pieds* does not share its theta-role entailment: *les pieds* do not causally initiate the action. (145) is ungrammatical because it violates the Semantic Constraint (140).

(145) *Marie a lavé les pieds.
Mary washed the feet

Koenig concludes that the necessity for Constraint (140) to filter IA structures which binding theory alone accepts shows that the grammar can impose non-configurational semantic conditions on syntactic processes. In particular, model-theoretic notions such as theta-role entailments must be available to grammatical description.

The semantic filter proposed by Koenig has the advantage of recognizing, and attempting to make explicit in terms of the notion 'active zone' the fact that affectedness involves not only the verb and the BP DP in a sentence but also the relation between the POSS DP and the BP DP with respect to the situation they participate in.

The empirical coverage of the analysis is insufficient, however. It predicts that (140) should function in the same way for all IA structures since all of them contain the configuration (139). It thus cannot account for the contrasts in (146) and (147). Although *le nez* or *la main* is the active zone of the antecedent DP in both sentences, only one of the sentences is grammatical:

(146) a. Je l'ai frappé sur le nez.
b. *Je lui ai frappé le nez.

(147) a. Le lutteur a écrasé la main à son adversaire.
b. *Le lutteur a écrasé son adversaire à la main.

Moreover, the notion active zone suggests that IA sentences invariably denote actions. But IA can be construed on a stative sentence also. It is hard to interpret 'les yeux' or 'les epaules' as having any active zone relation to Jean in (148):

(148) Jean a les yeux bleus, les epaules larges, etc.

The crucial claim that the antecedent DP and the BP DP must share the same theta-role entailments in an IA-structure cannot be tested, for no independent criterion of a theta-role entailment is given. One way to test theta-role entailments is by syntactic distribution: two NPs must have the same theta-role entailment if they appear in the same syntactic environments. But BP DPs, which are [–animate], do not appear in the same syntactic environments as AGENTS and BENEFACTIVES which are typically [+animate]:

(149) a. Jean a battu Pierre avec ses mains nues. AGENT
'Jean beat Pierre with his bare hands.'
b. *Les mains de Jean ont battu Pierre.
'The hands of Jean beat Pierre.'

(150) a. J'ai cassé le pied à Jean. BEN
'I broke the foot to Jean.'
b. *J'ai cassé le pied à la table.
'I broke the foot to the table.'

(151) a. Beulah, peel me a grape. BEN
b. *Beulah, peel the fruit salad a grape.

Similarly, the subject in (152a, b) is a BEN or PATIENT, which bears the brunt of the state which the verb denotes. But as *les pieds* cannot replace *il* in (152c), what motivates the claim that the two DPs have the same theta-role entailment?

(152) a. Il souffre des pieds.
'He is suffering in the feet.'
b. Il souffre.
'He is suffering.'
c. *Ses pieds souffrent.
'His feet are suffering.'

Finally, the analysis makes no attempt to situate IA within the theory of grammar. Each language would have its own list of IA constructions. If so, one should

expect each language to have its own list of control, anaphora, *wh*-, focus, passive-middle constructions, etc. While this is true, descriptively, to some extent, much progress has been made towards deriving individual constructions from a general theory of principles and parameters. The assumption that each language has a list of specific syntactic structures is a step backwards.

3.3 Jackendoff (1996), Nicol (1997)

For Cheng and Ritter (1987), affectedness is a lexical-semantic Feature of the THEME theta-role assigned by the particle *ba* in Mandarin and by certain verbs in Mandarin and French. For Koenig (1999), affectedness is a semantic constraint on IA, which somehow intervenes in the syntactic derivation, although it is not clear where and how.

Jackendoff (1996) is more explicit on this last point. He proposes a grammar with parallel structures in which phonological, syntactic and conceptual rules all feed a derivation. Semantic or phonological principles can block or favor a syntactic structure at any point in the derivation via correspondence rules which link the separate components:

(153) PHONOLOGY↔Corr. rules↔SYNTAX↔Corr. rules↔
CONCEPTUAL STRUCTURE

Nicol (1997) applies Jackendoff's model to the grammar of IA. Nicol addresses the question why the IA Structure II is more productive in French with a clitic than with a full dative POSS DP. He proposes that the answer to this question lies in the correspondence rules linking Syntax to Conceptual Structure.

Although V&Z treat the full and clitic dative forms as equivalent, Dorel (1980) had already shown that while both forms are acceptable under the GOAL construal of the DAT DP, this is not always the case under the BENEFACTIVE or IA construals:

(154) a. Marie a donné un cadeau à son pere. GOAL
Marie gave a present to her father
b. Elle lui a donné un cadeau.

(155) a. Marie a cassé son jouet à Pierrot. BEN
Marie broke his toy to Pierrot
b. Marie lui a cassé son jouet.

(156) a. Jean a caressé la joue à Marie IA
Jean carressed the cheek to Marie
b. Jean lui ai caressé la joue.

(157) a. Marie va lui casser la vaisselle. BEN
b. *Marie va casser la vaisselle à sa mere.
Marie will break the dishes to her mother

(158) a. Jean lui a donné un coup dans les dents. IA
b. *Jean a donné un coup dans les dents à Max.
Jean gave a blow in the teeth to Max

Nicol notes that all speakers accept both the clitic and the full form with dynamic verbs, in particular under an idiomatic construal:

(159) a. Paul tirait les cheveux à sa petite soeur.
Paul was pulling the hair to his little sister
b. Paul lui tirait les cheveux.

(160) a. Le fisc casse les pieds aux contribuables.
the taxman breaks the feet of (harrasses) the taxpayers
b. Le fisc leur casse les pieds.

(161) a. Cet incident a ouvert les yeux à Marie-Jeanne.
this incident opened the eyes to Marie-Jeanne
b. Cet incident lui a ouvert les yeux.

In the standard dialect of French, however, sentences like (162a), cited by V&Z as grammatical (cf. (77a) above), are acceptable only with a clitic, not with a full DP:

(162) a. *Le docteur a examiné la gorge à la petite fille.
the doctor examined the throat to the little girl
b. Le docteur lui a examiné la gorge.

Nicol reviews in detail the distribution of clitic and full DATIVE DPs in Structure II in terms of the lexical-semantic type of the verb, the target of its action, and the affect of the action on the BP DP and/or the Poss DP. He distinguishes three classes of verbs: type A accepts only the clitic, type B accepts neither clitic nor full DP, and type C accepts both clitic and full DP.

Type A: verbs of static contact, lacking 'affect': coller, toucher, envelopper, effleurer, etc.:

(163) a. *Les bandelettes enveloppaient la tête à la momie.
the bands envelopped the head to the mummy
b. Les bandelettes lui enveloppaient la tête.

(164) a. *La robe colle à la peau à Christine.
the dress sticks to the skin to Christine
b. La robe lui colle à la peau.

Type B: verbs of inchoative contact and of impact: atteindre. attraper, blesser, frapper, poignarder, taper, etc.:

(165) a. *Le jeune homme a attrapé/blessé le visage à son agresseur.
b. ?? Le jeune homme lui a attrapé/blessé le visage.

Type C: verbs which imply dynamic contact or change of state with affect: serrer, enlacer, briser, casser, éclaircir, nettoyer, amputer, inciser, lever, pousser, traîner, etc.:

(166) a. Il a serré la main à son pire ennemi.
he shook the hand to his worst enemy
b. Il lui a serré la main.

(167) a. Il a cassé le bras à son adversaire.
he broke the arm to his opponent
b. Il lui a cassé le bras.

(168) a. La charbon noircissait le visage aux mineurs de fond.
the coal blackened the visage to the miners
b. La charbon leur noircissait le visage.

(169) a. Le chirurgien a amputé le bras au soldat.
the surgeon amputated the arm to the soldier
b. Le chirurgien lui a amputé le bras.

Nicol proposes that every IA structure is linked by a correspondence rule to a lexical conceptual structure (LCS). The same verb may appear in several structures, linked to as many LCS. The sentences of (170) correspond to two LCS, which both include the dynamic LC primitive GO:

(170) a. Le blessé$_i$ a levé la jambe$_j$.
the wounded man raised the leg
b. L'infirmier$_i$ leva la jambe$_j$ au blessé$_k$.
the nurse raised the leg to the wounded man

The LCS (171) corresponds to the syntactic structure (170a). It contains three lines, one which indicates dynamic movement; a second, which indicates a part–whole relation between *jambe* and *blessé*; and a third, which indicates that the *blessé* is affected by the action (Nicol 1997: 510):

(171) $\begin{bmatrix} \text{GO } ([\text{JAMBE}]_j, [_{\text{Path}} \text{ UP } [\ ]]) \\ [\text{BE}_{\text{Iden}} ([\gamma], \text{PART OF } [\alpha])] \\ \text{AFF } (\text{BLESSE}_i^{\alpha}) \end{bmatrix}$

LCS (172) corresponds to structure (170b). It differs from (171) in that it contains a causative notation in the first line and includes two affected participants instead of one in the third line:

(172) $\begin{bmatrix} CS_{entrain} + ([\alpha], GO ([JAMBE]_j, [_{Path} UP [\ ]]) \\ BE_{Ident} ([\gamma], PART OF [\beta])] \\ AFF (INFIRMIER^{\alpha}_{i}, BLESSE^{\beta}_{k}) \end{bmatrix}$

Nicol proposes that an IA structure with full lexical Dative is acceptable only if (i) the LCS contains the conceptual primitive GO, (ii) the direct object is TARGET of the action, and (iii) the dative DP is AFFECTED.

The ill-formedness of stative (173) is due to the absence of the GO primitive in its LCS. And that of (174a), which contrasts with (174b), is due to the absence of AFFECT in its LCS:

(173) *Je lui ai admiré les jambes.

(174) a. *La belle prit la main au Prince. (Type B)
b. Le judoka prit le bras à son adversaire. (Type C)

Structure III is related by a correspondence rule to an LCS in which there is an AFFECT primitive, but no TARGET. In such cases, the Affect is global.

Nicol also locates the difference between English and French with respect to Structure II in the determiner of the BP DP, not in its morphology, like Guéron, nor in its construal, like V&Z, but via a language-specific correspondence rule of English which targets the determiner.

Structures I and II are associated with an LCS in which the BP DP corresponds to a TARGET of AFFECT, while Structure III is associated with an LCS with global affect: not only the BP but the POSS DP is affected by the action of the verb. English has a special correspondence rule, (171), which requires Global rather than local AFFECT whenever the determines a DP denoting a possessed item:

(175) [DO the N] = Possessor = [+Affected: [–Target]]

Nicol concludes from his detailed study of the distribution of the DAT DP in Structure II that syntactic analysis alone cannot distinguish grammatical from ungrammatical IA structures. Each structure must be linked to an LCS which functions as a semantic filter on its construal.

Nicol's analysis shows that the semantics of the IA construal is more complex than was previously supposed. AFFECT is not a defining property of all IA structures: there is no affect in class A of Structure II (cf. (59–60)). When affect is a property of IA, it may be targeted, as in French I and II, or global, as in Structure III.

The analysis has weak spots, however. One concerns the justification for parallel grammatical components, the other the notion of affect.

In Jackendoff's LCS component, a vocabulary of primitive conceptal notions combine to form LCS formulas which correspondence rules link to syntatic structures. Any theory of grammar which relates syntax and meaning must, like Jackendoff's, assume the existence of a limited repertory of semantic primitives,

and must furthermore relate each syntactic structure to a meaning. It is not evident, however, that LCS formulas and correspondence rules are necessary to accomplish these tasks. It must be shown that a grammar with less machinery, which maps primitive conceptual notions directly onto the morphemes of a syntactic output, and interprets these as a function of the compositional interpretation of the syntactic structure, cannot give the same results as one which appeals in addition to LCS and correspondence rules.

Under Nicol's account of IA, the correspondence rules which link syntactic structures to LCS are subject to language-particular constraints, such as that which stipulates that all IA structures in English must have global affect. Such an account is descriptive at best, rather than explanatory.

The non-equivalence of the theta-role entailments of POSS and BP DPs raises the question of the pertinence of the notion 'affect'. This notion is never defined, for good reason: it changes from structure to structure. In structures with BEN dative, affectedness refers to the psychological consequence of a situation on an individual. In 'IA structures', affectedness, when pertinent, involves physical contact. Psychological affect may be construed as a quasi-physical attack, as shown by Hebrew (112) and French (123), and by the idioms based on IA in (176):

(176) a. (i) Il a perdu la tête. (Structure I)
(ii) He lost his head.
b. (i) Tu me casses les pieds. (Structure II)
(you to me break the feet = you bore me)
(ii) I gave him a piece of my mind.
c. (i) Je l'ai regardé droit dans les yeux. (Structure III)
(ii) I looked him straight in the eye.

Inanimate objects are not subject to psychological affect, so *handles* cannot replace *legs* in structure II. Yet *handles* can easily replace *legs* in Structure III. Affect must therefore refer to something different in III than in II:

(177) Je lui ai vu les jambes (à Marie).
I to-her saw the legs (to Marie)

(178) *Je lui ai vu la poignée, à la casserole.
I to-it saw the handle, to the pot

(179) a. John pulled her by the arm.
b. I picked the pot up by the handle.

Finally, not all 'IA structures' involve affect (cf. (180)). Whatever it is, affect is not a general property of the IA construal:

(180) a. Les bandelettes lui couvrent le front.
the bands to her cover the forehead

b. Les cheveux lui descendent de la tête aux pieds.
the hair to her descends from the head to the feet

4 A return to binding

4.1 IA as anaphora

'Alienable' as well as 'inalienable possession' often involves phi-feature agreement between the possessor DP and the possessed NP. In Romance possessives, the head agrees in number and gender with a pronominal genitive. In the English genitive, either the prenominal POSS DP is a pronoun ('my book') or D bears an 's morpheme ('John's book') which functions as an AGR head (cf. Zribi-Hertz 1998). In Hungarian, the N which denotes a possessed item agrees in number and gender with the possessor.

Other possessive structures do not manifest phi-feature agreement between the POSS DP and the possessed N. Such is the case in French when the POSS DP is post-nominal ('les livres de ma cousine' – 'the books (m. pl) of my cousin (f.sg.)'), or when the DAT possessor and the possessed object are disjoint, as in Hungarian, Hebrew, or English III.

This last point may be incorrect, however. Perhaps Guéron (1983, 1985) was too hasty in concluding that the definite determiner does not function as a pronominal in English. The theory of the IA construal would be unified in an elegant manner if the definite determiner could be construed not only as an operator or an expletive, but also as a pronominal.

In English, the definite determiner has pronominal properties. The TH morpheme of *the* corresponds to a deictic F in the demonstrative paradigm THIS, THAT, THOSE.

Like pronouns and unlike anaphors, demonstratives, with or without a head N, trigger coreference over a sentence boundary:

(181) a. The apples look good.
b. They are good.
c. Allow me to offer you this one.
d. This is the best one.

Like pronominals and unlike anaphors, the demonstrative can have ostensive reference.

(182) a. Thank God he left (said of an obstreporous guest).
b. This is beautiful.

Like pronominals, demonstratives denote only objects when they vary in phi-features but they denote predicates and propositions when they are invariable:

(183) a. Mary est belle.
f. f.
b. Je le/*la sais.

(184) a. John is sick, and he won't come to the party.
b. (i) I know it/*them.
b. (ii) I know that/*those.

(185) a. Mary is both beautiful and smart.
b. That/*those she is.

Let us add *the* to the paradigm of demonstrative pronominals bearing a deictic F. We may now characterize the IA construal as anaphora in the widest sense, including both anaphoric and pronominal binding.

Unlike pronouns or deictic *this/that*, the definite determiner may not appear without an accompanying N in English or French:

(186) a. It is too big.
b. This is too big.
c. *The is too big.
d. The box is too big.

However, in other languages, such as Spanish, an isolated determiner may be construed as a head modified by a clause:

(187) El bañarse immediatamente despues de comer es peligroso.
(The to-swim right after to-eat is dangerous)

The contrast between *the* and *the box* in (18c, d) recalls a similar contrast between bare *wh*-words like French *que* or Portuguese *que*, and full *wh*-DPs such as *quel livre* or *que livro*. The bare forms have a more restricted distribution than the full forms (cf. Ambar 1987, for a full discussion):

(188) a. Je sais quand/où/à qui tu as parlé.
b. *Je sais que tu a dit.

(189) a. Que livro a Joana comprou?
(What book Joana bought?)
b. *Que a Joana comprou?
(What Joana bought?)

Like the bare WH morpheme, the bare TH morpheme needs a lexical item to determine its range, in place of its missing phi Fs.

The hypothesis that *the* may be construed as a pronominal morpheme in *the boy* just as *le* may be construed as an anaphoric morpheme in *le bras* illuminates certain properties of IA.

Like a pronominal or a deictic element, 'the N' participates in discourse anaphora. There need not even be an antecedent if the intended referent is unique in context:

(190) a. A boy entered. He sat down.
b. A boy entered. The boy sat down.

(191) a. Get him out of here.
b. The sun is shining.
c. John and Mary sold the car.
d. I forgot to turn off the gas.

'The N' can be related to a discourse antecedent by metonymy as well as by identity:

(192) a. Le roi est mort. Les drapeaux sont en berne.
b. The king is dead. The flags are flying at half-mast.

This is harder for a pronoun, which normally has to match its antecedent in phi-features, yet it can be forced:

(193) a. I saw the Joneses last night.
b. *I like him.
c. I like HIM better than HER.

The pronominal determiner *one* is construed referentially when it has a F for number, and generically when it does not:

(194) a. These pears are for sale.
Give me the firmest ones.
b. One does what one can to survive.
*Ones do what ones can to survive.

The, having no phi-features, also allows generic reference:

(195) a. Dr Jones has studied the kidney for years.
b. Mrs Smith often goes to the opera.

Most often, however, *the* is not generic, but functions as a pronominal linked to a discourse topic. The N predicate of the DP is linked to the topic by a part–whole or metonymy relation. The discourse topic may be created explicitly, like *the body* or *the Jones family* in (196), or it may be derived implicitly from the lexical

items in the sentence, like the implicit 'the body' in (195a) or the information that John and Mary own a car in (198c):

(196) a. The hand is an important part of the body.
b. When swimming, one should keep the hands close to the body.
c. In the Jones family, the father does all the housework.

(197) a. These gloves keep the fingers warm as toast.
b. Swimming is good for the back.

(198) a. Gianni e Maria hanno venduto la machina.
b. Jean et Marie ont vendu la voiture.
c. John and Mary sold the car.

V&Z argue for the hypothesis that the BP DP has a type denotation by showing that backward pronominalization, which is a criterion for coreference rather than binding, applies to French IA:

(199) Parce qu'elle est sensible, le médecin a décidé de leur protéger la tête d'une cagoule.
(Because it is sensitive, the doctor decided to protect to them the head with a hood)

Backward pronominalization also occurs in English, however, where, according to V&Z, nominals refer to tokens rather than types. The evidence of (200) suggests that backward coreference is not type reference associated with NP, but normal pronominal coreference of two DPs.[2]

(200) a. Because they are so sensitive, the doctor said to keep the eyes out of the sun at all times.
b. Because it is still fragile, the doctor advised keeping the arm in a sling for two weeks more.
c. Because it is a gas-guzzler, John and Mary sold the car.

More precisely, it seems that in all cases of backward pronominalization, the sentence implies a discourse topic to which the pronoun and the full DP refer independently.

Just as pronouns are in complementary distribution with anaphors, pronominal *the hand* is in complementary distribution with anaphoric *la main*. An anaphor is used when a bound pronominal and its antecedent are co-arguments of the same domain, while a pronominal is used if they are in different argument domains. Thus, PP contains an anaphor when V and P define a single predicate, as in (201a), but a pronoun in (201b), where PP functions as an adjunct (i, ii) or as predicate of a small clause (iii, iv).

(201) a. (i) She threw water on herself/*her.
(ii) Mary told stories about herself/*her.
(iii) Mary has a fixation on herself/*her.
b. (i) Come sit beside me/*myself.
(ii) Mary heard stories about her/?? herself.
(iii) She saw a serpent next to her/*herself.
(iv) She put the key behind her/*herself.

In the 'IA Structure' III, the definite determiner is embedded in an adjunct, which excludes anaphors. *The* in (201c) replaces the pronoun in (202b) not the anaphor in (202a):

(202) a. *I hit him on himself.
b. I hit him on his arm.
c. I hit him on the arm.

The construal of the French determiner *le* with respect to IA may target either its phi-features or its [+D] F. In the first case, *le* N is a bound anaphor in Structures I and II. In the second case, *le* N is a bound pronominal in Structure III. In English, the IA construal is not possible in structures like I and II because its definite determiner lacks phi-features.

Because the domains of anaphoric and pronominal binding are complementary, we may conclude that whenever English has the same 'IA structure' as French, the determiner is functioning as a pronoun in both languages. As noted above, the antecedent and bound DP are in different domains when the latter is in a PP adjunct in Structure III. They are also in different domains even in Structure I whenever the determiner of the BP DP defines an argument domain distinct from that of its antecedent.

Consider the sentences in (203) and (204), which are grammatical in both English and French:

(203) a. Le médecin a demandé à Jean de lever la main droite.[3]
b. ? The doctor asked John to raise the right hand.

(204) a. Le medecin a demandé à Jean de lever la main qui lui faisait mal.
b. The doctor asked John to raise the hand which hurt him.

Following Kayne (1994), we propose that the addition of restrictive material in sentences like (204) allows the determiner to function as the head of a restrictive relative clause internal to DP:

(205) [CP1 He raised [DP the [CP2 $hand_i$ [C' $which_i$ [IP t_i hurt]]]]]

Extending this analysis to (203), we may take *le* to function in general as an anaphoric element within the syntactic domain of its governor, but as a pronominal when it heads its own syntactic domain.

4.2 [+D] as a phi-feature

Phi Fs may be either formal features (FF), destined to be erased in syntax after checking, or referential features (RF), destined to be construed at the interface. For example, number and person are formal features on predicates but referential features on arguments. Korean has a FF for 'honorificity' which is a morphologically visible agreement F on V, but an intrinsic RF of certain lexical items such as 'mother' or 'professor' (cf. Kang 1999). Gender is a FF in French which appears on N, A, and participial heads, but a RF in English, where no lexical head is marked for gender. The same morpheme may carry a FF in one context and a RF in another. In English, *s* is a referential number F on N (*book* vs. *books*) but a formal [nb. + pers.] F on V (*John runs*) and a formal person F on D (*John's book*). In Hungarian number and person (but not gender) are formal FFs which appear on N or V under agreement with a DP in Spec Agr.

Formal Fs on a head are valued under agreement between the head and a DP in its Spec position. They are also valued on an N head under local binding, as in reflexive sentences, which also falls under F-agreement. RFs appear on the DP which determines agreement in Spec, or binds an anaphor within an argument domain or a pronominal over domains.

In English, [+D] is a referential, pronominal F which is bound over argument domains, as in Structure III or in sentences like (203b) and (204b) above. But nothing prevents a language from treating [+D] as a FF under local agreement.

The Construct State (CS) DP in Hebrew exhibits agreement in 'definiteness' between DP in Spec AGR and the N head which raises from AGR to D:

(206) beit ha sefer
[DP beit$_i$ [AGRP ha sefer AGR t$_i$]]
+D +D
house the book

'Definiteness' would correspond to the construal of [+D] as a formal O-F defining an agreement relation between the DP in Spec AGR and the N head. When N raises to D, the locus of reference in DP, the formal +D F of N is construed as a referential F, establishing the referentiality of the DP as a whole. Raising from N to D has the function of changing the construal of +D from FF in AGR to RF in D.

When the Possessor and the possessed object are distinct DPs in Hebrew, [+D] is a referential F. This is shown by the fact that the POSS DP may be related to the possessed object over a PP boundary, as in (207). This boundary blocks anaphoric relations such as agreement, binding or A-movement:

(207) Gil niskav le-Rina al ha-mita.
Gil lay to-Rina on the bed
'Gil lay on Rina's bed.'

Anaphora is local agreement involving FFs while pronominalization is non-local agreement between referential Fs. [+D] functions in Hebrew as a formal F below D and as a referential F in D. +D is solely a referential F on D in English and French. If it were a FF, we might expect those languages to have CS. But neither English nor French have a referential DP without a pronominal specifier or a (in)definite determiner to carry the +D F. In French, in the absence of a +D phi-F, a Noun can obtain a +D RF under Spec-Head agreement on the CP level within DP, as illustrated in (208b), perhaps via transfer of the referential +D F of the determiner to the formal +D F in the particle *de* in Comp:

(208) a. *fille le roi t
b. la fille du roi
[DP la [CP fille [C' de [AGRP le roi AGR fille]
+D +D +D

5 Semantic constraints on IA and the Minimalist Program

The minimalist framework of Chomsky (2000) integrates the hypothesis of Distributive Morphology (Halle and Marantz 1993) according to which syntactic nodes contain only the formal features necessary to trigger 'merge' and 'move'. Words are inserted late, in the phonology. Construal at the interface must then be limited to the interpretation of referential Fs and the syntactic configurations in which they appear.

Certain primitives of Jackendoff's theory could function at the syntax–semantics interface as the conceptual counterparts of referential Fs. The syntactic articulation of these RFs would be determined compositionally on autonomously derived syntactic structures.

Notions such as GO or IDENTITY plausibly correspond to FFs of verbal heads construed as RFs and concepts at the interface. Such notions are easy to grasp and necessary throughout the grammar. GO distinguishes states from events. This distinction is crucial for filtering verbal forms like the progressive, and for matching time adverbials with VPs. IDENTITY translates a F on the copula which distinguishes predicative from identificational sentences ('John is my best friend' vs. 'My best friend is John') and is necessary to derive cleft and pseudo-cleft construals.

Other notions which are essential for construal correspond to entire substructures, not to syntactic heads. 'Part of' in (172) and (173) above is a concept which is both easy to grasp and crucial for the construal of partitive DPs and for

filtering extraction from DP of French *en* or Italian *ne*, but it requires defining relations between nominals within a structure.

A conceptual primitive may be easily construable and independently necessary in the grammar yet not be crucial for the IA construal. GO, which is a plausible semantic primitive, is not pertinent for the construal of the IA examples of (209):

(209) a. Marie a les yeux bleux.
Marie has blue eyes.
b. Elle est entrée la tête haute.
She entered, head held high.
c. Les cheveux lui descendent de la tête aux pieds.
Her hair goes down from her head to her feet.

As for AFFECT, this notion, if it is one, cannot be defined on a head, as it must at the least relate a nominal to a situation. Nor is it easy to grasp, as its meaning changes with each structure, nor is it a necessary property of IA.

The fact that no syntax-based analysis of IA has yet been able to account for the interpretive constraints which filter these structures does not imply that such analyses cannot do so in principle and that the syntactic component must incorporate semantic constraints. The theories we have sampled above, which propose semantic constraints, are unable to account for the full range of the data.

What needs to be discovered is a still unknown FF or Fs whose referential counterparts interact at the syntax–semantics interface with other formal features and with the construals of syntactic configurations to derive the equivalent of affect where it is needed, in dynamic IA sentences, for example, but not where it is unwanted, in stative sentences.

Some of the formal and lexical Fs which are crucially involved in the semantic calculus of IA have already been discovered: Formal phi-Fs and the [+D] F, lexical Fs such as [+animate] and the semantic 'body-part' F which together changes a 'possessive' construal into an 'IA' construal. Crucial syntactic constraints include c-command, locality, and whatever defines an argument domain. The missing FF will interact at the interface with these other Fs and with the construal of the sentence as denoting an action or a state. As the list of FFs available to natural language is small, the missing feature or features should not be impossible to identify.

NOTES

1 A reviewer notes, interestingly, that one can say (i) but not (ii) in English. She or he asks whether (15a) might not represent a 'type' reading of the object DP in the sense of Vergnaud and Zubizarreta (1992).

(i) He raised his hand.

(ii) *He has his blue eyes.

(ii) is possible, in fact, under a special reading, as the answer to a question like "What does John have going for him anyway that Mary is so smitten?" Exactly the same is true for (iii) in French, first pointed out by A. Culioli (p.c.):

(iii) (*) Il a ses yeux bleus.

For us, this data suggests, not necessarily a type construal of the DP, but a difference in interpretive domains. Pronominal reference is acceptable only if the DP containing the pronominal is situated in an interpretive domain distinct from the domain which contains the antecedent. In the acceptable readings of (ii) and (iii), such a domain is defined by presupposition.

2 A reviewer notes, very pertinently, that in fact definite DPs in English can denote types (e.g., 'The dog is a mammal' – my example), contrary to V and R's claim, and suggests that the DPs in both (198) and (199) denote types. We believe there is no contradiction between this hypothesis and the text suggestion that *the* is a pronominal in English. According to Carlson (1977a), types, or KINDS, are individuals, like names and pronouns. The characterization of *the eyes* in (199a) as a type/kind, does not prevent it from being construed as an individual with the discourse function of referring back to an implicit topic, the body. *The eyes* would function with respect to *the body* like *him* with respect to *John* in ordinary pronominalization: each entity includes a subset of the features of an antecedent to which it must be linked in order to refer.

3 Schmitt (2000) provides a Kaynean analysis of adjectives like *wrong* which are precisely the ones allowed with IA BPs.

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36 Inverse Linking

ROBERT MAY AND ALAN BALE

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1 Introduction

In this chapter, we will consider a phenomenon known as *inverse linking*, a term coined by May (1977) to describe the most salient readings of sentences such as 'Someone from every city despises it'.[1] What is interesting about this sort of sentence is a particular 'quirk' in its interpretation, in that the embedded quantifier phrase preferentially receives a wide-scope interpretation. In the example at hand, 'every city' has scope over 'someone', so that it is naturally read as meaning that for each city, there is at least one person that despises that city. Inverse linking has prompted much discussion since the early 1970s in the linguistic literature. Our aim here is to explore the influence the inverse linking phenomenon has had on syntactic theory, especially with respect to the syntactic representation of quantifier scope. By examining such issues, we hope to demonstrate how the understanding of this phenomenon has highlighted the difficulties in investigating the link between language and meaning.

In the discussion to follow, we will initially address research conducted during the 1970s and 1980s on the significance of inverse linking for the issue of the logical representation of natural language in general, and on notions of covert, syntactic movement in particular. As we will see, inverse linking was one of the strongest examples for motivating post Surface Structure (SS) movement of quantifier phrases, a form of covert movement called Quantifier Raising (QR). Ironically, although the effect of these examples is acknowledged in the post-eighties literature, post-eighties theories of QR are generally incompatible with inverse linking. In an effort to rid ourselves of this irony, we will focus on two of the principal works on inverse linking, viz., Larson (1985c) and May (1985). We hope to re-establish the judgments concerning this type of quantifier interaction while also discussing some of the specifics of Larson's and May's theoretical machinery.

2 Linked and non-linked quantification

In this section we will argue for a parallelism between Quantifier Phrases (QPs) that interact with each other within a complex NP and QPs that interact as arguments to the same verb or predicate relation. First we will discuss the kind of syntactic constructions relevant for inverse linking. We will then demonstrate how such constructions reveal scope ambiguities (or lack thereof) that mirror the ambiguities found with subject and object quantifiers. Finally we will also demonstrate how quantifiers within complex NPs undergo the same type of scope freezing effects as regular subject and object quantifiers.

To begin, inverse linking involves complex NPs with the syntactic structure shown in (1a) below. The preposition can be locative in nature (in English this includes *at*, *from*, *in*, and *on* to name a few) or it can simply serve as a connector to a relational noun (in English, this preposition is normally *of*). The relevant NPs each have quantificational determiners such as *every*, *some*, *a*, *two*, *three*, *at least four*, *few*, *most*, etc. Some example phrases appear in (1b):

(1) a. $[_{NP}$ Det $[_{NP}$ $[_{N}$ Noun] $[_{PP}$ $[_{P}$ Preposition $[_{NP}$ . . .]]]]]
b. Someone in every building, every man from a small town, at least three women on each committee, a parent of every child . . . etc.

These complex NP constructions demonstrate at least two types of scope interactions: an inversely linked interpretation where the embedded quantifier takes scope over the main NP and a surface-scope reading with the opposite interaction. Some prepositions like *with* and *without* resist any inversely linked interpretations, only allowing the surface-scope reading. For example, (2a) is a statement about the resignation of most of the boys that are with every committee, rather than a statement about each committee having most of its boys resign. Similarly, (2b) states that there is at least one woman that is without every lipstick color. It cannot be read as making any claims that for every lipstick color, there is at least one woman without that color.

(2) a. Most boys with every committee resigned from their duties.
b. At least one woman without every lipstick color appeared on the news.

However, other than *with* and *without*, normally most prepositions demonstrate the same kind of scope interactions that are found with verbs and other predicates. For example, the sentences in (3) can have either an inverse-scope interpretation or a surface-scope interpretation. Whether the quantifiers interact as arguments to the verb or as members of the same complex NP seems to make little difference. (See also Gillon (1996) who makes similar observations about distributivity and collectivity effects in such constructions.)

(3) a. Someone joined every committee.
b. Someone on every committee voted for the amendment.
c. At least one woman is on five of the committees.
d. At least one woman on five of the committees voted for the amendment.
e. Every boy in the school skipped two classes.
f. Every boy in two classes went to the washroom.
h. Two sisters met each committee member.
g. Two sisters of each committee member came to the meeting.

Also, just as inverse scope is blocked by sentential complements to verbs, so too is the inversely linked interpretation blocked in complex NPs with sentential complements. For example the sentences in (4a) and (4b) can only have a surface-scope interpretation where there is one boy that annoyed all of the parents:

(4) a. A boy knew that he annoyed every parent.
b. A boy that annoyed every parent skipped school.

Similarly, just as negative quantifiers in the object position cannot scope over universal subjects, so too are negative quantifiers prohibited from scoping over universals that contain them:

(5) a. Everyone joined no committees.
b. Everyone on no committees felt uninvolved.

The sentence in (5a) cannot be interpreted as saying that there are no committees that everyone joined. Similarly (5b) cannot be interpreted as saying that there are no committees such that everyone on such a committee felt uninvolved. Parallelism between the two types of constructions remains even to the point of having the same type of idiosyncratic scope restrictions.

Such parallelism suggests that perhaps both types of scope interactions should receive similar explanations within linguistic theory. However, there are some instances where this parallelism breaks down. For example, negative quantifiers do not seem to allow for an inversely linked interpretation when they have a universal quantifier embedded within. This is a bit puzzling considering that

such interactions are permitted when the negative quantifier is the subject and the universal quantifier is the object. (Thanks to an anonymous reviewer and Kyle Johnson for drawing our attention to such breakdowns in parallelism.)

(6) a. Nobody on every committee voted for the amendment.
b. Nobody joined every committee.

The sentence in (6a) cannot have an interpretation where for every committee, nobody on that committee voted for the amendment. In contrast, (6b) can have an interpretation where for every committee, nobody joined that committee. Yet, even though the parallelism breaks down slightly here, similar constructions without the universal quantifier seem to allow for the inversely linked reading. For example, the sentence in (7) can have an interpretation where there are three cities such that nobody in those respective cities voted for the incumbent:

(7) Nobody in three cities voted for the incumbent.

In summary, the examples of parallelism seem too systematic to ignore. In fact, not only do complex NPs demonstrate the same type of scope ambiguities, they also conform to constraints similar to those governing verb-argument quantification. For example, consider some of the scope-freezing effects mentioned in Fox (1999), and accounted for by his principle of Scope Economy:[2]

(8) a. Two volunteers greeted every producer.
b. Two volunteers greeted every producer. Bill did too.

The sentence in (8a) is true, whether it was the same two volunteers that greeted each producer, or two different volunteers for each producer. However, (8b) can only be true in the situation where it was the same two volunteers. The same kind of scope-freezing effect also exists for NP-embedded prepositional objects. Consider the sentence in (9):

(9) a. Two volunteers greeted the producer of every movie.
b. Two volunteers greeted the producer of every movie. Bill did too.

The sentence in (9a) is true whether it was the same two volunteers that greeted each producer, or two different volunteers for each producer. The sentence in (9b) is only true if it was the same two volunteers, just as in (8b).

The similarities in scope restrictions do not end here. NP-embedded prepositional objects also demonstrate a scope-freezing effect involving pronominal binding, and a similar kind of effect can be exhibited with quantifiers in verbal argument positions. This is particularly relevant for inverse linking, since binding is usually hypothesized to require a specific syntactic configuration: that of c-command. To demonstrate the similarities, consider the sentences in (10):

(10) a. Some politician disappointed every female voter.
b. Some politician disappointed every female voter before finishing his acceptance speech.
c. Some politician disappointed every female voter that voted for him.

The sentence in (10a) is true whether there is one politician that disappointed all the female voters, or whether for each female voter, a different politician disappointed her. However, as noted by Hornstein (1995), in (10b) and (10c) where 'he' and 'him' are understood as being bound by 'some politician', only the former reading is possible; the one where there is one politician that disappointed all the female voters. The same kind of scope-freezing effects exist for inversely linked constructions, as we observe in (11):

(11) a. At most two senators on every committee voted for the bill.
b. At most two senators on every committee voted to abolish it.
c. At least one senator on every committee that he thought was worthy of his attention, voted for the bill.

(11a) is true in a situation where on each committee, many senators voted for the bill, but where only two senators that were on all the committees voted for the bill. Such a situation characterizes the surface-scope interpretation of the sentence in (11a). In contrast, (11b) is not true in a similar situation: a situation where on each committee, many senators voted to abolish that same committee, but where only two senators that were on all the committees voted to abolish each of those committees. In (11b), the binding of the pronoun 'it' by 'every committee' forces the sentence to only permit the inversely linked interpretation. Binding of the pronoun 'he' by 'at least one senator' in (11c) has the opposite consequence. Much like (10c), only the surface-scope interpretation is available. This is demonstrated by the fact that the sentence is false in a situation where the following two facts hold: (i) for every committee there is one senator on that committee who both voted for the bill and thinks that his committee is worthy of his attention, and (ii) every senator thinks that there are some committees that he is not on, that are worthy of his attention.

In summary, the quantifier positions in inversely linked constructions demonstrate similar kinds of ambiguities and interpretive restrictions as quantifiers in regular argument positions. Such similarities suggest that any theory that provides a separate explanation of the quantificational ambiguities in complex NPs is missing a strong generalization about the parallelism between complex NPs and their sentential counterparts.

3 Initial accounts

In this section, we explore the earlier syntactic theories and their accounts of inverse linking before discussing more modern syntactic theories with a focus on how they could possibly deal with deriving inversely linked interpretations.

The beginning of the linguistic history of the inverse-linking phenomenon started with Hintikka (1974), who used such interpretations as evidence for a theory of branching quantification. Gabbay and Moravcsik (1974), in response to an unpublished draft of Hintikka's paper, also take note of such interpretations in their efforts to incorporate branching quantification into a Montague style semantics, as does Reinhart (1976) in her discussion of binding. However, although these authors used these constructions within their linguistic analysis, no author discussed the full syntactic complexity of inverse linking until May (1977). It was within this work, that May's main premises were introduced arguing for a syntactic level of Logical Form (LF) and a syntactic operation called QR, and it was amongst these issues that inverse linking had its greatest influence. So, here is where we will begin our discussion, exploring some of the details discussed in May (1977) before examining some of the more recent literature.

May (1977) hypothesized that scope ambiguity could be derived by syntactic movement. He conjectured that there was another syntactic level beyond Surface Structure called Logical Form (LF) derived by syntactic movements obeying familiar constraints on such movements. It was at this level that QPs moved to adjoin to a phrase above all inflectional elements; in the parlance of the day, adjoining to S. C-command relations determined scope interpretations. In sentences with multiple quantifiers, all else being equal, the final arrangement of the QPs was indeterminate relative to surface order, either QP free to move above the other, scope ambiguity being dependent on this choice.

One of the important insights recognized at the time by May was that syntactic constraints affected the possibilities of semantic interpretation vis-à-vis the possible scope order of multiple QPs. Although it is important to show the ability of syntactic theory to derive permissible interpretations, it is equally important (if not more so) to demonstrate that some inadmissible interpretations can be explained by syntactic conditions. For May (1977), inversely linked constructions were a prime example for demonstrating such a syntax–semantics interaction.

To see why, consider the sentences in (12):

(12) a. *Which did the girl kiss boy?
b. Which boy did the girl kiss?

These sentences demonstrate the well-known condition that overt movement affects a whole *wh*-phrase, not just part of that phrase. As May (1977) saw the examples in (12), it is only the *wh*-element 'which' that is targeted for movement, but a certain syntactic constraint, the 'Condition on Analyzability', (hereon COA), requires the whole NP 'which boy' to move. May used this movement restriction to derive interesting results in inversely linked constructions. Consider the sentence in (13):

(13) Each of the members of a key congressional committee voted for the amendment. (May 1977: 62, (2.1d))

According to May's theory of QR, the quantificational elements 'each' and 'a' are targeted for movement. Thus, in compliance with the COA, the entire phrase 'a key congressional committee' and 'Each of the members of . . .' must move to adjoin to the S-phrase. This means that the following two LF forms can be derived for the sentence in (13), where '*y*' marks the original position of 'a key congressional committee' and '*x*' marks the original position of 'Each of the members of a key congressional committee':

(14) a. *[$_S$ [Each of the members of y]$_x$ [$_S$ [a key congressional committee]$_y$ [$_S$ x voted for the amendment]]]
b. [$_S$ [a key congressional committee]$_y$ [$_S$ [Each of the members of y]$_x$ [$_S$ x voted for the amendment]]]

(14a) represents the interpretation where 'each' scopes over 'a key congressional committee' (i.e., where every member of any of the congressional committees voted for the amendment), whereas (14b) represents the inversely linked interpretation (i.e., where there is one congressional committee such that each of its members voted for the amendment). The interesting result for May was that (14a) is ill-formed since 'a key congressional committee' does not properly bind the variable '*y*'. As a result (14a) is ruled out by a general syntactic condition barring the occurrence at LF of unbound traces of movement (see Proper Binding Condition in Fiengo 1977).[3] What is of importance to note here is the general form of the argument May employs: syntactic constraints can explain the restricted interpretation of inversely linked constructions, and thus provide evidence that covert QR exists as a mechanism for explaining quantifier ambiguity.

By the mid 1980s, inverse linking was generally taken to be centrally important for establishing an operation of quantifier movement. As May (1985: 72) put it, "inverse linking serves as an existence argument for the level of LF itself," and the structures and operations employed to account for inversely linked sentences were also used to account for simpler structures without embedded quantification. The relevance of inverse linking in establishing the existence of a level of LF did not go unnoticed in the subsequent literature. Chomsky and Lasnik (1995: 65), in their review of Government and Binding theory, state, "The examples of 'inversely linked' quantification discussed by May . . . clearly indicate that S-Structure configuration does not suffice." Hornstein (1995: 25), in his review of LF through the period under discussion, also states that inverse linking provides strong evidence for LF. Although neither of these reviews gets into the full complexity of the issues surrounding inverse linking, they do acknowledge the importance of the phenomenon, especially in sentences that have inverse linking combined with pronominal binding, as in (15):

(15) Someone from every city despises it. (May 1985: (26))

The sentence in (15) can be interpreted with the quantifier 'every city' binding the pronoun 'it' (i.e., for every city, someone from that city despises it, it being

the city). On the standard assumption that this form of binding requires c-command, and on the assumption that the object position of the preposition does not c-command the Verb Phrase (VP), 'every city' must move from its apparent surface position to a higher position c-commanding the pronoun.[4]

With such observations peppered throughout the recent literature on LF, one would think that the theories of QR and LF since 1985 would at least be able to account for the phenomenon. In many cases, however, this does not seem to be borne out.

This lacuna is acknowledged by some authors. For example, Kayne (1998: 183) in trying to reduce covert movement to overt movement, mentions inverse linking as a problem that will have to be reanalyzed within his framework. However, an account within Kayne's theory would require that the QP in the prepositional complement, such as 'every city' in (15), somehow c-command a trace of the subject QP from its surface position. Although a solution via Kayne's analysis might be possible, it seems difficult to naturally create an overt structure for sentence (15) with the inversely linked interpretation, where 'every city' c-commands the VP or at least the trace of the VP, while also c-commanding the QP 'someone from . . .' or at least the trace of the QP. The structure would have to be something like (16):

(16) $[[_{IP}$ [someone from t_1] $t_2]_3$ [[every city]$_1$ [$[_{VP}$ despises it]$_2$ t_3]]]

Crucial to this structure is that the object of the preposition is overtly in a separate phrase from the actual preposition. Certainly a very suspicious consequence, especially considering that sentences such as 'Someone from incidentally every city despises it' are unacceptable in English. Further research may be able to establish or avoid this problem, but either way, the road ahead for Kayne's hypothesis seems very rocky indeed.

While Kayne makes it known that he is aware of the problem, others do not. For example, Aoun and Li (1993b) never mention inverse linking. Yet, the phenomenon is very problematic for their theory. Consider their two principles that they employ to syntactically derive quantifier scope; the Minimal Binding Requirement and their Scope Principle:

Scope Principle:
A quantifier A may have scope over a quantifier B iff A c-commands a member of the chain containing B. (Aoun and Li 1993b: 21)

Minimal Binding Requirement: (MBR)
Variables must be bound by the most local potential A-bar-binder.[5]

Now consider a much simpler version of the sentence in (15) without the pronoun.

(17) Someone from every city loves Esme.

In a sentence like (17) with the inversely linked interpretation, Aoun and Li (1993b) must hypothesize, in accordance with their Scope Principle, that 'every city' c-commands at least one member of the chain containing 'someone from x'. However, if 'every city' has scope broader than the operator 'someone from x', then its variable would be within the scope of the quantifier 'some'. It is unclear what consequences this would have for the MBR. According to the MBR the trace of 'every city' must be bound by its closest A-bar binder. Whether appearing in the restrictor phrase of a quantifier would violate the MBR is an issue that warrants some attention. Such a discussion might have led Aoun and Li to a more detailed definition of quantifier scope and variable interactions. (See the generalized structure in (18), where the potentially offending variable is the complement of the preposition.)

(18) [. . . [every city]$_x$ . . . [[some [one [from x]]] . . . t_y loves Esme]]

However, potential problems do not stop here. In the case of a non-inversely linked interpretation (where quantifiers maintain surface scope), it is doubtful whether there is a means of deriving the required interpretation. This is especially problematic considering sentences such as (19) where an inversely linked reading is impossible:

(19) Someone with every known skeleton key opened this door.

The sentence in (19) can only be a statement about one person who happens to have every known skeleton key. Clearly, the QP 'someone with x' has scope over 'every known skeleton key'. According to Aoun and Li's Scope Principle, a QP may have scope over another QP only if it c-commands a member of the chain containing that QP. For a sentence like (19), this would require having 'someone with x' scope over a variable for 'every known skeleton key'. Yet, 'every known skeleton key' must scope over 'someone with x' in order to bind the variable 'x'. Not only would this need multiple movements of 'every known . . . key' in order to create a variable that 'someone with x' could bind, but it would also require that 'someone with x' be closer to the variable of 'every known . . . key', thus violating the MBR. (See the generalized structure in (20), where the offending variable is t_x.)

(20) [. . . [every known . . . key]$_x$ . . . [[some [one [with x] . . .]] . . . t_x . . . t_y loves Esme]

Another mechanism could be used to derive the surface scope interpretation (see Larson 1985c; and Heim and Kratzer 1998, who derive the surface scope through type shifting), but such a mechanism would miss the generalization that inversely linked and surface-scope interpretations within complex noun phrases seem to parallel the scope interactions between subjects and objects within sentences.

Other syntactic theories suffer from comparable difficulties. For example, as first noted by Fox (1999: 46, n. 35), theories that rely on explaining scope variation through case checking are particularly challenged by inverse linking. Such theories include Hornstein (1995), and Kitahara (1996). In each of these theories, case-checking movements are employed to account for the ambiguous quantifier interpretations, scope being determined by c-command relations (see Kennedy 1997a for arguments against replacing QR with case checking). However, movement motivated by case checking is a procedure usually applied to verbal arguments. It is unclear how case checking would work for prepositional objects. To account for inverse linking and pronomial binding (required for the most salient interpretation of sentences like (15) above), these theories would need the prepositional object to move to a case-checking position c-commanding the NP complement and the VP object. Hypothesizing such a case-checking movement seems a little too problem-specific to be plausible.

However, there is a second group of problems for case-checking accounts of inverse linking. Hornstein's own arguments concerning inverse linking claim that non-quantificational NPs are not able to c-command out of PPs that are embedded within NPs, while in contrast QPs seem to have this ability (see Hornstein 1995: 25, and note 4 in this chapter). Yet, in a theory of movement for case-checking purposes, there should not be any difference between the movement of QPs and other non-quantificational NPs. Hence, it cannot be just the case-checking position that allows a QP to move and c-command out of an [NP PP] constituent. The obvious way out of this dilemma is to hypothesize a type of movement targeting quantifiers specifically. But this would just be reintroducing QR, when the whole purpose of case-checking theories of quantifier scope was to eliminate this rule.

Before concluding this section, it is important to note that the problems for theories of quantifier scope and inverse linking are even more general than those mentioned above. Many theories of quantifiers in natural language have an underlying assumption that QPs need to adjoin at some kind of propositional level in order to be interpretable. This assumption seems to be supported by the fact that the embedded QP can bind a variable in the object position in sentences like (15) above, repeated below as (21).

(21) Someone from every city despises it.

Since binding is thought to involve c-command, the fact that 'every city' can bind the object seems to suggest that 'every city' is in fact adjoined at a propositional level. (Note that all the propositional levels in such a sentence necessarily dominate the object position of the verb.) However these facts become problematic when considering non-inversely linked interpretations. If QPs need to take scope at a propositional level, then the embedded QPs such as 'every city' should be able to c-command the object even in non-inversely linked interpretations. Yet this is not the case. Consider the sentence in (22) below:

(22) At most two senators on every committee voted to abolish it.

The sentence in (22) can have a non-inversely linked interpretation where the voters are (at most) two senators that are on every committee. Yet (22) does not permit 'every committee' to bind the pronoun in the object position of 'abolish'. If the QP were able to bind the pronoun then the sentence should be true when the following two facts held: (i) on each committee, more than two senators voted to abolish that same committee, and (ii) there are at most two senators that are on every committee and that voted to abolish each of those committees. (22) however is not true in such a situation. Such judgments seem to suggest that the embedded QP does not adjoin to the propositional level when it is interpreted within the scope of the QP containing the preposition. To capture such facts, a means separate from QR might seem necessary (for example see Larson 1985c; Heim and Kratzer 1998). Yet in deriving the surface scope with a separate kind of procedure, one wonders whether the theory fails to capture the similarities between subject and object scope interactions and the interactions between quantifiers in complex NPs. Having two separate mechanisms predicts that the similarities are merely coincidental.

In summary, it appears that inverse linking has not been as central to theories of LF and QR as it was in the seventies and eighties, despite the emphasis on this phenomenon in originally motivating a need for such theories. Even authors that were aware of the data and its importance have conspicuously left it out of their analyses.

4 Re-acquainting ourselves with the eighties

Thus far, we have reviewed the early importance of inverse linking and noted its fading influence within the more recent literature. Yet, as just discussed, this fading influence is by no means justified. In an effort to understand somewhat more deeply what is at stake with inverse linking, we shall examine in some detail the discussions of Larson (1985c) and May (1985). However, before launching into a detailed review, a little background.

As mentioned in section 2, prior to the theories being considered in this section sentences with inversely-linked, complex NPs were thought to be unambiguous (see May 1977: 65 who states this opinion directly; yet also see Gabbay and Moravcsik 1974: 143, who implicitly assume the same judgment). However, things changed in 1985.[6] In *Logical Form*, May (1985: 72) suggests that surface scope interpretations are indeed available,[7] and this altered the status of the original arguments developed by May (1977), which used the lack of a surface scope interpretation as support for claiming that quantifier interpretation involved syntactic restrictions. Furthermore, in the early eighties, notions of subjacency became more prevalent as a means of restricting syntactic movement. In the traditional account of inverse linking (May's 1977 account), the QP in the complement

position of the preposition moved out of the subject NP to the adjoin at the sentential level. This movement was in direct violation of subjacency.

It was in this environment that Larson (1985c) and May (1985) built their syntactic theories in an effort to capture the subtleties of inverse linking.

4.1 Larson (1985c)

Before reviewing the details of Larson's analysis of inverse linking, it is appropriate to recognize his motivations. As we will see below, a great deal of his arguments tacitly assume that syntactic positions are mirrored by functional, logical combination (following Montague 1974 in this regard). With this underlying concern, Larson begins by exploring whether the object of a preposition moves at some syntactic level or not. For Larson (1985c), this concern was not as straightforward as it was for May (1977), who assumed that the quantifiers embedded within the prepositional phrase took sentential scope. However, Larson demonstrates that this is not necessarily always the case. Consider the sentence in (23):

(23) Max needs a lock of mane from every unicorn in an enchanted forest.
(Larson 1985c: (4a))

According to Larson, the sentence in (23) has a reading where 'every unicorn' scopes over 'a lock of mane' but where 'every unicorn' scopes under the intensional operator of the verb. In other words, (23) can have a *de dicto* reading, even when the object and the embedded quantifier are inversely linked. To establish this, Larson claims that (23) is true in the following context: "Max requires locks of unicorn mane for the performance of some magic spell. The spell stipulates no particular forest nor any particular pieces of mane. It is only necessary that he have some bit of mane from every unicorn in whatever forest is selected" (Larson 1985c: 2).

Larson argues from this example that "if we are to retain Montague's analysis of intensional object NPs, then the fact that each of these NPs may be read de dicto clearly entails that such quantification must take place *before* the object NP is combined with the intensional verb" (Larson 1985c: 2). In other words, as long as intensional verbs are thought to have scope only over their objects, then sentences such as (23) must demonstrate an inversely linked reading localized within the object NP itself. Furthermore, Larson claims that this internal NP derivation can be accomplished via a small modification of Montague's Grammar (Montague 1974). No syntactic operations need apply.[8]

This is an interesting conjecture that at first seems to undermine the syntactic enterprise of describing inverse linking. However, Larson quickly moves on to the problematic data for his *in-situ* theory of inverse linking. Consider the examples of pronomial binding as in (15) repeated here as (24):

(24) Someone from every city despises it.

Assuming that 'every city' is a generalized quantifier of type <<e,t>, t> (Barwise and Cooper 1981), then 'every city' must combine with a predicate such as "$\lambda x \exists y$ (PERSON(y) and FROM(y,x) and DESPISE(y,x))." Otherwise, 'every city' would not be able to bind the object pronoun (represented as the variable 'x' in the relation 'DESPISE'). However, this predicate contains the logical representation of the transitive verb and its arguments. This suggests that 'every city' must combine at the sentential level and not within the NP subject. A minor alteration to Montague's Grammar will not be able to derive the pronomial binding while maintaining that the QP remains within the NP. For Larson, the obvious solution is to move the quantifier out of the NP and let it combine sententially above the subject. Perhaps syntactic movement is required after all.

But now there is something of a paradox taking shape. There are two reasons that Larson thinks that movement out of the subject NP in (24) should not be permitted. First, complex NPs are typically an 'island' for movement, as demonstrated by the unacceptable (25):

(25) *Which city does [someone from e] despises it. (May 1985: (30a))

However, whether 'islands' apply to covert movement has always been a controversial subject in the syntactic literature,[9] so this might be taken as only weak motivation for not allowing movement out of the NP. His second reason for restricting movement is somewhat stronger. According to Larson, allowing movement to the sentential level predicts some unattested interpretations. Consider the sentence in (26):

(26) Two politicians spy on someone from every city. (Larson 1985c: 5 (12))

If the quantifier embedded in the PP is permitted to take sentential scope, then like a normal verb object it should be able to scope over the subject. Furthermore, since the embedded quantifier would be able to scope out of the NP, it should not need to carry that NP with it when it moves. In other words, movement out of the NP (without any further restrictions) seems to predict that (26) should have an interpretation where the embedded quantifier 'every city' has scope over the subject 'two politicians', but where 'someone' has scope under 'two politicians'. This means that (26) should be true in the situation where the following two facts hold: (i) For every city, there are two politicians who each spy on someone from that city; (ii) no politician spies on more than one person nor on the same person as another politician. But as Larson observes, (26) is not true in this circumstance.

This result is particularly damaging since (26) does seem to allow an interpretation where the embedded quantifier 'every city' has scope over the subject, but where the object also has scope over the subject. For example, (26) is true in the situation where the following two facts hold: (i) for every city, there is someone from that city that two politicians are spying on, and (ii) it is not the same politicians doing the spying in each city.[10]

In observing the interpretations available for (26), Larson makes the following generalization. If the quantifier embedded in the object's PP has scope over the subject, then the object must also scope over the subject. This result would make perfect sense if the embedded quantifier were unable to move out of the NP, since to move this quantifier above the subject would require moving the whole NP.[11]

Larson's observations seem to lead to contrary conclusions. Evidence from pronomial binding suggests that the embedded quantifiers move outside of the NP in which they are embedded, while the absence of certain interpretations suggests that the embedded quantifiers are unable move out of the NP.

4.2 Is Larson's Generalization really general?

Stepping back a little from Larson's approach, it seems appropriate at this point to examine the judgments concerning (26) a little more closely, for there are some apparent difficulties surrounding Larson's claims about this example. First of all, (26) involves a bare indefinite numeral quantifier and the indefinite quantifier 'someone'. As has been demonstrated repeatedly in the linguistic literature (see Reinhart 1997 for both a demonstration, and a list of other works), such quantifiers do not have the same scopal behavior as other quantifiers. Second, May (1985: 82–3) reports a counter-example to Larson's Generalization. Consider the sentence in (27):

(27) Some student will investigate two dialects of every language.

According to May (1985), there is an interpretation of (27), where 'every language' is understood as taking scope over 'some student', which in turn takes scope over 'two dialects'. Ignoring for the moment the indefinites in (27), how is it possible to tell that (27) has the interpretation that May claims? Normally, one would construct a situation that isolates the meaning. However, any situation where May's interpretation is true, is also a situation where, for every language, there are two dialects that were each investigated by a student.[12] This makes it impossible to isolate the interpretation where the subject has scope over the object from the interpretation where the object scopes over the subject (this is assuming that 'every language' has widest scope). So, to use Reinhart's (1997: 341) turn of phrase when explaining just this point, "there is no obvious way to know" whether the sentence has the scope reading it is claimed to have or not.

To avoid both the problem with the choice of quantifiers, and the problem with May's (1985) counter-example, consider the sentence in (28):

(28) More than half of the students will investigate at least one dialect of every language.

The sentence in (28) contains the quantifiers 'every', 'more than half', and 'at least one'. Each of these quantifiers does not demonstrate the wide-scope behavior

as exhibited by the bare numeral quantifiers and the indefinite 'someone'. (For example, none of the quantifiers seems to be able to scope outside of the modal operators in a conditional sentence as do 'two' and 'some'.) In addition, it is easy to isolate the reading where the embedded QP has widest scope, and the subject scopes over the object. For example, consider the situation where two-thirds of the students were assigned to investigate a dialect from every language except one: the excluded language differing for each student. Also, for each language, more than half of the students investigated a dialect from it, but no student investigated the same dialect as another. It seems difficult to understand (28) as being true in such a situation, even though this interpretation should be available if Larson's Generalization did not hold. This is despite the fact that (28) is true in the situation where, for every language, there is at least one dialect that more than half of the students will investigate.

So, perhaps Larson's Generalization does indeed hold.[13]

4.3 *Quantifier retrieval and storage*

So, how does Larson account for the observations under consideration? Building on a system first hypothesized by Cooper (1983), Larson proposes a dual operation for moving quantifiers: Quantifier Storage followed by Quantifier Retrieval. This process, often called Cooper storage, was one of the leading theories of quantifier movement and *wh*-movement during the early eighties. Leaving the (important) algorithmic details for the reader to explore independently, we will review the general design of the system. The idea proposed by Cooper was that during the course of combining the logical representations of the sub-sentential phrases into the logical representation of the entire sentence (from the bottom of the tree up), two possible operations could apply to QPs. Either, a QP could be combined and processed like other phrases, thus allowing the quantifier to take surface scope, or the QP could be stored, replaced by a variable, and later combined at the sentential level. When it is combined at the sentential level, the variable is abstracted, thus forming a predicate which can then be logically combined with the QP, represented as a Generalized Quantifier.[14]

In this manner, a QP is able to move into a position where it can take wide scope (the object moving above the subject, for instance). Cooper also worked in the notion of islands into his storage and retrieval system. For him, islands can be incorporated by adding a constraint which renders a phrase that is an island (an NP for instance) uninterpretable if there is a QP of some kind already in storage. To quote Larson (1985c: 8), the desired result of this kind of constraint is "to require that all stored quantifiers in the interpretation of an island node be quantified out or 'discharged' before that node is combined semantically with another constituent."[15]

Larson (1985c) modifies this system, by changing Cooper's storage operation (Quantifier Storage) into a push-down mechanism. Thus, for Larson multiple QPs could be stored at the same time, the only constraint being that the quantifiers have to be retrieved in the reverse order that they were stored. The

consequence of this is that if two quantifiers are stored, then the resulting interpretation will almost always have the inverse scope of the surface word order.

With this minor change, Larson can now explain the apparent paradox noted above. In inversely linked constructions, the embedded QP cannot be stored and then later retrieved at the sentential level. This would violate Cooper's island constraint. However, Larson redefines Cooper's constraint, such that if the NP is a QP, then this QP can be stored on top of the embedded QP. The island constraint thus would not apply, since the island would be in storage.[16]

In this way, the embedded QP is allowed to have sentential scope through movement, but only if the NP in which the QP is embedded is itself stored and combined at the sentential level. Since the storage system employs a push-down mechanism, the resulting structure after retrieval necessitates that the embedded QP scope over the NP in which it was embedded. A welcome result, considering the scope-freezing effects already mentioned to exist in this section and in section 1 above. For example, recall that in sentences like (22) above, repeated here as (29), pronominal binding forces the inversely linked interpretation:

(29) At most two senators on every committee voted to abolish it.

In Larson's system, 'every committee' has to combine at the sentential level in order to bind the pronoun 'it'. In effect, the push-down mechanism guarantees that 'every committee' scopes over 'at most two senators' when there is a pronoun acting as a bound variable in the VP.

Also, this kind of quantifier movement easily accounts for Larson's generalization, mentioned above. In sentences such as (28), repeated as (30), there are three quantifiers:

(30) More than half of the students will investigate at least one dialect of every language.

To move 'every language' above 'more than half of the students', 'at least one dialect' would have to be stored as well, otherwise the movement would violate the island constraint. Thus, before 'every language' could be retrieved, 'at least one dialect' would first have to be discharged at the sentential level, where it would scope over the subject. Even if the subject itself were stored, the push-down mechanism guarantees that in the resulting interpretation, quantifier scope will be the exact inverse of the surface word order ('every language' having scope over 'at least one dialect' which scopes over 'more than half of the students'). In this way, Larson's system forces the object to scope over the subject whenever the QP embedded in the object scopes over the subject.

This is a very strong result. Not only does Larson's system account for the available, inversely linked interpretations, it also rules out potentially invalid interpretations. Furthermore, Larson can maintain a unified account of island effects between covert and overt movement.

However, although Larson's system works well for inversely linked constructions and even common declaratives, its Achilles heel seems to be double object constructions. As noted by Breuning (2001), double object constructions seem to only allow surface scope. Consider the sentence in (31):

(31) My daughter Esme showed at least one newborn baby every wooden toy in the room.

The sentence in (31) is true in the situation where there is one newborn to whom Esme showed each of the wooden toys, but it is false in the situation where Esme showed every wooden toy to a different newborn. The second situation is what characterizes the inverse-scope reading. In Larson's system, if the objects of ditransitive verbs are subject to Quantifier Storage and Retrieval, then it would be difficult to explain why the inverse-scope reading is unavailable. Especially problematic, is the fact that the sentence in (32) is acceptable:

(32) What did Esme show her mother?

Since Larson employs his quantifier movement operations to account for *wh*-movement, the grammaticality of (32) suggests that these operations should apply to double object constructions.

4.4 Switching tactics: the basic argument of May (1985)

Like Larson, May (1985) is chiefly concerned with where the embedded quantifier moves. However, unlike Larson, he has no intent to maintain an isomorphism between syntactic structures and some kind of logical representation. May's underlying theme is that syntax simply constrains or enhances the range of flexibility involved in semantic interpretation, not that it determines this interpretation. With this in mind, let's consider May's (1985) theory of inverse linking.

In contrast with his earlier work, May (1985) is a little bothered by the idea of moving a quantifier out of an NP island. He asks rhetorically, "Why can QR extract a phrase from NP in mapping onto LF, but *wh*-movement cannot in mapping onto S-Structure?" (May 1985: 69). In the end, May thinks that island constraints are in a certain sense inapplicable to Quantifier Raising (see the discussion below). Nonetheless, with this question serving as background motivation, May (1985) proposes an alternative to his earlier theory of inverse linking. Instead of raising the embedded QP out of the NP to a sentential position in order to derive the inversely linked reading, May suggests that the QP adjoins to the NP in which it is embedded. Under this hypothesis the representation of 'Someone from every city despised it' would be as in (33) (see May 1985: 70–1):

(33) $[_S\ [_{NP1}\ [\text{every city}]_x\ [_{NP2}\ \text{someone from } x]]_y\ [_S\ y\ \text{despised it}_x]]$

In (33), the subject NP 'someone from every city' still adjoins at the sentential level, however 'every city' adjoins to the NP 'someone from *x*'. Of course, now

that May has this structure, the obvious question is how to derive the scope relations and quantifier binding effects. Crucial to both of these issues are May's (1985) definitions of c-command, Government, and his Scope Principle. The definitions of c-command and Government are quite straight forward, and are presented below.

C-command:
A c-commands B iff every maximal projection that dominates A dominates B, and A does not dominate B.

Government:
A governs B iff A c-commands B and B c-commands A, and there are no maximal projection boundaries between A and B.

The Scope Principle is a little more complex, but it can be summed up informally as follows. If two QPs are not in a Government relation with each other, then scope is dependent on constituency hierarchy. However, for any set of quantifiers that are all governed by one member of that set, any quantifier ordering is possible. For example, take a set of quantifiers A, B, and C, where A governs B and C, then the possible quantifier orderings would be ABC, ACB, CAB, CBA, BAC, and BCA. The scope relation would be dependent on the quantifier order that is chosen.[17]

In considering the application of the Scope Principle to inverse linking, May relies on his articulation of adjunction structures on which the segments of a maximal projection, such as the segments of the NP in the adjunction structure in (33), are not themselves maximal projections, but only parts thereof. Thus, any element adjoined to some phrase is not dominated by that phrase. What this means for adjunction structures of the form $[_{XP1}$ A $[_{XP2} \ldots]]$, is that A will always c-command XP, and XP will also c-command A. In addition, since the only nodes intervening between A and XP are the segments of XP, A governs XP.

The consequence for the QP and the NP in (33), is that 'every city' governs 'someone from x'. In principle, this means that either scope relation should be available: the inversely linked interpretation or the surface scope interpretation. However, since the NP contains a variable that must be bound by the QP, only the inversely linked interpretation is permitted by May (see May 1985: 75, where this aspect of the Scope Principle is fully spelled out).

So, what about surface scope interpretations? As mentioned earlier, unlike May (1977), May (1985) recognizes that he has to account for surface scope interpretations. To get this interpretation, May raises the embedded QP to adjoin to the NP-internal PP rather than to the NP itself. For example, the sentence 'At most two senators on every committee voted for the bill', under the surface scope interpretation where 'at most two senators' scopes over 'every committee', would have the representation in (34) (see May 1985: 72):

(34) $[_S [_{NP}$ At most two senators $[_{PP1} [$every committee$]_x [_{PP2}$ on $x]]]]_y [_S\, y$ voted for the bill]]

In (34), constituency hierarchy determines that 'At most two senators . . .' has scope over 'every committee'. In this way, May (1985) is able to separately derive both kinds of scope relations for inversely linked constructions. But, as has been discussed throughout this paper, being able to derive scope ambiguity is not enough. What is important is to explain the lack of certain interpretations through syntactic means. In this area, May's theory offers some explanation, although maybe not quite as much as Larson's theory reviewed in the previous section.

In terms of the benefits of May's theory, consider the lack of surface scope availability in sentences such as (11b) above, repeated as (35):

(35) At most two senators on every committee voted to abolish it.

The sentence in (35) would have the following two possible derivations according to May.

(36) a. $[_S\ [_{NP1}$ [every committee]$_x$ $[_{NP2}$ At least two senators from x]]$_y$ $[_S\ y$ voted to abolish it$_x$]]
b. $[_S\ [_{NP}$ At most two senators $[_{PP1}$ [every committee]$_x$ $[_{PP2}$ on x]]]$_y$ $[_S\ y$ voted to abolish it$_x$]]

As mentioned in section 2, 3, and 4.3, when 'every committee' is interpreted as binding the pronoun 'it', the sentence in (35) can only have the inversely linked interpretation. This is exactly what May's structures would predict. Assuming that a QP must c-command a pronoun in order to bind it, only the structure in (36a), the inversely linked representation, would allow 'every committee' to c-command 'it'. In (36b) the maximal projection NP dominates 'every committee' but not the pronoun.[18]

However, even though May can account for the pronoun binding effects, Larson's Generalization is still a problem. This is not surprising considering that May (1985) claims to have a counter-example to this generalization. But as we saw in section 4.2, the counter-example is rather weak. Recall that Larson's Generalization maintains that a QP, embedded in the object, cannot scope over the subject unless the object also scopes over the subject. Since May (1985) does not have island restrictions that apply to QR (more on this later), the embedded QP is free to move to a position where it scopes over the subject, while the object can move to adjoin to a phrase below the subject. Yet, even if island constraints were maintained, Larson's Generalization would still be out of reach for May's theory. Consider the sentence 'Two politicians spy on someone from every city'. May's account would allow a representation such as in (37):

(37) $[_S\ [_{NP1}\ [_{NP1'}$ [every city]$_x$ $[_{NP2'}$ someone from x]]$_y$ $[_{NP2}$ Two politicians]$_z$] $[_S\ z$ spied on y]]

In (37), 'every city' is adjoined to 'someone from x', and this whole object phrase is adjoined to the subject phrase 'two politicians'. There are two interesting

things about this structure, first 'every city' does not move past the NP island, second 'every city' governs both 'someone from *x*' and 'two politicians'. According to May's (1985) Scope Principle, (37) should allow the interpretation where 'every city' has scope over the subject 'two politicians', while the object 'someone from *x*' has scope under the subject. Larson's Generalization is still violated.[19]

4.5 Simplifying May's theory and accounting for Larson's Generalization

Since Larson's Generalization is a problem for May's theory, it seems appropriate to discuss some minor changes to May's (1985) proposal that would allow for an account. While the validity of this generalization is not beyond doubt, (cf. section 4.2 and note 13), it will still be useful to see how small alterations to a theory can dramatically affect its descriptive adequacy.

Early in his chapter on inverse linking, May (1985) uses concern about island restrictions to motivate his adjunction structure. Later in the text (1985: 80), he explicitly denies the notion of islands having any effect on LF movement, proposing a new constraint as a replacement.[20] This constraint involves forbidding double adjunction as represented by the template in (38):

(38) $[_{XP1} \ldots [_{XP2} \ldots [_{XP3} \ldots]]]$.

As a result of this restriction, if an argument has already adjoined sententially, then the embedded QP cannot adjoin sententially. Thus, the constraint forces it to adjoin to the NP or PP in which it is embedded. May (1985) suggests that this may be a general constraint on phrase structure, but in the context of the theory, he only needs it to apply to quantifiers (i.e., no two quantifiers can adjoin to the same phrase).[21]

As pointed out by Kayne (1994: 19), the prohibition against double adjunction structures can be reduced to a constraint involving asymmetric c-command. For example, May (1985) would not have needed to hypothesize a new constraint if his definition of the Scope Principle were something more akin to a definition similar to Hornstein's (1995):

Scope Principle:
A Quantifier Phrase QP1 scopes over a Quantifier Phrase QP2 iff QP1 asymmetrically c-commands QP2.

With this definition, May's double-adjunction constraint follows naturally (i.e., it can be derived from the definition). Any two QPs adjoined to the same phrase would mutually c-command each other. This means that neither QP would scope over the other. An interpretation would be impossible. The problem is that this definition of the Scope Principle would also predict that May's NP adjunction structure could not account for inverse linking, at least not as long as May kept

the same definition of c-command. However, notice that if the definition of c-command were altered slightly, then the NP adjunction structure would get the same scope interpretation as May's original theory would have predicted. Consider the definition below:

C-command:
A c-commands B if and only if every maximal projection that dominates A dominates B, and A excludes B. (For a similar definition see Kayne 1994.)
A *excludes* B if and only if no segment of A dominates B (Chomsky 1986a: 9).

With this new definition of c-command and the new Scope Principle, let's revisit the NP adjunction structure in (36a), repeated as (39) below:

(39) $[_S\ [_{NP1}$ [every committee]$_x$ $[_{NP2}$ At least two senators from $x]]_y$ $[_S\ y$ voted to abolish it$_x]]$

In (39), 'every committee' still c-commands 'at least two senators' and the pronoun in the VP as before. However, with the new c-command relation, 'at least two senators from x' does not c-command 'every committee', since a segment of 'at least two senators from x' dominates 'every committee'. This means that 'every committee' has scope over 'at least two senators from x', exactly the same result as in May's original theory.

On the surface, these changes to May's theory seem to simplify the definition of the Scope Principle without changing the descriptive adequacy of the system (at least within the limited domain of the inverse linking data). However, there is more. If movement out of an NP island is forbidden at the level of LF, then this new variation of May's theory can account for Larson's Generalization. With island constraints limiting movement, the only way for a QP embedded in the object to move to a position where it c-commands the subject is for the QP to adjoin to the object NP, and for the object NP to either adjoin to the subject NP, or somewhere above the subject NP. The two possibilities are represented in (40):

(40) a. $[_S\ [_{NP2}\ [_{NP1'}$ [every city]$_x$ $[_{NP1}$ someone from $x]]_y$ $[_{NP2}$ Two politicians$]_z]$ $[_S\ z$ spied on $y]]$

b. $[_?\ [_{NP1'}$ [every city]$_x$ $[_{NP1}$ someone from $x]]_y \ldots [_? \ldots [_S\ [_{NP2}$ Two politicians$]_z$ $[_S\ z$ spied on $y]]]]$

No matter which option is taken, the object NP will always asymmetrically c-command the subject: in (40a) the subject NP has a segment that dominates the object, and in (40b) there is a maximal projection (whatever the node above S would be) that dominates the subject but not the object. Either way, if the embedded QP raises to a position that asymmetrically c-commands the subject, then the object must also raise and asymmetrically c-command the object.

In summary, with adjustments to May's (1985) analysis, we are able to account for Larson's Generalization as long as island restrictions apply to Quantifier

Raising. The key modification involved in obtaining this result, was to alter the Scope Principle from a definition that involves Government to one that employs asymmetrical c-command.

4.6 Is there any need for Government?

May (1985) does provide some evidence in support of his use of Government, at least in terms of his Scope Principle. In light of the possibility of eliminating this notion from May's account, it seems appropriate to review some of the motivations for using this relation.

As noted, in May's original proposal a relative scope interpretation is possible when two QPs c-command each other. In support of this May brings forward cross-binding Bach-Peters type sentences, as in (41), in which both pronouns can be simultaneously construed as bound variables, with a fixed scope interpretation of the quantifiers:

(41) Some pilot who shot at it hit the navigator of every MIG that chased him.
(May 1985: 70 (34))

Higginbotham and May (1981) present a semantic account of these cases in terms of absorbed quantifiers; the account is generalized to all *n*-tuples of mutually c-commanding quantifiers in May (1989).[22]

Another argument for Government deals with donkey anaphora. May assumes that a Heim-style, unselective binding mechanism can account for sentences where an indefinite quantifier seems to be interpreted as a universal. For example, the sentence 'Everybody that owns a donkey beats it' has an interpretation where it is implied that every donkey is beaten by its owner. Crucial to May's analysis is that unselective binding can apply only if a variable could not be otherwise interpreted (see May 1985: 75). This is relevant to inverse linking since inverse linking constructions demonstrate donkey anaphora. For example, in 'Every owner of a donkey beats it', the indefinite phrase 'a donkey' is permitted to have a universal interpretation: the interpretation where every donkey is once again beaten by its owner.

May is able to derive this interpretation through his Scope Principle. Recall that May's Scope Principle allows for any ordering of QPs that are in a Government relation. Thus, in a structure such as (42), either 'every owner of *x*' can be positioned to scope over 'a donkey', or 'a donkey' can be positioned to scope over 'every owner of *x*':

(42) $[_S\ [_{NP1}\ [\text{a donkey}]_x\ [_{NP2}\ \text{Every owner of } x]]_y\ [_S\ y \text{ beats it}_x]]$

Normally, only the latter position would be permitted, otherwise the variable '*x*' would not be bound by 'a donkey'. However, in the option where 'every owner of *x*' precedes 'a donkey', unselective binding is permitted to apply. There is a

variable that could not be otherwise interpreted (i.e. '*x*'), and 'every' would be in a position where it would scope over the pronoun 'it', the indefinite phrase 'a donkey' and the variable '*x*'. It is the freedom of positioning created by May's Scope Principle that derives the proper environment for unselective binding.

This having been said, there is another construction that would allow May to derive the proper environment for unselective binding: namely (43) below:

(43) $[_S$ Every owner $[_{PP1}$ [a donkey]$_x$ $[_{PP2}$ of $x]]_y$ $[_S$ y beats it$_x]]$

In this construction, 'every' once again has scope over 'a donkey', the pronoun 'it', and the variable '*x*'. Furthermore, the pronoun 'it', if it is represented as a variable, is uninterpretable unless unselective binding is employed. In the end, donkey anaphora can be derived without the intricacies of May's Scope Principle. Thus, perhaps in this case there is an alternative.

In contrast, there are some phenomena that are easily explained by May's Government relation, but not by other theories. For example, consider the sentences in (44):

(44) a. What does somebody from every city despise.
b. What does everybody despise. (May 1985: 70 (32))

(44b) allows for a pair-list answer (i.e., Brad, the local school board, and Jerry, the teachers association). (44a) does not. On May's view, the pair-list reading of a question arises when 'what' is interpreted as scoping under 'every'. Assuming that the subject QP adjoins to the S-phase, and that the *wh*-element is adjoined above the S-phrase, then May has a natural explanation for the differences between (44a) and (44b). In (44b), 'what' governs 'everybody'. However in (44a), the NP to which 'every city' is adjoined, blocks 'what' from governing 'every city' and vice versa. Constituency determines that 'what' must scope over 'every city'. It is difficult for any other theory to account for the contrast between (44a) and (44b), which makes this lack of the pair-list reading one of the strongest arguments in support of May's Government definition of the Scope Principle.

4.7 Leaving the eighties

To summarize, this section reviewed two theories of inverse linking that were developed in the eighties. Although the details are a little dated, the basic properties of the theories are still well motivated by the data. Both theories were not only able to derive the inversely linked interpretation, but also showed how scope interpretation was restricted by (their) syntactic principles. As a result, both May (1985) and Larson (1985c) are empirically more adequate than the

theories reviewed in section 3, and while they are couched within principles and mechanisms that are not wholly compatible with some contemporary approaches to syntax (e.g., the Minimalist approach of Chomsky 1995c), their essentials remain viable accounts of inverse linking phenomena. The challenge for more current syntactic theories is to account for the inverse linking data at least as well as May and Larson did in the mid-eighties. There are some interesting attempts. For instance, Breuning (2001) has suggested that object quantifiers move to adjoin to VP: the only position where they are interpretable. Inverse scope of the subject and object is a side effect of choosing to interpret the subject in its internal VP position, rather than its nominative case checking position higher than the VP. Assuming, as Sauerland (2005) does, that QPs embedded in NPs must scope over those NPs for interpretability reasons, Larson's Generalization can be accounted for. If the object NP and the object-embedded QP are adjoined to the VP, then for the subject to be interpreted below the embedded QP, it would have to be interpreted in its VP internal position. This position is also below the NP-object. Thus Larson's Generalization holds. However, within the Minimalist framework there still remains the question of how to derive surface scope interpretation of inversely linked constructions without arbitrary stipulation (i.e., without Type-Shifting).

Also, there are more general problems with inverse linking that eventually have to be addressed in any syntactic theory of quantifier interpretation. One particularly puzzling difficulty is why with certain prepositions an inversely linked interpretation is blocked. For example, 'A man with every woman likes her' disallows an interpretation where the man can vary for each woman. In addition, 'every woman' seems to have trouble binding the pronoun 'her'. (See Gabbay and Moravcsik 1974: 143, who were the first to note the semantic restriction involved with this preposition.) Why this should be so is unclear, but perhaps it is related to aspects of the internal structure of NPs, and the argument/adjunct distinction.

5 Conclusion

In this review of inverse linking phenomenon, we have considered various approaches, from the classic accounts of the 1970s and 1980s to more recent proposals. One of our main themes in outlining this history has been to observe how inverse linking has been employed in motivating syntactic explanations for primarily semantic effects. These arguments have taken the form of first accounting for known semantic interpretations through syntactic mechanisms, and then explaining the lack of certain interpretations through restrictions derived from the syntactic mechanisms. It is through the execution of arguments of this form that the syntactification of semantic phenomena becomes plausible. Another theme developed in this essay is that inverse linking remains central to any syntactic theory which purports to account for logical representation of natural language quantification.

NOTES

1 The 'inverse' label stems from the fact that the quantifiers are interpreted in the inverse of their surface word order, 'every city' has scope over 'someone' in the example sentence, whereas the 'linking' label is used to describe how the broader scope quantifier binds a variable contained within the restriction of the narrower scope quantifier.

2 Fox's Scope Economy restricts the ability of the object to scope over the subject, if the following VP-elided sentence does not have a quantifier for a subject. This codifies an observation initially due to Fiengo and May (1994: 231ff.).

3 Note that the issue here is not whether the scope order of the quantifiers shown in (14a) is possible. As noted by May (1977, 1985) and Gabbay and Moravcsik (1974), this ordering of quantifiers is possible, just not with the logical structure given in (14a). Rather, the representation will be one in which the scope of the narrow-scope quantifier is wholly *contained* within the restriction of the broader-scope quantifier. We might paraphrase this reading as something like 'Each of the members who are on a key congressional committee voted for the amendment'. Hence the moniker 'relative reading' given this construal in May (1977). In May (1985), these cases are analyzed by allowing for NP-internal adjunction structures. Larson (1985c) also discusses these cases in his efforts to establish the quasi-syntactic operation of quantifier retrieval (based on Cooper 1983).

4 Hornstein (1995: 25) provides an argument that non-quantificational elements in the prepositional object position do not c-command into the VP. He uses the lack of so-called 'sloppy' readings of the pronoun to demonstrate his case. According to Reinhart (1983a), sloppy readings of pronouns require c-command even with non-quantification noun phrases. So consider the sentences in (i) and (ii):

(i) John loves his mother and Bill does too.

(ii) The woman who likes John loves his mother, and the woman who likes Bill does too.

The sentence in (i) can be interpreted with the sloppy reading as John loves John's mother and Bill loves Bill's mother. On the other hand, (ii) cannot be interpreted as referring to one woman liking John's mother and the other liking Bill's. The reason for this, according to Reinhart, is that 'Bill' c-commands the elided VP in (i), but not in (ii). Hornstein claims that the sentence in (iii) also lacks the sloppy reading:

(iii) People from LA love its beaches, and someone from NYC does too.

In other words, (iii) cannot mean that people from LA love LA beaches, and someone from NYC loves NYC beaches. Hence NYC cannot c-command the elided VP. However, note that May (1985: 68) claims that sentences such as (iii) can have sloppy readings. For example, May claims that (iv) can be interpreted as saying that nobody from NYC rides NYC subways, but everybody from Tokyo rides Tokyo subways:

(iv) Nobody from New York rides its subways, but everybody from Tokyo does.
(May 1985: 65, (29))

Also, Fiengo and May (1994) have argued at considerable length that Reinhart's claim itself is incorrect, and that sloppy readings are possible in the absence of c-command.

5 Note that the trace in the VP subject position is not a variable, but a trace that is A-bound by the subject in Spec-IP.

6 As an aside, it is interesting that there are some difficulties in linking scope to c-command notions, while leaving the quantifiers in their surface positions. The two competing structures for the QP + PP constituent are $[_{QP1}$ Q [N $[_{PP}$ [P QP_2]]]] and $[_{QP1'}$ $[_{QP1}$ Q [NP]] $[_{PP}$ P $[QP_2]]]$. In the first structure, QP_1 does not c-command QP_2 since it dominates QP_2. Q does c-command QP_2, but if scope was based on the c-command properties of Q, then it is unclear how Q could ever c-command outside of QP_1 (which it must to get sentential scope). In the second structure QP_1 can c-command QP_2, as long as the definition of c-command does not exclude inclusion of categories. Unfortunately, many definitions do maintain such an exclusion.

7 The evidence that May considers come from sentences such as 'Every house near a river faces danger from flooding' or 'The head of every public authority in New York was Robert Moses' (May, 1985: 72). Other examples that do not rely on the vicissitudes of definite and indefinite articles (on the latter, see Reinhart 1997; Diesing 1992b; Fodor and Sag 1982, among others) can be adduced:

(i) Less than three senators on every committee voted for the bill.

(ii) Every senator on more than two committees voted for the bill.

(i) is true in the situation where several senators on each committee voted for the bill, but only one or two senators that were a member of every committee did. (ii) is true in the situation where every senator that was on more than two committees voted for the bill but no committee was unanimous in their vote.

8 Larson's modification consists of reducing two expressions, A and B of the type <<e,t>, t> to one expression, C of the type, <<e,t>, t>, where C = λQ [A [λ*x* B-with-*x*-in-formula (Q)]]. For example, suppose A = λS ∃(*x*) [E(*x*) and S(*x*)], and suppose B = λR∀ (*z*)[(W(*z*) and From(*z*,*q*)) ⊃ R(*z*)]. C would then equal λQ (λS∃(*x*) [E(*x*) and S(*x*)]) λ*q* (λR∀(*z*)[(W(*z*) and From(*z*,*q*)) ⊃ R(*z*)]) Q, which reduces to λQ (∃(*x*) [E(*x*) and ∀(*z*)[(W(*z*) and From(*z*,*x*)) ⊃ Q(*z*)]). The representation of a QP as λP ∃(*x*)[Man(*x*) and R(*x*) and P(*x*)] where R is a free variable which can be λ-abstracted, is from Bach and Cooper (1978) who use it to account for relative clauses. Thus PPs can be bound into QP.

9 This is a main theme of May (1985, especially ch. 3). See also remarks in Reinhart (1997), who argues that as a matter of principle, all movement whether covert or overt should obey the same movement restrictions. One of the first extensive discussions of the relevance of LF islands can be found in Huang (1982a).

10 Although this situation is true of both the interpretation where 'someone' has scope over 'two politicians' and the interpretation where 'two politicians' has scope over 'someone', the lack of the second interpretation in the previous situation suggests that it can only be the first interpretation that makes the sentence true.

11 As an aside, we note that Heim and Kratzer (1998) use Larson's Generalization to argue for the NP internal structure.

12 To be more explicit, whenever it is true that for every language there is some student that is investigating two dialects from that language, it is also true that for every

language there are two dialects of that language that are being investigated by some student. It just happens to be the same student for the second proposition.

13 There is some other evidence in support of Larson's Generalization, although matters here are quite subtle, as well as theory dependent. If an object and subject are scopally commutative (according to Fox's (1999) definition), then Fox's Scope Economy should prevent the quantifier embedded in the object from scoping over the subject. Consider, the sentence in (i), where the object and subject are scopally commutative:

(i) A volunteer greeted an exchange student from every country.

Can this sentence have a reading in which the quantifier "every" has scope over "a volunteer"? To isolate this reading, consider the situation where the following two facts hold: (1) no volunteer greeted more than one of the exchange students, (2) For every country, an exchange student from that country was greeted by a volunteer. The sentence in (i) seems false in such a situation. This is interesting because this sentence can have the interpretation where there is one volunteer that greeted each of the exchange students. If Fox's Scope Economy blocks the object from moving over the subject, then the sentence in (i) demonstrates that the object must be able to scope over the subject in order for the internal NP quantifier to do so.

14 The following is an informal description of the operation. To store a quantifier, replace its position by a variable (actually by ^λP P(x), but basically this is the same thing), and then store the ordered pair <QP, x> where x marks the 'variable address' for the quantifier. Then, to retrieve the quantifier, first λ-abstract the variable given in the 'variable address', and finally apply the quantifier. For example, consider 'Esme loves everybody'. First replace the QP with a variable, leaving 'Esme loves x' with <everybody, x> stored. Then λ-abstract and combine, leaving 'Everybody λx (Esme loves x)' after retrieval. For a critical notice of Cooper (1983), see May (1987).

15 For a more thorough description of Cooper's approach, see Cooper (1983: 134ff.). Note that Cooper like many other linguists treats *wh*-elements as quantifiers.

16 Larson (1985c: 8) re-defines Cooper's constraint on quantifying out of islands as follows: If α is a structural description and $\alpha \in I$, then INT assigns no interpretation β′ to [β . . . α . . .], where $\beta' = <\Phi, <Q', x_n>>$, and where $\alpha' = <\Psi, <Q', x_n>>$. I = {NP, Q, R} where Q and R are [+WH] S's.

17 This is an informal presentation. May's more formal definition is as follows. "Let us call a class of occurrences of operators Ψ a Σ-sequence if and only if for any Oi, Oj ∈ Ψ, Oi governs Oj, where . . . members of Σ-sequences are free to take on any type of relative scope relation" (May 1985: 34).

18 Because May is unconcerned with maintaining a Montagovian semantics, binding need not be equated with λ-abstraction, as it was with Larson (1985c).

19 An alternative to (37), would be a double adjunction structure as in (i) below, where the complex object NP is adjoined sententially along with the subject:

(i) $[_{S1}\ [_{NP1}$ [every city]$_x$ $[_{NP2}$ someone from x]]$_y$ $[_{S2}\ [_{NP2}$ Two politicians]$_z$ $[_{S3}\ z$ spied on y]]]

May (1985) actually has a constraint on double adjunction, so (i) is an invalid derivation according to May, and hence not mentioned as a possible derivation in the main text. However, even if (i) were permitted, 'every city' still governs both 'someone' and 'two politicians'. Thus this structure would also violate Larson's Generalization.

20 May (1985: 80) notes the following to show that extraction from islands is possible via QR: "One case is brought up by van Riemsdijk and Williams (1981), who point out that a question such as *Who knows which pictures of whom Bill bought* allows an interpretation in which whom is paired with who in asking a multiple direct question. Representing this, on the view here, involves extracting from an island, so as to move whom to a higher clause."

21 The actual phrasing of the constraint is "only one operator can be adjoined per projection level." (May 1985: 81).

22 Conceivably the LF representation of (41) could be one in which the relative clauses are extraposed. If so, the resulting structures would be compatible with the revised proposal. However, as Guéron and May (1984) argue, extraposition is typically undone at LF (although see Lechner 1999; and Fox 2002, who challenge this assumption).

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37 Left Dislocation (including CLLD)

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1 Introduction

The phenomenon referred to as 'left dislocation' (LD) is exemplified in (1). LD is characterized by the presence of a phrase in the first position of the clause which is connected with that clause through the intermediary of some anaphoric element referred to as the *resumptive* element (see chapter 55).

(1) John, I like him.

In (1) the DP *John*, appears in sentence initial position, to the left of the material contained within the clause, and is connected with the clause through the intermediary of the pronoun *him*.

In LD constructions, the clause is considered to be 'about' the left dislocated element. This is often referred to as the *aboutness* requirement.

2 Types of left dislocation

It has been observed that there are various instances of LD across languages or even within a language. In addition to (1), we find constructions of the type illustrated in (2) (see Van Haaften et al. 1983). As can be seen in (1–2), the resumptive element can be a regular personal pronoun as in English, or a demonstrative pronoun as in Dutch (2a) or a clitic pronoun as in languages such as Italian, Romanian, Spanish, Hebrew, Arabic, and Greek (2b):

(2) a. Die man die ken ik niet.
the man that know I not
'That man, I don't know him.'
b. Ton Jani den ton ksero.
the-acc John-acc neg cl-acc know-1sg
'John, I do not know him.'

(2a) is known as Contrastive Left Dislocation (CLD), while (2b) is referred to as Clitic Left Dislocation (CLLD). CLD is a typical Germanic construction. A further type of Left Dislocation is Hanging Topic Left Dislocation (HTLD), illustrated in (1) and again in (3) with a Spanish example, where the role of the resumptive element is performed by an epithet:[1]

(3) Bernardo estoy segura que nadie confia en ese idiota.
Bernardo (I) am sure that nobody has confidence in that idiot
'(As for) Bernardo, I am sure that nobody has confidence in that idiot.'

Hanging topics can be introduced by an 'as for' phrase (4). However, as (3) shows, the presence of these phrases is not obligatory:

(4) As for the circus the elephants are fine.

All types of LD respect the *aboutness* requirement. The aboutness requirement is usually met by the resumptive element, but in some languages a weaker, purely semantic form is sufficient. This seems to be true in French, as pointed out in Hirschbühler (1975):

(5) Oh tu sais moi la bicyclette je n' aime pas me fatiguer.
oh you know me the bicycle I neg like not me tire
'Oh you know, me, the bicycle I don't like to tire myself.'

This type of LD is referred to as Loose Aboutness Left Dislocation (LALD) in Van Riemsdijk (1997a).

As Van Riemsdijk (1997a) points out, much of the variation among these types can be related in some form or other to the resumptive element. In particular, different types of LD arise depending on the obligatoriness of the resumptive element, its form, and whether it is subject to movement operations. For instance, in (6) we see that in Spanish the dislocated phrase in CLLD cannot be construed with an epithet, while this is possible in HTLD, cf. (3):

(6) a. A sus amigos Pedro los invitó a cenar.
acc his friends Pedro cl-acc invited-3sg to dine
'As for his friends, Pedro invited them to dinner.'
b. *A sus amigos Pedro invitó a cenar esos idiotas.
acc his friends Pedro invited to dine these idiots
'As for his friends, Pedro invited these idiots to dinner.'

On the other hand, resumption via an epithet phrase is possible in other languages, e.g., Lebanese Arabic (Aoun and Choueiri 2000). As shown in (8), the dislocated phrase can appear embedded under a verb like 'to doubt', hence it is CLLD-ed and not HTLD-ed (see section 3.2):

(7) Ha-l-muttahame rəfto ənno ha-l-ma duube n abasit.
this-the-suspect.f know-2p that 3p-the idiot imprisoned-3sf
'This suspect, you know that this idiot was imprisoned.'

(8) Bʃəkk ʔənn ʔəχt-e byaʕrif Saami ʔəza naʒafiit
doubt.1S that sister my know.3Sm S. whether passed.3SF
ha-l-maSZuube b-l-fafiS.
this-the-idiot in the exam
'I doubt that my sister Sami knows whether this idiot passed the exam.'

Epithets can be used as resumptive elements and can be interpreted as bound variables in certain contexts, as they are pronominal in nature. Jackendoff (1972), Lasnik (1976), Hornstein and Weinberg (1990) claim that the epithet phrases are inherently pronominal. On the other hand, Aoun and Choueiri (2000) claim that epithet phrases are similar to pronominals only when those occur with the pronominal morpheme in, e.g., Lebanese Arabic.

A second issue concerns the position of the pronominal. It appears to move in CLLD and CLD, but not in HTLD. The movement arguably is to Spec,CP for CLD, while in CLLD the clitic adjoins to a verb.

A further difference between the various types of LD concerns the base generation vs. movement of the LD-ed element in sentence initial position. The most significant asymmetry between HTLD and CLD/CLLD is that the latter two constructions show certain forms of 'connectivity' between the LD-ed phrase and the sentence internal position (whether this is bound or not by a clitic) which are entirely absent in HTLD (see Van Riemsdijk and Zwarts 1974; Cinque 1990c; Van Haaften et al. 1983, among others). Thus CLLD and CLD contrast with

HTLD in that these two can be treated as movement constructions with respect to connectivity criteria, while HTLD cannot.[2]

The connectivity phenomena that are absent from HTLD but do occur with CLD/CLLD can be summarized as follows (and see the contributions in Anagnostopoulou et al. 1997):

(i) Idiom chunks are found in LD-ed position in CLLD and CLD but not in HTLD.
(ii) Bound pronouns can occur embedded in a larger LD-ed constituent in CLLD and CLD but not in HTLD.
(iii) Bound pronominal variables can occur within a LD-ed constituent in CLLD and CLD but not in HTLD.
(iv) Case connectivity is obligatory in CLLD and CLD but not in HTLD.

In section 3, I discuss the differences between HTLD and CLLD. In section 4, I pay particular attention to the issues of debate concerning the proper characterization of CLLD. In section 5, I turn to the differences between CLLD and CLD.

3 HTLD and CLLD

3.1 Differences between the two constructions

That HTLD and CLLD are two distinct constructions becomes apparent if we consider their basic properties (see Cinque 1990c; Dobrovie-Sorin 1990; Anagnostopoulou 1997; and others).

(i) First of all, there is a sharp intonational break between the LDed XP in HTLD and the rest of the sentence; such pause is not present in CLLD. Although the LD-ed phrase in CLLD is separated from the clause that follows it via a comma, the intonational break between the two is much weaker than that present with HTLD.

(ii) The LD-ed phrase in CLLD can be any maximal phrase, as is illustrated in (9a) and (9b) with Italian examples. This contrasts with HTLD which allows only for LD-ed NPs.

(9) a. Al mare ci siamo già stati.
to the seaside there have-1pl already been
'To the seaside, there we have already been.'
b. Bella non lo é mai stata.
beautiful not it is ever been-3sg.fem
'Beautiful, she has never been.'

(10) *To John I have already spoken to him.

(iii) The LD-ed element in CLLD can occur in front of any subordinate type, as the Italian sentence in (11) suggests:

(11) L' unica person che a Gianni non gli ha mia fatto un favore.
the only person which to John not him has ever done a favor
'The only person which to John not to him has ever done a favor.'

HTLD typically occurs in root contexts, as the ungrammaticality of the Spanish example in (12) indicates:

(12) *Sin embargo estoy segure que Bernardo nadei confia en ese idiota.
without embargo am sure that Bernardo nobody confides to this idiot
'On the other hand, I am sure that, Bernardo, nobody has confidence in this idiot.'

(iv) In CLLD there is no theoretical limit to the number of the LD-ed phrases. HTLD allows no more than one LD-ed phrase. This is evident in the contrast between the Italian and English sentences shown in (13):

(13) a. Di vestiti a me Gianni in quel negozio non mi ce ne ha
clothes to me Gianni in that shop not to me there of them has
mai comprati.
ever bought
'As for clothes, for me, Gianni has never bought them in that shop.'
b. *Mary John she likes him.

(v) In languages like Spanish and Greek, the IP internal resumptive element in CLLD, if present, can be a clitic pronoun only. No such requirement holds of HTLD. In fact in HTLD the resumptive element can be a clitic-doubled pronoun or an epithet, as the Greek examples in (14–15) show:

(14) Ton Petro ton nostalgo poli.
the Peter-acc him mis-1sg much
'Peter, I miss him much.'

(15) O Petros ton nostalgo ton gliko mu/afto poli.
The Peter-nom him miss him sweet my/this much
'As for Peter, I miss my sweety/this guy much.'

On the other hand, in Lebanese Arabic CLLD the resumptive element can be an epithet, cf. (8).

(vi) In CLLD there is obligatory connectivity between the LD-ed phrase and IP internal position. There is no such connectivity in HTLD. One such case is Connectivity with respect to Binding Theory, as is clear in the following Italian

examples, where the distribution of the reflexive and personal pronoun correlates with their distribution in non LD-ed positions, i.e., base positions:

(16) A lei/*a se stessa Maria dice che non ci pensiamo mai.
of her/of herself Mary says that not there we think ever
'Mary says that we never think about her.'

(17) A *lei/a se stessa Maria non ci pensia.
of her/of herself Mary not there she think
'Mary does not think about herself.'

Another case of connectivity is with respect to Case in languages exhibiting case morphology such as Greek. In HTLD there is no obligatory case agreement between the LD-ed phrase and the nominal expression clause internally. CLLD, on the other hand, forces case agreement. In (18a), the HTLD-ed element bears nominative Case, while the Case borne by the clitic clause internally is accusative, i.e., the Case of the LD-ed element in HTLD and the Case of the clitic clause internally do not need to match. On the other hand in (18b), an embedded clause where only CLLD is possible, case matching is obligatory, i.e., both the LD-ed phrase and the clitic must bear accusative:[3]

(18) a. I Maria tin ematha kala tosa hronia.
the Mary her learnt well so many years
'As for Mary, I know her after so many years.'
b. Ipe oti ti Maria/*i Maria tin emathe kala tosa hronia.
said that the Mary-acc/*nom her learnt well so many years
'He said that as for Mary, he knows her well after so many years.'

Furthermore, LD-ed idiom chunks are ill formed in HTLD but can be well formed in CLLD:

(19) a. *I tihi tu kathe ftohos tin ekane pigenodas stin Ameriki.
the luck-nom his every poor her did going to America
b. Tin tihi tu kathe ftohos tin ekane pigenodas stin Ameriki.
the luck-acc his every poor her did going to America
'Every poor person made his luck by going to America.'

(vii) A further and crucial difference between CLLD and HTLD is that only CLLD is subject to locality constraints. The fact that the relation between the LD-ed element and the resumptive pronoun in CLLD is sensitive to islands (cf. (20b), and see the discussion in section 4.3), while this is not the case in HTLD seems to suggest that CLLD is derived by a type of *wh*-movement. As the contrast in (20) shows, HTLD is not sensitive to a relative clause island, while CLLD is:

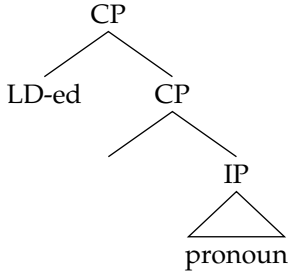
(20) a. I Maria htes gnorisa ton andra pu tin pandreftike.
the Mary-nom yesterday met the man that her married
'As for Mary, I met yesterday the man that married her.'
b. *Tin Maria htes gnorisa ton andra pu tin pandreftike.
the Mary-acc yesterday met the man that her married

While it is uncontroversial that HTLD involves base generation of the LD-ed phrase in sentence initial position, whether or not CLLD displays actual movement of the LD-ed phrase remains a matter of controversy, since CLLD does not behave like *wh*-movement in all respects. On the one hand, Cinque (1977), Dobrovie-Sorin (1990), Mahajan (1990), Sportiche (1996b) and Kayne (1994) claim that there is actual movement in CLLD. On the other hand, Cinque (1990c), Iatridou (1994), and Anagnostopoulou (1994) among others claim that that there is no such movement involved. In the next section I present the structural analysis of HTLD and CLLD and in section 4 I come to the arguments in favor of and against the movement vs. base generation analysis for CLLD.

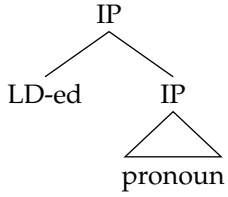
3.2 Syntactic analysis of HTLD and CLLD

Generally, HTLD elements are represented as being CP adjuncts (21a), while CLLD elements are considered by some researchers to be IP adjuncts (21b) while others analyze them as CP adjuncts, the resumptive element being contained within IP in both cases:[4]

(21) a.



b.



The main argument for analyzing HTLD-ed elements as CP adjuncts comes from the observation that these phrases occur only in root contexts. The main argument for analyzing CLLD-ed elements as IP adjuncts relies on the fact that these phrases occur in all types of embedded contexts and not only in so-called

CP-recursion (Iatridou and Kroch 1992) environments. This is illustrated below with an example containing an adverbial adjunct from Greek:

(22) I Maria ine harumeni tora pu ton Jani ton paratise.
the Mary is happy now that the John him left
'Mary is happy now that she has left John.'

In order to understand the line of argumentation it is necessary to briefly discuss CP-recursion here. The phenomenon of CP-recursion is discussed most prominently on the basis of Germanic data. In certain embedded contexts as shown in (23a) with a Frisian example (from Iatridou and Kroch 1992: 4) verb second order can occur, while in others (23b, c), only the verb final order is allowed (see chapter 23):

(23) a. Pyt sei dat hy hie my sjoen.
Pyt said that he had me seen
'Pyt said that he had seen me.'
b. Pyt betreueret dat er my sjoen hie.
Pyt regrets that he me seen had
'Pyt regrets that he had seen me.'
c. *Pyt betreueret dat er my hie sjoen.

According to de Haan and Weerman (1986), CP-recursion occurs in just those environments and with just those verbs that allow deletion of the overt complementizer. Iatridou and Kroch claim that this restriction suggests that CP-recursion occurs only when the embedded clause is governed by a local L-marking head. As expected, clauses not governed by a lexical head (adjunct clauses (24) and sentential subjects) do not allow embedded V2:

(24) *Ik sil fuortgean at jo wolle dizze film net sjen.
I will leave if you want this film not see

Crucially, CP-recursion is possible under specific conditions, namely it occurs only when the embedded clause is selected by a certain kind of verb. These verbs are referred to as 'bridge' verbs in the literature, e.g., verbs like *say, whisper*, etc. The Greek example in (22) does not contain a CP-recursion environment, since it exemplifies an adverbial clause. Thus it is difficult to maintain the CP adjunction hypothesis, as the LD-ed phrase in (22) follows the complementizer *pu* and no second C position is contained in the clause.

It should be pointed out here that Rizzi (1997) associates CLLD phrases with special projections in the CP domain, which is now split into a number of specified projections such as FocusPhrase and TopicPhrase (25). LD-ed elements occupy Topic Phrases. Current research investigates whether these Topic projections have different properties.

(25) [ForceP [TopicP [FocusP [TopicP [FinP]]]]]

4 CLLD: movement vs. base generation

At first sight the properties of CLLD seem to suggest that this construction differs from HTLD precisely in involving movement.[5,6] However, matters are not that simple. There are two related considerations. First, CLLD does not behave like *wh*-movement in all respects, as will be discussed below in section 4.2. Second, one important issue a movement analysis for CLLD has to address is the co-occurrence of movement with a clitic pronoun that matches in features the putatively moved phrases. Essentially two possibilities suggest themselves. The first consists in regarding the construction as an instantiation of the clitic-doubling phenomenon. The second consists in regarding the clitic pronoun as an overt spelling out of the pronominal features left on the (*wh*-) trace. As Cinque and others point out, neither proposal is without problems.

In what follows I first discuss certain problems with the view that CLLD is derived via movement through a clitic-doubling input construction and I then turn to arguments for the non-*wh*-movement nature of CLLD.

4.1 CLLD and clitic doubling

Clitic doubling is a common construction in many languages, such as Romanian, dialects of Spanish, Lebanese Arabic and Greek, in which a clitic agreeing in features with the object appears along with the object (see chapter 14). This is illustrated in (26) with an example from Greek:

(26) To agorasa to vivlio tu Jani.
it bought the book-acc the John-gen
'I bought John's book.'

In the languages that have clitic doubling the issue therefore arises whether this construction is the source for CLLD which is derived by movement of the doubled element to the sentence initial position, as shown in (27):

(27) [DP to vivlio]$_i$ to agorasa t_i

However, there are certain problems with the view that clitic doubling is the source for CLLD.

First, as Cinque (1990c) points out there are languages that have CLLD (28a), but do not have clitic doubling (28b). One such a language is Italian. Hence for these languages a clitic-doubling input structure could not be assumed:

(28) a. *Lo conosciamo Gianni.
him know-1pl Gianni
b. Gianni lo conosciamo.
Gianni him know-1pl

Second, there are languages in which doubling is subject to Kayne's Generalization while CLLD is not. Rio Platese Spanish presents such a case:

(29) Lo vimos a Juan. Rio Platese Spanish
Him saw-we a Juan
'We saw Juan.'

(30) Lo vimos Juan.
him saw-we Juan
'We saw Juan yesterday.'

Third, while the cases of doubling reported in the literature are limited to (doubling of) DPs, the dislocated constituent in CLLD can be any maximal phrase. The Italian data in (31) (Cinque 1990c: 58) exemplify CLLD of PPs and APs:

(31) a. A casa, non ci sono stato ancora. Italian
To home, not there am been yet
'I haven't been home yet.'
b. Di questa faccenda, non ne voglio più parlare.
Of this matter, not of-it want anymore talk
'I don't want to talk about this matter anymore.'
c. Bella, pare che non lo sia mai stata.
Beautiful, seems that not it is ever been
'It doesn't seem that she has ever been beautiful.'

Forth, there are semantic classes of NPs that appear in CLLD structures but cannot be clitic doubled. As the Greek examples in (32) show, while CLLD of numeral noun phrases is allowed, clitic doubling is not (see Iatridou 1994):

(32) a. Tria provlimata mono o Kostas ta elise.
three problems only the Kostas them solved
'Only Kostas solved three problems.'
b. *Mono o Kostas ta elise tria provlimata.
only the Kostas them solved three problems

Finally, there are languages that have an animacy requirement on clitic doubling, such as Spanish (see Torrego 1998 for a recent discussion and references therein), but not on CLLD. As the contrast in (33) shows, while clitic doubling is sensitive to the [+/–animate] nature of the doubled NP (i.e., doubling of [–animate] DPs is ungrammatical), this is not the case with CLLD, where [–animate] DPs can occupy sentence initial positions:

(33) a. Lo vimos a Juan.
him saw to Juan
'We saw Juan.'

b. *Lo vimos el/al libro.
it saw the/to the book
c. El libro lo compramos ayer.
the book it bought yesterday
'As for the book, we bought it yesterday.'

These differences are unexpected if CLLD is the movement counterpart of doubling, arguing against the reduction of CLLD to an underlying clitic-doubling source. For this reason, Cinque (1990c), Iatridou (1994) and Anagnostopoulou (1994) propose that in CLLD the LD-ed phrase is base generated in a left peripheral adjunct position. The main problem for base-generation analyses of CLLD is that they have to appeal to special mechanisms in order to derive the connectivity property of CLLD (for selective island sensitivity, see Demirdache 1991 and Iatridou 1994). In section 4.3, I come back to this issue.

In particular, Iatridou proposes that CLLD is a predication structure: the LD-ed DP is the subject of predication and it is base generated in a position adjoined to the clause which forms the complex predicate; the open position necessary for the clause to function as a variable is provided by the cl-pro chain:

(34) $[_{CP/IP}\ XP_{LD\text{-}ed}\ [_{CP/IP}\ cl\ pro]]$

*4.2 CLLD and its (non-)*wh*-movement nature*

I highlight some differences between CLLD and constructions involving object fronting as the result of focus/*wh*-movement (see chapter 26).[7] Here I compare OVS/OSV orders with OclS/OScl-V orders, that is constructions where the object appears in a peripheral position and is not resumed by a clitic clause internally to constructions where a resumptive clitic is present.

First of all, there are interpretational and intonational differences. In CLLD the fronted object constitutes old information and cannot be stressed. In OSV, where the object is fronted as a result of movement, the object is new information and receives focal stress. This is illustrated below with an Italian example:

(35) a. Il tuo libro lo ha comprato.
the your book it have bought
'As for your book, I have bought it.'
b. IL TUO LIBRO – ho comprato.
the your book have bought

There are further differences between CLLD and focus movement. As (35) shows, in CLLD there is a clitic present within the clause. On the other hand, a focalized element is incompatible with a resumptive clitic (see Cinque 1990c; Tsimpli 1995; Rizzi 1997). Moreover, a CLLD-ed element never gives rise to Weak Crossover effects (WCO). Such effects are, however, detectable with focus:

(36) a. Gianni sua madre lo ha sempre apprezzato.
Gianni his mother him has always appreciated
'As for Gianni, his mother has always appreciated him.'
b. ??GIANNI sua madre – ha sempre apprezzato.
Gianni his mother – has always appreciated

The fact that no WCO violation occurs in (36a) indicates that the postverbal empty category is not a variable.[8]

It has been suggested that such behavior with respect to WCO leads to a distinction between two types of A'-binding. Specifically, Lasnik and Stowell (1991) assume that WCO is a distinctive characteristic of A'-relations involving genuine quantification. Thus, A'-dependencies must be split into those involving a quantifier that binds a variable, and those that involve non-quantificational A'-binding, but rather binding of a null constant (nc) (see Rizzi 1997):

(37) a. *Who does his mother like t (vbl)
b. John who his mother like (nc)

Assuming WCO to be a diagnostic of what constitutes a quantifier–variable binding relation leads us to conclude that Focus involves quantificational A' binding, while CLLD does not (see Rizzi 1997). According to Rizzi, if Focus is quantificational and CLLD is not, then the difference exemplified in (36) follows as well. In (36b) the focalized element must bind a syntactic variable, hence a clitic cannot be present, since the clitic is an overt pronominal head, its trace is an X^0 trace. So the example with a clitic would be ruled out by the Principle of Full Interpretation which requires that quantifiers bind variables.

Another difference between the two constructions concerns the type of elements that can/cannot appear in CLLD. In Italian, bare quantificational elements cannot appear in CLLD constructions, while they easily allow focalization:

(38) a. *Nessuno lo ho visto.
nobody him have seen
b. NESSUNO – ho visto.

Moreover, a clause can contain several CLLD elements but only one focus, hence the ungrammaticality of (39):

(39) *A GIANNI IL LIBRO darò.
to Gianni the book I will give

Similar effects are observed when we compare CLLD to *wh*-movement. According to Cinque (1990c), if CLLD involved *wh*-movement, then the object clitic that appears in this constructions must be either the spell-out of a *wh*-trace or an instance of clitic doubling. Assuming for the moment that the first option cannot be maintained for the reasons discussed above, let us consider the second one.

First, note that the clitic in CLLD does not seem to behave like a *wh*-trace, given that licensing of parasitic gaps is not permitted. Hence it does not have the properties of a variable.

(40) *Gianni l'ho cercate per mesi senza trovare e.
Gianni I have him looked for for months without finding

With respect to the licensing of parasitic gap constructions, Demirdache (1991) points out that the reason for the ungrammaticality of the example in (40) is that the trace is indirectly bound by the pronoun. She assumes Haik's *convention on variable binding* ((i) a trace must be locally A'-bound, (ii) a pronoun must be A'-bound). This condition allows the index of any variable to percolate to the maximal projection immediately dominating it. The idea is the following: a pronoun need not be locally A'-bound, a trace, however, must be locally A'-bound. This predicts that when the pronoun is to the right of the parasitic gap the parasitic gap is licensed. Such is the case in Greek (see also next section):

(41) a. To Jani i Maria ipe horis na agapa oti tha ton pandrefti.
the John the Mary said without subj love that fut him marry
'As for John, Mary said, without loving him, that she will marry him.'
b. *To Jani i Maria ipe oti tha ton pandrefti horis na agapa.
the John the Mary said that fut him marry without subj love

Second, the clitic that occurs in CLLD does not occur in ordinary *wh*-constructions, as is shown in (42):

(42) Chi (*lo) hai visto.
whom him you have seen

According to Cinque, a *wh*-operator is incompatible with a clitic, due to the quantificational nature of the *wh*-phrase. This is supported by an asymmetry between quantified NPs and bare quantifiers with respect to CLLD in Italian. As discussed in Cinque (1990c: 15), CLLD of bare quantifiers in Italian does not require a resumptive clitic:

(43) Qualcuno (lo) troveremo.
someone him we will find
'Someone, we will find him.'

When the clitic is present the quantifier is interpreted as specific, when the clitic is absent the quantifier is interpreted as non-specific (see also Dobrovie-Sorin 1990 for Romanian).

However, according to Demirdache (1991), this difference could be made to follow from the difference of the level of representation at which movement takes

place. While *wh-* and focus movement take place in the syntax, CLLD involves LF movement of an operator.

Third, under the assumption that *wh*-movement is constrained by Subjacency as re-formulated in Chomsky (1986a), then CLLD does not involve *wh*-movement. There appear to be perfectly grammatical CLLD structures that Subjacency would exclude, if they were derived by *wh*-movement:

(44) a. Loro il libro credo che a Carlo sia siguro che non glielo
they the book believe that to Carlo is certain that not him-it
daranno mai.
will give ever
'It is certain that they will never give the book to Carlo.'
b. *A cui non so quando si saprà cosa daranno.
to whom not know when one will know what they will give

In (44) three different constituents are LD-ed from the most deeply embedded clause. Whatever derivation is chosen a violation of Subjacency will ensue, as is the case with *wh*-movement in (44). See Cinque (1990c: 63ff. for details).

Another property suggesting that CLLD does not involve *wh*-movement is that, unlike ordinary *wh*-constructions, it apparently cannot avail itself of successive cyclic derivations. If we consider adjuncts, which have to move through any intermediate Spec,CP (see chapter 64), we detect a clear contrast between ordinary *wh*-movement constructions and CLLD. Consider the Italian examples below:

(45) PER QUESTA RAGIONE ha detto che se ne andrà.
for this reason has said that will leave
'For this reason, he said that he will leave.'

(46) Per quale ragione ha detto che se ne andrà?
for which reason has said that will leave
'For which reason did he say that he will leave?'

(47) *Per questa ragione ha detto che se ne andrà.
for this reason has said that will leave

(45), a sentence involving focus, and (46), a *wh*-question, are grammatical, but the corresponding example involving CLLD in (47) is not. If CLLD does not involve any form of movement, the contrast directly follows.

The above facts then seem to suggest that CLLD is not immediately compatible with a movement analysis. However, in the literature arguments have been presented, see e.g. Demirdache (1991), Iatridou (1994) and Aoun and Benmamoun (1998), which seem to suggest that CLLD or at least certain types of CLLD do involve *wh*-movement. We will discuss their arguments in the next section.

4.3 CLLD and island effects

As mentioned above, according to Cinque, the relation between the LD-ed element in CLLD and the clitic is not one of movement. As the following Lebanese Arabic data show, the relation between the CLLD-ed NP and the clitic can violate islands, such as the Adjunct Condition, and the Complex NP constraint (see Aoun and Benmamoun 1998: 571):

(48) a. Səʔt ʔənno Naadya rəht mən duun ma təhke maʔ-a.
heard that Nadia left-2sm without comp talking with her
'I heard that Nadia, you left without talking to her.'
b. Səʔt ʔənno ha-l-kteeb hkiit mʔ l-walad yalli katab ʔal-ee.
heard that this the book talked-2sm with the boy who wrote on it
'I heard that this book, you talked with the boy who wrote on it.'

This is expected under a base-generated approach to CLLD, since movement obeys strong (and weak) islands.

However, as has been mentioned earlier on, CLLD in some languages, such as Italian, Hebrew and Greek, is constrained by islands. This is illustrated below with Greek examples containing a relative and an adjunct clause respectively (taken from Iatridou 1994):

(49) a. *Ton Kosta sinandisa tin kopela pu ton ide.
the Kostas met-1sg the girl that him saw-3
b. *Tin efimerida apokimithike diavazondas tin.
the paper fell-3sg asleep reading it

Note, however, that in the languages in which CLLD is constrained by islands it displays selective island sensitivity in the sense that long distance CLLD freely violates weak islands, illustrated below with a *wh*-island:

(50) To forema den ksero pu na to valo.
the dress neg know where subjt it put
'As for the dress I do not know where to put it.'

In other words, CLLD is sensitive to strong islands, but not to weak islands.

This is paradoxical under the base-generated approach: if islands constrain movement and not base-generated relations, why is the relationship between the clitic and the CLLD-ed element constrained by certain types of islands? Cinque (1990c) proposes as a solution that islands in fact do not distinguish movement from base-generated representations. Specifically, Cinque argues that connectivity and selective island sensitivity are properties of chains, regardless of the origin of these chains, i.e., whether they are created via movement or not. In fact Cinque uses CLLD in order to argue in favor of his notion of 'Binding Chain', i.e., a chain which is defined in terms of referential indices (Rizzi 1990b) and can

hold at an arbitrary distance, in the sense that it shows insensitivity to Relativized Minimality Effects. For a phrase to enter a binding relation with its trace, it must not only occupy an A'-position and receive a referential theta-role, but also it must have intrinsic referential properties, properties that allow it, for example, to be D-linked in Pesetsky's (1987b) terms. What is crucial for Cinque is that sensitivity to strong islands is a property that characterizes chains regardless of whether they involve movement or base generation. In other words Binding is sensitive to strong barriers only. Hence strong islands, which are properties of chains, constrain the chain between binding relations between the LD-ed element and the operator variable chain created by the clitic. On the other hand, weak islands (*wh*-islands, inner islands, factive islands) constrain movement. Hence CLLD is not sensitive to conditions that directly affect movement.

On the other hand, Iatridou (1994) and Demirdache (1991) have tried to show that the island sensitivity problem is only apparent, because CLLD does involve some movement after all.[9] Specifically, Iatridou (1994) argues that the LD-ed element in CLLD is generated as an adjunct to the lower CP, the one containing the clitic, from which it moves to the higher clause, hence CLLD involves some type of movement. If this is correct, it should be possible to test such a movement. One such test involves parasitic gaps, as mentioned in the previous section. If the alleged movement crosses an adjunct containing a parasitic gap, then the acceptability of that sentence would confirm the existence of such a movement. This movement forms an A'/A' chain which licenses the parasitic gap, and is in fact acceptable in Greek. (51) is compared with (52) which has the parasitic gap in a position not crossed by the movement out of the LD-position. This sentence is ungrammatical:

(51) To Jani$_i$ i Maria ipe horis na agapa t_i oti tha ton pandrefti.
the John the Mary said without subj love that fut him marry
'As for John, Mary said, without loving him, that she will marry him.'

(52) *To Jani$_i$ i Maria ipe t_i oti tha ton pandrefti horis na agapa.
the John the Mary said that fut him marry without subj love

It has also been pointed out in the literature that a language can have both a type of CLLD formed by base generation and a type of CLLD formed via movement. For instance, Aoun and Benmamoun distinguish between two types of CLLD in Lebanese Arabic. Type 1 is base generated and hence freely violates islands. Type 2, on the other hand, is generated via movement and hence shows a different behavior. In particular Aoun and Benmamoun show that CLLD does not exhibit a uniform behavior with respect to this interaction: *wh*-movement and topicalization across a CLLD-ed NP related to a clitic within an island is consistently ruled out. However, *wh*-movement and topicalization across a CLLD-ed NP which is not separated from its clitic by an island is possible. This is schematically represented in (53):

(53) a. [WH/Top) Np/PP]j CLLD-edNP$_i$ V+clitic$_i$ tj
b. *[WH/Top) Np/PP]j CLLD-edNP$_i$ [island clitic$_i$] tj

They argue that the former construction (53a) is a result of movement. If this is so, it is expected that in this language only the former construction would show reconstruction effects (see chapter 54). This seems to be borne out. Consider the following sentences:

(54) a. Təlmiiz-a əəitaan bt?rfo ?ənno kəll m?allme ? aasasət-o.
student-her the naughty know-2 that every teacher punished him
'Her naughty student, you know that every teacher punished him.'
b. *Təlmiiz-a əəitaan fallaytp ?alblma kəll m?allme ?aasasət-o.
student-her the naughty left-2 before every teacher punished him
'Her student, you left before every teacher punished him.'

In (54a) the pronoun within the CLLD-ed NP can be interpreted as bound by the quantifier phrase 'every teacher'. Bound pronouns must be c-commanded at LF by the elements that bind. The relevant bound reading follows the assumption that the CLLD-ed NP reconstructs under the subject QP. In (54b), on the other hand, no reconstruction takes place since the CLLD-ed NP is base generated in its position. Aoun and Benmamoun account for the interception effects observed in (54) as follows: a moved CLLD-ed NP reconstructs and therefore does not intercept *wh*-movement. A base-generated CLLD-ed NP cannot reconstruct and therefore does not intercept *wh*-movement.[10]

Anagnostopoulou (1994) shows that there are in fact two types of reconstruction effects: full reconstruction effects which presuppose movement, and partial reconstruction effects which do not presuppose movement. As she points out, CLLD in Greek does not exhibit full reconstruction effects. Consider the examples in (55):

(55) a. *O Janis tis$_i$ epestrepse to vivlio tis Marias$_i$.
the John her returned the book-acc the Mary-gen
b. *TO VIVLIO TIS MARIAS$_i$ tis$_i$ epestrepse o Janis.
the book the Mary her returned the John
c. To vivlio tis Marias$_i$ o Janis tis$_i$ to epestrepse.
the book the Mary the John her it returned

In (55a) the indirect object is co-indexed with the possessive genitive inside the direct object phrase. Under this interpretation the sentence is ruled out as a Condition C violation. (55b) is also bad. Under the assumption that focus fronting involves actual movement of the XP, the status then of (55a) and (55b) is identical. On the other hand, (55c) is acceptable. The genitive contained within the CLLD-ed direct object can be coreferential with the indirect object clitic IP-internally. There is no Condition C effect in CLLD which does not involve actual movement.[11] Anagnostopoulou further argues that connectivity characterizes

CLLD because of the existence of a chain which permits transmission of features relevant for Binding Theory.

4.4 Movement approaches to CLLD

In this section I come to discuss analyses that favor a movement approach to the CLLD derived from a clitic-doubling input structure. Agouraki (1993), Kayne (1994), Sportiche (1996b), and Grohmann (2000a), among others, argue in favor of analyses along these lines, which straightforwardly explain the connectedness properties of CLLD.

Before I present such analyses, it is necessary to address one of the arguments against this view, namely the fact that languages such as French lack clitic doubling, but do have CLLD. French has right dislocation, a construction that is superficially similar to clitic doubling. If the movement analysis for CLLD were on the right track, the result would be that the distinction between clitic doubling and right dislocation can no longer be stated.

Right dislocation is a construction in which a clitic co-occurs with a phrase to its right as illustrated in (11) with an example from French (see chapter 14):

(56) Je l' ai vu, l' assassin. French
I him have seen, the murderer
'I saw him, the murderer.' (Jaeggli 1986b: 33)

Clitic doubling and right dislocation are subject to different constraints. For instance, in right dislocation, the dislocated phrase is set off from the rest of the sentence with a sharp intonational break, as illustrated in (57), while no such break is required before the object in clitic doubling, as illustrated in (58):

(57) Parece que tuvieron que llevarla de urgencia a los Estados Unidos la hija de Coronel Martínez. Rio Platese Spanish
'It seems that they had to take her urgently to the United States the daughter of Coronel Martinez.'

(58) Parece que tuvieron que llevarla a la hija de Coronel Martinez de urgencia a los Estados Unidos.
'It seems that they had to take her the daughter of Coronel Martinez urgently to the United States.'

In languages such as Greek in which clitic doubling is restricted to certain types of DPs, it is possible for a DO clitic to co-occur with an indefinite in CLLD and right dislocation, but not in clitic doubling:

(59) To pino pu ke pu ena uzaki.
it drink now and then a glass of ouzo
'I drink a glass of ouzo every now and then.'

Kayne (1994) and Zubizarreta (1998) relate right dislocation to CLLD. Kayne (1994: 82–3) proposes that in both clitic doubling and right dislocation, the DP doubled by the clitic is base generated in an argument position, thus unifying structurally clitic doubling with right dislocation. These authors have argued that clitic doubling, right dislocation, and CLLD have the same underlying structure with a clitic doubling a DP in all three constructions. The doubled DP starts out as a complement of the verb as in (60), and is never generated in a left or right peripheral position. The clitic could be analyzed as the head of a determiner phrase, in whose specifier the LD-ed phrase is originally generated (Torrego 1998).

(60) $[_{CP}\ DP_{LD\text{-}edi}\ [_{IP}\ clV\ t_i]]$

To express the intonational and interpretational differences between right dislocation and doubling, Kayne suggests that the former construction is an instance of CLLD at LF, i.e., the right dislocated phrase undergoes LF-movement of the CLLD type. Covert CLLD is triggered by a feature having the effect of a particular intonation contour at PF. No such feature is present in clitic doubling. On the other side, Zubizarreta (1998: 198, n. 57) suggests that right dislocation involves clitic left dislocation followed by leftward movement of the TP across the left dislocated constituent. Given the distributional differences between right dislocation and clitic doubling mentioned above, the latter approach is descriptively more adequate as it captures the fact that right dislocated elements occupy a peripheral position in the sentence, unlike doubled elements. In Kayne's proposal, this difference is not explained. See also Cecchetto (1996), and Agouraki (1993).[12]

In the next section I turn to a brief discussion of the specificity associated with CLLD.

4.5 CLLD and specificity

Generally, since CLLD involves a topic phrase in the left periphery of the clause, the elements that may appear in this position are specific. However, there exists a cross-linguistic asymmetry with respect to LD of bare quantifiers. For instance, in Greek (Anagnostopoulou 1999b) bare quantifiers either undergo CLLD, in which case a clitic is required and the quantifiers are generally interpreted as specific, or they undergo focus-movement, in which case the clitic is necessarily absent (this is always the case with focus-movement in Greek, cf. Tsimpli 1995 for discussion and references):

(61) a. Kapjon i Maria ton epiase na andigrafi.
someone the Mary him caught-3 subj cheat-3
'Mary caught somebody cheating.'

b. *Kapjon tha vrume alla den kserume pjon.
someone fut find-1pl but neg know-1pl who-acc

c. KAPJON tha vrume alla den kserume pjon.
someone fut find-1pl but neg know-1pl who-acc
'We will find someone but we do not know whom.'

Second, as Demirdache (1991) points out, measure phrases and idiom chunks which are non-referential can be connected to a clitic:

(62) a. 70 chili non li pesa.
seventy kilos not them weigh
'He does not weigh 70 kilos.'
b. Giustizia non la fara mai.
justice not her do ever
'As for justice, he will never do it.'

Demirdache also observes that since any type of XP can be LD-ed why should a predicate, as in (63) below, be able to enter into a referential binding relation with a clitic?

(63) Messo da parte non lo e mai stato.
got out of the way not it he ever was

Moreover, in languages such as Greek, the presence of a clitic is licit in *wh*-constructions, as exemplified in (64):

(64) Pjon apo tus filus tu o Janis ton agapai perisotero.
who from the friends his the John him love-3 more
'Who of his friends does John love more?'

The above data are discussed in Iatridou (1994) and Anagnostopoulou (1994). Both authors note that the presence of clitics is legitimate in *wh*-constructions in which the *wh*-phrase is D-linked (Pesetsky 1987b). Iatridou then argues that CLLD is in general only possible with D-linked DPs, a fact which explains why clitics are possible with D-linked interrogatives: these do not have the syntax of questions but rather they involve CLLD of a D-linked *wh*-phrase.

I now turn to a discussion of the similarities between CLLD and CLD.

5 CLLD and CLD

As mentioned in the introduction CLD is a typical Germanic construction which is characterized by the fact that the resumptive element inside the matrix clause is a demonstrative pronoun, which must be adjacent to the LD-ed element.

5.1 The common properties of CLLD and CLD

CLD and CLLD have a number of properties in common.[13] Investigation of these similarities led researchers to propose a uniform account of CLLD and CLD (see in particular Van Haaften et al. 1983; Demirdache 1991; Anagnostopoulou 1994,

1997; Wiltschko 1997b). The discussion below concentrates on data from Greek and Dutch:

(i) In both constructions the left peripheral XP is understood as a topic.
(ii) Both have a gap in the argument position, while HTLD has a lexical pronoun in that position.
(iii) The left peripheral XP is an adjunct (see section 5.3 for details).
(iv) CLLD like CLD are unbounded, as (65) shows:

(65) a. To Jani skeftika oti o Petros ipe oti ton ide.
the John thought that the Peter said that him saw
'As for John, I thought that Peter said that he saw him.'
b. Jan die dacht ik dat Piet zei dat hij gezien had.
Jan that thought I that Piet said that he had seen
'As for Jan, I thought that Piet said that he had seen him.'

(v) Both constructions are sensitive to islands:

(66) a. *Ti Maria htes gnorisa ton andra pu tin pandreftike.
the Mary yesterday met-1sg the man that her married
b. *Jan die vertelde Piet het verhaal dat hij verslagen had.
Jan that told Piet the story that he beated had

(vi) There is connectivity in both:

(67) a. Ton eafto tu o Janis ton aporipti.
the self his the John him rejects
'John rejects himself.'
b. Zichzelf daar praat Jan niet over.
himself there talks Jan not about

There are similar restrictions on the type of elements that may occur in the fronted position. It is standardly assumed that D-linking or referentiality are the most crucial factors involved. For example, bare quantifiers as in (68a) and (69a) are ungrammatical, while restricted QPs as in (68b) and (69b) are not:

(68) a. *Kathena ton ksero.
everybody him know-1sg
b. Kathena ston kipo ton iksera.
everybody in the garden him knew-3sg

(69) a. *Iedereen die ken ik.[14]
everyone that know I
b. Iedereen in de tuin die kende ik.
everyone in the garden that knew I

5.2 The differences between CLLD and CLD

However, CLLD and CLD are by no means identical. In fact they display a number of differences, listed below:

(i) In CLLD the resumptive pronoun is a clitic. In CLD the d-word can be stressed and can be replaced by a phrasal category. As Zwart (1993: 248), points out, the presence of the d-pronoun is not obligatory, while the presence of the clitic is obligatory:

(70) Marie (die) kust Jan niet.
Mary that kisses John not
'Mary, John doesn't kiss.'

Grohmann (2000a) suggests that when the d-pronoun is not present the construction is similar to focalization:

(71) Jan die z'n ouders ken ik niet.
John that his parents know I not
'John, I do not know his parents.'

(ii) In CLLD the clitic can be clause internal, whereas the d-word must be the first element after the LD-ed phrase. In root clauses, since Dutch requires V-to-C movement, the verb immediately follows the d-pronoun:

(72) Ton Jani i Maria ton kseri.
the John the Mary him knows

(73) *Jan die ik ken niet.
Jan that I know not

(iii) CLLD can involve stacking of LD-ed phrases. This is not possible in CLD:

(74) *Jan op school die daar zag ik niet.
John at school that there saw I not

(iv) CLLD displays selective island sensitivity in the sense that long-distance CLLD freely violates *wh*-type islands (see section 4). CLD is sensitive to all islands:

(75) *Jan die weet ik niet waarom Piet geloofde.
Jan that know I not why Piet believed

(v) Finally, the LD-ed phrase in CLLD can occur at the front of any subordinate type clause. CLD basically occurs in root contexts:

(76) *Ik denk dat Jan die ik niet ken.
I think that Jan that I not know

5.3 Deriving the similarities and the differences between CLD and CLLD

In the literature, it has been argued that the LD-ed phrase in CLD is a CP adjunct, and the d-pronoun is moved to Spec,CP from its base position, as illustrated in (77):

(77) $[_{CP}\ XP_{LD\text{-}ed}\ [_{CP}$ d-pronoun t]]

CLD has been analyzed by some researchers as involving raising of the LD-ed element to the sentence initial position, i.e. Spec,CP (see, e.g., Grohmann 2000a).[15] Wiltschko's (1997b) analysis also accepts that the LD-ed phrase in CLD is in CP, but proposes that it is parasitic on the syntactic operator chain between the topicalized pronoun and its trace.

Demirdache (1991) and Anagnostopoulou (1997) propose that CLD and CLLD can be unified, both involving the general schema in (78):

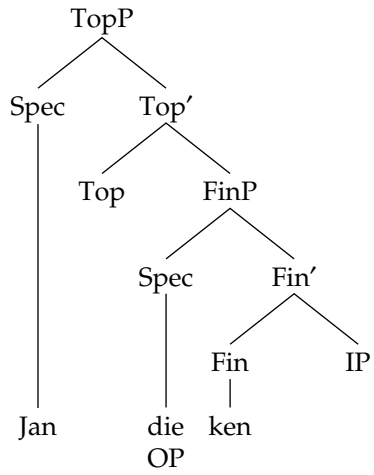
(78) $[_{FP}\ XP_{LD\text{-}ed}\ [_{FP}$ Operator t]]

According to Anagnostopoulou (1994, 1997), predication licenses both cases of (78). The d-pronoun and the clitic head a predicate variable chain, the LD-ed XP being the subject of predication. This approach captures the parallelism between two constructions in a straightforward manner. A clitic-doubling alternative to CLLD, on the other hand, seems to miss a generalization. The differences between these two construction types can be accounted for in terms of a difference in adjunction sites. Specifically, CP-adjunction is forced in CLD, but not in CLLD.

As discussed in section 3.2, embedded CLLD is free to apply everywhere, a fact which suggests that the LD-ed phrase in CLLD is adjoined to IP, contrary to what Demirdache (1991) and Iatridou (1994) have proposed. Recall that Iatridou and Kroch (1992) have argued that the phenomenon of CP-recursion is possible under CPs that are selected by a bridge verb. If the correct analysis of embedded CLLD is in terms of CP-recursion, then Iatridou and Kroch's analysis is not compatible with it, as the conditions on CP-recursion are systematically violated in the case of embedded CLLD. Hence a more correct analysis seems to be one in which the LD-ed phrase is adjoined to IP. On this view, the differences between CLD and CLLD can be captured if one assumes that CLD requires a matrix CP.[16]

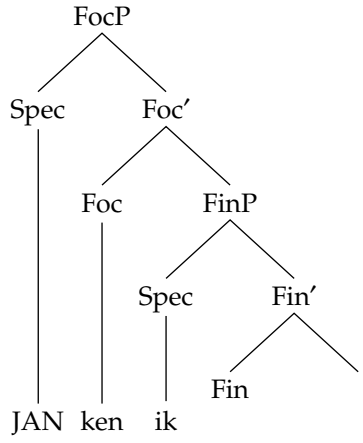
Haegeman (2001), on the other hand, adopts Rizzi's analysis of the split CP and assumes that in Dutch root clauses the finite verb occupies Fin. She assumes that a fronted topicalized constituent occupies the specifier of TopP and that the doubling *die* pronoun occupies the specifier of FinP. When the pronoun is absent, it is assumed that a non-overt analogue occupies the specifier of TopP. This non-overt analogue is taken to be a null operator, OP:

(79)



A further refinement needs to be added here. In V2 languages such as Dutch, fronted objects receive either topic interpretation ('old information') or focal interpretation ('new information'), in which case they will have focal stress. One may assume that when fronted constituents receive topic interpretation the structure is as in (79) above, with an overt or non-overt topic operator. When focal, Haegeman assumes that the structure is as in (80) with the fronted constituent moved to Foc and the verb moves to Foc:

(80)



6 CLLD in the noun phrase

Within noun phrases, there exists a construction in which both a possessive pronoun and a possessor DP are present. This pattern is found in many languages. (81) provides a non-exhaustive list of examples (Haegeman 2001; Alexiadou et al., forthcoming):

(81) a. Per sin bil — Norwegian
Peter his car
b. ae mand hans hus — W. Jutlandic
a man his house
c. dem Vater seine Katze — German
the father his cat
d. em bueb zini Mutter — Swiss German
a child his mother
e. Peter z'n Kat — Dutch
Peter his cat
f. Marie eur katte — W. Flemish
Mary her cat
g. Epkema syn plan — Frisian
Epkema his plan
h. the Man of Lawe his Tale — Middle English
i. li serf sum pedre — Old French
the serf his fater
j. Jón hin-ós — Krio
John his house
k. Peter sua filho — Malayo-Portuguese
Peter his son

The particular instantiation of the construction is not homogeneous cross-linguistically. For instance, in languages with overt morphological case the possessor DP may be associated with different case-forms. In German (81c), the possessor DP *dem Vater* appears in the dative case. The Swiss German possessor *em bueb* in (81d) is a 'nominative pendens'; both in German and in Middle English the doubled construction occurs with a dative possessor, but it may also occur with a genitive possessor. The genitive possessor is illustrated in (82a) for German and in (82b) for English. Middle Dutch doubled possessors occur in the genitive case, illustrated in (82c):

(82) a. bringt ja des teufels sein Gepäck.
bring ja the devil-gen his pack
b. God Mars'es his vigour Sir Robert's his shape
c. alle des conincks sijn landen
all the king-gen his lands

Corver (1990) argues at length that in (81e) above *z'n* occupies the same position as genitive '*s*, i.e., D^0. That this is so is suggested by the fact that they are mutually exclusive:

(83) a. Jans auto
Jan's car

b. Jan z'n auto
   Jan his car
c. *Jans z'n auto

Corver further suggests that this possessor is actually generated in Spec,DP. Note that the possessor in Spec,DP is not assigned case from outside its clause:

(84) a. Ich habe dem Mann seinen Wagen gesehen.
   I have the man-dat his car seen
b. Dem Mann sein Wagen wurde gestohlen.
   the man-dat his car was stolen

In (84) the possessor bears dative case, i.e., an oblique case form. It is not assigned structural case from outside. However, the DP containing the possessor is assigned case by a governing case-assigner, the verb and Infl.

It is a characteristic property of this construction that it only occurs with third person pronouns. First and second person pronouns, on the other hand, are unacceptable, as can be seen in the following Dutch (85a) and German (85b) examples:

(85) a. *mij m'n moeder
   my my mother
b. *euch Brüdern euer Haus
   your Brothers-dat your house

This restriction to the third person is not exclusive to left dislocation of DPs but it is prototypical of left-hand satellites in general. As de Wit (1997) observes, CLD is also sensitive to this:

(86) *Ik/mij die kent Jan niet.
   I/me that knows Jan not

In fact, others have noticed the similarities between these constructions and CLD and CLLD. Giusti's (1996) analysis for the doubling construction assimilates the pattern to the Romance left dislocation structure. She proposes that the DP-possessor parallels the topicalized constituent in the CLLD pattern and occupies the specifier of a TopP in the DP domain. The doubling possessive pronoun in her analysis corresponds to the doubling clitic. Though this analysis is on the right track, Haegeman (2001) discusses some points that need refinement. For one thing, we cannot always identify the preposed possessor with the topic in the CLLD constructions. In CLLD constructions, typically, the dislocated DP cannot be a bare quantifier:

(87) *Personne je ne l'ai vu.
   nobody I not him have seen

According to Haegeman (2001), in West Flemish the doubling pronoun may be a bare N-quantifier, in which case the DP has the features of an indefinite DP, witness the obligatory expletive construction in (88b):

(88) a. dat zyn niemand zen zoaken
that are no one his business
b. Niemand zen voader zou ter da keunen verdroagen.
no one his parents would there that be able to support

The topicalized element in a CLLD construction can also be a strong pronoun, an option which is at best extremely marginal for the possessor construction:

(89) a. Lui je ne l'ai pas vu.
him I not him have not seen
'As for him, I have not seen him.'
b. *T'is zie eur boek.
it is she her book

Another argument against assimilating the doubled DP to the topic is that the doubled DP may also be an interrogative element, which is compatible with focus interpretation (i.e., new information), but not with topic interpretation (i.e., 'given information'):

(90) Wien zenen boek is da?
who his book is that

The variety of elements that can double the possessor pronoun suggest that they cannot just be seen as DP-topics. Below we shall propose that the doubling construction may indeed involve some form of topicalization inside the DP, but that, contrary to what seems to be suggested by Giusti, it need not always do so.

In fact, Haegeman (2001) takes (91) to support the parallelism between dislocation and doubling possessives:[17]

(91) Over minister-president v.A. die zijn fouten hebben we gepraat.
about prime minister v.A. that his mistakes have we talked

In (91) the possessive DP *minister-president v.A.* is actually doubled by two elements. (i) Immediately adjacent to it there is the doubling *die*-pronoun which also typically occurs in the left periphery of the Dutch clause and precedes the finite verb. (ii) In addition there is the possessive pronoun *zijn* in POSS. Given this close parallelism between Dutch dislocation and doubling possessives in (91), Haegeman takes the Dutch pattern as the closest clausal parallel for the doubling construction.

The example offers an exact match for the dislocation structure as shown by the schematic patterns in (92):

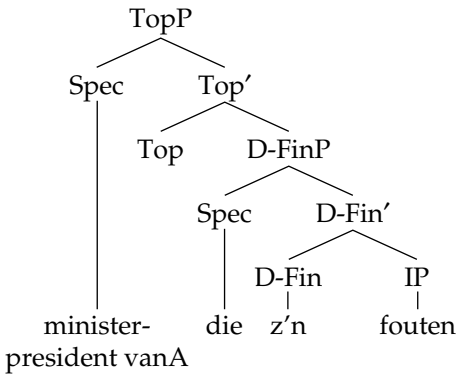
(92) a. Jan die vertrekt
Jan die leaves

b. Jan die z'n vertrek
Jan die his departure

While the data do confirm Giusti's intuition that the doubling construction finds a parallel in the dislocation pattern, we also see that the *die* pronoun in the dislocation pattern does not correspond to the possessive itself. In fact, (91) suggests that the matching elements in 'third' position are the finite verb in the clause and the pronoun in the DP.

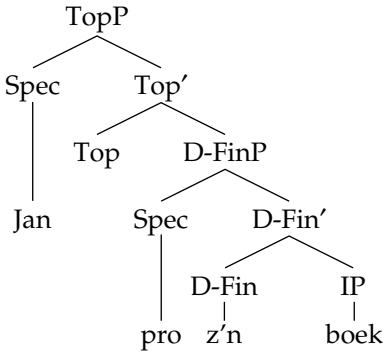
By analogy with the split CP, Haegeman (2001) assumes a split DP, i.e., the category D is in fact a shorthand for a hierarchically organized set of functional projections. Haegeman proposes that the DP-internal category which encodes (in)definiteness corresponds to FinP in the CP layer. In the same way that FinP can be dominated by TopP and by FocP, the relevant projection DP can be dominated by TopP. Adapting Corver's DP structure along the lines of Rizzi's split CP she proposes the following representation for the DP in (93):

(93)



The question arises how to represent possessive structures without the doubling *die* pronoun. Based on the analogy with the clausal domain and assuming that possessors are subject analogues, Haegeman proposes that in the absence of an overt *die* pronoun the doubling possessor may still be inserted in the specifier of the TopP and that that there is a null pronominal under [Spec,D-FinP]:

(94)



NOTES

1 For a discussion on the status of epithets as resumptive elements see Aoun and Engdahl (1985), McCloskey (1990), Demirdache (1991), Shlonsky (1992), Choueiri (1999).
2 Van Riemsdijk (1997a) points out that there is a partial correlation between movement properties and connectedness.
3 Note that case connectivity is possible between the LD-ed noun phrase in Greek HTLD and the clitic. The point here is that it is not obligatory as is the case with CLLD.
4 In a system like Rizzi's (1997), HTLD elements would occur in the highest topic construction, while CLLD elements would occupy lower topic positions. According to Rizzi, topic projections hosting CLLD elements can be multiple.
5 The literature on CLLD is very rich (see Cinque 1990c; Iatridou 1994; Zubizarreta 1998, among many others and references therein).
6 The discussion on CLLD does not include the status of preverbal subjects in pro-drop languages, which have been argued by some researchers to be in a CLLD-ed position (see Alexiadou and Anagnostopoulou 1998 and references therein). Their A vs. A' status is still a matter of controversy (see Cardinaletti 1997).
7 It is generally assumed that focus movement applies much like *wh*-movement (see Cinque 1990c; Rizzi 1997).
8 Demirdache (1991) points out that the immunity to WCO simply shows that the pronoun does not have the interpretation of a logical variable. It does not show that the construction does not involve *wh*-movement.
9 Though the two approaches share certain common properties, they differ in the details. For instance, Iatridou assumes that it is the dislocated XP that undergoes A'-movement, whereas Demirdache assumes that the dislocated XP is generated in the position where it appears at S-structures and it is the IP-internal pronoun that undergoes movement. Second, Iatridou assumes that movement takes place at S-structure, whereas Demirdache proposes that movement takes place at LF. However, both share the property of suggesting that CLLD is selective sensitive to islands because movement originates from an A'-position.
10 Aoun and Benmamoun further propose that the type of movement involved in CLLD in Lebanese Arabic takes place actually at the PF component. Specifically, pre-spell-out the CLLD-ed NP remains in the specifier of a clitic phrase, an A-position, therefore no interception with *wh*-movement and topicalization is observed. A PF movement operation does not feed LF. At LF the CLLD-ed element is still located in the specifier of the clitic phrase. Hence the "reconstruction effects."
11 Anagnostopoulou shows that the Condition C effects do not disappear under clitic doubling, hence providing an argument that CLLD cannot be reduced to clitic doubling.
12 The specifics of the overall analysis of Agouraki are crucially different. In the spirit of Sportiche (1996b), Agouraki (1993) proposes that clitics are functional heads heading their own projection and they may co-occur with full DPs in argument positions (clitic doubling). The doubled DPs may raise overtly to the specifier of the clitic head and from there they can move further on (CLLD). Agouraki points out that CLLD has mixed A/A' properties, similar to scrambling. She proposes to account for this similarity by postulating that the movement step of the DP to the clitic position has

A properties (akin to an agreement process) while movement beyond this domain has A′ properties (cf. Mahajan 1990 for short-, medium-, and long-distance scrambling; Sportiche 1996b, who proposes to unify the syntax of clitic constructions and scrambling; and Alexiadou and Anagnostopoulou 1997a, who argue that the counterpart of short scrambling is clitic doubling, substantiating Sportiche's claim with evidence from binding).

13 There is an obvious parallelism between the structure of relative clauses and that of left-dislocated constructions. This is particularly true in languages such as Dutch and German: both relative clauses and CLD are characterized by a nominal head and a fronted d-pronoun (see the contributions in Anagnostopoulou et al. 1997).

14 Zwart (1993: 250) points out that this example is not very bad under a restricted reading.

15 Vat (1997) contains a discussion of the derivation of CLD by comparing the T-model to the NP-Structure model of Van Riemsdijk and Williams (1981).

16 Note, however, that given recent proposals about the set of functional categories that form the left periphery of a clause embedded CLLD-ed phrases could be argued to be situated on specifiers of functional projections within the C system.

17 Note that at least some speakers of Standard Dutch judge the example as ungrammatical.

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Preface

Generative grammar has always set its aims high. From its inception in the 1950s, the ambition has been to go beyond observational and descriptive adequacy to reach explanatory bliss. Important work would be about 'conditions on transformations' rather than on 'some properties of *wh*-movement in English', about the 'transformational cycle' rather than on verb clusters.[1] This is what science should be like. And while earlier attempts at achieving a semblance of an explanatory theory were often clumsy and inadequate, these past forty or so years have shown that truly fundamental questions can now be asked and addressed.[2] This emphasis on theory has not, of course, altered the fact that linguistics is a thoroughly empirical science, but data and analyses are seen as what they are: tools to help us understand the structure and properties of the human language faculty. It is the fate of tools that when the product is finished they are put away. When some (as it turns out controversial) data from Italian had suggested that the notion of bounding node should be parameterized, we then forgot about the Italian data and happily proceeded with the idea of parameters.[3] Numerous other examples could be added.

More generally, the data and analyses that at some point in the history of generative grammar played an important, sometimes even a crucial, role have a tendency to fade into the background rather quickly.[4] This effect is particularly strong when the piece of theorizing they helped to establish becomes obsolete, but it is even true when the theoretical insight persists over time. As time went on, and as generative grammar (using the term in the broad sense, including all its theoretical diversity), in its explosive success, expanded to dozens of countries, hundreds of universities and colleges, and many hundreds of researchers, the muckheap of once useful but then discarded empirical material continued to grow. Old hands in the field may still be served by a good memory, helping them to dig out some of these rejects if they seem useful at some later stage, but successive new generations of young linguists simply don't have access to the wealth of data, generalizations, and analyses that might be terribly important to their research if only they knew about them.

But it is not only a problem for younger generations. Researchers who like to keep track of developments, particularly (but not only) in those subfields that are not directly related to their own research, or who work in closely related disciplines such as, for instance, psycholinguistics or sociolinguistics, find it increasingly difficult to keep track. Current handbooks are often concerned with current theorizing, but only marginally with the history of the various versions of the theory and even less with the empirical generalizations underlying those theories. As a consequence, an ever smaller percentage of the potentially useful empirical material is treated in standard textbooks, and hence the rest is not part of the knowledge that researchers and students in the field may be expected to possess.

It might be objected that the articles in which all this wisdom is stored are, after all, still around in the journals, in the books, in the libraries. But given their theoretical focus, the titles are often unrevealing as far as the empirical domain is concerned, keywords are notoriously absent or unreliable, relevant data are scattered over several articles, and, most importantly, the presentation of the data in these articles is subservient to the theoretical claims that are made and hence not presented in succinct, didactically useful ways.[5] So searching for the relevant materials, even if you know what to look for, is often hard. For young researchers, such a search task is doubly difficult because very often the descriptive generalizations are presented in a jargon and formalism that were characteristic of the theoretical framework at the time, sometimes decades ago. Who thinks to look up the term 'backward equi' when looking for data relevant to what we now call exceptional case marking (ECM)?[6]

Having a good, theoretically oriented mind is not enough. You cannot gain an understanding of the abstract properties of Universal Grammar without having any ideas about interesting empirical areas that might provide the crucial evidence (or counter-evidence) for your claims. But these flashes of empirical insight can only come if you have enough knowledge in your head to start the neurons firing away. And you can only have that knowledge if you have been taught about a certain range of phenomena in a variety of languages, or if you have had access to a repository of such materials to work through by yourself. The problem is that such courses are rarely taught, the reason being more often than not that the relevant data are not available in a form that is didactically usable.

This is the lacuna that we are hoping to fill with *The Blackwell Companion to Syntax*. In these five volumes, we offer you 77 case studies of syntactic phenomena that should, at least partly, fill the gap and constitute an important research tool for the working linguist and for teachers and students of syntax (and its interfaces). In bringing these chapters together, we were guided by a working definition of what a syntactic case study was supposed to be. The following properties were thought to be central: *a well-delimited empirical area (both as to the construction(s) involved and as to the languages in which the phenomena are found) whose analysis has, at one time or another in the history of generative grammar, played an important role in the theoretical debates at that time*. More often than not, we will find that such results are relatively robust in the sense that they will stand and

be interpretable regardless of various innovations or adaptations of the version of the theory in which they first saw the light.

The so-called 'verb-raising' construction in Continental-West Germanic languages (chapter 75) will serve as an example. Much has been published on this subject, a reasonable degree of consensus exists about the most important properties of the construction, its analyses have been frequently used to support theoretical proposals, etc. Nevertheless, the existence of this complex of facts is hardly known outside the small group of specialists in this field, the main properties cannot be presupposed as common knowledge, and no one in the field can be properly held responsible for ignoring the verb-raising construction. In a situation like that, the chapter's presentation will be oriented toward combining views and formulating them in such a way that they will be accessible to researchers from various approaches to the theory of grammar.

In addition, of course, the delimitation had to be such that the empirical subdomain in question could be treated in manageable chapters. It would have been unthinkable to include a case about relative clauses: even a thick monograph would not do such a topic justice. But the subtopic of free (headless) relative clauses (chapter 27), a topic that in the late 1970s and the 1980s generated a considerable literature, is a typical example of what we had in mind.

What about the theory? We wanted to make the empirical generalizations, the insights into the properties of constructions, the main focus of each chapter. But wherever useful and possible, of course, reference can be and is made to the theoretical issues that the phenomena in question were or even are relevant to. This introduces a certain bandwidth, and indeed some of our authors stress the empirical side more strongly while others swerve more easily into theoretical discussions. With a project this size it has been impractical to impose more uniformity than we have achieved here. It was, frankly, not always easy to convince our authors to take time away from their primary theoretical research to write the chapters we asked them to. And it was also on occasion hard to curb the attention that they tended to give to theoretical issues and their own role in those theoretical developments. More generally, wherever possible we suggested that theoretical issues be addressed in robust, sustainable ways, not in terms that would reflect the fads and the terminological peculiarities typical of a specific brief period in the short history of generative grammar.

It does not take a great deal of knowledge of the field to realize that an enterprise such as the present one is a highly open-ended affair. Even if we had achieved complete coverage at the time of appearance, new cases would soon present themselves. But complete coverage is unattainable in the first place. It is always possible to come up with other potential cases, not represented in the present work. Even now we already have a number of ideas about cases that might be added and which may at some point be added to the present collection. Nevertheless, we believe that the coverage that the present collection achieves is very considerable. So much ground is covered that already it seems doubtful that future graduate students of linguistics could be expected to work through all of this material. If a student manages part of it and has the rest at his or her disposal

as an encyclopedia of linguistic phenomena, we feel certain that his or her research will greatly benefit. As teachers we are frequently confronted by a big question mark in the faces of students or even fellow faculty members when we use terms like 'contraction', 'subdeletion', or 'freezing effect'. And when asked "Where can I read up on this?" we are often faced with our own bad memory and the virtual impossibility of pointing toward one representative text that will concisely and competently explain what kind of phenomena are hiding behind these terms. This, we feel sure, is now a problem of the past.

If, as we are convinced, this *Companion* will become an important research tool in linguistics, a pressing need will also be felt for additional case studies to be added. While it may well be possible to project further volumes in the future, or an updated or extended version of the present publication, it has been clear to us from the start that the best way to make this an incremental enterprise is to publish these cases electronically. This would allow the possibility of reviewing cases now published, adding new cases relatively easily, and allowing discussion fora, etc. When that happens, the way to expanded coverage of the field will be paved. For the moment we refer you to www.syntaxcompanion.org to keep you informed on developments in this area.

One point to make about the references: every individual chapter has a reference section; the consolidated reference list is in volume V, and in the XML CD version the links are to the consolidated list rather than to the end-of-chapter lists. So in the chapter references you may find entries with a, b, etc. after the date even if there is only entry with that author and date in that chapter, because there is more than one entry in the whole five volumes with the same author and date. For example, even if there's only one Chomsky 1995 cited in any one chapter, it will appear as Chomsky 1995a or 1995b or 1995c, because there are three Chomsky 1995 entries in the consolidated references for the whole five volumes, identified as a, b, and c.

As editors of this encyclopedia of case studies, we have had to make many choices. In doing so we were greatly helped by the project group at NIAS, the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, at Wassenaar, in the dunes lining the Dutch coast, in 1996/1997. The definition of what we would consider a typical case study was intensively discussed and ultimately fixed by that group: Reineke Bok-Bennema, Norbert Corver, Denis Delfitto, Joe Emonds, Martin Haiden, Itziar Laka, Eric Reuland, Tim Stowell, Sten Vikner, and, to some extent, Ian Roberts. We were also fortunate to have good input and feedback from Hagit Borer, Jan Koster, and Edwin Williams, our special outside consultants. The original list of cases was also compiled by that group. First sample chapters were produced during that year. And we brainstormed a lot about who would be the ideal author for which chapter. Nevertheless, we accept full responsibility for all the choices that were made.

We do wish to emphasize, however, that it has never been our intention to suggest that the present collection could be interpreted as a kind of canon, in the literary sense of the word (to the extent that literary scholars are still prepared to advocate such a notion). What we say above about the open-ended character of

an enterprise such as this should underline the fact that nobody could pretend that it is at all possible to establish such a canon, even if one tried to.

The first plans for this project were made in 1993. That is when we decided to apply to NIAS to see if we could get together a team of colleagues with whom to discuss the scope, the objectives, and the realization of the present work. The application was approved. We gratefully acknowledge the generous support, financial, logistic, and otherwise, of NIAS and, in particular, Dick van de Kaa and Wouter Hugenholtz, respectively the rector and the director of the institute. The group convened in the splendid isolation of NIAS in the academic year 1996/1997. There, we were happy to be able to work together with the colleagues mentioned above. Ilke van den Ende joined us as a student trainee. We were also happy to be able to organize two workshops at NIAS during that year. A third was held in Los Angeles at USC with the help and support of Hagit Borer and Tim Stowell in 2001. We wish to thank the participants at these workshops for their contributions, and LOT (the Dutch National Graduate School of Linguistics) as well as NWO and KNAW (the Netherlands Organization for Scientific Research and the Dutch Royal Academy of Sciences respectively) for financial support for these workshops. We also wish to thank the BSGM Foundation for an additional grant to the NIAS group. Last but not least we wish to thank those who have assisted us with the administration and correspondence, with the copy-editing and the HTML-conversion and the maintenance of the website: Jenny Doetjes, Bart Hollebrandse, Rob Goedemans, and Hannah de Mulder. Without them we literally and figuratively could not have managed. Thanks are due to NWO and the Utrecht Institute of Linguistics OTS (Language in Use project) for grants that made this assistance possible.

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Utrecht and Tilburg
Martin Everaert and Henk van Riemsdijk

NOTES

1 Cf. Chomsky (1973); Evers (1975b).
2 See, for example, Chomsky (2004).
3 Cf. Rizzi (1982b).
4 The reverse also holds true. Certain empirical domains have never figured prominently in theoretical debates, and remain, thus, uncharted territory from a descriptive point of view.
5 We should add that publications like *Linguistics Abstracts Online* will, in future, solve part of the problem we note.
6 Cf. Postal (1974).

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38 Logophoricity

ERIC REULAND

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1 Background

According to the canonical Binding Theory (Chomsky 1981), nominal expressions occur in three basic types: (i) anaphors, (ii) pronominals, and (iii) R-expressions. Anaphors are characterized as expressions that have no inherent capacity for reference. Hence, they must depend on some other expression in the sentence for their interpretation (their *antecedent*). Pronominals may, but need not depend on another expression for their interpretation. They are characterized by the fact that their features are drawn solely from a set of grammatical features, phi-features (in many languages just gender, number, and person). R-expressions have some additional features (grammatical and/or lexical).[1] Certain anaphors are like pronominals in that they only consist of phi-features. Other anaphors are morphologically complex and may contain other features as well. Anaphors and pronominals are together often referred to as *pronouns*.

The linguistic encoding of interpretive dependencies between nominal expressions and their antecedents is governed by the Binding Theory. For anaphors, the Binding Theory stipulates that they must be bound in a local domain (Condition A of the Binding Theory). Within the class of anaphors a further distinction is made between reflexive and non-reflexive anaphors. Loosely speaking, reflexive

anaphors have an argument of the same predicate as their antecedent, non-reflexive anaphors do not (for a more precise exposition, see chapter 9).

2 The notion of logophoricity

One of the challenges for the canonical Binding Theory, discussed by Clements (1975) among others, is the fact that the behavior of anaphors is not always clear-cut. Languages may have forms that must be bound in one environment, and need not be bound in another.[2] A typical example is *sig* in Icelandic. It must have a binder in (1a) (and failing this, due to a feature mismatch between *þú* and *sig*, it is ill-formed):

(1) a. *Þú hefur svikið sig.
you have betrayed self
b. María var alltaf svo andstyggileg. Þegar Olafur$_j$ kaemi segði hún sér$_{i/*j}$ áreiðanlega að fara. (Thráinsson 1991)
'Mary was always so nasty. When Olaf would come, she would certainly tell himself [the person whose thoughts are being presented – not Olaf] to leave.'

In (1b) *sér* is without a linguistically expressed antecedent, and yet the sentence is well-formed.[3] Traditionally anaphors such as *sig* in (1b) were called indirect reflexives. Hagège illustrates the indirect reflexive with the Latin example in (2) (Hagège 1974: 289, my gloss and annotation):

(2) (Patres conscripti) legatos . . . miserunt . . . qui a
senators delegates sent who from
rege peterent [ne inimicissimum suum secum haberet sibique
king ask$_{subj}$ that not biggest enemy refl$_2$ refl$_1$-with keep$_{subj}$ refl$_2$-and
dedere].
give$_{subj}$
'The senators$_i$ sent delegates to ask the king$_j$ not to keep their$_i$ biggest enemy$_k$ with him$_j$ and to give [him$_k$] to them$_i$.' (Cornelius Nepos, 23, 12, 2).

Suum, *se*, and *sibi* are all formally anaphors (reflexives in Hagège 1974).[4] As he points out, (2) shows two quite different uses, however. One use (in *secum*) is properly reflexive (rendered as 'refl$_1$' in the gloss), the other use is not, but rather refers to the author of the request (rendered as 'refl$_2$' in the gloss).[5] It is impossible for *sibi* in (2) to refer to individuals different from the senators, as would be the case if it were replaced by the pronominal form *eis*.

This second use is special since the reflexive, although it is technically bound, is not bound in a local domain, contra to what Condition A would lead one to

expect; rather the binding relation crosses two (subjunctive) clausal boundaries. Such a use of reflexive-like forms is not limited to Icelandic or Latin, but widespread over the languages of the world.[6]

Since Clements, the term *logophor* has come to be used for such anaphors. The term *logophor* was earlier introduced by Hagège (1974) for a different purpose, namely, to characterize a class of pronouns in languages from the Niger-Congo family that refer to the 'auteur d'un discours' (the 'source of a discourse', in the terms of Clements 1975). As Hagège puts it: "These pronouns distinguish the individual to which they refer from the speaker himself who uses them, in . . . 'indirect speech'" (Hagège 1974: 287, my translation). They refer to the individual cited, the secondary speaker, as opposed to the primary speaker.

Such a formally distinct series of pronouns for this type of use is found in, for instance, Mundang, Tuburi, and Ewe from the Niger-Congo family. These pronouns bear no formal resemblance to reflexives, hence Hagège considers the term 'indirect reflexive' inappropriate. It is for these, therefore, that Hagège introduces the term 'logophoric'.[7] Yet, as Hagège and Clements noted, the discourse function of such logophoric pronouns is similar to the indirect reflexive (Hagège 1974; Clements 1975).

The parallel between indirect reflexives and logophors is illustrated by the following example from Ewe (Clements 1975):

(3) Tsali gblɁ na-e be ye-e dyi yè gake yè-kpe dyi.
Tsali say to-Pron that Pron beget LOG but LOG be victor
'Tsali$_i$ told him$_j$ (i.e., his father) that he$_j$ begot him$_i$ but he$_i$ was the victor.'

Here LOG is the gloss for the logophoric pronoun *yè*.[8] Only *Tsali*, the source of the reported discourse, can be the antecedent of *yè*. As Clements notes, it is not necessary that the clause containing the logophoric pronoun be subjacent to the clause containing the antecedent. The logophoric pronoun may occur at any depth of embedding. In fact these pronouns do not require a cosentential antecedent – the antecedent can be several sentences back. The subsequent sentences of the discourse will continue to present the events described by the narrator from the point of view of the same individual or individuals (Clements 1975: 170).

The terminology of Hagège, and most of the standard typological literature with him, explicitly distinguishes indirect reflexives from logophoric pronouns. Modern syntactic literature often follows the usage of Clements (1975), which extends Hagège's. In this usage, logophoricity is what characterizes both the special forms of (3) and the non-local and/or free use of anaphors in Icelandic and Latin as in (1b) and (2) and in many other languages (varying from Chinese and Japanese, to Italian and English).

Clements gives the following cross-linguistic characterization of logophoric pronouns (Clements 1975: 171–2):

(i) logophoric pronouns are restricted to *reportive contexts* transmitting the words or thoughts of an individual or individuals other than the speaker/narrator;
(ii) the antecedent does not occur in the same reportive context as the logophoric pronoun;
(iii) the antecedent designates the individual or individuals whose words or thoughts are transmitted in the reported context in which the logophoric pronoun occurs.

Clements observes that in some languages logophoric pronouns may occur in sentences that strictly speaking do not satisfy conditions (i–iii), but that are in some sense modeled on sentences in which these conditions are satisfied. He notes that these conditions are primarily semantic/pragmatic, but does not elaborate on this.

Clements argues that there are no universal syntactic conditions on logophoric pronouns, such as a strict subjecthood condition on the antecedent. Languages do, however, impose varying idiosyncratic conditions on logophors. In Ewe, for instance, logophors are restricted to clauses introduced by the complementizer *be*.[9,10] Icelandic logophoric anaphora requires a subjunctive, in Mandarin Chinese the antecedent must be a living human being, etc.[11]

3 Long-distance anaphora

Much of the syntactic study of indirect reflexives, which will henceforth be referred to by the more neutral term *free anaphors*, has been conducted from the perspective of long-distance anaphora, and the questions they raise for the canonical Binding Theory. As noted in section 1, binding Condition A (Chomsky 1981) expresses that anaphors must be locally bound:

(4) **Condition A:**
An anaphor must be bound in its governing category.
γ is a governing category for α if and only if γ is the minimal category containing α, a governor of α, and a SUBJECT (*accessible to* α).[12]

Anaphors exceptionally allowing an antecedent beyond their SUBJECT are classified as long-distance anaphors. Icelandic logophoric anaphora forms a paradigm case.

Three types of exceptions have been distinguished:

(i) anaphors that are properly bound by an antecedent outside the governing category assigned under (4);
(ii) anaphors that are properly interpreted without a c-commanding antecedent;
(iii) anaphors that are properly interpreted without a linguistically expressed antecedent.

An influential line of research considered (i) as the canonical instance of such exceptions. Within this approach the possibility of non-local binding is captured by parameterizing the factors entering into the computation of the governing category (Manzini and Wexler 1987; see also Dalrymple 1993). Manzini and Wexler revise Condition A as in (5):

(5) **Condition A:**
An anaphor must be bound in its governing category.
γ is a governing category for α if and only if γ is the minimal category containing α, a governor of α, and F (an opacity factor).

F is taken to assume values such as (accessible) SUBJECT, Tense, Agr, or Comp. Particular anaphors may lexically differ in the value they select. Essential in this approach is that all processes interpreting anaphors are uniformly binding processes.

It has been established, however, that the nature of the relation between anaphors and their antecedents is not uniform across domains (Hellan 1988; Thráinsson 1990, 1991; Reuland and Sigurjónsdóttir 1997). Even languages allowing all three options given above do not necessarily allow them under the same conditions. Exceptions of types (ii) and (iii) are not only sensitive to syntactic factors and parameters (Everaert 1986b). They are also subject to specific non-structural conditions to be met by the discourse in which they are embedded. This is what will be focused on next (see also chapter 33).

4 Theoretical issues in logophoricity

Over the last decades logophoricity has received attention from a typological, a syntactic, and a semantic perspective. The first type of perspective is exemplified by work such as Hagège (1974), Hyman and Comrie (1981), Frajzyngier (1985), Wiesemann (1986), von Roncador (1992), Culy (1994, 1997). These works contain an array of important findings about the ways in which logophoricity is encoded cross-linguistically, some quite challenging for theory formation, for instance verbal markings of logophoricity (see, e.g., Curnow 2002). To some extent independent of the details of the typological findings, the semantics of attititudes, reports, perspective, indexicals, and self-representation has drawn the attention of linguists and philosophers. Some illustrative works are Lewis (1979), Chierchia (1989), Kaplan (1989), Reinhart (1991), and, more recently, Higginbotham (2003). In addition, there is a growing body of literature in which typological, syntactic and semantic considerations are brought together under a general perspective. Clements (1975) can be considered the first representative of this approach, followed by Sells (1987). These authors present a general perspective on both logophoric pronouns of the Niger-Congo type and logophoric anaphors. This line of research constitutes an attempt to explicitly incorporate the role of discourse factors in a general Binding Theory (formulated from the perspective of discourse representation theory; Kamp 1981b).[13]

In recent years Tancredi (1997), Safir (2003), Schlenker (2003a), Sigurðsson (2004) presented intriguing endeavors toward an integrated approach based on their contributions toward a general theory of the interpretation of indexicals with respect to the context of utterance, and the accessibility of context in the interpretation of reports. Of crucial importance was the inclusion into the debate of languages like Amharic. In Amharic one finds shifted interpretations of first person pronouns in reportive contexts. If the situation to be reported is one in which John says 'I am hero' English says '*John* says that *he* is a hero.' Amharic, however, say '*John* says that *I* am a hero', where 'I' and 'John' are the same, which is impossible in English. As discussed by Sigurðsson, this type of interpretation is not unique to Amharic, but occurs in a wider variety of languages. Such shifted interpretations of indexicals are not logophoric in the original sense, but contribute to finding the proper constraints on a theory of logophoricity. It would be impossible to bring all these strands together here. We will only be able to focus on a limited number of issues.

From a syntactic and lexical perspective, logophoric pronouns (or in general pronouns with shifted interpretation) and free anaphors pose different theoretical problems. Logophoric pronouns have specific lexical properties, which impose a certain type of interpretation. For them, the questions arise of (i) how this type of interpretation can be characterized; and (ii) why assigning this interpretation is subject to syntactic licensing in some languages, even though it is lexically expressed.

Prima facie, free anaphors have no specific lexical properties imposing a logophoric interpretation (this must be so, since they don't have this interpretation in standard reflexive contexts).

Logophoric pronouns and free anaphors with logophoric interpretation both give rise to the following question: (i) How can logophoric interpretation be characterized?

Different questions are: (ii) How can free anaphors escape the locality conditions on anaphor binding, although they are formally anaphors? (iii) Is long-distance anaphora a unified phenomenon (i.e., do all long-distance dependencies reflect the same type of process)? (iv) How can free anaphors be interpreted as logophors, although, prima facie, they have no specific lexical properties to impose a logophoric interpretation? (v) What are the principles governing the cross-linguistic variation observed?

We will first address the question of how logophoric interpretation can be characterized, keeping discussion at an informal level (for recent discussions with different degrees of formalization, see Safir 2003, Schlenker 2003a, and Sigurðsson 2004).

5 The nature of logophoric interpretation

A question that comes up is how 'special' logophoric interpretation is. The number of languages with a special paradigm of logophoric pronouns is quite

limited. The number of languages with some sort of free anaphor is considerably larger, but, nevertheles, quite a few languages lack that kind of use. So, another way to frame the question is to what extent we find the ingredients for logophoricity also in languages like Dutch, which prima facie appear to lack it. Since logophoric interpretation is held to reflect properties of the 'source of a discourse', as we saw, let's consider these more closely.[14]

Any utterance is an event that happens at some particular time and place, involving a speaker and a hearer (who may be identical).[15] In the notation of Fillmore (1971a) this can be captured by associating an utterance (of a sentence in context) with a *center*, which is a triple consisting of the *time* and the *place* of the utterance, and the *participants* (generally taken to be the speaker and hearer).

It is important to determine how properties of the interpretation of an utterance depend on the center. With the model held constant, the truth-value of a sentence like *Mirella danced the tango* can remain the same regardless of whether it was uttered on January 10, 11, or 12, 1997, and at Trans 10, Building 20, or on Harvard Square. A sentence can be provided with expressions specifying values for time and place. Some expressions, such as *January 12, 1997*, or *Room 0.19, Trans 10*, receive interpretations independent of context of utterance. The interpretation of other elements cannot be given independently of context. These are the elements we will be concerned with here.

Relative interpretation is pervasive in the deictic system, be it local or temporal. The value of *Mirella danced the tango yesterday* is affected when the utterance time is varied. The value of *Mirella danced the tango here* is affected by varying utterance place.

For the interpretation of many texts actual time and location of production play a marginal role or no role. It is sufficient that some coordinate system can be identified with respect to which interpretation of an utterance takes place. This can be the actual time and place of the utterance, it can be a different time and place related to these, or it can be some virtual coordinate system intrinsic to the text itself. This is illustrated in (6):

(6) Mary found out that John failed the test. (Enç 1987)

It is quite possible that this sentence has been uttered in some actual conversation. In that case the moment of utterance must provide the basis for an evaluation of the sentence. This entails that *utterance time* = *evaluation time*. However, if (6) is part of a novel, it must be evaluated against the background of a system that may well be completely virtual. Hence utterance time, as the time of linguistic event in the actual world giving rise to the novel, is irrelevant for the evaluation of the sentence. *Evaluation time*, therefore, must be distinguished from utterance time, although they may coincide, and no linguistic process presumably ever distinguishes the two. What is linguistically relevant is the relation between the temporal coordinate of the utterance as such, i.e., the evaluation time, and the interpretation of the matrix clause and the complement. The past tense expresses

that the moment of Mary's finding out is prior to the evaluation time, and that the moment of John's failing the test is yet earlier. This is a *shifted reading* in Enç's terms. The moments of Mary's finding out and of John's failing the test are the *event times*.[16] This leads to distinctions between *utterance time*, *evaluation time*, and *event time*.

Similar distinctions must be made with respect to the place dimension. So, taking together the place and time coordinates from Fillmore's center, the *position* of an utterance is defined as a pair containing the values for place and time in the associated coordinate system, and a distinction must be drawn among *utterance position*, *evaluation position*, and *event position*.

Thus, for a class of elements the interpretation will vary with the position of the utterance in the coordinate system, even if the interpretation domain is held constant.[17] This is what captures the specific type of context sensitivity of these elements.

As is well known, the role of person in personal pronouns cannot be captured in terms of position as defined here. Suppose that *a* saw *b* on January 12, 1997, and *a* = John, *b* = Bill, but *b* did not see *a* on January 12, 1997. On January 13, 1997, this situation verifies *John saw Bill yesterday* and falsifies *Bill saw John yesterday*. These arguments can also be expressed by personal pronouns such as *I* and *you*. Under the conditions sketched, it is possible for John to truthfully say to Bill *I saw you yesterday*. That is, under these circumstances, *I* = John and *you* = Bill. However, it is equally possible that we have a different situation, in which the speaker has been changed from John to Bill, and consequently *I* = Bill and *you* = John. So, in this situation, Bill can truthfully say to John *I didn't see you yesterday*, but, of course, not *I saw you yesterday*. So, both a sentence and its negation can be truthfully uttered in one and the same position.

This shows that *I* and *you* are indexicals whose context sensitivity cannot be captured in terms of utterance position. They reflect the participants in Fillmore's conception of the center.

An utterance is not just an event that happens at some particular time and place, it is also intrinsically associated with a speaker who utters it and, if it is observed at all, with a person who perceives it. This implies that the role of the speaker–hearer relation as part of the center is quite different from the role of the position. The speaker–hearer relation implies that utterances have directionality. Together, speaker and hearer define the *orientation* of an utterance in a world.[18]

The same caveats apply as with time and place. Just as the actual time and place of an utterance must be generalized to the notion of an evaluation position, the notions of speaker and perceiver must be generalized so as to accommodate the possibility that they are positioned within some derived or virtual reality. I will use the terms *source* and *target* for these parameters (allowing the possibility that source and target coincide), and continue to use the term *orientation* for what they contribute. *Orientation* thus reflects the same type of systematic distinctions as *position*, namely, as *utterance orientation*, *evaluation orientation*, and *event orientation*, but with a restriction, since orientation is, by its very nature,

only a property of *linguistic events*: typically events of saying, but also of dreaming, imagining, etc.

Languages do not necessarily express all these distinctions. Utterance time and evaluation time are generally not formally distinguished, nor are utterance place and evaluation place. However, a distinction between evaluation time and event time is typically linguistically reflected in some way, just like a distinction between evaluation place and event place. Just as in the case of position, utterance orientation and evaluation orientation are expected to coincide. But just as in the case of utterance time vs. event time, we will expect that the contrast between utterance orientation and event orientation does reflect a possible linguistic category.

Although many languages have no special system reflecting event orientation, logophoricity of the Niger-Congo type as described by Hagège and Clements is precisely that: a system linguistically expressing event orientation. But then, logophoricity is nothing mysterious. Relativizing the interpretation of elements with respect to some property reflecting the context of utterance is one of the recurring options among language systems. Logophoricity is nothing but realizing that option with respect to the event orientation of expressions. Logophoric pronouns are just elements lexically marked as expressing this property.

Of course, the question comes up of how rich this lexical property must be. This is one of the recurring themes in any account of pronominal properties that are not prima facie trivial. Our semantic apparatus is so rich that that it would be hard to think of a property that cannot be described.[19] Ideally, however their interpretation should in the end be governed by far more elementary properties of the syntactic structure. In fact, Safir (2003), Schlenker (2003a), and Sigurðsson (2004) all succeed in finding restrictive ways of lexically encoding the relevant properties. Thus, from a broader perspective, the availability of the type of lexical marking that is required needs no more stipulation than any kind of lexical marking does; the ingredients are there, even in languages that have no 'grammaticalized' logophoricity.

It is by no means necessary that the notions we have covered so far, including event orientation, exhaust the context sensitivity of pronoun interpretation. Let's therefore briefly discuss Sells's (1987) taxonomy of discourse factors. Sells (1987: 457) proposes that there are three basic roles in discourse, in terms of which logophoricity phenomena are to be described:

(7) SOURCE: one who is the intentional agent in a communication,
SELF: one whose mental state or attitude the content of the proposition describes,
PIVOT: one with respect to whose (space-time) location the content of the proposition is evaluated.

Below, I summarize Sells's diagnostics for each of these categories. Sells uses Japanese examples, contrasting the anaphor *zibun* with the null object (Ø). For simplicity's sake, I will be using just Sells's translations of his examples, since

the intuitions are actually quite transparent in English as well. SOURCE is illustrated by speaker-evaluative phrases, such as *that fool* in (8):

(8) Taroo heard from Takasi$_i$ that that fool Yosiko was following him$_i$ = *zibun*

Here the SOURCE = Takasi (or the external speaker) is responsible for calling Yosiko a fool. The SELF can be diagnosed by adverbs such as *mysteriously*, as in (9):

(9) Takasi$_i$ said that Yosiko was mysteriously following him$_i$ = Ø

It is the SELF = Takasi for whom the following is mysterious, unlike in (10), which carries what Sells calls a third person point of view (3POV):

(10) Takasi$_i$ doesn't mind, though Yosiko is mysteriously following him$_i$ = Ø

The *though*-clause does not reflect Takasi's point of view, hence *mysteriously* does not represent Takasi's perspective on who is following him.

The notion of PIVOT can be brought out in 3POV environments by verb selection (*come* versus *go*), as in (11):

(11) a. Takasi$_i$ was happy because Yosiko came to visit him$_i$ = *zibun*
b. *Takasi$_i$ was happy because Yosiko went to visit him$_i$ = *zibun*

According to Sells, *Takasi* is not a proper antecedent for *zibun* in (11), since he is not a PIVOT, as required.[20]

Sells argues that SOURCE, SELF, and PIVOT define a range of options for cross-linguistic variation in conditions on antecedency. It is easy to see that the role of SOURCE is covered by what I described as event-orientation. In fact, that of SELF is too. SELF pertains to psychological predicates, which also reflect linguistic events, provided that source and target are identified.

What about PIVOT? PIVOT is understood as the locus to which deictic elements must refer (Sells 1987: 465), and its role is subtle. According to Sells, speakers report that (11b) is acceptable if one imagines that Takasi was out and that Yosiko went to the place where Takasi would normally be expected to be. *Go* and *come* differ as to whether their beginning or their end coincides with the designated space-coordinates of the event representation. If an anaphor is sensitive to whether or not a potential antecedent is a PIVOT, this effectively means that its interpretation is sensitive not only to the intrinsic features of its antecedent (phi-features, etc.), but also to its location in space with respect to the event described. Given that verbs apparently reflect such a sensitivity, to find it in the nominal domain as well need not be very surprising. We may, however, conclude at this point that sensitivity to PIVOT is really something quite different from the notion of logophoricity as such (a conclusion that in fact can already be found in Sells's contribution).

6 Logophoricity and free anaphors

Free anaphors posed the following additional questions: (ii) How, having the form of reflexives, can they escape the locality conditions on anaphor binding? (iii) How, having no specific lexical properties imposing a logophoric interpretation, are they, nevertheless, so interpreted?

6.1 The binding requirement on anaphors

As stated in section 1, the canonical Binding Theory (Chomsky 1981, 1986b) stipulates that anaphors (simplex anaphors such as Icelandic *sig*, Dutch *zich*, and perhaps Latin *se*, clitic anaphors such as Italian *se/si*, French *se*, and complex anaphors such as Icelandic *sjalfan sig*, Dutch *zichzelf*) are referentially defective.[21] A commonly adopted view is that this is so because of (12) (Bouchard 1984):

(12) In order for some argument α to be interpreted it must have a full specification for phi-features.

It appears to be the case that all the simplex anaphors exemplified are underspecified in some respect. Taking that the set of phi-features can be given as [α person, β gender, γ number], we observe that, e.g., *zich* is specified for person (namely third person), but is not specified for gender, or for number. I.e., although *zich* requires a third person antecedent, it is immaterial whether the antecedent is masculine or feminine, or singular or plural. Yet, the general role of lexical and formal features is to constrain the interpretation of the elements carrying them. Therefore, (13) rather than (12) would be expected to hold (Reuland 2001):

(13) If α has fewer phi-features than β, there are fewer constraints on the interpretation of α than on the interpretation of β.

From this perspective, a general binding requirement on anaphors has no intrinsic motivation. The existence of free anaphors as in (1) (see also chapter 33) then provides reason to doubt the correctness of (12), and assume (14) instead:

(14) There is no intrinsic need for anaphors to have a syntactic binder.

Given that free anaphors have a restricted distribution, just as they have a special type of interpretation, this leads to the question in (15):

(15) What principles regulate the free interpretation of anaphors?

Reinhart and Reuland (1991, 1993), Pollard and Sag (1992) and Reuland and Sigurjónsdóttir (1997) show that the syntactic conditions on freedom/exemption

should be sharply distinguished from the semantic and discourse conditions on interpretation. Cole et al. (2001b) show the same from a different perspective (see note 11). Reuland (2001) argues that the obligation for an anaphor to be bound is due to a general economy principle. Encoding an interpretive dependency by a syntactic process takes precedence over alternative ways of interpreting the anaphor. Thus, the availability of syntactic encoding blocks interpretation of the anaphor as free. The encoding process can be agreement based (if both the antecedent and the anaphor are in an obligatory feature-checking relation with a head, such as finite inflection, this establishes a syntactic link for anaphors such as Icelandic *sig*); it can also be movement based (for instance, in the case of English SELF-anaphors, *self* covertly moves onto the verb). Free interpretation of anaphors obtains just in case the syntactic mechanism involved in establishing the link cannot apply (see Reuland 2001 for detailed discussion). The factor can be subjunctive in the case of simplex anaphors such as *sig*/*sibi* in Icelandic or Latin; it can be the structural position of the source with respect to the target in SELF-anaphors in English (coordinate structure constraint, adjunct condition); see chapter 9 for more discussion. In languages where the details of encoding differ, also the details of the blocking factor (or absence thereof) may differ, but the general pattern will be expected to be the same: If a syntactic encoding mechanism is blocked, discourse principles come into play, and the factors that are relevant for discourse based dependencies become visible.

6.2 The logophoric interpretation of free anaphors

The free use of anaphors is essentially pronominal. Just like pronominals these anaphors are potentially referring expressions (see chapter 33). Their referential use falls primarily under discourse theory.

Also in cross-sentential domains, where syntactic binding is unavailable, the choice of an expression to refer to some object in the domain of discourse is not arbitrary. Ariel (1990) extensively discusses the conditions under which one and the same object is referred to by a full NP, an epithet, or a pronoun (see also earlier relevant discussion by Givón 1983). Ariel establishes that there is an inverse relation between the descriptive content of a referring expression and what she calls the accessibility of the discourse referent. The more prominent an element is in the discourse, where prominence can, for instance, be measured in terms of textual distance, the more accessible it is in the theoretical sense Ariel develops. So, whenever the last mention of a discourse referent is sufficiently distant with respect to the mention to come, a full lexical NP or proper name will be used. If it is high on the scale of accessibility, a pronoun is preferred instead. Epithets can be used for referents of intermediate accessibility.

Since anaphors of the type discussed have even lower descriptive content (i.e., fewer phi-features) than pronouns, Ariel's theory predicts that they require discourse referents of higher accessibility than pronouns do. The correctness of this prediction has been obscured by the fact that, in many languages, anaphors may not escape syntactic binding at all, and so the remaining cases were viewed

as anomalies. The interpretation of free anaphors indicates that this prediction is, in fact, correct. In the environments in which they occur, free anaphors take discourse referents that are, indeed, high on the scale of accessibility. That is, they refer to individuals within the domain of interpretation that can be characterized as being the center of consciousness, defining view point, or as perspective holders.[22]

Although such individuals do figure prominently in the discourse, we still have to clarify why it is only these elements that serve as discourse referents for free anaphors, and why not just any forcefully foregrounded discourse entity will do.

That this is so follows from the nature of pronominals as such. We already saw that first and second person pronouns represent source and target of an utterance, respectively. That is, they first and foremost express *orientation*. Generalizing, I will claim that the property of expressing orientation is the basic, unmarked, property of third person pronominals as well. If so, a pronoun can only be used independent of orientation, for instance, deictically, if it has specific features allowing that use. Therefore, a canonical third person pronominal must have at least one feature that is not the direct counterpart of some feature in a first or second person pronoun. A feature that seems identical but is in fact different in third person pronouns from first and second person pronouns is number. As was noted by Benveniste (1966b), the plural *we* does not denote a plurality of individual *I*'s in the same way in which the plural *cats* denotes a plurality of *cat*s or the plural *they* denotes a plurality of individuals.[23] Thus, *I* and *we* are not grammatically, but inherently, singular and plural respectively. I will then advance the hypothesis that it is *grammatical number* (as opposed to the inherent number of *I* or *we*) that enables a use that is independent of orientation. Then, if number (or any other such feature) is absent, as it is in the case of *zich*, *sig*, *se*, etc., the only option for interpretation left will represent precisely that property that is basic, namely orientation. Utterance and evaluation orientation are typically expressed by first and second person pronouns. This leaves open a slot for event orientation. The option for a numberless third person pronoun is, then, to fill this slot and represent event orientation, the reported SOURCE or SELF of a linguistic event (varying from actual utterances to internal monologues, dreams, etc.).[24]

This ties in with the analysis by Koopman and Sportiche (K&S) (1989) of the pronominal system of Abe. Abe has two pronominal classes, O-pronouns and n-pronouns. O-pronouns behave essentially as English pronominals. They respect Condition B, and can be interpreted as bound variables, or referentially. N-pronouns also respect Condition B, but they cannot be bound by either an R-expression or an O-pronoun (other than under conditions indicated below), or bind one themselves. At first sight they allow a referential interpretation, but the number of indexings (taking these to reflect interpretations) available to them in a sentence is limited by the number of Comp nodes dominating them. For instance, two n-pronouns in a root clause are dominated by only one Comp node. Hence, they are obligatorily coindexed. Generalizing, in the case of n Comp

nodes dominating n + i (occurrences of) n-pronouns, i n-pronouns will have to be coindexed with another n-pronoun.

In clauses introduced by the complementizer *kO* (under reportive verbs), they are, however, coindexed with (and bound by) the NP representing the source of the report, regardless of whether this is an O-pronoun or R-expression. In this environment they exhibit the standard features of logophoricity. The basis of the analysis in K&S (1989) is the claim that n-pronouns are logical variables. In this they are deemed similar to first and second person pronouns (n-pronouns are also characterized as +human).

K&S (1989) discuss the status of logical variables in syntactic, rather than semantic terms. A semantic characterization of what it means to be a logical variable, in the sense of K&S, can be based on the idea that these elements reflect event orientation, as discussed above. This entails that they are identified with the source of the report in reportive contexts. This amounts to saying that in these contexts logophoric pronouns are obligatory *de se* pronouns (Chierchia 1989; Schlenker 2003a).[25]

The *de se* analysis alone, however, does not cover the use of n-pronouns in non-reportive contexts. K&S account for the relation between the interpretation of n-pronouns and the number of dominating CPs in non-reportive contexts by assuming that each C, being associated with an operator position, provides a possible A'-binder for the variable. One C, then, directly entails co-interpretation. This insight may be combined with the discourse based approach. Events are syntactically realized as CPs. One may assume that, in general, the orientation of an utterance is not just a pair <*source, target*>, but, in fact, a triple <*source, target, other*>, where *other* refers to *any other participant defining the event*, such as a person talked about. This person is also a participant in the utterance, and thus among the factors determining orientation. If the orientation of each event is unique, the selection of this further participant, once made, enabling it to be referred to by the n-pronoun, must be maintained for the whole CP, thus fixing its interpretation to that one choice. In a complex sentence, with embedded expressions for events (CPs), each event will introduce a possibly different *other*, yielding the dependency pattern found.

7 Conclusion

The logic of our discussion led us to a number of questions. In answer to question (i), we found that logophoric interpretation expresses event orientation. In answer to question (ii), we can say that free anaphors can escape the locality conditions on anaphor binding since there is no absolute binding requirement on anaphors. As discussed in Reuland (2001), the morphosyntactic features of the anaphor will interact with the functional structure of the clause. If movement is involved, the dependency will be subject to standard conditions on movement. The anaphor will be freed if movement is blocked. If agreement is involved, the anaphor will be freed if some factor interferes with agreement. The question (iii)

of whether long-distance anaphora is a unified phenomenon (i.e., do all long-distance dependencies reflect the same type of process?) is discussed in chapters 9, 33, and 40. The answer is negative for reasons set out there. Although free anaphors appear to have no specific lexical properties imposing a logophoric interpretation, they can nevertheless be interpreted logophorically (question (iv)). Due to their poverty of grammatical features they reflect the unmarked properties of personal pronouns, i.e., they express orientation. It is hypothesized that it is the grammatical number feature that enables fully specified pronouns to bypass expressing orientation.

Cross-linguistic variation in free anaphors is essentially due to the interaction of grammatical features with independent properties of grammatical structure. In fact the issue reduces to patterns of variation in general. If 'being logophoric' can be encoded in morphosyntactic features along the lines sketched in the literature cited, also its variation poses no particular problems beyond the issue of variation itself.

We may conclude that the logophoric use of pronouns is not anything special, but just a reflection of basic properties of the pronominal system.

NOTES

While I was finalizing this chapter I came to realize that it is not a paradigmatic instance of a 'Case', as cases were initially conceived for this project. In the area of logophoricity, the fields of typology, formal syntax, and formal semantics, including its philosophical perspective, come together, and a proper synthesis has yet to be established. Moreover, a considerable amount of the literature that is relevant for such a synthesis only appeared after this chapter had essentially been written. The main aim of this chapter is to present the Clements/Sells approach to logophoricity and put the discussion on long-distance anaphora, in particular that of free anaphors, in its perspective. I trust that the selection of further literature cited, although not exhaustive, is broad enough to point the user in the direction of current debates. I am very grateful to three anonymous reviewers whose constructive criticisms led to considerable improvement and broadening of scope. Needless to say, I am alone responsible for any omissions and mistakes.

1 Whether the definition of an R-expression must involve reference to grammatical features, rather than just lexical features, depends on the analysis of bare *wh*-elements. For instance, suppose that *wh* is a grammatical, rather than a lexical feature, as is often assumed. If so, *wh*-words such as *who* or *what* will effectively be bundles of purely grammatical features, non-distinct from the corresponding pronouns in lexical content. Yet, *wh*-elements cannot be A-bound, as in *He$_i$ was wondering whether Mary had asked Cindy whom$_{*i/j}$ Daphne had seen (whom$_{*i/j}$)*. If they are R-expressions this follows from the standard Condition C. Of course, if, as a reviewer suggests, the quantificational character of *who* or *what* is intrinsically lexical, no reference to grammatical features is needed. For current purposes we can leave this issue open.
2 Exceptions in English were noted earlier by Ross (1970b), Cantrall (1974), and Kuno (see, for a summary, Kuno 1987a).
3 See chapters 33 and 9 for further examples from Icelandic and examples from English.

4 In most of the older, but also much of the modern literature the term *reflexive* is used indiscriminately for elements that appear to require an antecedent, regardless of whether they actually reflexivize a predicate. Except for contexts where I actually discuss such literature I will be using the term *anaphor*, following the usage that has become standard since Chomsky (1981).
5 According to Hagège, the former is an 'opérateur de réflexivité' (reflexive operator); the latter refers to a particular participant that is distinguished from the others by being the author of a discourse or a thought, and is, furthermore, also distinguished from the principal speaker.
6 Languages for which this phenomenon has been described in some depth include Icelandic, English, Italian, Japanese, and Mandarin Chinese.
7 That is, 'renvoyant au discours' ('pertaining to the discourse event').
8 *Yè*'s non-high tone, represented by the grave accent, distinguishes it from the non-logophoric strong form *ye*, which bears high tone; the logophoric pronoun is also distinct from a reflexive; in Ewe these are formed by affixing a genetive form of a pronoun to the noun *d,okui* 'self', and, according to Clements, behave much like their English counterparts.
9 This may well be a reflection of the fact that logophoricity occurs in reportive contexts since the complementizer *be* is a 'grammaticalized' form of the verb *bè* 'say'. In fact, as Sells (1987) notes, there is a common tendency for the verb 'say' to develop into a complementizer.
10 Also, the logophoric forms *yè* (singular) and *yèwo* (plural) each allow both third and second person antecedents. In many languages with indirect reflexives this is impossible.
11 There are reasons to believe that the role of subjunctive in Icelandic is less idiosyncratic than Clements implies. In general it is necessary to distinguish between conditions facilitating a logophoric interpretation, and the conditions determining the interpretation that is actually obtained. For instance, Cole et al. (2001b) discuss the variation between two Chinese 'dialects' in Hong Kong, showing that the syntactic conditions under which logophoric interpretation obtains are identical, but that the discourse conditions vary. Too little is known at this point to provide a principled discussion of the licensing conditions on logophoric pronouns in general. Hence, this issue will be left open.
12 See chapter 9 for discussion.
13 See also Dalrymple (1993) and especially Huang (2000) for approaches from different perspectives.
14 Discussion will be limited to personal pronouns. An anonymous reviewer raises the question of whether there are also logophoric place or time pronouns. I have not been able to answer this question, so I will have to leave the issue open.
15 This statement would be completely trivial, were it not for the fact that where there is a significant delay between production and reception of a text occasionally significance should be attached to time and place of reception, rather than to time and place of production.
16 In this I depart from Enç's usage, who uses the term *evaluation time* throughout (distinguishing between shifted and unshifted evaluation times). See for discussion of temporal structure the extensive literature on this subject starting with Reichenbach (1947).
17 This implies that we distinguish between the model and the space-time in which it is embedded. Clearly, formally one might collapse the distinction, as is usually done.

However, some reflection on their behavior with respect to quantification shows that expressions of space-time are different from expressions for individuals. For instance, *Cindy loved every book* clearly has a different status from *Cindy loved every kilometer*. The former is acceptable in an out-of-the-blue context. The latter is not. It becomes acceptable, though, in a context such as *Cindy ran the Amsterdam Marathon. She loved every kilometer* (or . . . *every minute*). Expressions denoting dimensions in space or time must be anchored with respect to the objects they are dimensions of. (See De Jong 1987 for discussion.) Of course, there is a difference between coordinates and dimensions. But this is precisely the heart of the matter. Dimensions can be anchored to objects by virtue of the latter's space-time coordinates, but they cannot be anchored to space-time coordinates directly. To express the same fact in a different manner, objects are available for accommodation, as in *Cindy loved the book*, but dimensions are not, as in **Cindy loved the kilometer* (I think this one indeed merits an asterisk). Thus, however one turns it around, there is an asymmetry between the individuals and the coordinates in a model.

18 Which can be thought of as a vector in space-time. For present purposes an informal notion will do.

19 An interesting example is the issue of the existence of 'monsters'. Kaplan (1989) discusses the possibility that there are indexicals violating the fixity thesis:

Fixity Thesis (a corollary of Direct Reference):
The semantic value of an indexical is fixed solely by the context of the actual speech act, and cannot be affected by any logical operators.

Indexicals violating this thesis he calls 'monsters' and claims they should not and cannot exist in natural language. As shown in Schlenker (2003a) logophoric pronouns and Amharic first person pronouns are in fact such monsters. And he argues that their existence follows from a proper theory of how context is to be accommodated in the interpretation of indexicals.

20 A similar effect obtains by the possibilities of construal for *beloved* in (i) (which Sells attributes to Kuno):

(i) a. Takasi$_i$ told Taroo that his beloved Yosiko hated him$_i$ = *zibun*
b. Taroo heard from Takasi$_i$ that his beloved Yosiko hated him$_i$ = *zibun*
c. Takasi$_i$ got wet because his beloved Yosiko spilled water on him$_i$ = *zibun*

In all cases *beloved Yosiko* is interpreted relative to the PIVOT *Takasi*.

21 To my knowledge virtually all of the literature on anaphora, from Chomsky (1981) to the present (including Reinhart and Reuland 1993), takes this position.

22 See Hellan (1988).

23 See also Kayne (1995) and Reuland (2001) for discussion.

24 One word of caution about terminology. From the perspective developed, the term *third person* has become ambiguous. An element can be third person in the sense that it is marked for person, but as third, rather than first or second person, or in the sense that it is a non-person, an element outside the person system proper (see, for instance, Anagnostopoulou 2003 for discussion of this contrast). From the present perspective, then, only a numberless pronoun, such as *sig*, is properly third person. This ties in with the fact that argumental SE-anaphors (non-local *zich* in Dutch, non-local *sig* in Icelandic, also when it is not logophoric) require a *sentient* antecedent. What is

generally considered to be a canonical pronominal (*he*, *she*, *they*, etc.) is in fact a non-person and only has grammatical third person properties by default, just like R-expressions such as *the Amsterdam Marathon*, *Cindy's running shoes*, etc. This obviously has implications for the grammatical checking of person features. However, discussion of these implications would lead us too far afield.

25 An important reason to strive for a proper semantic characterization of what K&S refer to as a "logical variable" is that bound variable interpretation in its canonical sense needs to be distinguished from a pure *de se* interpretation. As argued in Higginbotham (2003), a *de se* interpreted expression will be able to mimic variable binding behavior, but the opposite does not obtain. (I would like to thank an anonymous reviewer for prompting me to clarify these issues.)

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39 Long-Distance Binding in Asian Languages

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1 Introduction: long-distance reflexives and Universal Grammar

A distribution of anaphoric elements roughly like that found in English occurs in languages around the world: there are certain lexical items that occur only with antecedents which c-command them and which are located in the same local domain (roughly, clause) as the anaphoric elements. In contrast, other anaphoric elements are unable to take c-commanding antecedents within the local domain. The fact that so many genetically unrelated, areally separated, and typologically dissimilar languages have anaphoric elements that conform to the same distributional restrictions constitutes convincing support for the view that Binding is determined by principles of Universal Grammar.

While a universalist approach to Binding has a strong foundation in the typology of anaphoric forms, it is also well known that there are many languages in which some forms that can be used as local reflexives can also take antecedents outside their local domain (hereafter, long-distance reflexives). For instance in Chinese, the reflexive *ziji* in (1) can be interpreted as referring to the matrix subject, the intermediate subject, or the lowest subject:

(1) Zhangsan$_i$ renwei Lisi$_j$ zhidao Wangwu$_k$ xihuan ziji$_{i/j/k}$.
Zhangsan think Lisi know Wangwu like self
'Zhangsan thinks Lisi knows Wangwu likes self.'

Are these 'exceptions' to Binding Theory arbitrary (thereby seriously undercutting the universality of Binding Theory and leaving unexplained why so many anaphoric forms in unrelated languages show the same distribution), or do the violations of Binding Theory occur in a restricted domain, due, perhaps, to the interaction of the Binding Theory with other modules of grammar and with extra-grammatical principles governing pragmatics and discourse?

In the sections which follow, we shall examine the extent to which the distribution of long-distance reflexives is arbitrary and varies freely from language to language, and the extent to which the facts follow a similar pattern in a variety of genetically, areally, and typologically unrelated languages. Special attention will be paid to the properties of long-distance reflexives in Asian languages, especially Chinese and Malay/Indonesian. The task of determining the patterns that occur is complicated by the complex relations between syntax and discourse observed with long-distance reflexives. Thus, we devote considerable attention to the issue of which facts are syntactic in nature and which are due to discourse.

In addition to describing the cross-linguistic patterns that require explanation, we consider the adequacy of various theories of long-distance reflexives in accounting for these patterns. Our ultimate conclusion will be that long-distance reflexives are not a unitary phenomenon with a unitary analysis. However, while there is a variety of types of 'reflexives' that can take non-local antecedents, one type, which we shall call 'bound anaphor long-distance reflexives', displays the

typological properties that have been widely identified with long-distance reflexives in the literature. We shall show that, while the discourse properties associated with these forms vary considerably, the syntactic properties (in the strict sense of 'syntactic') appear to be subject to much less variation. We argue that the pattern observed can best be accounted for by one theory of bound anaphor long-distance reflexives, the theory that claims that these forms undergo covert movement to a position close to their ultimate antecedents. There remain, however, problems with the movement analysis that remain as yet unsolved.

2 Typological properties of long-distance reflexives

It has often been observed that long-distance reflexives appear to share a number of characteristics across languages (Giorgi 1984; Pica 1987; and many others):[1]

(2) **Apparent typological characteristics of long-distance reflexives:**
   a. Long-distance reflexives are monomorphemic.
   b. They take subject antecedents.
   c. Their occurrence is, in many languages, restricted to environments in which the antecedent and reflexive are found in specific domains (i.e., specific types of IPs such as infinitival or subjunctive).

Furthermore, it was noted in the Chinese literature (Y.-H. Huang 1984; Tang 1985, 1989) that long-distance reflexives are subject to a 'Blocking Effect': when the subjects of the matrix and the subordinate clauses share features for person, either NP is a possible antecedent for *ziji*. When, however, the subjects of these clauses differ in person, only the subject of the subordinate clause is a possible antecedent for *ziji*: the subordinate subject blocks the matrix subject (and any higher subject regardless of person) from anteceding *ziji*:

(3) Zhangsan_i renwei wo_j zhidao Wangwu_k xihuan $\text{ziji}_{*i/*j/k}$.
Zhangsan think I know Wangwu like self
'Zhangsan thinks I know Wangwu likes self.'

In (3) the presence of third person *Wangwu* as subject of the lowest clause blocks *ziji* from referring to either the intermediate subject *wo* or the main clause subject *Zhangsan*.[2] No similar restriction was noted in the literature on European languages with long-distance reflexives. This raised the question of how the cross-linguistic variation with respect to the existence of the Blocking Effect should be explained and of whether Blocking correlates with any property of the languages in which it occurs or of the forms that are subject to Blocking, a question to which we shall return below.

In addition to the restrictions just mentioned, which were widely interpreted as syntactic in nature, many authors noted that long-distance reflexives are frequently limited to taking antecedents which are 'prominent' in the discourse. The discourse

requirements appeared to vary from language to language, to at least some extent, but they could, in most cases, be reduced to what came to be referred to as 'logophoric' requirements, by analogy with the system of logophoric pronouns occurring in some African languages. This raised the question of how logophoricity should be related to long-distance reflexives. Are long-distance reflexives simply logophoric pronouns masquerading as reflexives, or is the relationship between logophoricity and long-distance reflexives more complex than simple equivalence?

3 The Groningen and Cornell workshops

In order to assess the current state of knowledge and to provide an impetus for further study, a workshop on long-distance anaphors was held by the Department of Linguistics of Groningen University in June of 1987. This workshop resulted in a volume that appeared in 1991 (Koster and Reuland 1991). While there was considerable diversity in the interests of the contributors to that volume, two themes preoccupied many of the authors: (i) what is the nature of the domain restriction on long-distance reflexives?; and (ii) what sorts of logophoric or other discourse conditions are necessary for long-distance anaphora? While there was some brief discussion of Asian languages in several of the chapters in the volume, with the exception of the extended discussion of Mandarin in Huang and Tang (1991), nearly all of the detailed analysis was of European languages. This, of course, reflected the fact that in the 1980s most of the research on long-distance anaphora had been on European languages (especially Italian and Scandinavian languages).

Since the appearance of the Groningen volume, there has been an explosion of interest in long-distance anaphora. A workshop similar to the Groningen one was organized by the authors of this chapter at the Cornell LSA Linguistic Institute in July of 1997, in part to assess progress over the previous ten years. The contributions to the Cornell workshop provided the basis for most of the chapters in Cole et al. (2001a). How did the results of the Cornell workshop differ from those of ten years earlier? The most obvious difference between the research conducted in the 1980s and that conducted in the 1990s is that the focus of the later research is on the anaphoric systems of languages that had received little or no attention in the literature ten years earlier. While research has continued on European languages, a large body of work on Asian languages, especially Chinese, has appeared. Not surprisingly, the properties of long-distance reflexives found in such a wide variety of languages are considerably more diverse than those that were the focus of research in the 1980s, but, despite the diversity, the major themes of the earlier research are prominent in current research as well.

4 Pronoun or bound anaphor?

A fundamental and recurring topic is whether the 'long-distance reflexives' in the language under study have the distribution of pronouns or of bound anaphors.

Early studies like Giorgi (1984) claimed that they have the properties of bound anaphors. As it turns out, the question is in fact a difficult one. The study of the typological characteristics of long-distance reflexives has been frustrating because every proposed characterization of the construction appears to have many counter-examples. If, however, 'long-distance reflexives' are not a single type of morphosyntactic entity, it would not be expected that all long-distance reflexives would have the same properties or the same analysis across languages. In fact, an examination of current research suggests that long-distance reflexives are several distinct sorts of entities, which differ with regard to whether they have the distribution of bound anaphors or of pronouns.[3] If this is correct, it is not surprising that they differ in both syntactic and discourse properties: bound anaphors are generally assumed to require (or strongly favor) a binding relationship with their antecedents, thereby explaining why they require c-commanding antecedents, do not allow extra-sentential antecedents, and require (or strongly favor) sloppy readings in VP ellipsis. In contrast, pronouns are assumed to enter into both binding and coreference relations. Thus, c-command is not required, extra-sentential antecedents are possible, and both strict and sloppy readings are easily available under VP ellipsis.

It may be useful to illustrate the range of variation: inflected reflexives in Turkish (Kornfilt 1997, 2001) provide an example of a form that can be used as a reflexive within the local domain, but which has the distribution of a pronominal when used beyond that domain. Another such example is Malay (Cole and Hermon 1998a, 1998c; Cole et al. 2001b). In these languages apparent long-distance reflexives show none of the characteristics of bound anaphors: outside of the local domain the antecedent does not need to c-command the 'reflexive', extra-sentential antecedents are possible, and strict readings are easy to come by under VP ellipsis. This is illustrated from Malay:

(4) Ahmad$_i$ tahu Salmah$_j$ akan membeli baju untuk dirinya$_{i/j/k}$.
Ahmad know Salmah will buy clothes for self.3sg
'Ahmad knows Salmah will buy clothes for him/herself.'

(5) a. [$_{NP}$ Bapa Siti$_j$]$_i$ tidak suka dirinya$_{i/j/k}$.
father Siti not like self.3sg
'Siti's father does not like her/himself/him.'
b. [$_{NP}$ Ibu Ali$_j$]$_i$ telah mengenalkan dirinya$_{i/j/k}$.
mother Ali already introduce self.3sg
'Ali's mother has introduced him/herself/her to my friends.'

In (4) *dirinya* can be interpreted either as a local reflexive, as referring to the matrix subject, or as referring to some third individual in the discourse. The examples of (5) show that a c-commanding or non-c-commanding antecedent, or an extra-sentential, discourse antecedent are all possible.

Turning to VP ellipsis, we see that *dirinya* allows both strict and sloppy readings, even in local contexts, as is expected with a pronoun:

(6) John nampak dirinya di dalam cermin; Frank pun.
John see self.3sg at inside mirror Frank also
'John saw himself/him in the mirror and Frank did too.' (= 'Frank saw Frank in the mirror' or 'Frank saw John in the mirror')

(7) Ali cukur dirinya di dalam bilik air; Bill pun.
Ali shave self.3sg at inside bathroom Bill also
'Ali shaved himself/him in the bathroom. Bill did so too.' (= 'Bill shaved Bill' or 'Bill shaved Ali')

To conclude, the relationship between the seeming long-distance reflexive and its antecedent in Malay would appear to be either coreference or Binding, as is the case for personal pronouns.[4]

In contrast, in Kannada long-distance reflexives require c-commanding antecedents, cannot take extra-sentential antecedents, and require sloppy readings under VP ellipsis (Amritavalli 2000; Lidz 2001). Similar facts are found in Hindi-Urdu (Davison 2000, 2001). Example (8) illustrates the VP ellipsis facts in Hindi-Urdu (Davison 2000):

(8) Guatam$_i$ [apnee (aap$_i$)-koo caalaak] samajhtaa hai, aur
Guatam self's self-dat smart consider-Impf is and
Vikram$_j$ bhii$\emptyset$.
Vikram also
'Guatam considers himself smart, and so does Vikram.' (= 'Vikram considers Vikram smart'; ≠ 'Vikram considers Guatam smart')

In these languages long-distance reflexives have the properties associated with bound anaphors, and, like other bound anaphors, appear to require a binding relationship with antecedents.

The situation is more complex in Icelandic (Reuland 2001; and see chapter 33). In Icelandic the reflexive form *sig* can occur with long-distance antecedents in both infinitival and subjunctive clauses. However, *sig* has different properties in each environment: when *sig* and its antecedent are found within an infinitival clause, *sig* behaves like a bound anaphor, but when the domain is a subjunctive clause, it behaves like a pronominal. Thus, in some environments *sig* must be related to its antecedent by Binding while in other environments a relationship of coreference is possible. Finally, in Chinese (both Mandarin and Teochew) the simplex reflexive (*ziji* in Mandarin, *kaki* in Teochew) normally shows the distribution of a bound anaphor: The antecedent must c-command (or subcommand) the reflexive, and VP ellipsis yields only (or predominantly) sloppy readings, as in Hindi-Urdu (Cole et al. 2001b; Huang and Liu 2001; as well as earlier works by many authors). However, in limited discourse contexts *ziji* can take extra-sentential discourse antecedents, as is illustrated in (9), taken from Pollard and Xue (2001):[5]

(9) Zhangsan$_i$ zhidao neijian shi yihou hen qifen; Lisi$_j$ shuo neixie hua
Zhangsan know that-CL thing after very angry Lisi say those word
mingming shi zai he ziji$_{i/j}$ zuodui.
obviously is being with self against
'Zhangsan$_i$ was very angry when he learned that. By saying those words Lisij was obviously acting against himself$_j$/him$_i$.'

The Icelandic and Mandarin facts suggest that the same reflexive form can be a bound anaphor in one grammatical and discourse context and a 'free anaphor' with pronominal properties in another.

To summarize, there appear to be *at least* the following types of 'long-distance reflexives':

- long distance bound anaphors, which show the distribution of bound variables (illustrated by Chechen/Ingush, Chinese, Hindi-Urdu, Kannada);
- forms which are used as reflexives locally and as pronominals non-locally (illustrated by Turkish and Malay);
- forms that are 'primarily' bound anaphor reflexives, but which can be used non-locally in specific syntactic and discourse contexts (Chinese 'free anaphors', Icelandic subjunctives, and long-distance uses of English reflexives: Zribi-Hertz 1989).

If 'long-distance reflexives' do in fact display the diversity just claimed, several conclusions follow:

(i) The distribution and properties of each type of 'long-distance reflexive' (anaphor, pronominal, mixed) need to be investigated separately.
(ii) The factual contradictions both in and across languages may be resolved by distinguishing properly the various types of 'long-distance reflexives'.
(iii) A major problem in understanding the phenomenon of long-distance anaphora is the determination of the grammatical and discourse conditions that license each type of long-distance anaphor. The successful solution to this problem may provide the basis for the development of a theory or theories of long-distance anaphora with sufficient power to predict the properties of a reflexive from its grammatical and discourse context. We shall return in section 11 to a consideration of what might constitute the basis for such a theory.

5 The role of discourse

5.1 Variation among languages and dialects with bound anaphor long-distance reflexives

A second theme in current research is the attempt to characterize the role of discourse/pragmatics vs. syntax in the licensing of long-distance reflexives.

While many aspects of the problem remain unclear, many new facts about the relationship of discourse factors and long-distance reflexives have become known. First of all, the role of discourse varies considerably from language to language, and from form to form within some languages. Nichols (2001) shows that Chechen and Ingush exhibit bound anaphor-type long-distance reflexives. In these languages, however, there is no requirement that the antecedent satisfy logophoric or other discourse conditions.

In many other languages, discourse adds restrictions over and above those of the grammar. For instance, Amritavalli (2000) notes that in Kannada (which also exhibits bound anaphor long-distance reflexives) the antecedent for the reflexive *tannu* must be aware of the state or event described, leading to a preference for the pronoun *avannu* over the long-distance reflexive *tannannu* in sentences like (10) (Amritavalli's 119):

(10) a. ?Sitte$_{i\rightarrow j}$ tannannui$_{i/*j/*k}$ kaaNalu bandaaga raaju sattu hoogidda.
Sita self-acc he-acc to see came then Raju was dead
'?Raju$_i$ was dead when Sita$_j$ came to see self$_{i/*l/*k}$.'

b. Sitte$_{i\rightarrow j}$ avanannu$_i$ kaaNalu bandaaga raaju sattu hoogidda.
Sita self-acc he-acc to see came then Raju was dead
'Raju$_i$ was dead when Sita$_j$ came to see him$_i$.'

Even within the same language, different dialects and varieties may vary with regard to the discourse properties of long-distance reflexives. For example, Cole et al. (2001b) show that there is considerable variation in the discourse conditions on long-distance reflexives in the Chinese dialects of Singapore. In these dialects (in most contexts), the reflexive has the distribution of a bound anaphor, but the logophoric conditions on Singapore Teochew are much stricter than those on Singapore Mandarin: in Teochew, the antecedent of a long-distance reflexive must be aware that he, himself, is carrying out the action described (a *de se* requirement), while in Singapore Mandarin, self-awareness on the part of the antecedent is not required. However, weaker 'PIVOT' conditions (Sells 1987) hold in both Singapore Mandarin and Singapore Teochew. In a paper on Mandarin as it is spoken in Taiwan, Huang and Liu (2000) claim that a *de se* requirement constrains the relationship between matrix subject antecedents and object *ziji* in complement clauses. In contrast, Pollard and Xue (2001: 326) claim that such examples (illustrated by (11)) are not subject to logophoric requirements:[6]

(11) Zhangsan$_i$ zhidao Lisi$_j$ renwei Wangwu$_k$ zui xihuan ziji$_{i/j/k}$.
Zhangsan know Lisi think Wangwu most like self
'Zhangsan$_i$ knows that Lisi$_j$ thinks that Wangwu likes himself/him$_{i/j}$ most.'

Pollard and Xue claim explicitly with respect to (11) that "the key fact about such cases is that any commanding subject qualifies as the antecedent for *ziji on the strength of its syntactic prominence alone*" (emphasis ours). We take such apparent factual contradictions among authors writing about Chinese as indicative of the

fact that the discourse conditions vary in subtle ways from dialect to dialect, and from speaker to speaker within a single dialect. It would appear that the extent of the variation has not been recognized adequately in the literature.

5.2 Absence of logophoric conditions on pronominal long-distance reflexives

A second fact about discourse that emerges from recent work on Chinese is that, while logophoric conditions may (but need not) restrict bound anaphor-type long-distance reflexives, they do not affect pronominal long-distance reflexives. Thus, in Malay 'long-distance' *dirinya* does not require any special perspective or self-awareness (Cole and Hermon 1998a, 1998c; Cole et al. 2001b). Rather, it has the same discourse properties as a personal pronoun. We believe that a similar lack of logophoric restrictions occurs for long distance inflected reflexives in Turkish (as shown by Kornfilt 1997, 2001) as well as for Middle English and Old English pronouns (Keenan 1976a, 2000), which, as discussed in note 4, can also be used for local coreference). Thus, forms that are indeterminate between pronouns and reflexives do not seem to be subject to logophoric conditions.

5.3 Logophoric 'conversion' of reflexives to pronominals

In contrast to the situation in Malay and Turkish, as well as to that in Chechen/Ingush, Hindi-Urdu, Kannada, etc., in languages like English, and in Icelandic subjunctives, a form which in most environments is exclusively a bound anaphor is given special license by a combination of syntax and discourse to function as a pronominal. As was shown by Reinhart and Reuland (1993 and earlier works) and by Zribi-Hertz (1989), this occurs mostly when a reflexive occurs in a non-argument position (though the syntactic conditions vary greatly from language to language) and when the antecedent satisfies logophoric conditions:[7]

(12) a. Philip$_i$ was supposed to be fooling (. . .), because Desiree (. . .) had undoubtedly explained to them the precise nature of her relationship with himself$_i$. (Zribi-Hertz 1989: (43b))
b. But Rupert$_i$ was not unduly worried about Peter's opinion of himself$_i$. (Zribi-Hertz 1989: (46b))

In the examples in (12) the reflexive occurs in a position in which it is not an argument of the verb. From a discourse perspective, the sentences present the situation as pictured in the mind of the antecedent for the reflexive: the use of the reflexive indicates to the reader that the scenes are being viewed from Philip and Rupert's perspective.

Note that in the case of sentences like (12b) VP ellipsis allows either a strict or a sloppy interpretation:[8]

(13) Rupert$_i$ was not unduly worried about Peter's opinion of himself$_i$; nor was Fred$_j$.

The elliptical clause of (13) can be understood to mean either (14) or (15):

(14) Nor was Fred unduly worried about Peter's opinion of Rupert. (strict reading)

(15) Nor was Fred unduly worried about Peter's opinion of Fred. (sloppy reading)

The fact that both strict and sloppy interpretations are easily available shows that in English, as in Icelandic, the reflexive form has taken on the referential properties of a pronoun.

Although the reflexives show the distribution of a pronoun in both Malay and English, the use of reflexives differs in an important way. In English and in Icelandic subjunctives, as discussed by Reuland (2001), a reflexive can only be used as a pronominal in the specific licensing environments just described, while in Malay, Turkish, etc., no special licensing conditions are necessary. This suggests that the Malay/Turkish and the English/Icelandic cases should not be conflated, and that the English/Icelandic type of long-distance reflexive might usefully be viewed as a reflexive that is 'converted' to a pronominal under special syntactic and discourse circumstances,[9] while the Malay/Turkish cases are inherently pronominal (or are indeterminate between an anaphor and a pronominal). (We will discuss and extend Reuland's analysis of the Icelandic facts further in section 11.)

6 Logophoric pronouns and logophoric restrictions on long-distance reflexives

We have seen that the various types of long-distance reflexives (bound anaphor, pronominal and 'de-anaphoric' pronominal reflexives) differ with regard to whether special discourse conditions apply to their use: bound anaphors may be subject to 'logophoric' discourse requirements, but need not be; pronominal (or indeterminate) forms are not subject to these requirements; and 'converted' reflexives are (we hypothesize) always subject to such requirements. We would like to turn to an examination of whether the logophoric requirements on long-distance reflexives are the same as those on logophoric pronouns.

The term 'logophoric pronoun' was coined by Hagège (1974) to describe a special subgroup of personal pronouns used in reported speech in some African languages to refer to the individual whose speech is reported or to the addressee of that speech. For example, in Mupun, as described by Frajzyngier (1993), there are three sets of personal pronouns as well as a set of reflexive anaphors:[10]

(16) **Personal pronouns in Mupun:**

	Set A		Set B		Set C
	Subj.	Obj.	Subj.	Obj.	Subj.
3m.sg	wu	wur	ɗi	ɗin	gwar
3f.sg	wa	war	ɗe	ɗè	paa
3pl	mo		ɗu	ɗun	nuwa

(17) **Reflexives in Mupun:**

	Singular	Plural
1p	sen	sun
2m	sak	suk
2f	sik	
3m	sin	sut
3f	set	

In complements of the verb *sát* 'say', pronouns of set A indicate disjoint reference with the subject of the matrix clause:

(18) wu/wa/mo sát nə wu/wa/mo ta ɗee n-jos.
he/she/they say COMP he/she/they stop stay PREP-Jos
'He$_i$/she$_i$/they$_i$ said that he$_j$/she$_j$/they$_j$ stopped over in Jos.'

In contrast, the set B pronouns are used in indirect speech to indicate coreference with the matrix subject:

(19) wu sát nə ɗi n nas an.
3m say COMP 3m FUT beat 1sg
'He$_i$ said he$_i$ will beat me.'

Set C is used to indicate that the pronoun refers to the addressee of the matrix clause. If the reference is to other persons, the pronoun must be drawn from set A:

(20) a. n-sát n-wur nə wur ji.
1sg-say PREP-3sg COMP 3sg come
'I told him$_i$ that he$_j$ should come.'
b. n-sát n-wur nə gwar ji.
1sg-say PREP-3sg COMP 3sg come
'I told him$_i$ that he$_i$ should come.'

The logophoric pronouns are used to indicate coreferentiality or disjoint reference with the subject or addressee of superordinate verbs of speaking. Whenever coreference is within the same clause a reflexive pronoun is employed:

(21) n-seet nləər n-sen.
1sg-buy shirt PREP-REFL:1sg
'I bought a shirt for myself.'

(22) mu-sarep nləər-mo n-sun.
1pl-buy-pl shirt-pl PREP-REFL:1sg
'We bought shirts for ourselves.'

(23) wu cet mbise n-sin.
3m cook food PREP-REFL:3m
'He cooked for himself.'

To summarize, in a 'classic' logophoric system like that described by Frajzyngier for Mupun, logophoricity is a property of pronouns rather than of bound anaphors, and is licensed by whether the matrix verb is a verb of saying: in Mupun, verbs of thinking like *pan* 'think, remember' do not permit set B and C (logophoric) pronouns, but rather require pronouns from set A (non-logophoric):

(24) wu ben nə wu pan an.
3m think COMP 3m remember 1sg
'He thinks he remembers me.'

According to Frajzyngier (1993: chapter 20), set A pronouns are required in (24), and can be used to indicate either coreference or disjoint reference. This is unlike the case when the matrix verb is a verb of saying. In that case, the use of a set A pronoun indicates disjoint reference:

(25) wu sát nəə wu nas an.
3m say COMP 3m beat 1sg
'He_i said that he_j beat me.'

According to Frajzyngier, the same pattern obtains with set C pronouns, but examples showing the distinction between verbs of saying and verbs of mental activity like 'think' are not provided in the grammar.[11]

Logophoric conditions on long-distance reflexives differ in a number of ways from classic logophoric pronominal systems like that illustrated by Mupun. First, as was shown above, the elements in question belong to different grammatical classes. Pronominal long-distance reflexives (like those in Malay and Turkish) are *not* subject to logophoric requirements. Thus, it cannot be true that when reflexive forms have 'pronominal' usage, they become logophoric pronouns. The logophoric requirements appear to be optionally present for bound anaphor long-distance reflexives and obligatorily present for reflexives which have undergone 'conversion' to pronominals, as in the case of Icelandic subjunctives and English long-distance reflexives. Second, the discourse restrictions on reflexives are different from those on true logophoric pronouns. The choice of logophoric pronouns is determined by whether the higher verb is a verb of saying and whether the antecedent is the subject of that verb or the addressee. In contrast, long-distance reflexives are typically well-formed when the higher predicate is one of saying or of thinking. While a special set of pronouns (set C) exists in

Mupun to indicate coreference with the addressee, no such possibility exists in the case of long-distance reflexives: long-distance reflexives never indicate coreference with the addressee. These facts suggest that the analogy between long-distance reflexives and logophoric pronouns collapses when the two are compared in a fine-grained fashion, and the origin of the discourse conditions on long-distance reflexives is distinct from that of logophoric pronouns. Furthermore, there will be separate sources for the 'logophoricity' of bound variable and 'conversion' long-distance reflexives. These questions are explored in section 11. To conclude this section, while the term 'logophoricity' appears to be too well established to banish it from discussions of long-distance reflexives, it is important to recognize that there is strong evidence against the hypothesis that long-distance reflexives are covert logophoric pronouns. Furthermore, the system of logophoricity found with 'classic' logophoric pronouns is quite different from that found with long-distance reflexives of various types.[12]

7 Logophoricity and attitudes *de se*

We would like to turn now to the question of whether there appears to be any unified use of the concept of logophoricity with respect to one type of long-distance reflexives: those that are interpreted as bound variables. Sells (1987) claims expressly that the term 'logophoricity' has been used for three different though related concepts. Sells's SOURCE is similar to the use of 'logophor' in the literature on logophoric pronouns. The SOURCE is the source of speech, e.g., the subject of a higher verb of saying. Sells's second type of logophoricity, SELF, is the individual whose mental state the sentence describes (subject of verbs of thinking), and PIVOT is the center of deixis or perspective for the sentence (the reference point for indexicals). What these notions share is that they refer to the individual whose point of view or general state of consciousness is expressed by the sentence. According to Sells, languages differ with regard to which type of logophoricity licenses long-distance reflexives, though there are claimed to be implicational relations among different types of logophoricity.

In the spirit of Sells (1987), Huang and Liu (2000) attempt a unified treatment of these types of logophoricity in the domain of long-distance reflexives by proposing that the core meaning of logophoricity is SOURCE. This can be extended in some languages to also include SELF and in other languages to PIVOT as well:

(26) SOURCE $\subseteq$ SELF $\subseteq$ PIVOT

Thus, in some languages only SOURCE will license the use of a long-distance reflexive (e.g., with verbs of saying); in others both SOURCE and SELF will license long-distance reflexives (with verbs of saying or verbs of thinking); in yet others PIVOT, in addition to SOURCE and SELF, may also license long-distance reflexives (e.g., with the aid of deictic expressions like 'come', 'go', 'here', 'there', etc.).

According to Huang and Liu, the logophoricity condition (being a SOURCE, SELF, or PIVOT as required in a given language) is a necessary but not a sufficient condition for the antecedent of a long-distance reflexive. Thus, as noted by Pollard and Xue (2001), there are instances of SOURCE that do not license long distance *ziji* in Chinese:

(27) Zhangsan$_i$ cong Lisi$_j$ chu tingshuo Wangwu$_k$ bu xihuan ziji$_{i/*j/k}$.
Zhangsan from Lisi place hear Wangwu not like self
'Zhangsan$_i$ heard from Lisi$_j$ that Wangwu$_k$ does not like him$_{i/*j}$/himself$_k$.'

In (27) *Lisi* is the SOURCE of communication, but this is not sufficient to permit the use of long-distance *ziji*. According to Huang and Liu, the relation of a long-distance reflexive to its antecedent is mediated through a structure of predication which normally requires the reflexive to be c-commanded by the antecedent. In (27) the SOURCE Lisi does not license the long-distance *ziji* because it does not stand in a predication relation with a suitable predicate that includes the reflexive.

The range of cross-linguistic variations allowed for under (26) is illustrated by the two Chinese dialects presented in Cole et al. (2001b). Cole et al. show that whereas in the Teochew dialect spoken in Singapore, the long-distance *ziji* requires its antecedent to be SOURCE or SELF, in the Mandarin spoken in the same city, PIVOT alone may license long-distance reflexives.

Huang and Liu try to unify the various types of logophoricity by taking them to represent a progressive liberation of the notion of 'core logophoricity' – SELF being an extended (or 'virtual') SOURCE, and PIVOT being an extended (or 'virtual') SELF. This view they share, in part, with Cole et al. (2001b), and with Pan (2001). All these authors explore the possibility that SOURCE and SELF (and for Huang and Liu, also PIVOT) can be reduced to the notion of *de se*. Developing an idea suggested by Chierchia (1989) for Italian, Huang and Liu note that the restriction on *ziji* in the variety of Mandarin they report on is not merely that the antecedent for *ziji* must be the SOURCE of communication, or the individual whose mind the sentence describes (SELF), but, rather, that there is a stronger requirement: the individual in question must be aware that the sentence is a description of an event in which he himself or she herself is a protagonist (a *de se* restriction), or more precisely, that the individual actually ascribes, or is disposed to ascribe, to himself or herself the property denoted by the predicate containing the reflexive. Following Chierchia, the *de se* restriction is taken to be applicable to long-distance reflexives generally. For instance, Chierchia examines the distinction between long-distance reflexives and pronouns in Italian, and notes that sentence (28) is a contradiction, while (29) is not:

(28) Pavarotti crede che i **propri** pantaloni siano in fiamme. Ma non
Pavarotti believes that the self pants are in flame but not
si e' accorto che i pantaloni sono i propri.
realize that the pants are the own
'Pavarotti believes that self's pants are on fire, but he hasn't realized that the pants are his own.'

(29) Pavarotti crede che i **suoi** pantaloni siano in fiamme. Ma non
Pavarotti believes that the his pants are in flame but not
si e' accorto che i pantaloni sono i propri.
realize that the pants are the own
'Pavarotti believes that self's pants are on fire, but he hasn't realized that the pants are his own.'

The contradictoriness of (28) disappears when the personal pronoun *suoi* is substituted for *proprio*. That is, the use of the long-distance reflexive *proprio* requires that Pavarotti realize that it is his own pants that are on fire. No such requirement holds for the personal pronoun *suoi*: in (29) Pavarotti must realize of a certain individual that the individual's pants are on fire. It is not necessary, however, that Pavarotti identify that individual with himself. A *de se* restriction similar to (28) applies in Mandarin, as discussed by Huang and Liu (2000) and by Pan (2001), as well as in Teochew, discussed by Cole et al. (2001b).

The existence of a *de se* restriction in Italian and in certain Chinese dialects suggests that neither SOURCE nor SELF adequately characterizes the discourse requirement in these languages. Rather, an apparent SOURCE/SELF discourse restriction may in fact be an artifact of a stronger *de se* requirement. While languages differ with respect to whether bound anaphor long-distance reflexives are subject to a *de se* restriction, the presence of such a restriction may explain instances of apparent SOURCE/SELF restrictions in languages in which they occur. We shall return to the origin of *de se* below.

8 The dividing line between local and long-distance reflexives

We will turn now to a new topic, one which figures in much current research on reflexives. It is taken as given in discussions of long-distance reflexives that there is a well-defined notion of what constitutes a local reflexive and what anaphoric relations are nonlocal. There are in fact two widely held notions of locality in the generative literature on reflexives. The traditional Binding Theory (Chomsky 1981 and subsequent works) treats the local domain ('governing category') as, roughly, consisting of the clause plus the subject of a non-finite complement clause. In a departure from the Chomskyan approach, Reinhart and Reuland (1993 and earlier work) have argued that the core use of reflexives is to mark co-argumenthood, not intra-clausal coreference.[13] Thus, the expected division would be between anaphors used to mark co-argumenthood and other anaphors, rather than between clause-internal (or governing-category-internal) and clause-external (or governing-category-external) anaphora. Reinhart and Reuland's proposal is provided immediate support by the fact that many Germanic languages distinguish between different anaphoric forms along the lines predicted by Reinhart and Reuland's theory. For example, in Dutch *zichzelf* 'himself' is restricted to co-argument positions:[14]

(30) Max haat zichzelf.
Max hates self-self
'Max hates himself.'

(31) *Max haat zich.
Max hates self
'Max hates himself.'

(32) Max hoorde mij over zich praten.
Max heard me about self talk
'Max heard me talk about him.'

(33) *Max hoorde mij over zichzelf praten.
Max heard me about self talk
'Max heard me talk about him.'

(34) Jan_i zag Piet_j de spullen naast zich_i/*zichzelf_i neerlegen.
Jan saw Piet the gear next.to self self-self
'Jan saw Piet put the gear next to him.'

Examples (30–34) show that the 'true reflexive' *zichzelf* 'himself' is restricted to co-arguments, while the 'pronominal reflexive' *zich* is permitted for both intra-clausal non-co-argument reflexives and long-distance reflexives. Similar facts occur outside Germanic as well. See Lidz (1996, 2001).

While the pattern just illustrated appears to provide prima facie support for Reinhart and Reuland's division of anaphora into co-argument and non-co-argument anaphora, there are purported to be arguments against the definition of locality in terms of co-argumenthood. First, Lidz (2001) argues from Kannada examples much like (30–34) that the distinction between *zich*- and *zichzelf*-type anaphors is not a distinction between co-argument and non-co-argument anaphora. Rather, the two types of anaphors differ in meaning. The apparent anti-locality of the *zich*-type anaphor is due to a distinction between 'pure reflexivity' (*zich*-type) and 'near reflexivity' (*zichzelf*-type). Lidz argues that pure reflexives are compatible only with inherently reflexive predicates or with predicates that have been marked as reflexive by a verbal reflexive marker (as in Kannada). Thus, *zich*-type reflexives are predicted to occur only with reflexive predicates like 'shave' or in cases of non-co-arguments, for which the distinction between pure reflexivity and near reflexivity is not relevant. Lidz argues that this semantic distinction removes an apparently strong empirical support for the division between co-argument and non-co-argument anaphora. In evaluating the force of Lidz's arguments, it is not clear that the facts he adduces are not tangential to the issue of the nature of locality. In any case, Lidz provides additional evidence that the distinction between *zich*-type and *zichzelf*-type anaphors is not devoid of semantic content.

The question of whether the dividing line between local and non-local should be the governing category or the co-argument/non-co-argument distinction is considered by Hestvik and Philip (2001), who present evidence from Norwegian child language that binding of non-co-arguments within the simple clause (locative PPs and possessive reflexives) constitutes an instance of 'core Binding', while Binding into picture NPs is an instance of 'logophoric' Binding. Thus, on the assumption that 'core Binding' is equivalent to the local domain, from the

perspective of child language the local domain appears to include non-co-arguments within the simple clause. A similar point is made by Huang and Liu (2001), who show that 'local' reflexives in Mandarin are not subject to any logophoric restrictions (neither *de se* requirements nor PIVOT-related restrictions like the Blocking Effect). What counts as 'local' for this purpose includes not only non-co-arguments like locatives and benefactives, but also reflexives with subcommanding (Tang 1989) rather than c-commanding antecedents in the same clause: in both Mandarin and other Chinese dialects, when the head of a noun phrase is inanimate (and, hence, in Chinese, not a potential antecedent for a reflexive), the specifier of that noun phrase can serve as antecedent for the reflexive:

(35) Zhangsan$_i$ de jiaoao hai-le ziji$_i$.
Zhangsan's DE arrogance hurt-ASP self
Zhangsan$_i$'s arrogance harmed him$_i$.

In (35) the non-co-argument *Zhangsan* is the antecedent for *ziji*. There is, however, persuasive evidence that *ziji* does not need to meet any logophoric restrictions: in (35) the antecedent is neither SOURCE nor SELF. Furthermore, the Blocking Effect is not exhibited:

(36) Zhangsan$_i$ de biaoqing gaosu wo$_j$ ziji$_{i/*j}$ shi wugude.
Zhangsan DE expression tell me self is innocent
'Zhangsan's expression tells me that he is innocent.'

Thus, the absence of logophoric effects provides strong reason to believe that the relationship between *ziji* and its antecedent is local – despite the fact that *Zhangsan* is not an argument of the same predicate as *ziji*.

We conclude that there are persuasive arguments that there is a division between local and long-distance reflexives along the lines of the locality domain as defined in Chomsky (1981) and related work: the traditional notion of 'governing category'. We would emphasize, however, that evidence for the need for the notion 'governing category' does not in itself provide evidence against the relevance of co-argumenthood for explaining the distribution of *zich-* and *zichzelf*-type reflexives, as proposed by Reinhart and Reuland (1993). Thus, the evidence discussed in this section does not constitute a general argument against the use of co-argumenthood to define one type of locality. It does, however, appear to show that co-argumenthood does not constitute a replacement for the notion of the governing category.

9 A more detailed look at the typological properties of long-distance reflexives

We would like to turn now to a review of the status of the typological properties traditionally associated with long-distance reflexives: monomorphemicity, c-command/subject orientation, and the Blocking Effect.

9.1 Monomorphemicity

It was noted early in the literature that long-distance reflexives are typically monomorphemic while local reflexives tend to consist of more than one morpheme (Giorgi 1984; Pica 1987):

(37) Credo [che Mario$_i$ sostenga che tu abbia parlato di se$_i$ e della
I-believe that Mario claims that you have spoken of self and of-the
sua famiglia in TV]]
his family on TV
'I believe that Mario claims that you spoke about him and his family on TV.' (Giorgi 1984)

(38) Gianni$_i$ pensava [che quella casa appartenesse ancora a se stesso$_i$].
Gianni thought that that house belong still to self self
'Gianni thought that that house still belonged to him.' (Giorgi 1984)

In (37), from Italian, the monomorphemic reflexive *se* takes a long-distance antecedent, while in (38) the bimorphemic *se stesso* is ill-formed with a long-distance antecedent. Similar facts continue to be discovered as new languages are examined. For instance, Davison (2000) summarizes the facts of Hindi-Urdu as follows: "If the simple reflexive [*apnee*] is contained within a nonfinite embedded clause, it may be coindexed with subject antecedents in higher clauses or with the local subject . . . In a nonfinite clause, the complex reflexive *apnee aap* and the reciprocal have only a local c-commanding subject antecedent."

There is, however, a variety of counter-examples to the claim that only simplex reflexives can have long distance interpretations. For instance, the Malay reflexive *dirinya* consists of two morphemes, *diri-* and a third person marker *-nya*. Yet, as was seen above, long-distance interpretations are possible. Similarly, the inflected reflexives *kendisi/kendileri* in Turkish (Kornfilt 1997, 2001) are clearly bimorphemic, consisting of *kendi* 'self' plus *-si* 'third person singular" or *-leri* 'third person plural'. Furthermore, long-distance uses of English reflexives are clearly bimorphemic.

We do not, however, interpret such examples as counter-examples to the generalization regarding the monomorphemicity of long-distance reflexives. Rather, we take examples of this type to show that the generalization that long-distance reflexives are monomorphemic applies only to those long-distance reflexives that are bound anaphors, and not to those that are pronominals. To the best of our knowledge, all bound anaphor long-distance reflexives are monomorphemic.[15]

It does not, however, appear to be true that all monomorphemic reflexives are long distance. For example, the German reflexive *sich* consists of a single morpheme like the Icelandic reflexive *sig* or the Italian reflexive *se*. While these forms are all restricted to third person antecedents, there does not appear to be a division into two morphemes, one meaning 'self' and the other 'him', as is the case for English *himself* or Malay *dirinya*. However, German *sich* is local, while Icelandic

sig and Italian *se* take long-distance antecedents. Thus, monomorphemicity appears to be a necessary but not a sufficient condition for bound anaphor long-distance reflexives.

9.2 C-command and subject orientation

We saw earlier that a c-command requirement and subject orientation are restricted to bound anaphor long-distance reflexives. It has been noted in the literature (e.g., Xu 1994; Yu 1996) that there is a variety of apparent counter-examples to subject orientation. Such counter-examples might be taken to indicate that seeming subject orientation has a functional rather than a grammatical explanation. In this section we would like to examine four questions related to this general issue:

(i) Is subject orientation derivable from logophoric discourse conditions on long-distance reflexives, or does it appear to be a grammatical requirement?
(ii) Can subject orientation be reduced to a requirement that (bound anaphor) reflexives refer to the noun phrase with the highest rank on the following thematic hierarchy?

(39) **Thematic hierarchy:**
Agent < Experiencer < Theme < Other

(iii) In the event that the answer to (ii) is negative, can subject orientation be reduced to the requirement that (bound anaphor) long-distance reflexives refer to the noun phrase with the highest grammatical function on a hierarchy of grammatical functions?

(40) **Hierarchy of grammatical functions:**
Subject < Direct object < Indirect object < Oblique

(iv) In the event that these functional explanations fail, can subject orientation be reduced to c-command?

We shall argue that there is evidence against (i), (ii), and (iii), but that (iv) is consistent with the available evidence, at least if c-command is understood as c-command/subcommand. We shall also examine one type of apparent counter-example to subject orientation: reflexives with experiencer subjects. We shall conclude that the evidence is unclear regarding whether these examples can be reduced to c-command as well, or whether they provide evidence that apparent subject orientation is not grammatical in nature.

The main evidence that subject orientation is not reducible to a discourse requirement is typological. We saw earlier that languages with bound anaphor long-distance reflexives differ regarding whether and which logophoric requirements are respected. Thus, for instance, Chechen and Ingush (Nichols 2001) do not manifest any logophoric requirements. In contrast, in Teochew (Cole et al. 2001b) there are strong logophoric restrictions on the relationship between the reflexive

and its antecedent. Despite this striking difference between Chechen/Ingush and Teochew, both languages manifest subject orientation. A similar point can be made on the basis of the comparison of Singapore Teochew and Mandarin in Cole et al. (2001b, 2004). Although Singapore Mandarin and Teochew differ greatly in the nature of the logophoric requirements found, long-distance reflexives are subject oriented in both cases. Thus, there is no correlation between the existence of subject orientation and logophoric requirements.

We turn next to the question of whether subject orientation could be reduced to the requirement that bound anaphor long-distance reflexives must refer to the noun phrase which is highest on the thematic hierarchy in the domain chosen (as was proposed by Giorgi 1984, inter alia). (We assume that in a multi-clausal structure, the choice of the clause in which the antecedent occurs is independent of the choice of which noun phrase in that clause serves as antecedent.) This hypothesis is given some support by the fact that non-nominative experiencers can serve as antecedents for bound anaphor long-distance reflexives (Giorgi 1984). There is, however, clear evidence that this hypothesis cannot be correct as a general source for subject orientation. With regard to Mandarin, Cole and Wang (1996) show that while objects in postverbal position cannot serve as antecedents for long-distance *ziji*, preverbal objects are possible antecedents:

(41) Wangwu$_i$ shuo Zhangsan$_j$ zengsong gei Lisi$_k$ yipian guanyu ziji$_{i/j/*k}$
Wangwu says Zhangsan give to Lisi one about self
de wenzang.
DE article
'Wangwu says that Zhangsan gave an article about him/himself to Lisi.'

(42) Zhangsan$_i$ yiwei Lisi$_j$ hui ba Xiaoming$_k$ dai hui ziji$_{i/j/k}$ de jia.
Zhangsan thought Lisi will BA Xiaoming take self self's DE home
'Zhangsan thought Lisi would take Xiao Ming back to his home.'

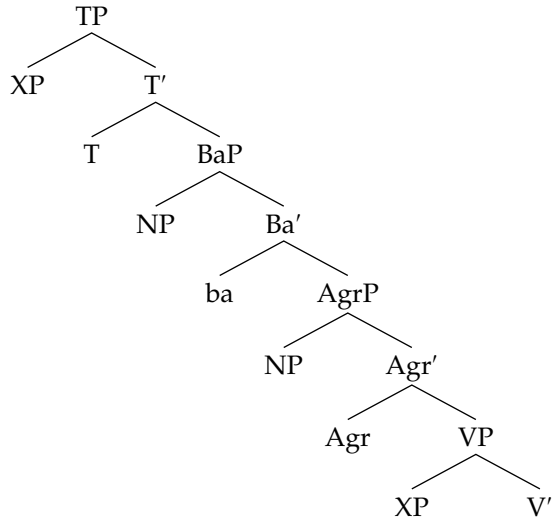
Example (41) shows that *ziji* cannot refer to *Lisi*, the postverbal object of *zengsong gei* 'give', but only to the matrix subject, *Wangwu*, or the complement subject, *Zhangsan*. In contrast, in (42), in which the theme occurs in preverbal position, *ziji* can refer to the matrix subject, *Zhangsan*, the complement subject, *Lisi*, or the theme, *Xiao Ming*. The fact that within the domain of the complement clause either the agent or the theme can be the antecedent for *ziji* shows that 'subject orientation' cannot be reduced to a requirement that the antecedent must be the highest noun phrase on the thematic hierarchy.

The same examples provide evidence against the proposal that subject orientation can be reduced to the requirement that the reflexive must refer to the highest noun phrase on a hierarchy of grammatical functions (at least for Mandarin). In (42) the complement subject, *Lisi*, outranks the complement object, *Xiao Ming*, on a hierarchy of grammatical functions. Despite that fact, the object is a possible antecedent for *ziji*.

Turning now to the hypothesis that subject orientation can be reduced to c-command, there appears to be evidence that this is the case. Under current

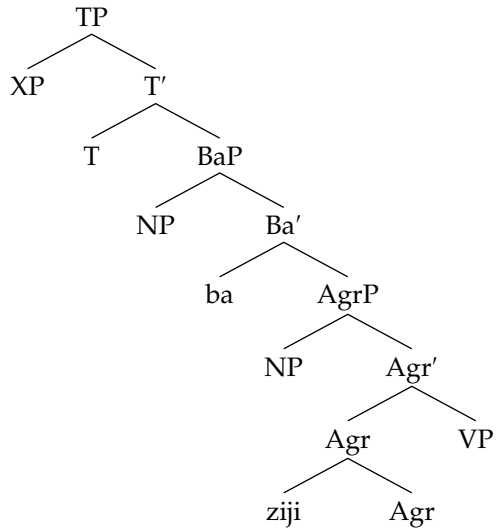
analyses of the *ba* 'preverbal object' construction, *ba* is a functional head and the 'object' of *ba* is the specifier of the maximal projection which is the complement of *ba*, as shown in (43) (adapted from Cole and Wang 1996):

(43)



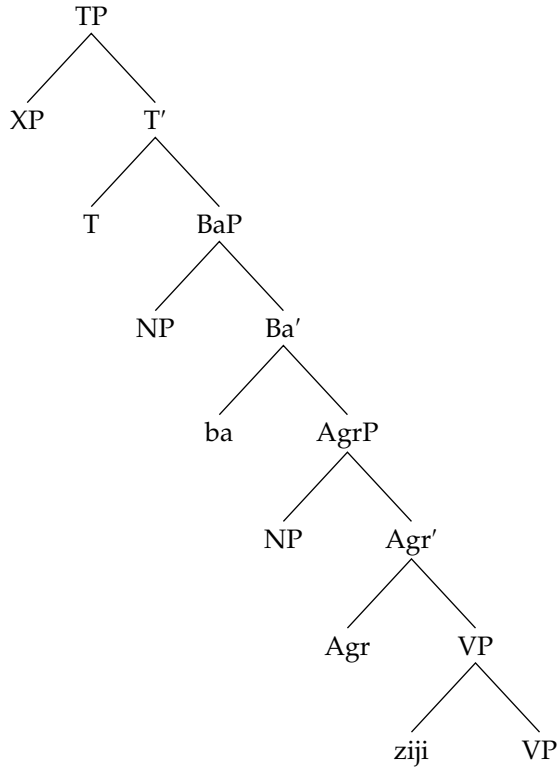
(We show the complement of *ba* as AgrP for the sake of concreteness, but the choice of projections is not relevant to our point here. Another possibility is PREDP.) We shall assume for the moment (i) that TP is the local domain in which Binding is determined; and (ii) that some version of the movement theory of long-distance reflexives applies, under which the reflexive moves to a position in which its antecedent is within the local domain of the reflexive. We shall also, for the moment, assume (iii) that *ziji* adjoins to the head of AgrP (as in Cole and Wang 1996), though this assumption will be dispensed with shortly:

(44)



Given the resulting tree (roughly (44)), c-command alone would predict that the possible antecedents for *ziji* are the subject (the specifier of Tense/AspectP) or the specifier of AgrP (the noun phrase immediately following *ba*). Thus, both subject orientation and the failure of subject orientation in examples like (42) can be shown to be predicted from c-command alone if a movement analysis for *ziji* is assumed. Furthermore, these predictions are not dependent on the assumption that *ziji* adjoins to the head of AgrP (as is generally assumed in the head-movement analysis). If, instead, it is assumed that *ziji* adjoins to VP (as in Huang and Liu 2000), the same predictions are made:

(45)



Thus, we conclude that the reduction of subject orientation to c-command makes more accurate predictions about the distribution of *ziji* than does an analysis in which subject orientation is a primitive, at least if a movement analysis of LD reflexives is assumed. (We shall discuss the status of the movement analysis in section 10 below.)

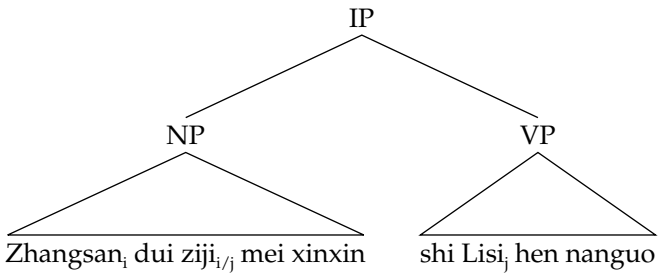
While the reduction of subject orientation to c-command appears to make the right predictions regarding the *ba* construction in Chinese, examples like (46) appear to be counter-examples to subject orientation both as a primitive and as a by-product of a c-command requirement:

(46) Zhangsan$_i$ dui ziji$_{i/j}$ mei xinxin shi Lisi$_j$ hen nanguo.
Zhangsan to self no confidence make Lisi very sad
'That Zhangsan had no confidence in himself made Lisi sad.'

(47) Ziji$_j$ de xiaohai yige ren qu luxing shi Lisi$_j$ hen danzin.
self's DE child alone go travel make Lisi very worried
'That his own child went traveling alone made Lisi worried.'

In (46) and (47) the antecedent for *ziji* can be *Lisi*. The S-structure for such sentences is roughly (48):

(48)



As is apparent from the tree, *Lisi* is not the matrix subject and does not c-command *ziji*. Thus, both in theories in which subject orientation is taken as a primitive and in those in which subject orientation is reduced to c-command, it is predicted that *Lisi* is not a possible antecedent for *ziji*.

While experiencer sentences like (46) and (47) appear to suggest that subject orientation is not one of the core properties of LD reflexives, the fact that apparent counter-examples to subject orientation/c-command are largely restricted to experiencer sentences suggests an alternative approach to the problem: perhaps the LF structure of experiencer constructions differs from the S-structure, and at LF the experiencer c-commands *ziji*. For example, as long ago as Postal (1970c) it was proposed that experiencers are LF subjects. A similar position was taken by Sung (1990). We conclude that the evidence is not conclusive with respect to whether subject orientation is a syntactic phenomenon. If subject orientation is syntactic in nature, it would appear not to be a primitive of grammar or to be derivable from either the thematic hierarchy or a hierarchy of grammatical relations, but rather to derive from c-command.

9.3 The Blocking Effect: typological evidence

The existence of a Blocking Effect based on person has been discussed primarily in the literature on long-distance reflexives in Chinese. The Blocking Effect is illustrated by the contrast between (1) and (3) (repeated here):

(1) Zhangsan$_i$ renwei Lisi$_j$ zhiao Wangwu$_k$ xihuan ziji$_{i/j/k}$.
Zhangsan think Lisi know Wangwu like self
'Zhangsan thinks Lisi knows Wangwu likes self.'

(3) Zhangsan$_i$ renwei wo$_j$ zhidao Wangwu$_k$ xihuan ziji$_{*i/*j/k}$.
Zhangsan think I know Wangwu like self
'Zhangsan thinks I know Wangwu likes self.'

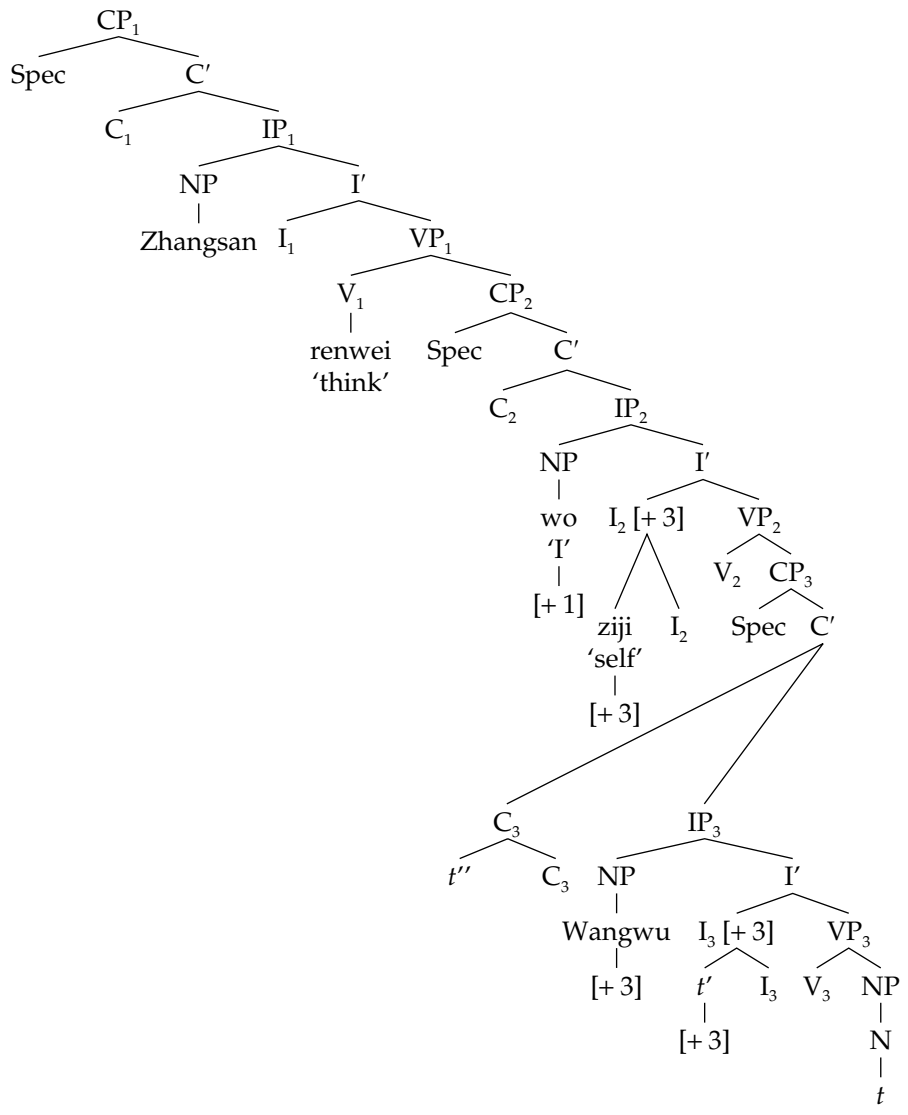
In (1) the person of the subject of the three clauses is identical (third person). In contrast, in (3) a change in person from the lowest clause (third person) to the intermediate clause (first person) prevents the reflexive from referring to the subject of the intermediate or matrix clause. Although the Blocking Effect was analyzed as syntactic in nature in most early studies of Chinese reflexives (e.g., Battistella 1987; Cole et al. 1990; Sung 1990; Huang and Tang 1991), it was originally noted by Y.-H. Huang (1984), who suggested that Blocking has a functional origin. The controversy regarding Blocking remains unresolved. While there is general agreement that certain instances of Blocking Effect are due, at least in part, to discourse/semantic/pragmatic factors, it remains controversial whether grammatical Blocking also occurs. From a typological perspective, the functional/discourse account does not seem to provide an explanation for the distribution of Blocking across languages: why is the Blocking Effect observed only in some languages (e.g., Chinese and Malayalam) and not in others (e.g., Chechen/Ingush, Kannada, Hindi-Urdu, Icelandic, or Norwegian)? Is there a typological difference in the discourse structure among languages that accounts for the cross-linguistic variations, or is the variation due to a difference in syntax?

There is prima facie evidence that syntax plays a significant role in accounting for the distribution of the Blocking Effect in Chinese. Cole et al. (2001b) and earlier work by Cole and Wang (1996), Cole et al. (1990), and others relate the occurrence of Blocking in Chinese to the fact that Chinese lacks verb agreement. The non-occurrence of Blocking in languages like Italian is related to the occurrence of verb agreement in these languages. This topic is debated in detail in Cole and Wang (1996), Cole et al. (2001b), Huang and Liu (2000), Pollard and Xue (2001), and Pan (2001).

According to the agreement theory of Blocking, languages differ with regard to whether INFL (or the appropriate agreement-bearing node) manifests features of person. All languages have a rule of 'subject–verb agreement' which states that spec of IP and I must be non-distinct with respect to phi-features. Chinese (in contrast to Italian) lacks base-generated person feature on INFL. Thus, in most sentences in Chinese spec–head agreement (subject–verb agreement) is vacuous. In contrast, in Italian INFL is base generated with person features, so spec–head agreement will play a major role in determining the grammaticality of sentences.

Structure (49) illustrates how Blocking is achieved by the agreement theory of Blocking:[16]

(49)



It is assumed that the reflexive *ziji* can be generated with any person feature. In the case of (49) it is generated as [+3]. The following Feature Percolation Principles are assumed:

(50) **The Feature Percolation Principles (FPP):**

a. The features of the mother node and the features of the daughter nodes will be identical.

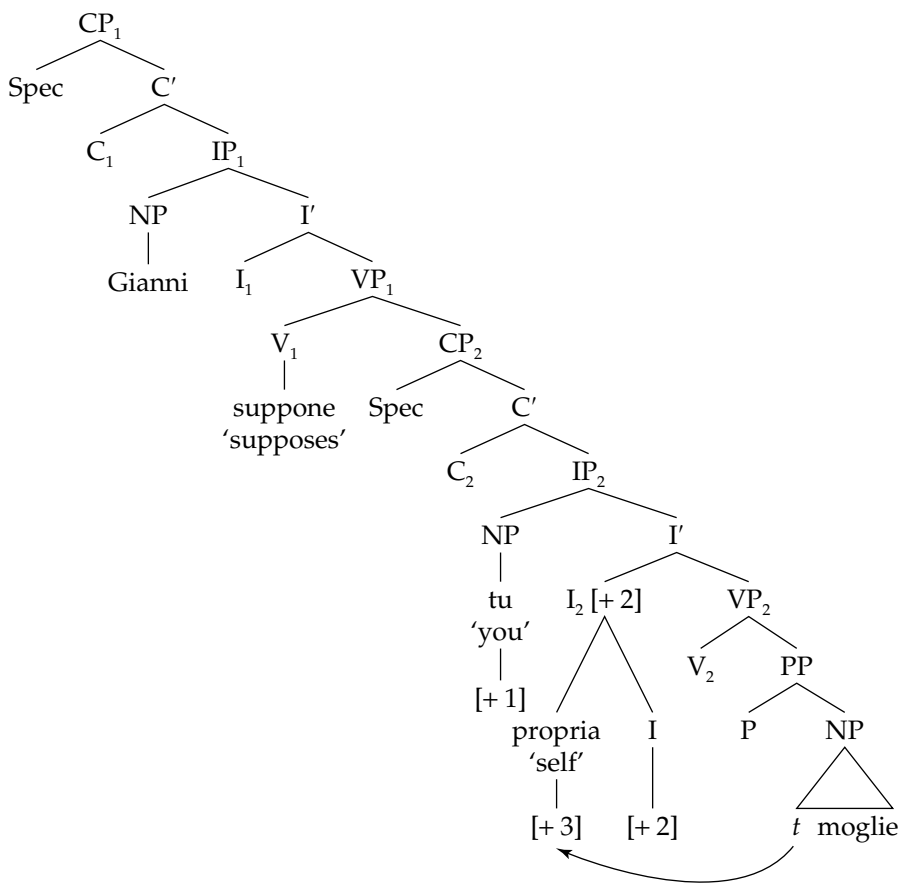
b. If the features of the daughter nodes conflict, the mother node will have the features of the head node.

No problems arise in IP_3. The reflexive adjoins to I. Since I has no base-generated phi-features, the feature [+3] percolates up to I_3. Spec–head agreement checking compares the phi-features of I and of the spec of IP. Since they do not differ, IP_3 is well-formed and the spec of IP_3 is a possible antecedent for *ziji*. Consider now the consequence of adjunction to I_2. The feature [+3] is percolated to I_2. In the case of IP_2 – unlike IP_3 – there is a difference in the phi-features of I_2 and the spec of IP_2. Thus, movement to I_2 results in an ill-formed output. Further movement to I1 would not result in grammaticality. Although there would be no conflicting phi-features at the IP_1 level, movement to I_1 must be via I_2. Thus, the FPP predict correctly the Blocking Effects seen in examples like (3).

The agreement theory of Blocking also predicts that Blocking will not occur in languages manifesting verb agreement, as illustrated by examples like the following from Italian:

(51) Gianni$_i$ suppone che tu$_j$ sia inamorato della propria$_{i/j}$ moglie.
Gianni supposes that you are in love with self's wife
'Gianni supposes that you are in love with his/your wife.'

(52)



In IP_2 in Italian, the reflexive bears the feature [+3] but INFL is [+2]. According to the FPP, when there is conflict among the features of the daughters ([+3] and [+2]), the features of the head ([+2]) percolate up to the mother node (the higher INFL node). Thus, INFL is [+2], and agrees with the subject of the clause, and the sentence is well-formed. As a result, no Blocking Effect is found when INFL is generated with person features, i.e., in a language in which even vestigial agreement is found.

The Chinese facts and the agreement theory of Blocking will be discussed in greater detail in section 10, where we compare the relative adequacy of different theories of long-distance reflexives. We also defer until section 10 the question of which nominals can be blockers; i.e., is it the case that all and only potential antecedents for long-distance reflexives constitute potential blockers? In this section our discussion will be limited to the typology of the Blocking Effect. The distribution of Blocking across languages provides support for the claim that Blocking is (in part) a grammatical (agreement-based) phenomenon, and is not due entirely to discourse.

As was seen, the agreement analysis of Blocking makes the typological prediction that Blocking will occur only in languages that lack even vestigial verb agreement (i.e., person features on INFL). This prediction is corroborated by Chinese languages, which lack agreement and manifest Blocking. It is also corroborated by Hindi-Urdu, Icelandic, and Italian, which have verb agreement and, as predicted, lack Blocking. Furthermore, strong support is provided by the Dravidian languages: in a comparison of Kannada (Amritavalli 2000; Lidz 1996, 2001) and Malayalam (Jayaseelan 2000), it is shown that the facts regarding long-distance reflexives in these two languages are very similar except that Malayalam has lost verb agreement. As predicted by the agreement theory of Blocking, Malayalam manifests a Blocking Effect like that seen in Chinese, while none is found in Kannada or any other Dravidian languages. None of the Dravidian languages, other than Malayalam, has lost verb agreement. Thus, the Dravidian facts provide evidence that the absence of agreement and presence of Blocking in Chinese are not coincidental.

While the Dravidian facts provide corroboration for the agreement theory of Blocking, other languages present problems for the theory. First, the Mainland Scandinavian languages have lost most verb agreement, but long-distance reflexives are not subject to Blocking. This would appear to be a strong counterexample to the agreement theory. This evidence, however, is not as persuasive as might appear. As is pointed out in Sung (1990), the Mainland Scandinavian languages exhibit agreement in predicate adjective constructions:[17]

(53) **Predicate adjective agreement:**

a. Gutten er stor.
the.boy is big
'The boy is big.'

b. Huset er stor.
the.house is big
'The house is big.'

c. Husene/Guttene er store.
the.house/the.boy are big
'The houses/boys are big.'

We assume that agreement in predicate adjective constructions is indicative of the presence of person features on INFL, which are then transmitted to the predicate adjective. Thus, the Mainland Scandinavian languages do not appear to constitute a genuine counter-example to the agreement theory of Blocking. There is, furthermore, some indirect evidence that these languages are not completely without agreement, but are rather similar to English in having a reduced agreement system rather than none at all. In general, two classes of languages manifest subject pro-drop: those with rich agreement systems, like Italian, and those entirely without agreement, like Chinese. Languages which have a reduced form of agreement do not allow pro-drop. The Mainland Scandinavian languages lack pro-drop, which suggests that they retain a reduced agreement system like that found in English.

Finally, Korean may constitute an additional language in which verbs do not agree with their subjects, but for which Blocking is absent.[18] However, Korean exhibits honorific agreement:

(54) atu-nim-i ttokttokha-si-ta.
son-NOMsmart-HON-Decl
'The son is smart.'

Sentence (54) illustrates obligatory honorific agreement in Korean. As in the case of Mainland Scandinavian predicate adjective agreement, honorific agreement may indicate that abstract agreement features are present on INFL. The presence of such features would be expected to result in the absence of syntactic Blocking in the language.[19]

While the apparent counter-examples to the agreement theory of Blocking are less than entirely convincing, it must be recognized that the typological argument in favor of the agreement theory is not as strong as would be desired. So far the only languages that illustrate the correlation between the absence of verb agreement and the Blocking Effect are Chinese and Malayalam. The empirical evaluation of this argument, therefore, must await the examination of additional languages which lack verb agreement and which exhibit bound anaphor long-distance reflexives. Furthermore, even here it is also clear that there are important discourse factors that contribute to the Blocking Effect (see section 10.4.3 below, and Huang and Liu 2000; Cole et al. 2001b), but the typological evidence suggests that it has a syntactic component as well; the evidence is still inconclusive.

10 Theories of long-distance reflexives

We will now turn to an examination of the extent to which various theories of long-distance reflexives predict the typological properties of the construction.

We shall restrict our discussion in this section to bound anaphor long-distance reflexives. Our purpose is to evaluate the adequacy of several current analyses, and to highlight the analytic problems posed by the construction.

10.1 The parameterization of the Binding domain

The earliest generative approach to long-distance reflexives, dating back to the 1980s, was to explain the possibility of non-local antecedents by proposing that languages differ with respect to the definition of the Binding domain ('governing category'). For instance, in English the Binding domain might be the immediate clause in which the reflexive occurs, while in Chinese it might be the root sentence. These differences in Binding domain were taken to be parameters of Universal Grammar along which languages could vary.

It is immediately apparent from the occurrence of both local and long-distance reflexives in the same language that such a parameterization could not be on a language-by-language basis, since the same language typically contains forms with different Binding domains. For instance, in Chinese, while *ziji* appears to take the root clause as its Binding domain, the pronoun *ta* 'he, she' has the same Binding domain as its English equivalent:

(55) Zhangsan$_i$ renwei Lisi$_j$ zhidao Wangwu$_k$ xihuan ta$_{i/j/*k}$.
Zhangsan think Lisi know Wangwu like him
'Zhangsan thinks Lisi knows Wangwu likes him.'

If the binding domain for *ta* were the root sentence, it would be expected that *ta* could not be bound within the root sentence. Not only is this not the case for Chinese, but we are not aware of any language in which personal pronouns are subject to such a requirement.

Furthermore, in Chinese the root clause is not the domain for all reflexive forms. The complex reflexive *ta ziji* cannot take a long-distance antecedent:

(56) Zhangsan$_i$ renwei Lisi$_j$ zhidao Wangwu$_k$ xihuan taziji$_{*i/*j/k}$.
Zhangsan think Lisi know Wangwu like himself
'Zhangsan thinks Lisi knows Wangwu likes himself.'

Thus, the parameterization of the binding domain would have to be different for each anaphoric element, and not for each language (Manzini and Wexler 1987; Wexler and Manzini 1987: the Lexical Parameterization Hypothesis). Additionally, for a variety of reasons, Wexler and Manzini and Manzini and Wexler argue that each parameter must be independent of all other parameters. Otherwise the parameterization will be unlearnable (in the sense of Wexler and Culicover 1980).

The parameterization of the binding domain has been criticized on a variety of bases: as was just noted, the approach fails to predict that across languages the apparent expansion of the Binding domain is restricted to reflexives, and never

occurs with pronouns. Thus, there must be something specific to reflexives that allows them to be long distance. An analysis that predicts similar variation in domain range for other anaphoric elements does not make the correct typological predictions. Furthermore, as was noted by a variety of authors (e.g., Safir 1987; Sung 1990; Hermon 1992) this approach appears to be inadequate as a model for the acquisition of reflexives by children. Most serious from our perspective is that the paramaterization of the Binding domain fails to make the correct typological predictions about the typological properties of long-distance reflexives themselves. Under this approach, in order to account for the fact that long-distance reflexives are monomorphemic, subject oriented, and subject to the Blocking Effect (in some languages), it would be necessary to introduce separate parameters for each of these properties of long-distance reflexives. But, in order for the parameters to be learnable, it is necessary that each parameter be independent of the others. That is, the fact that all these properties occur together is not predicted by the analysis. Thus, this parameterization approach fails to predict the core typological properties of long-distance reflexives. Furthermore, if, in a particular language, a stipulation were added – e.g., that long-distance reflexives must be monomorphemic – this requirement would be entirely stipulative, and would not follow in any way from the principles that license the existence of long-distance reflexives. Thus, this analysis predicts that languages could differ with regard to whether each of the core properties of long-distance reflexives will be found in that language. As a result, the parameterization of the Binding domain does not provide an adequate analysis of long-distance reflexives.

10.2 Cyclical re-indexing

The first analysis to predict some of the typological properties of long-distance reflexives was that of Tang (1985, 1989), who proposed that long-distance reflexives in Chinese should be accounted for in terms of a process of cyclical re-indexing of the reflexive with potential antecedents. Tang proposed the following hypothesis: long-distance reflexives are not simply reflexives with an expanded Binding domain, but rather the process of extending the domain is cyclic in nature. This hypothesis was suggested by the seemingly cyclic nature of the Blocking Effect. It will be remembered that in Chinese a difference in person features between the subject of the clause containing *ziji* and a superordinate clause prevents *ziji* from referring to the subject of the superordinate clause, or any higher clause. That is, all intermediate subjects between *ziji* and its ultimate antecedent must agree in phi-features. Such a requirement is at least suggestive of the possibility that *ziji* must be tested for agreement in phi-features with each potential subject along the path to its final antecedent. That is, the process of checking the feature content of *ziji* against intermediate subjects appears to be cyclic in nature.

Turning to the details of Tang's analysis, this result is achieved in the following way: *ziji* is analyzed as *pro-ziji*. The *pro* element in *pro-ziji* transfers its phi-features to *ziji*. The phi-features of *ziji* are thereby fixed and cannot be changed in the

course of the derivation. *Ziji* with phi-features undergoes an obligatory cyclic indexing process which reassigns to *ziji* the (referential) index of the potential binder in the Binding domain. In order for the indexing to be well-formed, *ziji* must agree with the potential antecedent in phi-features. The indexing process applies iteratively, and, presumably, cyclically. Thus, *ziji* can be assigned the referential index of an antecedent which is separated from its surface position in an unbounded fashion. However, *ziji* can never be assigned the referential index of a nominal that has phi-features that are different from those of the lowest potential antecedent, nor can the phi-features of intervening potential antecedents differ from those assigned to *ziji* on the first cycle. Thus, the Blocking Effect is predicted by the cyclic nature of (re-)indexing.[20]

Tang's proposal has a number of advantages over the parameterization of the Binding domain. First, it provides an analysis of long-distance reflexives that is specific to reflexives, thereby remedying one of the serious deficiencies of the parameterization of the Binding domain. It will be remembered that domain parameterization predicts the possibility of variation in Binding domains for pronouns as well as for reflexives. Cyclic re-indexing also provides an account of why *ziji* is long distance but not *ta ziji*; only *pro-ziji*, which lacks phi-features, is subject to cyclic re-indexing. Because *ta ziji* is generated with phi-features, it is assigned an unchangeable referential feature on the first cycle. That is, the critical difference between *ziji* and *ta ziji* which makes *ziji* long distance is taken to be the presence of lexically specified phi-features on *ta ziji* and their absence on *ziji*. In addition, cyclic reindexing provides an account of the cyclic nature of Blocking, also an important improvement over previous analyses.

The analysis appears, at least, to fail to predict subject orientation, which is stipulated. Furthermore, the analysis of the distinction between local and long-distance reflexives does not make the correct cross-linguistic predictions: any reflexive with lexically specified phi-features is predicted to be purely local. In Italian, however, both long distance and local reflexives are lexically specified as third person (long distance *se* and *proprio* vs. local *se stesso*). The factor which differentiates between local and long-distance reflexives is not feature content, but whether the form is monomorphemic or complex. Monomorphemic forms (*se* and *proprio*) are long distance while the complex form (*se stesso*) is local. Similar patterns are found in other European languages, so it would seem that the presence or absence of person features is not what differentiates local and long distance, but rather whether the form is simple or complex.

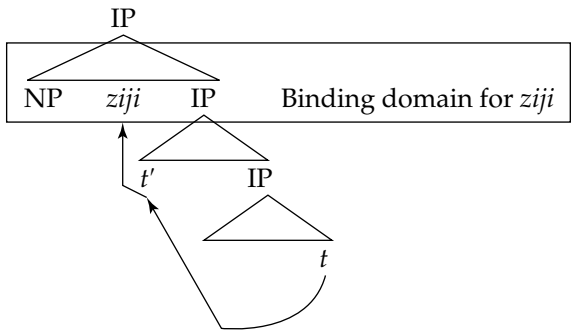
In addition, the analysis provides no explanation of how cyclic re-indexing occurs. From the perspective of contemporary linguistic theory, cyclic re-indexing is implausible as a mechanism: the process of re-indexing is non-local and unbounded, in that it occurs iteratively at ever greater remove from the location of the reflexive, while current expectations would be that both indexation and feature agreement should apply only in a local domain. The absence of a detailed account of the mechanisms by which re-indexing occurs suggests not that the proposal should be abandoned, but that it should be viewed as an incomplete analysis. Cyclic re-indexing might be viewed as a prototype for an analysis of

long-distance reflexives, a schema of properties (re-indexing, cyclic application) that a full analysis of long-distance reflexives should possess.

10.3 Movement analyses

The possibility of a movement analysis for long-distance reflexives was first suggested by Pica (1987, inter alia), an idea that was later developed by Battistella (1987), Huang and Tang (1988, 1991), Cole et al. (1990), and others for Chinese.[21] The basic idea is that long-distance reflexives are only apparently non-local. Rather, the long-distance reflexive moves successive-cyclically in the LF component from the position where it is generated to a position in which it has a local relationship with its ultimate antecedent:

(57)



The movement approach provides a solution to two important problems we noted with respect to the cyclic re-indexing analysis: the absence of a detailed description of the mechanisms involved in re-indexing, and the apparent non-locality of the relationship between the reflexive and its ultimate antecedent. The movement of the reflexive to a position near its ultimate antecedent allows a local account of the co-indexing of the reflexive and its seemingly long-distance antecedent. The seeming long-distance antecedent is in fact an LF-local antecedent. Thus, movement can be viewed as an elaboration of the cyclic re-indexing model earlier proposed by Tang rather than as an entirely new approach.

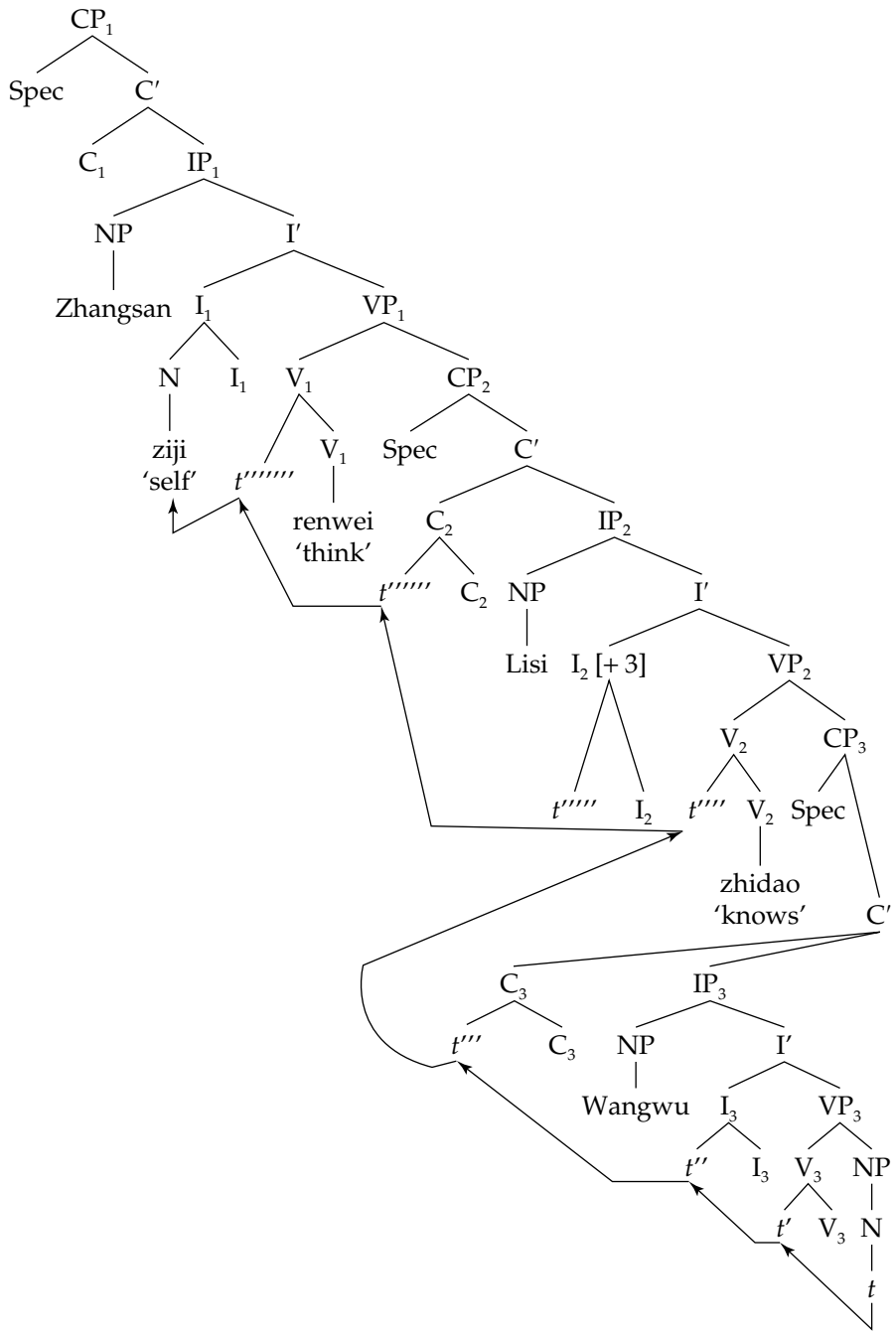
Several questions arise if a movement approach is adopted:

(i) What is the nature of the reflexive movement, XP movement (presumably to an A′-position), of the maximal projection containing the reflexive or head movement of the reflexive noun?
(ii) To what position does the reflexive move?
(iii) What is the motivation of the movement?

In general, analyses have been divided between two approaches: head movement of the reflexive to a functional head, generally INFL or AGR (works by Pica 1987, Battistella 1987, Cole et al. 1990, and others) or adjunction of the reflexive

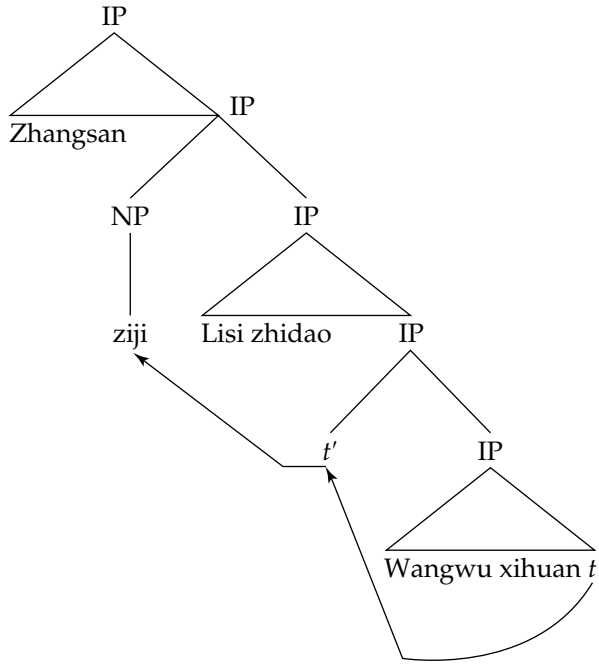
XP to the IP immediately below the antecedent (Huang and Tang 1991; Huang and Liu 2001):[22]

(58)



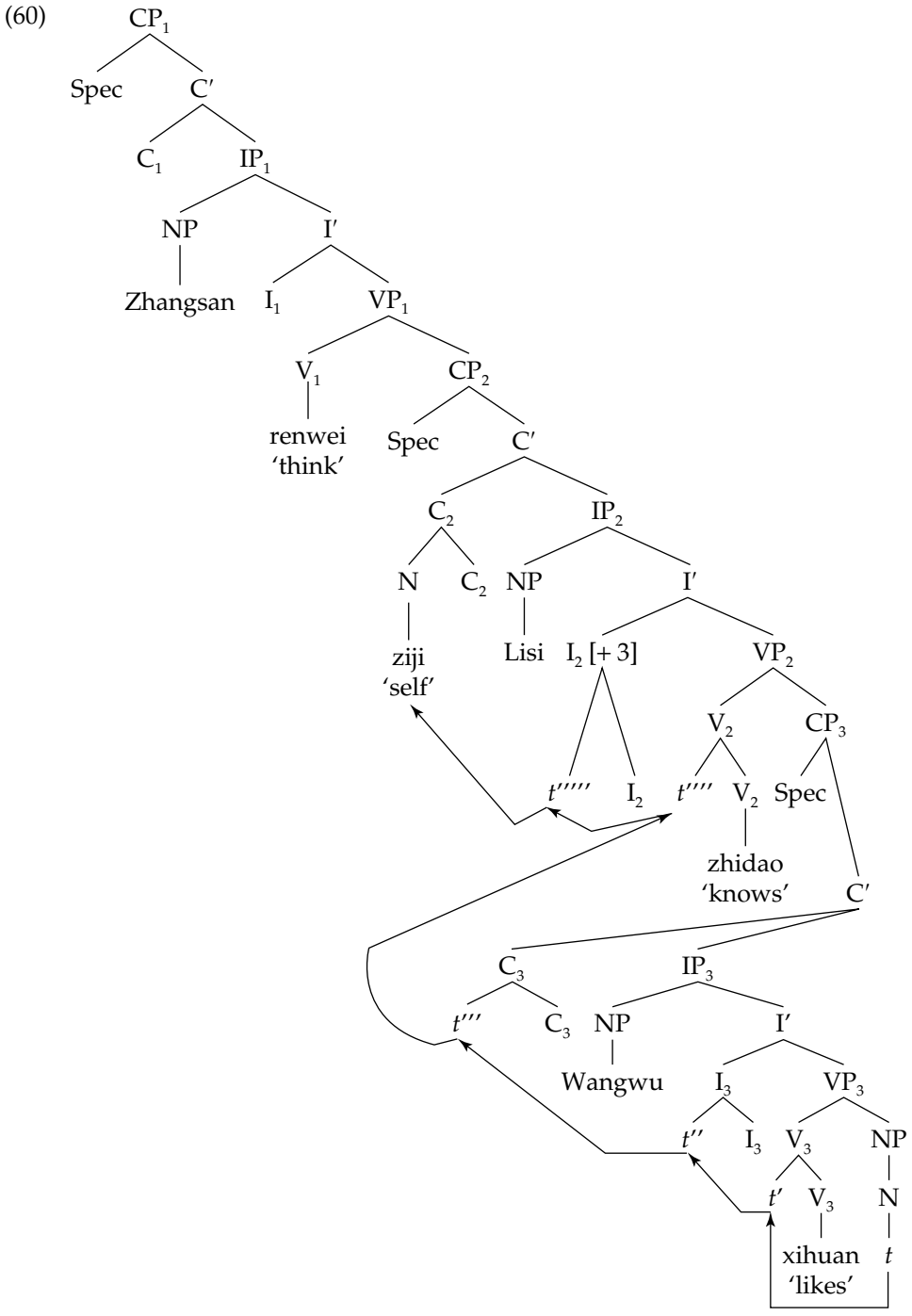
In (58) the reflexive noun *ziji* moves by head movement from the position in which it is originally inserted to the INFL of the clause in which the antecedent occurs. The alternative analysis, in which the XP reflexive adjoins to the IP below its antecedent, is illustrated in (59):

(59) **XP adjunction to IP:**[23]



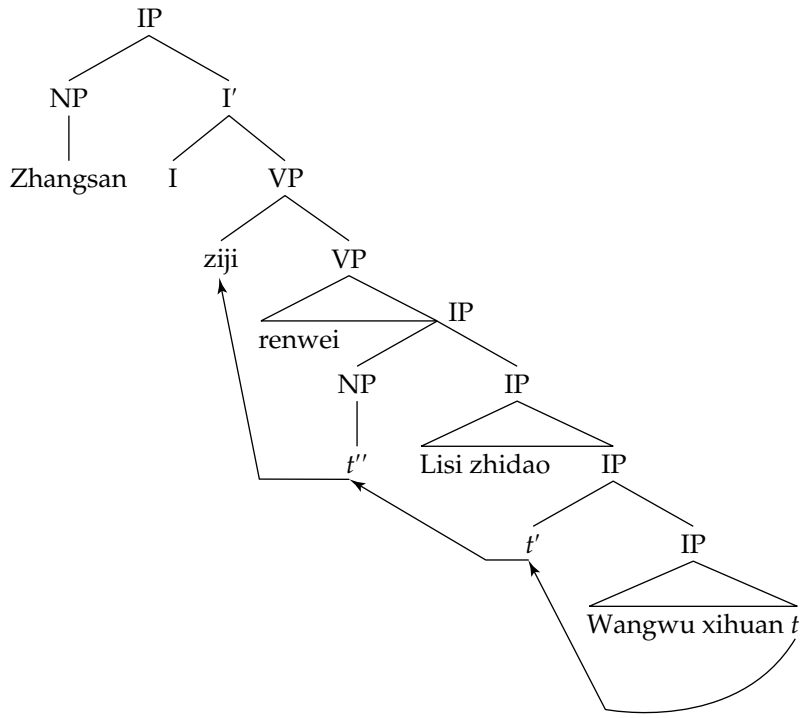
In (59) the XP *ziji* moves by successive-cyclic adjunction to IP from the subordinate clause to a position in which it is adjoined to the IP below the clause containing the antecedent. Note that (58) and (59) differ in two ways: the type of movement (head movement vs. XP movement) and the position to which the reflexive moves (a functional projection in the clause containing the antecedent vs. adjunction to the clause below that in which the antecedent occurs). These two points are in fact separable. Thus, while no one has made such a proposal in the literature, a derivation like (60) is possible:

(60)


CP1
Spec
C′
C1
IP1
NP
I′
Zhangsan
I1
VP1
V1
CP2
renwei
'think'
Spec
C′
C2
IP2
N
C2
NP
I′
ziji
'self'
Lisi
I2 [+ 3]
VP2
V2
CP3
t′′′′′
I2
t′′′′
V2
Spec
zhidao
'knows'
C′
C3
IP3
t′′′
C3
NP
I′
Wangwu
I3
VP3
t′′
I3
V3
NP
t′
V3
N
xihuan
'likes'
t

In (60) *ziji* has moved by head movement to a position roughly equivalent to the position occupied by *ziji* in (59). Similarly, in (61) the XP containing *ziji* adjoins to the VP of the clause in which the antecedent for *ziji* is found:

(61)



10.4 Relative adequacy of differing approaches to movement

10.4.1 Morphological complexity vs. phi-features

We shall now turn to an examination of the degree to which the various versions of the movement analysis predict the primary typological properties of the construction. First, given certain auxiliary assumptions, head movement (derivation (58) and (60)) predicts that long-distance reflexives will be simplex and local reflexives complex.[24] At least in the case of complement clauses like those illustrated here, we may assume that nothing blocks the movement of the noun *ziji* from the clause in which it is generated to matrix INFL (in 58) or COMP (in 60).[25] On the assumption that inter-clausal XP movement is only via the specifier of CP, and making the further assumption that movement via specifier of CP is not possible for reflexives (perhaps because this route is restricted to operators and *ziji* is not an operator), XP reflexives would not be able to move from clause to clause. Thus, it is predicted that only X^0 reflexives can be long distance.

A related but not identical prediction is made by the XP adjunction analysis, again making use of auxiliary assumptions.[26] On the assumption that the property that distinguishes long-distance reflexives from local reflexives is that the former lack phi-features while the latter have them, and making the further assumption that only reflexives without phi-features can be long distance, it would be predicted that only reflexives that are not distinguished for person can be long distance. However, as we saw earlier, while this is a correct characterization of Chinese, it is not in fact generally the case that reflexives with phi-features cannot be long distance. It will be remembered that Chinese *ziji*, Italian *se* and *proprio*, and Icelandic *sig* are all restricted to third person antecedents. But, despite the fact that they are generated with phi-features, *se*, *proprio*, and *sig* can take long-distance antecedents. Thus, an explanation of the simplex nature of long-distance reflexives as due to the correlation between morphological simplicity and the absence of phi-features may seem to be accidental.

The seeming advantage we see here of X^0 movement over XP movement is not absolute, however, as it depends on a battery of auxiliary assumptions, as noted. Alternative assumptions could be made and the argument could be turned around completely. For example, it has been assumed that the bare reflexive *zibun* in Japanese, *ziji* in Chinese, and *proprio* in Italian are operators or operator-bound (see Chierchia 1989; Katada 1991; Huang and Liu 2000), but compound reflexives like *karezisin*, *taziji*, and *se stesso* are not. A similar assumption could be made for *se* and *sig* but not their compound XP counterparts. This distinction between X^0 and XP reflexives can be attributed to the fact that the XP reflexives contain a pronominal component which makes them 'definite' on a par with other pronouns. Such 'reflexive pronouns' (as the traditional term implies), like the normal personal pronouns, are not operators. The bare reflexives, being devoid of a pronominal component, are indefinite operators on a par with indefinite quantifiers like *somebody*, *everybody*. Now, since operators are subject to A′-XP-movement, and A′-XP-movement is well known for creating (apparent) long-distance dependencies (albeit through successive local movements), the fact that bare, monomorphemic reflexives may have long-distance antecedents simply follows from the typical property of operator movement, under the assumption that they are XP operators undergoing LF A′-movement. On the other hand, it is well known that head movement is much more restricted than XP-A′-movement (due to the Head Movement Constraint (HMC), etc.: see note 25), a head-movement approach to bare reflexives may lead us to expect that it allows only local Binding, contrary to fact.

10.4.2 Subject orientation

Turning next to subject orientation, it will be remembered that we argued earlier that subject orientation appears to be reducible to c-command. As shown in section 9.2, subject orientation can be predicted correctly regardless of whether the movement in question is head movement or movement of a maximal projection. What is, however, relevant for the prediction of subject orientation is whether the reflexive moves to a functional projection within the clause containing

the ultimate antecedent or whether the movement is adjunction to the IP below the clause containing the ultimate antecedent.

Consider an example like (62), in which both the matrix and the complement subjects are potential antecedents for *ziji*, but in which the matrix object is not:

(62) Zhangsan$_i$ gausu Lisi$_j$ Wangwu$_k$ bu xihuan ziji$_{i/*j/k}$.
Zhangsan told Lisi Wangwu not like self
'Zhangsan told Lisi that Wangwu does not like him/himself.'

We shall consider two possible derivations for (62). If *ziji* moves to a functional projection within the matrix clause:

(63) [$_{IP}$ Zhangsan$_i$ ziji$_{i,*j,k}$ gausu Lisi$_j$ [$_{IP}$ Wangwu$_k$ bu xihuan *t*]]

the only potential long-distance antecedent is predicted to be *Zhangsan*, since *Lisi* fails to c-command *ziji* at LF. If the movement of *ziji* is to a functional projection in the complement clause:

(64) [$_{IP}$ Zhangsan$_i$, gausu Lisi$_j$ [$_{IP}$ Wangwu$_k$ ziji$_{*i,*j}$ bu xihuan *t*]]

it is predicted that only *Wangwu* is within the local domain of *ziji* at LF, thereby yielding the local interpretation. The interpretation in which *ziji* is co-indexed with *Lisi* is predicted not to occur because there is no derivation in which *Lisi* both c-commands *ziji* and is within the local Binding domain of the reflexive.

In contrast, if *ziji* adjoins to the complement IP, it is predicted that *Zhangsan*, *Lisi*, or *Wangwu* are potential antecedents:[27]

(65) [Zhangsan$_i$, gausu Lisi$_j$ [$_{IP}$ ziji$_{i,j,k}$ [$_{IP}$ Wangwu$_k$ bu xihuan t]]

In (65), unlike (63), *Lisi* c-commands *ziji* and is within the Binding domain of the reflexive.[28] In fact, this interpretation does not occur, a fact which would appear to provide evidence that *ziji* must move to a functional position within the clause in which the antecedent occurs rather than adjoin to the complement clause.

This conclusion, however, is again not necessary. For one thing, as just pointed out in connection with (61), the XP-movement theory could require *ziji* to be adjoined to the matrix VP in (65), where it would not be c-commanded by *Lisi*, thus deriving subject orientation. Second, as just pointed out in connection with (60), head movement of *ziji* could land it at C of the complement CP below the matrix verb in (63), where it is c-commanded by *Lisi*, thus incorrectly allowing

an object antecedent. This latter situation also seems unavoidable even if *ziji* lands finally in the matrix I, since the HMC would require the head to have moved through C^0 on its way to matrix I. Assuming the possibility of reconstruction (cf. note 27), the head-movement hypothesis actually does not ensure subject orientation.

The issue of subject orientation is also complicated by the existence of various counter-examples to subject orientation, such as the experiencer constructions discussed in section 9. Thus, it is a matter of controversy whether it is desirable to predict the occurrence of subject orientation. Ultimately, this question will be decided by the consensus that develops regarding the analysis of constructions like the experiencer construction, a topic which is beyond the scope of this chapter.

10.4.3 The Blocking Effect

Before it is possible to evaluate how well different approaches to reflexive movement account for the Blocking Effect, it is necessary to give further consideration to what Blocking facts need to be explained and whether the appropriate explanation is grammatical or in terms of discourse/pragmatic principles. We shall first consider some facts from Chinese that show that Blocking is not entirely grammatical in nature. It will be remembered that the agreement theory of Blocking predicted that only subjects should induce Blocking. However, as was first shown by Xu (1993) and Yu (1991), first and second person non-subjects can also induce a Blocking Effect:

(66) a. Zhangsan$_i$ shuo [[ni$_j$ zuo de chunshi] haile ziji$_{*i/j}$].
Zhangsan say you do silly deeds harm self.3sg
'Zhangsan says that the silly things you have done have harmed you.'
b. Zhangsan$_i$ shuo [[Lisi$_j$ zuo de chunshi] haile ziji$_{i/j}$].
Zhangsan say Lisi do silly deeds harm self.3sg
'Zhansan says that the silly things Lisi has done have harmed him/you.'

In (66a) the subcommanding specifier of the subordinate subject (*ni* 'you') differs in person features from the matrix subject, but the subordinate subject itself (*ni zuo de chunshi* 'silly deeds you have done') does not: both are third person. However, the subcommander prevents the matrix subject from anteceding *ziji*. In (66b), however, the subcommander and the matrix subject are both third person, and the matrix subject is a possible antecedent for *ziji*.

Furthermore, going beyond Xu and Yu's examples, at least for many speakers, the Blocking Effect can be induced by a non-c-commanding nominal that is not a possible antecedent for *ziji*:

(67) a. Zhangsan$_i$ cong ni$_j$ nar ting shuo Mali$_k$ hen taoyan ziji$_{??i/*j/k}$.
Zhangsan from you there hear say Mary very hate self
'Zhangsan heard from you that Mary hates herself.'

b. Zhangsan$_i$ cong Lisi$_j$ nar ting shuo Mali$_k$ hen taoyan ziji$_{i/*j/k}$.
Zhangsan from Lisi there hear say Mary very hate self
'Zhangsan heard from Lisi that Mary hates herself.'

While neither *ni* 'you' in (67a) nor *Lisi* in (67b) is a possible antecedent for *ziji* (since they fail to c-command/subcommand *ziji*), the fact that *ni* is second person prevents the matrix subject from anteceding *ziji* (or, for some speakers, makes it more difficult for the matrix subject to antecede *ziji*). In contrast, when *ni* is replaced by a third person nominal (*Lisi*), it is not problematic for the matrix subject to be the antecedent for *ziji*.

Reduced felicity is also found when a first or second person pronoun occurs in a position in the sentence which the agreement theory of Blocking would predict to be irrelevant to Blocking:

(68) a. Zhangsan$_i$ zhidao Mali$_j$ gen ziji$_{??i/??j}$ shuoguo ni xiang qu Taiwan.
Zhangsan knows Mary with self said you want go Taiwan
'Zhangsan knows Mary told him/herself that you want to go to Taiwan.'
b. Zhangsan$_i$ zhidao Mali$_j$ gen ziji$_{i/??j}$ shuoguo Lisi xiang qu Taiwan.
Zhangsan knows Mary with self said Lisi want go Taiwan
'Zhangsan knows Mary told him/herself that Lisi want to go to Taiwan.'

The second person nominal in (68a) does not intervene between *ziji* and its antecedent. Despite this fact, (68a) is less felicitous than (68b), in which *ni* 'you' is replaced by a third person nominal, *Lisi*. While explanations for (66) are possible in variants of the agreement theory of Blocking,[29] examples like those of (67) and (68) cannot be explained by such an account. These facts suggest that Blocking must have a major discourse component, which can be summarized as below, using the terminology of Sells (1987):

(69) **Discourse requirement in Chinese:**
a. The antecedent for an LD reflexive must be the internal PIVOT.
b. The presence of a first or second person pronoun anywhere in the sentence constitutes an external PIVOT, which blocks the possibility of an internal PIVOT.

In fact, something more general than (69b) seems to hold: the presence of *any* distinct PIVOT in a given sentence blocks the possibility of another PIVOT serving as the antecedent of an LD reflexive. The Blocking element can be a PIVOT associated with a first or second person pronoun as illustrated above, or it may be associated with a third person nominal element. For example, in Huang and Liu (2000), it is shown that a third person DP may induce Blocking if it is introduced deictically. In the example below, the pointing finger indicates that the speaker points to the referent of *neige ren* 'that person' in uttering the sentence:

(70) Zhangsan shuo [☞ ta qipian-le ziji].
Zhangsan said he/she cheate-Perf self
'Zhangsan said that he/she cheated himself/herself.'

The reflexive must be bound by *ta* but not by *Zhangsan*. This happens because the deictic use of *ta* establishes it as an (external) PIVOT, thus blocking the possibility of a distinct PIVOT as an LD antecedent of *ziji*.

Another case of PIVOT-Blocking occurs in sentences with multiple occurrences of *ziji*. In the example below (from Pan 1997), note that the most deeply embedded clause contains two occurrences of *ziji*:

(71) Zhangsan renwei Lisi zhidao [Wangwu ba $ziji_1$ de shu song-gei-le $ziji_2$
Zhangsan think Lisi know Wangwu BA self's books gave to self's
de pengyou].
friends
'Zhangsan thinks that Lisi knows that Wangwu gave self's books to self's friends.'

While both $ziji_1$ and $ziji_2$ may take *Zhangsan* or *Lisi* as their long-distance antecedents, the two reflexives may not take separate LD antecedents so that $ziji_1$ refers to *Zhangsan* while $ziji_2$ refers to *Lisi*, or vice versa. The sentence cannot mean that Zhangsan thinks that Lisi knows that Wangwu gave Zhangsan's books to Lisi's friends, or that Zhangsan thinks that Lisi knows that Wangwu gave Lisi's books to Zhangsan's friends.

Note that in (71) (as in (70)), all noun phrases involved are in the third person, so agreement cannot play a role in accounting for the Blocking Effect observed. From a discourse perspective, however, a natural explanation is that Blocking again occurs as a result of potential pivotal conflicts. In particular, having *Zhangsan* as a long-distance antecedent for one occurrence of *ziji* presupposes its status as an (internal) PIVOT of the sentence, and this prevents *Lisi* from being also a PIVOT and a potential long-distance antecedent for another occurrence of *ziji*; and vice versa.

In short, it is clear that Blocking has a discourse component along the lines of (72):

(72) **Discourse requirement in Chinese (revised):**
a. The antecedent for an LD reflexive must be a PIVOT.
b. The presence of a PIVOT (external or internal) in a sentence prevents a reflexive from taking any other distinct DP as a long-distance antecedent.

Having made a strong case for the relevance of discourse, a natural question arises: does this mean that Blocking is a purely discourse phenomenon? We think not. First, the typological facts that led to the agreement theory of Blocking are

not explained by the discourse theory of Blocking (if the typological facts hold up when more languages are examined). Second, there are facts internal to Chinese that give support to an agreement-based approach, independent of the discourse principle in (72). Cole and Wang (1996) note that while both subjects and the nominals following *ba/bei* are possible antecedents for LD reflexives (as discussed in section 9.2), subjects create strong Blocking Effects while the nominals following *ba/bei* do not:

(73) a. Zhangsan$_i$ yiwei wo$_j$ hui ba ni$_k$ dai hui ziji$_{*i/j/k}$ de jia.
Zhangsan thought I will BA you take back self 's home
'Zhangsan thought I would take you back to *his/my/your home.'

b. Zhangsan$_i$ yiwei wo$_j$ hui bei ni$_k$ dai hui ziji$_{*i/j/k}$ de jia.
Zhangsan thought I will by you take back self 's home
'Zhangsan thought I would be taken by you back to *his/my/your home.'

c. Zhangsan$_i$ yiwei Lisi$_j$ hui ba ni$_k$ dai hui ziji$_{i/j/k}$ de jia.
Zhangsan thought Lisi will BA you take back self 's home
'Zhangsan thought Lisi would take you back to his/my/your home.'

d. Zhangsan$_i$ yiwei Lisi$_j$ hui bei ni$_k$ dai hui ziji$_{i/j/k}$ de jia.
Zhangsan thought Lisi will by you take back self 's home
'Zhangsan thought Lisi would be taken by you back to his/my/your home.'

The sentences of (73a–b) show that a second person nominal following *ba/bei* is a possible antecedent for *ziji*. The nominal following *ba/bei*, however, does not block reference to the subject of that clause. A first person subordinate subject, however, blocks reference by *ziji* to the matrix subject. In contrast, in (73c–d), in which the subordinate subject is third person, reference to the matrix subject is possible. This pattern is explained if only subjects result in Blocking (since only subjects occur as the specifier of AGR), but any c-commanding nominal (including the nominals following *ba/bei*) is a potential antecedent for *ziji*.[30]

The facts of (73) appear to contradict the claim made earlier in this section that the occurrence of a first or second person pronoun anywhere in the sentence will cause a Blocking Effect. In fact, however, a comparison of (73c–d) with (74) shows that a mild Blocking Effect has occurred in (73):

(74) a. Zhangsan$_i$ yiwei Lisi$_j$ hui ba Xiao Ming$_k$ dai hui ziji$_{i/j/k}$ de jia.
Zhangsan thought Lisi will BA you take back self 's home
'Zhangsan thought I would take Xiao Ming back to his/my/your home.'

b. Zhangsan$_i$ yiwei Lisi$_j$ hui bei Xiao Ming$_k$ dai hui ziji$_{i/j/k}$ de jia.
Zhangsan thought Lisi will by you take back self 's home
'Zhangsan thought I would be taken by Xiao Ming back to his/my/your home.'

While in (73c–d) it is possible to understand *ziji* as referring to *Zhangsan*, this reading is much more salient in (74). That is, a mild Blocking Effect occurs in (73c–d) due to the occurrence of a second person pronoun following *ba/bei*. The strength of the Blocking, however, is much less than in (73a–b), in which a first person pronoun occurs in subject position. This is precisely the pattern that would be expected if agreement-based Blocking is *independent of* discourse Blocking. Discourse-based Blocking would result in some degree of Blocking simply because a first or second person pronoun occurs, thereby introducing an external PIVOT to the sentence. Agreement-based Blocking, however, would occur only when there is a change in the person of the subject. Thus, Blocking by subjects should be stronger than Blocking by non-subjects, since in the case of subjects both agreement-based Blocking and discourse-based Blocking occur. In the case of non-subjects, however, only discourse-based Blocking would apply. The pattern just described would have no explanation if all Blocking is due entirely to discourse constraints. Thus, the pattern of Blocking found in *ba/bei* sentences constitutes an argument that both agreement-based and discourse-based Blocking exist in Chinese.

An additional argument that the Blocking Effect has a grammatical as well as a discourse basis is provided by a close examination of sentences in which a third person subject blocks a first or second person antecedent, as in (75):

(75) Zhangsan$_i$ renwei [wo$_j$ zhidao [Wangwu$_k$ xihuan ziji$_{*i/??j/k}$]].
Zhangsan think I know Wangwu like self
'Zhangsan thinks that I know that Wangwu likes himself.'

Let us consider (75) from the perspective of discourse. The presence of *wo* 'I' in (75) is predicted to force the speaker to be the external PIVOT in (75), thereby preventing *Zhangsan* from being the internal PIVOT. Since only the PIVOT can be the antecedent for LD *ziji*, it is predicted that the possible antecedents for *ziji* in (75) are the local subject, *Wangwu* (since local subjects are not affected by logophoric conditions), or the intermediate subject, *wo* (since *wo* is the PIVOT), but not the matrix subject, *Zhangsan* (which is neither local nor the PIVOT). That is, first and second person are predicted to block third person (since first and second person induce an external PIVOT), but third person is predicted not to block first and second person.[31]

It is true that Blocking of first person by third person is somewhat weaker than Blocking of third person by first person, as in (76):

(76) Zhangsan$_i$ renwei [Wangwu$_j$ zhidao [wo$_k$ xihuan ziji$_{*i/*j/k}$]].
Zhangsan think Wangwu know I like self
'Zhangsan thinks that Wangwu knows that I like myself.'

However, the hypothesis that blocking is due entirely to discourse predicts that reference by *ziji* to the intermediate subject in (75) would be as well-formed as is reference to the intermediate subject in (1) (repeated here):

(1) Zhangsan$_i$ renwei Lisi$_j$ zhidao Wangwu$_k$ xihuan ziji$_{i/j/k}$.
Zhangsan think Lisi know Wangwu like self
'Zhangsan thinks Lisi knows Wangwu likes self.'

This, however, is not the case; reference to the intermediate subject is worst in (76), bad in (75), and good in (1).

These gradations in well-formedness are not predicted by either the grammatical or the discourse hypothesis alone. If, however, both discourse and grammar play a role in the Blocking Effect, the gradations of well-formedness are predicted correctly: (1) is best because it does not violate either grammatical or discourse restrictions; (75) is somewhat ill-formed because it violates grammatical but not discourse conditions; finally, (76) is worst because it is ill-formed in terms of both grammar and discourse.

We conclude that there is considerable evidence that the Blocking Effect in Chinese is due in part to discourse and in part to grammar. As far as we can tell, the grammatical component in Blocking seems best explained by the agreement theory of Blocking. Thus, we shall now examine whether the agreement theory of Blocking is compatible with the theories of reflexive movement that are under consideration.

The analysis in section 9.3, in which the agreement theory of Blocking was introduced, assumed that reflexives move by head movement and that the final position of the reflexive is the INFL or AGR of the clause containing the antecedent. Thus, the traditional head-movement analysis is fully compatible with the agreement theory of Blocking: the reflexive adjoins to INFL/AGR, and, in those languages in which INFL/AGR is generated without phi-features, the reflexive passes its phi-features to INFL/AGR. If the specifier of INFL/AGR does not agree with INFL/AGR (and, hence, the reflexive) in phi-features the sentence will be ill-formed. Let us turn next to the variant of the movement analysis, the XP-movement analysis, in which the reflexive adjoins to IP rather than to INFL/AGR. In this analysis the reflexive is not adjoined to INFL/AGR, so it is not immediately apparent why the phi-features of the reflexive should be passed to INFL/AGR. Thus, it might appear that XP-movement fails to predict the grammatical component in Blocking. Let us assume, however, that the Feature Percolation Principles ((50), repeated here) assumed for head movement also apply in the case of XP-movement:

(50) **The Feature Percolation Principles (FPP):**
a. The features of the mother node and the features of the daughter nodes will be identical.
b. If the features of the daughter nodes conflict, the mother node will have the features of the head node.

According to (50), if a reflexive with the feature [+3] is adjoined to IP, the feature [+3] will be passed on to all projections of I unless I has features that conflict with

[+3]. Thus, on the assumption that the reflexive is adjoined to the projection-bearing agreement (IP or AGRP), the XP-movement analysis makes the same predictions as the head-movement analysis. Both variants of movement appear to make correct predictions regarding the grammatical component of the Blocking Effect.

To summarize, in all the three areas considered, the two variants of the movement approach appear to be equally adequate. Under different assumptions, both head movement and XP movement are able to predict that long-distance reflexives are monomorphemic and (strictly) local reflexives complex. With regard to subject orientation, head movement and XP movement make the same predictions. The determining factor with regard to subject orientation is whether movement is movement to an initial position in the clause subordinate to that containing the antecedent, or movement to a position in the cause containing the antecedent. Finally, the grammatical component of the Blocking Effect is correctly predicted by both variants of movement. We conclude that movement theories of long-distance reflexives appear to capture well the core typological properties of long-distance reflexives. The facts that distinguish between the two variants on movement appear to be quite subtle in nature, and in the few cases in which there are differential predictions, the predictions are due primarily to subsidiary assumptions. Thus, we conclude that the evidence does not allow a clear decision regarding which variant of movement is to be preferred.

10.5 Long-distance reflexives in islands

We have shown in section 10.4 that movement analyses appear to make a number of desirable predictions regarding bound anaphor long-distance reflexives. There is, however, a serious problem with the movement analyses. An LF-movement analysis predicts that LD reflexives should not be grammatical in environments out of which movement is blocked. Thus, LD reflexives are predicted not to occur in syntactic islands (Ross 1986, inter alia), but such sentences are well-formed:

(77) ***Ziji* within the relative clause:**
Zhangsan renwei [Wangwu kanjian [$_{CP}$ neige taoyan ziji de ren$_k$]].
Zhangsan think Wangwu see that dislike self REL person
'Zhangsan thinks Wangwu saw the person who dislikes him/himself (Zhangsan, Wangwu or the person).'

(78) ***Ziji* within the adjunct clause:**
Zhangsan renwei [Wangwu shuo [$_{CP}$ rugoo Lisi piping ziji], ta jiu bu qu.
Zhangsan think Wangwu say if Lisi criticize self he then not go
'Zhangsan thinks that Wangwu said that if Lisi criticized him/himself (Wangwu, Lisi or Zhangsan), then he won't go.'

The structure of (77–78) is roughly that of (79–80) or (81–82), depending on which variant of the movement analysis is chosen (the island structure is shown in boldface):

(79) **LF structure of *ziji* within the relative clause (head movement):**
Zhangsan [$_{I}$ ziji] renwei [Wangwu kanjian [neige [$_{CP}$ **taoyan** *t*] de ren$_{k}$]].
Zhangsan self think Wangwu see that dislike REL person
'Zhangsan thinks Wangwu saw the person who dislikes him/himself (Zhangsan, Wangwu or the person).'

(80) **LF structure of *ziji* within the adjunct clause (head movement):**
Zhangsan [$_{I}$ ziji] renwei [Wangwu shuo [$_{CP}$ **rugoo Lisi piping** *t*], ta
Zhangsan self think Wangwu say if Lisi criticize he
jiu bu qu].
then not go
'Zhangsan thinks that Wangwu said that if Lisi criticized him/himself (Wangwu, Lisi or Zhangsan), then he won't go.'

(81) **LF structure of *ziji* within the relative clause (XP movement):**
Zhangsan renwei [$_{IP}$ ziji] [$_{IP}$ Wangwu kanjian [neige [$_{CP}$ **taoyan** ***t***] de ren$_{k}$]].
Zhangsan think self Wangwu see that dislike REL person
'Zhangsan thinks Wangwu saw the person who dislikes him/himself (Zhangsan, Wangwu or the person).'

(82) **LF structure of *ziji* within the adjunct clause (XP movement):**
Zhangsan renwei [$_{IP}$ ziji] [$_{IP}$ Wangwu shuo [$_{CP}$ **rugoo Lisi piping** *t*]], ta
Zhangsan think self Wangwu say if Lisi criticize he
jiu bu qu.
then not go
'Zhangsan thinks that Wangwu said that if Lisi criticized him/himself (Wangwu, Lisi or Zhangsan), then he won't go.'

In (79–82) the reflexive moves out of a modifying or adjunct clause, a movement that violates Subjacency or the Constraint on Extraction Domains (or contemporary analogues), and which thus would be predicted to result in ungrammaticality.

Explanations for such violations of island constraints have been proposed for both head movement and XP movement. For example, Huang and Tang (1991) argue that this pattern of island violation by XP movement in LF is in fact not surprising, given what we know about the syntax of *wh*-in-situ. Since Huang (1982b), it has been well known that argument *wh*-phrases in situ do not exhibit Subjacency or CED effects (although adjunct *wh*-phrases do). This is true both of normal *wh*-questions in Chinese-type languages and of multiple questions in English-type languages. Thus, in Chinese it is possible to ask a question about an argument within a relative clause or an adjunct, as shown in (83–84); and in English a direct multiple question may have one (more) of its *wh*-phrases located within such an island, as shown in (85–86):

(83) Ni zui xihuan [shei xie de shu]?
you most like who write DE Book
'You like the books that who wrote most?'

(84) Ni shi zai [shei lai-le yihou] cai zou de?
you be at who came after then leave Prt
'You left after who had come?'

(85) Who bought the books who wrote?

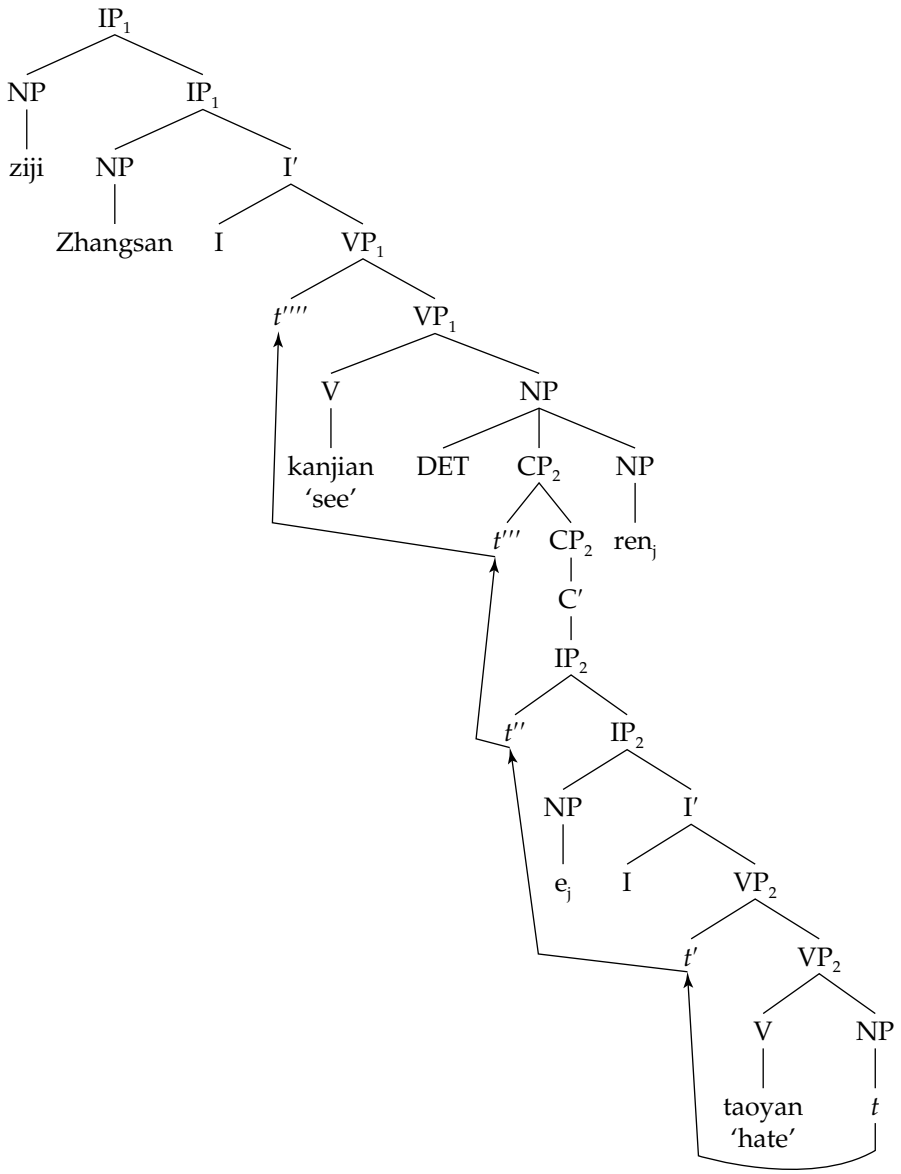
(86) Who left after who arrived?

Given the pattern exhibited by (83–86), the island violations described in (81–82) in fact come as no surprise. In all these cases, LF movement affects an argument. A *wh*-in-situ in argument position seems to exhibit no LF island effects, so an LD reflexive, also an operator occurring in argument position, also exhibits no LF island effects. In other words, given the facts of (83–86) as they are, the facts of the LD reflexive represented by (81–82) present no new empirical problem, and no surprise. Whatever explains the well-formedness of (83–86) can also explain the well-formedness of (81–82).

Of course, the facts of (83–86) themselves pose a theoretical problem, as to why covert extraction of arguments in LF should differ from overt extraction in Syntax. This question is addressed in Fiengo et al. (1988), where it is argued, on the basis of the *Barriers* system, that the observed island violations shown in (83–86) are only apparent violations. In line with the *Barriers* framework, Fiengo et al. assumed (i) that IP adjunction is not available in overt Syntax but available in LF, where QR, an IP adjunction operation, applies; (ii) that adjunction of α to a category β has the effect of 'debarrierizing' the boundary of β;[32] and (iii) that *wh*-in-situ phrases are both quantifiers and interrogative phrases: they move first qua quantifiers by successive-cyclic adjunction and then qua interrogatives by substitution into Spec, CP. Given the availability of IP adjunction, it is in fact a consequence of the *Barriers* system that *wh*-in-situ may escape the effects of island constraints, since all island barriers may be voided by the adjunction operation. That is, the island violations are only apparent; given the possibility of successive adjunction, no island effects are visible at all.

Huang and Tang (1991) proposed that the fact that LD reflexives do not exhibit island effects simply follows from the *Barriers* system as explicated by Fiengo et al. (1988), under the assumption that the bare reflexives are operators that undergo IP adjunction in LF, on a par with argument *wh*-phrases in situ (which involve an additional step of movement into Spec, CP). The availability of LD binding in (81–82) comes about because *ziji* could move out of a relative clause or adjunct island by successive cyclic adjunction. The following illustrates successive cyclic adjunction out of a relative clause:

(87)



Although covert argument extraction in general does not display island effects, it has also been well known that covert adjunct extraction does so:

(88) ***Wh*-extraction of adjuncts out of islands:**
a. *Suiran Lisi weishenme mei lai, ni haishi bu shengqi?
though Lisi why not come you still not angry
'Though Lisi didn't come why, you weren't angry?'

b. *Ni zui xihuan [ta weishenme mai de shu]?
you most like he shy buy REL book
'You like the book that he bought why?'

To account for the argument–adjunct asymmetries of this sort and other related facts, it was proposed by Huang (1982b) that while Subjacency/CED obtains only in overt syntax, the Empty Category Principle obtains in both overt Syntax and LF. Recall that the successive-cyclic adjunction hypothesis was used to explain the lack of covert Subjacency/CED effects by showing that, given the availability of successive-cyclic adjunction through IP in LF, such island effects are in principle invisible. The question now arises why, given the availability of successive-cyclic adjunction, covert adjunct extraction still displays clear ECP effects.

In order to solve this problem, Fiengo et al. (1988) suggested that adjunction to a maximal projection debarrierizes that projection only for Subjacency, but not for Government. Therefore, the extraction of arguments out of islands will be predicted to be well-formed since arguments are always lexically governed (or theta-governed). In contrast, the extraction of adjuncts will result in a violation of proper Government, since the adjunction node blocks proper Government from the outside.

As indicated in note 32, the idea is that adjunction debarrierizes a barrier by breaking a barrier into two segments, thus allowing an item to cross one segment at a time out of the barrier. Fiengo et al.'s proposal amounts to saying that, while a segment of a barrier is not enough to block movement, it is strong enough to block proper Government. This is not an unreasonable assumption since there is independent evidence that Government is blocked by 'weak barriers'. For example, a negative phrase does not create a Subjacency barrier, but does count as a barrier for ECP (Ross's 1986 'inner islands'; also Rizzi 1990b). Furthermore, complements to factive or non-bridge verbs must count as barriers for ECP:

(89) a. This book, which you like, has won the Pulitzer Prize.
b. This book, which you don't like, has won the Pulitzer Prize.

(90) a. This book, as you know, has won the Pulitzer Prize.
b. *This book, as you don't know, has won the Pulitzer Prize.

(91) a. What did you regret that John had stolen?
b. *Why did you regret that [John had stolen the key t]?

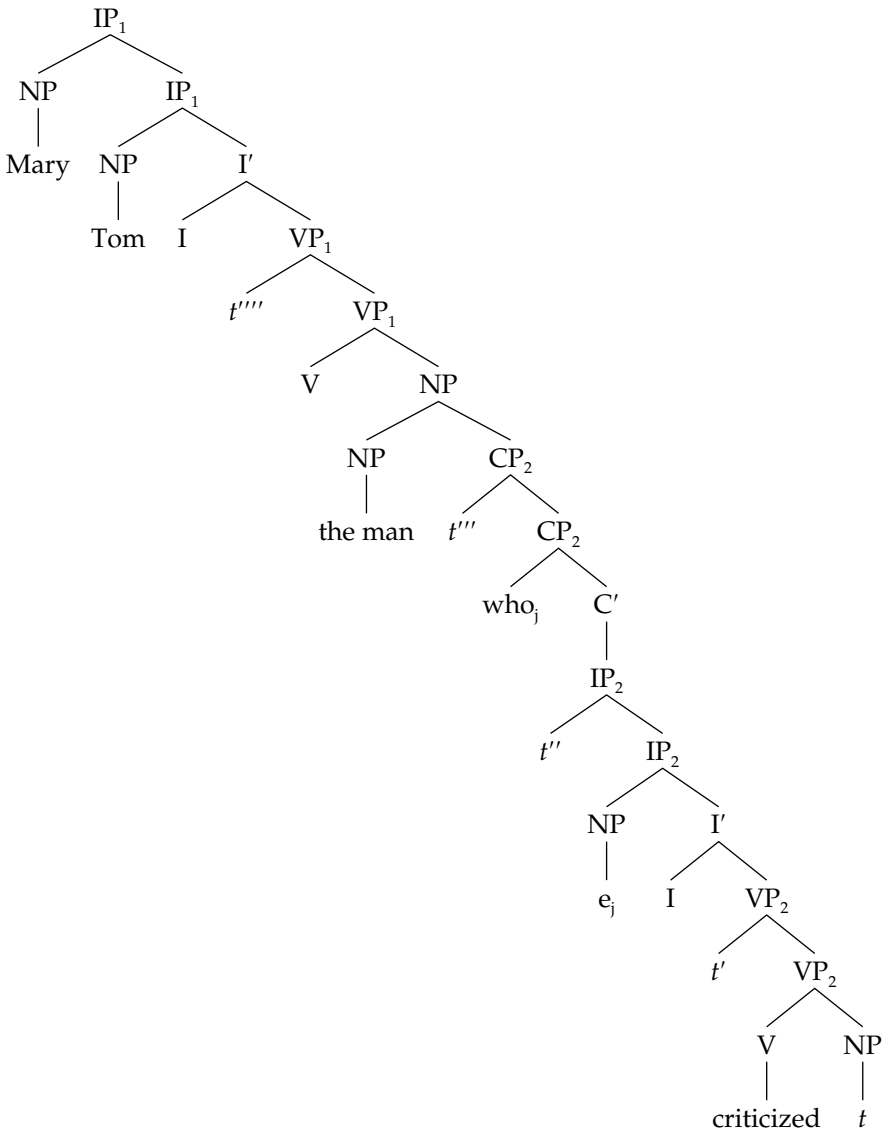
(92) a. What prize did John whine that he never got?
b. *Why did John whine that [he never got that prize t]?

Although this approach to (apparent) island violations of the LD reflexives seemed satisfactory given the set of assumptions made in the *Barriers* framework, it is ultimately called into question because the *Barriers* framework depends on stipulations some of which seem entirely unexplained. For example, while the

Barriers system allows covert IP adjunction (to allow for QR and similar processes), it specifically prohibits IP adjunction in overt syntax. This is necessary for the system to work, as Chomsky (1986b) notes, or most island effects would not be derived at all. For example, if IP adjunction were allowed in overt syntax, (overt) movement out of a complex NP would be licit – as shown in (93) and (94) – an incorrect result:

(93) *Mary, Tom saw the man who criticized *t*.

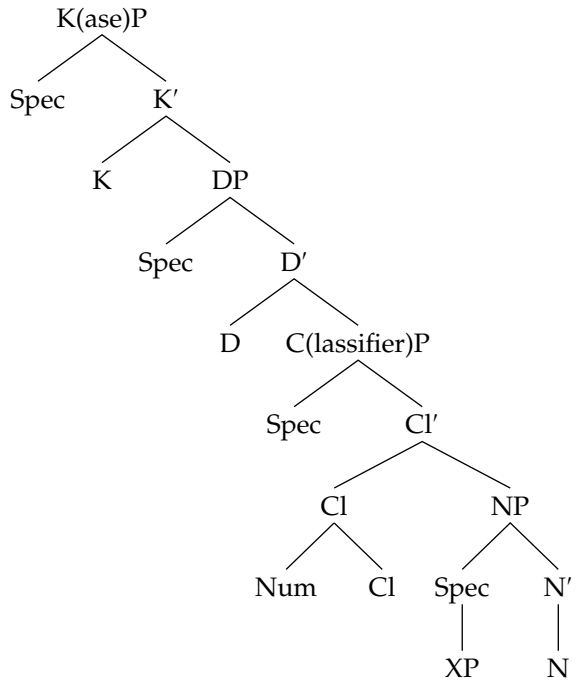
(94)



In other words, the *Barriers* system must include arbitrary stipulations in order for it to work in overt syntax, and at the same time not include such stipulations for it to work in covert syntax. Such undesirable stipulations undercut the fundamental assumptions of current Minimalist thinking. Thus, this account of why LD reflexives are possible in islands seems untenable.

An approach to this problem within the context of the head-movement analysis was proposed by Sung and Cole (1991). Sung and Cole argue that head movement can provide an account of the island facts if more complex structures are adopted for Chinese, based on Tang (1990). Tang proposed that Chinese relative clauses have the following structure:

(95) **Tang's structure for the Chinese noun phrase:**

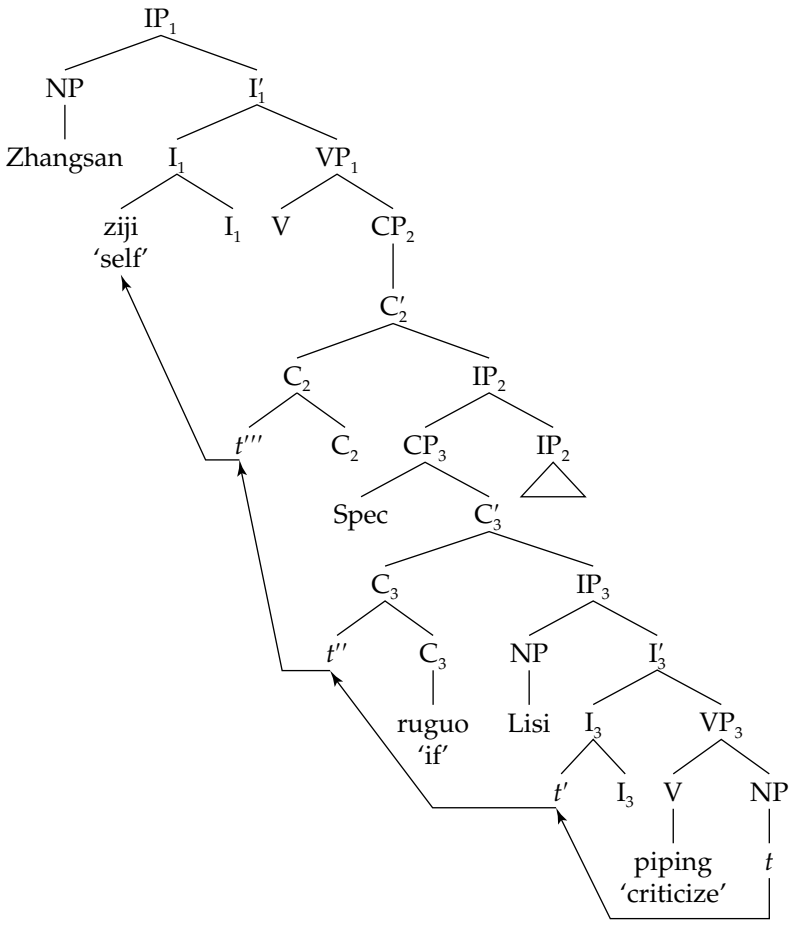


According to Sung and Cole, given Tang's proposed structure for the Chinese relative clause, with slight modification in the assumptions made in *Barriers* (Chomsky 1986b), relative clauses and adjunct clauses will be predicted not to be islands for head movement but to be islands for XP movement:

(96) **Modified assumptions:**
In order for a head to L-mark a maximal projection, it must: (i) be a lexical rather than a functional head; and (ii) govern the maximal projection.

Let us consider the application of head movement to a reflexive inside an adjunct clause:

(97)



Per (97), the movement of *ziji* to C_2 will make C lexical. This will also cause C_2 to L-mark CP_3. Thus, the extraction of *ziji* will be well-formed. The assumptions in (88) will not allow the extraction of an adjunct XP from an adjunct. This is because an XP cannot move to C_2 and void the islandhood of CP_3. Thus, given (97), head movement makes the correct predictions regarding extraction from adjuncts.

We shall turn next to reflexives in relative clauses:

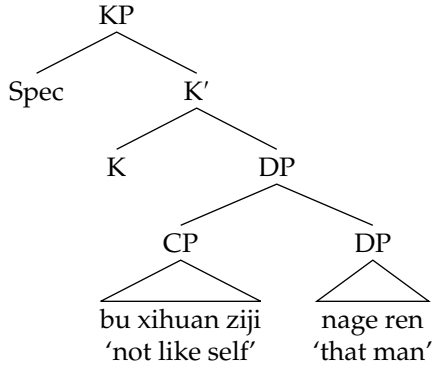
(98) a. **Predeterminer relative clause in Chinese:**
ec lai zheli de nage ren
come here REL that man
‘the man that came here’

b. **Postdeterminer relative clause in Chinese:**
nage ec lai zheli de ren
that come here REL man
‘the man that came here’

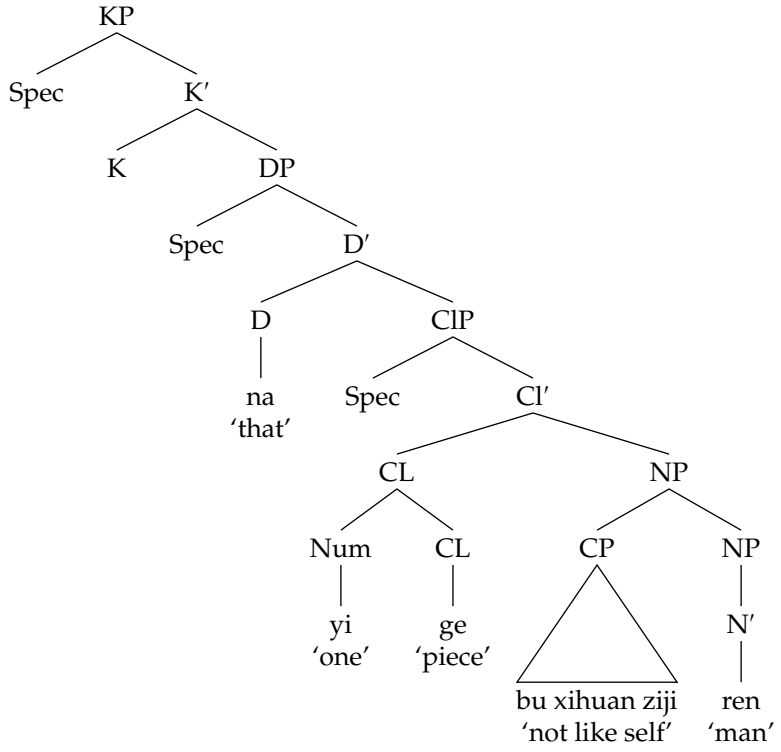
In (99a–b) the CP is governed by a functional head: K in the case of (99a) and Cl in the case of (99b):

(99) a. Zhangsan bu xihuan bu xihuan ziji de nage ren.
Zhangsa not like not like self REL that man
'Zhangsan does not like the man who does not like him/himself.'
b. Zhangsan bu xihuan nage bu xihuan ziji de ren.
Zhangsa not like that not like self REL man
'Zhangsan does not like the man who does not like him/himself.'

(100) a.



b.



In (100a–b) the modifying clause is governed by a functional category: K in the case of (100a) and Cl in the case of (100b). Thus, if *ziji* moves by head movement to K or Cl, the governing functional category will thereby become lexical and CP will cease to be a barrier: in both (100a) and (100b) the movement of *ziji* to the functional category governing the modifying CP makes that functional category lexical, and thereby debarrierizes the CP. But the movement of an XP from a modifying clause would not have that effect, since an XP could never move to an X^0 position. Thus, while adjunct and relative clause CPs are predicted not to be barriers for head movement, they are predicted to be barriers for XP movement.

The account just described, like that proposed for XP movement, suffers from both empirical and theoretical defects. From an empirical perspective, it makes the prediction that the existence of an LD reflexive inside an island enables other elements to move out of the island. This is so, because once *ziji* head-moves to I and L-marks the island, the island ceases to be an island for the movement of other categories as well. But this prediction is clearly incorrect for either overt movements (as in (101)) or covert movements (as in (102)):

(101) *Lisi, Zhangsan bu xihuan [t song-gei ziji de shu].
Lisi Zhangsan not like [t gave self DE book]
'*Lisi_i Zhangsan_j does not like the books that [t_i gave to self_j].'

(102) *Zhangsan, bu xihuan [weishenme piping ziji de ren].
Zhangsan not like [why criticize self DE person]
'*For what reason x, Zhangsan_j does not like the person who criticized self_j for x.'

Specifically, the account predicts that these sentences would be grammatical just in case the reflexive is bound LD by *Zhangsan*, but not if it is locally bound. But this prediction is not fulfilled. It should be noted, however, that this objection may not hold if the L-marking of the island is viewed as applying only at the stage of the derivation when the moved head governs the island, and not at subsequent stages in the derivation when the reflexive has moved on to its ultimate target. On this view *ziji* debarrierizes the island for itself but not for subsequent movement.

More generally, this account suggests that head movement should, in general, be possible from inside islands, but in fact, with the exception of LD reflexives, head movement is very local in nature. For instance, verbal inflection from one clause does not move by head movement onto the verb of a higher clause. Thus, an account that allows heads the freedom to move irrespective of barriers that affect XP movement would seem to make precisely the wrong claim for all putative head-movement constructions other than reflexive movement. With respect to theory, the account just proposed is based on the assumption, taken from *Barriers*, that islandhood is due to movement across an un-L-marked node. However, the notion of L-marking, based on Government, seems quite antithetical to

the fundamental assumptions of Minimalism. Thus, this explanation for the occurrence of LD reflexives in islands seems implausible.

We have argued at some length that two seemingly plausible explanations for the occurrence of LD reflexives in islands are both inadequate. We therefore conclude, that the fact that reflexives can occur in islands continues to pose non-trivial theoretical questions as to their explanation. To conclude this section, we have shown that while movement has important advantages over other analyses of long-distance reflexives, the analysis suffers from the absence of a satisfactory explanation of the occurrence of reflexives in islands. This suggests that a new analysis is needed, one which has the advantage of predicting correctly the core typological characteristics of LD reflexives and which is compatible with, or predicted by, an optimal theory of movement and constraints.

11 Conclusion: economy and long-distance reflexives

We would like to end this chapter by examining the ways in which the facts described in previous sections might contribute to our understanding of how long-distance reflexives fit into the anaphoric possibilities for natural language. We have seen that there appear to exist three kinds of entities which might be considered 'long-distance reflexives' in a pre-theoretical sense: long-distance bound anaphors, forms which are indeterminate between local reflexives and pronouns, and reflexives which undergo 'conversion' from bound anaphor to pronominal in specific syntactic and pragmatic contexts. Reuland (2001; and see chapter 33) discusses two types of reflexives (local reflexives and those that have undergone 'logophoric conversion' to pronominals), and notes that they are in complementary distribution: local reflexives undergo 'conversion' to pronominals when (i) anaphoric binding is blocked in the syntax and (ii) they satisfy certain logophoric conditions. This distribution suggests that local reflexives are given pronominal interpretation only if, given the specific syntactic properties of the language in question, they lack an eligible local antecedent as bound anaphors (e.g., per Reuland, Binding is blocked by subjunctive mood in Icelandic). That is, the complementarity derives from a principle of Avoid Pronoun, which requires that a form which is inherently capable of interpretation as either a pronominal (i.e., by coreference) or an anaphor (by Binding) must receive interpretation as a bound anaphor in contexts where an anaphoric interpretation is possible.

Why might such a preference for anaphoric interpretation exist? Reuland argues that the complementarity can be explained if we assume that local reflexives constitute a chain, a single syntactic object, perhaps as a result of movement of the reflexive. Reuland proposes that interpretation in which syntax and semantics work in tandem (i.e., by chain formation, in which a Binding relationship is forced by the existence of the chain) is inherently 'cheaper' than interpretation

by coreference (in which real-world information plays a role in the interpretive process).[33] Thus, whenever a single form can either form a chain (and, hence, receive a bound anaphor interpretation) or be interpreted pronominally, the possibility of the more economical chain interpretation should eliminate the possibility of pronominal interpretation. Pronominal interpretation should occur only when, for some reason, chain formation is blocked.[34]

We would like to extend this proposal from local reflexives to bound anaphor long-distance reflexives. Let us assume that this type of long-distance reflexive is derived by movement, putting aside the problems discussed in section 10.5. (We also abstract away from the issue of whether the movement is head movement or phrasal movement, whether it is adjunction to IP or to AGR, and what drives the movement.) If bound anaphor long-distance reflexives are derived by movement, chain formation must also occur in the case of bound anaphor long-distance reflexives. This predicts that in languages in which long-distance chain formation is possible, a c-command relationship would hold between the reflexive and its antecedent, and the reflexive would receive a sloppy rather than a strict interpretation under ellipsis. This extension of Reuland's analysis would predict that only when chain formation is somehow blocked would a pronominal interpretation become possible. This prediction appears to be correct, at least with respect to Chinese. As was pointed out by Yu (1992, 1996) and others, when *ziji* is unbound syntactically it receives a pronominal interpretation which is subject to logophoric requirements:

(103) Bu qinchu ziji shenme shihou neng qu Meiguo niansu;
not clear self when can go US read.book
Xiao Li ye zheme juede.
Little Li also thus feel
'It is not clear when I can go to the US to study. Little Li feels the same way.'

In (103) there is no syntactic binder for *ziji*. As predicted, the absence of a syntactic binder allows *ziji* to receive a pronominal interpretation, as is shown by the fact that the elliptical clause can receive either a strict or a sloppy interpretation ('Xiao Li says it is unclear when I can go' or 'Xiao Li says it is unclear when he can go'). Thus, Reuland's theory of economy, together with the movement theory of bound anaphor long-distance reflexives, predicts that both local and bound anaphor long-distance reflexives will be able to receive a pronominal interpretation only when there is no syntactic binder available.

We will next examine the predictions of Reuland's analysis with regard to long-distance reflexives like those in Malay and Turkish, forms that are interpreted as pronominals when they are long distance. Are such forms counter-examples to Reuland's theory of economy? In the context of Reuland's theory, the fact that such forms have the properties of pronominals rather than bound anaphors tells us that, unlike the case with bound anaphor long-distance reflexives, chain formation must be impossible. There is, in fact, evidence with respect to

local uses of Malay *dirinya* that chain formation has failed to apply. Example (5a) (repeated here) shows that even in a local context c-command is not required for *dirinya*:

(5) a. $[_{NP}$ Bapa Siti$_j]_i$ tidak$_k$ suka dirinya$_{i/j/k}$.
father Siti not like self.3sg
'Siti's father does not like her/himself/him.'

Examples with *dirinya* are to be contrasted with the complex reflexive *dirinya sendiri*, which requires a local antecedent and which is ill-formed when the potential antecedent does not stand in a c-command relation to the reflexive:

(104) $[_{NP}$ Ibu Ali$_j]_i$ telah menyiram air di dirinya sendiri$_{i/*j}$.
mother Ali already splash water on self.3sg alone
'Ali's mother already splashed water onto herself.'

We therefore conclude that *dirinya*, unlike *dirinya sendiri*, cannot participate in chain formation.[35] Since chain formation is blocked with this form, there will not be competition between pronominal and anaphoric *dirinya.* Thus it is expected that apparent long-distance reflexives employing forms like *dirinya* will have the distribution of a pronominal rather than that of a bound anaphor.

We have shown that an extension of Reuland's analysis successfully predicts the syntactic properties of each type of apparent long-distance reflexive. We will turn now to the discourse properties. We will start with bound anaphor long-distance reflexives. These have been argued to consist of chains between the surface site of the anaphor and a position in which a c-commanding antecedent is located within the local domain (roughly, the governing category) of the reflexive. Such a chain may be long distance (inter-clausal) when otherwise permitted by the structure of the language and by principles of Universal Grammar (such as principles of chain formation).[36] The problem raised by discourse for this analysis is why logophoric conditions might apply to the relationship between the head of the chain and the antecedent, with variation from language to language. We would like to suggest that the answer may be provided by viewing the chain as uninterpretable unless it is related to an antecedent by a predication relation along the lines suggested in Huang and Liu (2000). While a variety of technical problems remains unsolved with respect to this proposal, we propose that discourse principles, which may vary from language to language, determine whether the predication relationship would be subject to logophoric requirements. Thus, in the case of bound anaphor long-distance reflexives, logophoricity may restrict the relationship between the chain and the ultimate antecedent. However, the relationship between the head and tail of the chain would be a syntactic relation which would not be subject to logophoric requirements. In Huang and Liu's terms, predication of a chain structure on the ultimate antecedent establishes a relation at the interface level between syntax and discourse. It is then natural that such a mediation process is subject to both discourse and

syntactic restrictions. But the relation between elements internal to a chain structure would be strictly syntactic, not subject to extra-sentential considerations.

We turn next to those reflexives which can be used long distance only when they lack a c-commanding antecedent in their local domain (e.g., English and Icelandic subjunctives). Why are such reflexives obligatorily subject to logophoric requirements when logophoric requirements are optional in the case of movement chains (predication, according to Huang and Liu) and absent entirely in the case of the Malay/Turkish type of reflexive, in which chain formation is blocked? Reuland proposes that the answer can be found by examining the fundamental semantic content of pronouns. The semantic contribution of pronouns is to express orientation vis-à-vis the speech act (speaker, perceiver). This orientation is the lexical content of personal pronouns like *I* and *you*. In the case of anaphors that undergo 'conversion' to pronominals, orientation is not lexically specified, since these forms are radically deficient in lexical content. While 'classical' personal pronouns express only speech-act orientation, 'de-anaphoric' pronouns lack even that lexical content. In order to be well-formed, they must take their orientation from the context. That is, they must satisfy conditions of logophoricity.

Turning, finally, to 'pronominal' long-distance reflexives like those found in Malay and Turkish, Reuland's theory would predict that, unlike *sig*, they must include a specification of orientation in their lexical content, as must third person personal pronouns. It is not immediately apparent how the specification of orientation could be demonstrated without circularity, so we will leave this question open for future discussion.

NOTES

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1 See Cole and Hermon (1998a) for a summary of the typological characteristics of long-distance reflexives.
2 It is a matter of controversy in the Chinese literature whether a third person subject blocks reference to a first or second person subject, or whether Blocking occurs only when the intervening subject is first or second person. (It is uncontroversial that the

Blocking Effect is stronger when the blocker is first or second person.) For differing positions on the facts, see Cole et al. (2001b) on the one hand, and Huang and Liu (2000) and Pan (2001) on the other.

3 But note that this position is denied by Pollard and Xue (2001), who argue against a division between anaphors and pronouns, at least with respect to Chinese *ziji*.

4 It is argued in Cole and Hermon (1998c) that *dirinya* is not lexically specified as either a pronoun or an anaphor. Rather, *dirinya* lacks specification for the feature [anaphor].

The existence of forms which are not specified as either pronominal or anaphoric is not unique to Malay. Keenan (1976a, 2000) argues that in both Old English and Middle English there is only a single form that is used for local and interclausal anaphora:

(i) syðþan he hine to guðe gegyred hæfde
once he_i(nom) him_i(acc) for battle girded had
'Once he had girded himself for battle' (*Beowulf* line 1473, c.750)

(ii) At Thebes, in his contree, as I sayde,
Upon a nyght in sleep as heihymi leyde
(Chaucer, *The Knight's Tale*, verse 1384)

5 This is example (6) in Pollard and Xue (2001).

6 Example (1) in Pollard and Xue (2001).

7 The nature and origin of the logophoric conditions are discussed in greater detail in section 11. We would like to emphasize that the syntactic environments making possible a free interpretation of anaphoric forms may be quite different cross-linguistically. As was pointed out to us by Eric Reuland, whereas in English the relevant condition is whether the anaphor is a syntactic argument of a predicate, in Icelandic the crucial factor is whether *sig* is in the domain of a subjunctive verb. As discussed in Reuland (2001; see also chapter 33) and Cole et al. (2001a), the crucial factor is whether something prevents the anaphor from being hooked up to its antecedent by a syntactic process. In Icelandic, this is the blocking of chain linking by the subjunctive. In English, this could be, according to Reinhart and Reuland (1991), the impossibility for SELF to covertly move to the predicate from a non-argument position. (Of course, to obtain well-formedness, appropriate discourse requirements must be met as well.)

8 There seems not to be any way to construct an analogous test sentence in the case of (12a).

9 It is not important for us that the pronominal reflexive is literally 'converted' from the anaphoric reflexive by a process of derivational morphology. We shall use this term simply to mean that the pronominal use of the reflexive is somehow specified as 'marked' or 'secondary'.

10 These tables are adapted from Frajzyngier (1993). All Mupun examples are taken from Frajzyngier as well. Some of the discussion of the examples is based on a presentation made by Frajzyngier at the Max Planck Institute for Evolutionary Anthropology in Leipzig and on personal communications.

11 Examples are, however, provided for verbs of perception:

(i) n-naa wur wur pə dəm n-kaano.
1sg-see 3sg 3sg PREP go PREP-Kano
'I saw him going to Kano.'

Note that a series A pronoun *wur* is used despite the fact that the two instances of *wur* are coreferential.

12 A very similar point is made by Culy (1997), who argues that true logophoric pronouns are primarily devices for indirect discourse and that the representation of point of view is not a central use of these forms.

13 Our presentation is a considerable simplification of Reinhart and Reuland's position. See Reinhart and Reuland (1993) for a full exposition of their proposal.

14 Examples (30–33) are from Lidz (2001). Example (34) is from Everaert (1991).

15 In some cases it is not clear whether a form is a bound anaphor reflexive or a pronominal. The string *ta ziji* in Mandarin appears to be ambiguous between a local bound anaphor and a pronoun *ta* modified by an emphatic reflexive *ziji*. Thus, Tang (1985, 1989), Sung (1990), and others have argued that all instances of apparent long-distance *ta ziji* are in fact instances of the pronoun *ta* modified by an emphatic reflexive rather than a complex anaphor. It must be recognized, however, that there are no completely convincing syntactic tests that demonstrate that all cases of apparent long-distance *ta ziji* are really the pronoun *ta* modified by *ziji*.

One argument in favor of the proposal that long-distance *ta ziji* involves pronominal *ta* is found in Cole et al. (2004), published in Chinese, which shows that long-distance *ta ziji* (and its Teochew counterpart *i kaki*) manifest the discourse conditions of the personal pronouns *ta* and *i*, and not those of the long-distance reflexives *ziji* and *kaki*: while *ziji* and *kaki* are subject to various logophoric conditions (see Cole et al. 2001b), no such conditions apply to long-distance *ta ziji* and *i kaki*. This state of affairs would be expected if *ta ziji* and *i kaki* are really the third person pronoun modified by an intensive reflexive, but not if they are bound anaphor long-distance reflexives. (Similar considerations apparently hold for Cantonese as well.)

16 The discussion anticipates some of the discussion of the Movement Theory of LD reflexives which is presented in section 10.

17 Example (46), from Norwegian, was provided to Li-May Sung by Arild Hestvik (p.c.).

18 The facts about Blocking in Korean are less clear than those regarding Blocking in Chinese. While some speakers have told us that Blocking occurs with the reflexive *casin*, others have disagreed. Contrary to earlier work on this topic by Cole et al. (1990) and subsequent papers, we assume here that Blocking does not hold in Korean.

19 Honorific agreement does not result in the absence of pro-drop, however.

20 We have ignored some details of Tang's analysis that are not relevant to the current discussion.

21 Dates of publication do not give a clear idea of the chronological development of the approach. It appears that the idea first originated with Pica, and was then applied to Chinese by Battistella. It was later further developed independently by Huang and Tang and by Cole, Hermon, Sung, and colleagues.

22 See Katada (1991) for discussion of an LF-movement approach to the long-distance reflexives in Japanese.

23 Adjunction to additional maximal projections such as VP and CP might also be posited.

24 The auxiliary assumptions made here are those made by Cole et al. (1990) and similar works.

25 This goes against a familiar version of the Head Movement Constraint, though, which prohibits a head from moving out of CP. It could also be excluded by a constraint against ?improper movement? from a lexical head to a functional head and then back to a functional head (V-I-C-V, etc.), analogous to the constraint against improper movement from A- to A′- to A-positions (see Travis 1984; Li 1990).

26 The auxiliary assumptions employed here are adapted from Huang and Tang (1991).
27 We assume that *ziji* can be reconstructed to its original position or interpreted in the adjoined position.
28 The Binding domain for a reflexive adjoined to IP would be the matrix clause.
29 See Cole et al. (1993) for such an analysis.
30 It will be remembered that the nominals following *ba/bei* are analyzed as specifiers of their projections rather than as objects of prepositions. Thus, they c-command *ziji*.
31 This is similar to the predictions made earlier by Pan (1995, 1997, 2001), who bases his predictions on a variant of the *de se* hypothesis.
32 See Chomsky (1986b) for more details. Adjunction of α to β has the effect of splitting the node β into two 'segments' with β now located between the two segments: $[_\beta\ \alpha\ [_\beta \ldots t_\alpha \ldots]]$. Thus, by adjoining itself to β, α crosses one half of the boundary of β (the lower segment $[_\beta$). Now, if α is moved out further, it will cross the other half (the higher segment $[_\beta$). In this way, by adjunction to β, α may get out of the boundary of β, not by crossing the entire boundary of β at once, but by crossing one segment at a time.
33 Reuland phrases his account in terms of cross-modular operations. A syntactic chain requires only two cross-modular operations while coreference requires four. See Reuland (2001) for the details of how the evaluation is conducted.
34 There is a point of similarity here with Pollard and Xue (2001), who propose that reflexives are interpreted on discourse/pragmatic considerations once they are not 'bound' syntactically.
35 Reuland speculates that number plays a critical role in determining whether a form is able to undergo chain formation, and, hence, show the distribution of a bound anaphor. *Dirinya* appears to be a counter-example to the proposal that number is the only feature that could block chain formation: while the reflexive root *diri-* is inflected for person, inflection for number is not possible.

    It should be noted that number appears to distinguish *diri-* from personal pronouns. In the pronominal system it is possible to distinguish *dia* '3p pronoun' (singular or plural) from *mereka* or *diaorang* '3ppl pronoun' (obligatorily plural). No such distinction exists for *diri-*: the only possible form is *diri-nya* '3p', and number cannot be indicated.

    We have seen, however, that *dirinya* does not permit chain formation. Thus, it cannot be the presence or absence of number which is critical for distinguishing between forms that allow chain formation and those that do not.
36 That is, long-distance chains would be permitted when the reflexive is monomorphemic and when no domain restrictions block the chain. For instance, in Icelandic a finite clause boundary would block chain formation.

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40 Long-Distance Binding in Germanic Languages

ERIC REULAND

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1 Introduction

The canonical Binding Theory of Chomsky (1981) is based on a two-way distinction between pronominals and anaphors. An anaphor must be A-bound and a pronominal must be A-free in its governing category. This two-way distinction is not exhaustive. As already observed in the 1970s (for instance, Ross 1970b; Kuno 1972b; Cantrall 1974; Hagège 1974; Clements 1975; Thráinsson 1976a, 1976b), certain elements that are formally identical to anaphors can be A-bound outside their governing category, or need not be linguistically bound at all. An important further observation was that, cross-linguistically, the two-way distinction between anaphors and pronominals found in English is the exception rather than the rule. In particular, many Germanic languages have a contrast between simplex anaphors, such as Icelandic *sig*, Norwegian *seg*, Dutch *zich*, etc., and complex anaphors of the general form <*pron*> *SELF*, where *pron* stands for a pronominal or simplex anaphor, which gives rise to three-way and four-way contrasts, not even counting

anaphoric possessives. It took some time before systematic endeavors were undertaken to assess the theoretical implications of these observations.

The first attempt to systematically address the questions posed by the Germanic languages as a group is Everaert (1986b), who developed an approach to Binding based on chain theory, and explains cross-linguistic differences in Binding domains on the basis of independent structural differences between languages. Subsequently, Manzini and Wexler (1987) developed a theory of parameterization of Binding domains based on lexical differences between anaphors. Hellan (1988) proposed that Binding involves the interaction between two types of conditions: containment conditions that are purely structural (such as c-command) and connectedness conditions that require a particular substantive relation between the anaphor and its antecedent, such as predication command (the anaphor is contained in a constituent predicated of the antecedent) or perspective command, which requires that the antecedent qualify as a perspective holder. (As we will see, the latter type of condition is a typical indicator of logophoricity.)

One result of these works is that a distinction was discovered between local anaphors, which must be bound in their governing category, and long-distance anaphors, which are exempt from Condition A of the Binding Theory.[1] A second result is that the contrast between simplex and complex anaphors reflects properties of argument structure (as shown by Everaert 1986b; Hellan 1988).

The differences found by Thráinsson (1976a, 1976b), Maling (1984, 1986), Anderson (1986), Hellan (1991a), and Thráinsson (1991) between long-distance Binding into finite clauses (indicative or subjunctive) and long-distance Binding into infinitival clauses show that a further distinction exists. Only long-distance Binding into infinitival clauses reflects structural Binding. The other occurrences of long-distance anaphors are logophoric (as discussed by Clements 1975; Sells 1987). As such, their distribution is much freer, and they are governed by discourse, rather than by purely structural factors. (See chapters 9, 33, and 38 for discussion.) It will be important to further elucidate this distinction between structural Binding of anaphors and their interpretation by discourse processes in terms of a general theory of interpretive dependencies.

Below we will summarize some of the basic facts about the major Germanic languages, before once more addressing the nature of the pattern they present.[2]

2 Anaphors across Germanic languages

2.1 English

English has a two-way distinction between anaphors and pronominals. English anaphors (*myself*, *yourself*, *himself*, *ourselves*, *yourselves*, *themselves*) are SELF-anaphors. English anaphors are either locally bound or logophoric. Bouchard (1984) was the first to make a systematic contrast between anaphors obeying the canonical, structural, Binding principles and anaphors exempt from those, giving rise to dependencies that prima facie involve long-distance Binding. Pollard and

Sag (1992, 1994) and Reinhart and Reuland (1991, 1993) state precise structural conditions under which SELF-anaphors are exempt from Condition A of the Binding theory. Their results indicate that many apparent cases of long-distance Binding can be analyzed as instances of logophoricity. It has been argued by Siemund (2003) and others (particularly Baker 1995) that other instances of exempt *himself* can be appropriately analyzed as representing a pronoun plus an intensifier (that is, *himself* = *him* + *himself*). Basically, this seems correct, although further research into the principles governing the distinction between logophoric and intensified instances of *himself* is still needed. A limited number of inherently reflexive predicates (mostly verbs of grooming, such as *wash*) allow the absence of an overt object where other languages require an overt anaphor (see chapter 9 for more discussion of English). This is a manifestation of the interplay between Binding and properties of argument structure, a phenomenon that is fairly residual in English but prominent in other Germanic languages.

2.2 Icelandic

Icelandic has a four-way distinction resulting from the fact that the SELF element *sjalfan* combines both with the third person SE-anaphor *sig* and with the elements in the pronominal paradigm (*hann*, etc.). In addition, Icelandic has a possessive third person anaphor *sin*. The anaphors *sig* and *sjalfan sig* must be bound by a subject, just like the possessive anaphor. When the antecedent is not a subject, *hann sjalfan*, etc., is used instead of *sjalfan sig*, and the corresponding pronominal form instead of *sig* or *sin*. In the first and second person the standard pronominal form is used throughout, with *sjalfan* where a complex anaphor is required. *Sjalfan sig* must be locally bound (i.e., bound within its governing category). *Sig* can be long-distance bound or interpreted logophorically. Icelandic freely allows violations of the Specified Subject Condition (SSC) (Chomsky 1973) with Binding into infinitives and DPs. Long-distance Binding of *sig* may cross a number of clausal boundaries, as illustrated in (1), where *Jón* is a possible binder for *sér*:

(1) Jón$_i$ sagði [Maríu$_j$ hafa$_{(inf.)}$ látið [mig þvo$_{(inf.)}$ sér$_{i,j}$]].
John said Mary have made me wash SE
'John said that Mary had made me wash him.'

Logophoric interpretation is possible only for an anaphor which is in the domain of a subjunctive, and which appears in a reportive context. For logophoric interpretation the antecedent need not c-command the anaphor. In fact, the antecedent need not be linguistically expressed at all. A systematic comparison between long-distance Binding and logophoric interpretation in Icelandic is given in chapter 33.

2.3 Faeroese

Faeroese, as it is described by Barnes (1986), has a three-way distinction. The SELF element *sjálvan* combines with the third person SE-anaphor *seg*, forming a

complex anaphor *seg sjálvan*. In addition, Faeroese has a pronominal paradigm and a possessive anaphor *sín*. Combining a third person pronominal with *sjálvan* appears to give an emphatic pronominal rather than an anaphor. The distribution of simplex and complex anaphors in local Binding contexts is largely determined by properties of the predicate and appears to essentially follow the pattern found for Dutch. The complex anaphor is exclusively local. As Barnes (1986) notes, some speakers may allow a stressed variant of the simplex anaphor, and others colloquially even an unstressed one, where the majority requires a complex anaphor. Faeroese freely allows SSC violations with Binding into infinitival clauses and DPs as in (2):[3]

(2) a. Pætur$_i$ sá Mikkjalsa$_j$ bílæt av sær$_{i/j}$/sær sjálvum$_j$/hunum$_o$.
Peter saw Miichael's picture of SE/SE-SELF/him
b. Jógvan$_i$ bað meg$_j$ PRO$_j$ raka sær$_i$/honum$_{i/o}$.
Jógvan asked me to shave SE/him

The antecedent of an SE-anaphor must be the subject of a predicate containing the SE-anaphor. Thus, for instance, the indirect object of a subject-control verb is not a possible antecedent for an anaphor in its complement:

(3) Eg$_i$ lovaði Jógvani$_j$ PRO$_i$ at raka honum$_j$/*sær$_j$.
I promised Jógvan to shave him/SE

Faeroese also allows binding into finite complements subject to restrictions that are similar to the conditions on logophoricity in Icelandic (see chapter 33):

(4) Jógvan segði, at Mortan hevði verið glaður, um Guðrun hevði kyst seg.
Jógvan said that Mortan would be happy if Guðrun had kissed SE

The majority of speakers allows both *Mortan* and *Jógvan* as antecedents for *seg* in (4). Objects, such as *Jógvan* in *Eg fortaldi Jógvan* . . . 'I told Jógvan' appear not to be possible antecedents. Barnes reports a relatively sharp Blocking Effect if intervening subjects do not have the same specification for person. So (5) is a variant of (4) in which the nearest subject is first person and the result is ill-formed:

(5) *Jógvan$_i$ segði, at tú hevði verið glaður, um eg hevði kyst seg$_i$.
Jógvan said that you would be happy if I had kissed SE

Such a contrast has not been reported for Icelandic. Given the impoverished verbal morphology of Faeroese (number contrasts but no person contrasts) as compared to Icelandic, this contrast is consistent with extant accounts of the Blocking Effect if number and person are checked separately. Note that the double intervention is not crucial; two-clause sentences with only the higher subject matching in features are also bad. However, if in (5) the nearest subject *eg* is replaced by *Guðrun*, and the mismatching subject is in a higher clause, the

reading with *seg* dependent on *Jógvan* becomes considerably better. This fact merits further investigation.

Barnes mentions that this long-distance antecedency relation in Faeroese is almost exclusively found in the complements of verbs corresponding to English *say, believe, want, learn (information), feel, intend*. These are typically verbs of the sort licensing logophoricity in other languages, inducing a reportive context. As in Icelandic, the antecedent need not c-command the anaphor as in (6), or be linguistically expressed:

(6) Vón hennara$_i$ var at sær$_i$ fór at dáma tann nýggja prestin.
Hope her was that SE was going to like the new minister

What makes Faeroese particularly interesting is that, in contrast to Icelandic, it does not have an overt distinction between indicative and subjunctive. That subjunctive is not a necessary condition for licensing logophoricity is not new by itself. Many other languages (such as Chinese and Japanese, and also English) have logophoricity without a (relevant) subjunctive. The interesting question is what sets the Faeroese inflectional system apart from that of the mainland Scandinavian languages (and other Germanic languages) where logophoricity (at least involving *seg*-type anaphors) does not occur. Is it the particular feature composition of INFL or a particular distribution of the features over functional projections? Is it the fact that in subordinate clauses both V_{fin} *Adv* order and *Adv* V_{fin} order are allowed? (Or do these reduce to the same factor?) Is the subjunctive perhaps still covertly represented? To answer such questions, further investigation of the Faeroese facts is necessary.

2.4 Mainland Scandinavian

Mainland Scandinavian (Danish, Norwegian, Swedish), like Icelandic, has a four-way distinction (for discussion see, among others Hellan 1980, 1988; Vikner 1984, 1985a; Hestvik 1991, 1992). The SELF element *selv* combines both with the third person SE-anaphor *seg* and with the elements in the pronominal paradigm (*ham*, etc.). In addition, these languages have a possessive anaphor *sin*. The Norwegian anaphoric system may serve as a model for the system of mainland Scandinavian languages in general, since the systems are very similar. The main difference among the mainland Scandinavian languages is reported to be that Swedish *själv* differs from *selv* in not being obligatory in a case like *Johan fraktade sig* 'John despised himself' as it is in Norwegian (Hellan 1988: 97, fn. 10). The anaphors *seg* and *sig selv* must be bound by the subject of a predicate containing the anaphor. The same holds true of the possessive anaphor. When the antecedent is not a subject, *ham selv*, etc., is used instead of *seg selv*, and the corresponding pronominal form instead of *seg* or *sin*. As in Icelandic, in the first and second person the pronominal forms are used, with *selv* where a complex anaphor is required. Unlike Icelandic, Norwegian does not have a systematic use of *seg* as a logophor. This may well correlate with the absence of subjunctive in Norwegian (but see

the discussion of Faeroese above). As in Icelandic, X-*selv* is local, and bare *seg* allows long-distance Binding. The following example illustrates long-distance Binding in Norwegian (from Hellan 1991a: 30):

(7) Jon_i bad oss forsøke å få deg til å snakke pent om seg_i.
John asked us (to) try to get you to talk nicely about SE
'John asked us to try to get you to talk nicely about him.'

For both possessive and non-possessive forms the upward bound on the Binding domain is the minimal tensed S (Hellan 1991a: 31), in accordance with Chomsky's (1973) Tensed -S Condition. This is illustrated by the ill-formedness of (8):

(8) *Jon_i var ikke klar over at vi hadde snakket om seg_i.
John was not aware over that we had talked about SE
'John was not aware that we had talked about him.'

One of the outstanding questions in the theory of Binding is what factors are involved in the limitations on long-distance Binding in languages such as Dutch and German as compared to Norwegian and other Scandinavian languages.

2.5 *Dutch*

Dutch distinguishes between pronominals (first and second person singular and plural, third person singular masculine, feminine and neuter, third person plural common gender), SE-anaphors and SELF-anaphors. The SE-anaphor *zich* only occurs in the third person (no singular/plural contrast). In environments where *zich* would be used for the third person, the first and second person are realized by a canonical pronominal form. Although, in general, complementarity between pronouns and anaphors holds, as in other languages, it should be noted that third person feminine singular *haar*, and to some extent also third person plural common gender *hun*, are not as bad as one might expect on the basis of Condition B. There is a SELF-anaphor *zichzelf*. In the first and second person the SELF-anaphor is realized as the corresponding pronominal plus *zelf*. Binding of these SELF-anaphors is strictly local.

Full pronominals combine with *zelf* as well in Dutch. Koster (1985) argues that the resulting element is an anaphor that is not subject to a local Binding requirement. The conditions on its interpretation show logophoric characteristics. *Zich* in positions corresponding to those of exempt anaphors in English is impossible in Dutch; *zichzelf* in such positions must have its antecedent in the local domain, as in (9):

(9) Max_i telde vijf toeristen in de kamer behalve *zich_i/zichzelf_i/*hem_i/hemzelf_i.
'Max counted five tourists in the room apart from himself.'

Logophoric interpretation of first and second person SELF-anaphors is available under similar conditions to those that apply in English.

Long-distance Binding of *zich* is possible, but it is more limited than long-distance Binding of Icelandic *sig* and Norwegian *seg*. *Zich* in *te*-infinitives (corresponding to *to*-infinitives) cannot be bound from the outside, as in (10), whereas *zich* in causative or perception verb complements can, as in (11) (see Everaert 1986b for extensive discussion):

(10) Ik hoor dat Jan_i Piet gevraagd heeft een boek voor $\text{zich}_{*i}/\text{hem}_i$ mee te brengen.
I hear that John Peter asked has a book for SE/him to bring
'I hear that John_i has asked Peter to bring a book for SE/him_{*i}.'

(11) Jan_i hoorde Marie een lied voor $\text{zich}_i/\text{hem}_i$ fluiten.
John heard Mary a song for SE/him whistle
'John heard Mary whistle a song for SE/him.'

This latitude is restricted to *zich* in PPs. In the following cases with *zich* in direct object position, only local Binding is possible (in (12a) both readings are pragmatically OK; in (12b), where the local reading is pragmatically disfavored, the non-local reading is still impossible):

(12) a. Jan_i voelde Marie_j $\text{zich}_{*i/j}/\text{zichzelf}_{*i/j}$ verdedigen.
John felt Mary SE/SE-SELF defend
'John felt Mary defend SE/SE-SELF.'
b. Jan_i hoorde Marie_j $\text{zich}_{*i/??j}/\text{zichzelf}_{*i/j}$ verwensen.
John heard Mary SE/SE-SELF curse
'John heard Mary curse SE/SE-SELF.'

With causative Exceptional Case Marking (ECM) constructions, judgments about object (relative to the lower verb) *zich* are essentially the same:

(13) Jan_i liet Marie_j $\text{zich}_{*i/j}/\text{zichzelf}_{*i/j}$ wassen.
John let Mary SE/SE-SELF wash
'John let Mary wash SE/SE-SELF.'

Indirect object *zich*, does, however, allow a non-local reading:

(14) Jan_i liet Marie_j $\text{zich}_{i/??j}/\text{zichzelf}_{*i/j}$ een boek brengen.
John let Mary SE/SE-SELF a book bring
'John let Mary bring SE/SE-SELF a book.'

Note that in some of these cases, replacing *zich* with a pronominal is less than entirely well-formed under the intended interpretation:

(15) a. Jan$_i$ voelde Marie$_j$ hem$_{??i}$ verdedigen.
John felt Mary him defend
'John felt Mary defend him.'
b. Jan$_i$ hoorde Marie$_j$ hem$_{?i}$ verwensen.
John heard Mary him curse
'John heard Mary curse him.'

With causative ECM constructions, judgments about embedded object *hem* get sharper when the predicate is an intrinsic reflexive, as illustrated by the contrast between (16a) and (16b):

(16) a. Jan$_i$ liet Marie$_j$ hem$_{*i}$ wassen.
John let Mary him wash
'John let Mary wash him.'
b. Jan$_i$ liet Marie$_j$ hem$_{?i}$ verdedigen.
John let Mary him defend
'John let Mary defend him.'

Embedded indirect object *hem* is fine, though:

(17) Jan$_i$ liet Marie$_j$ hem$_i$ een boek brengen.
John let Mary him a book bring
'John let Mary bring him a book.'

2.6 German

German distinguishes between pronominals (first and second person singular and plural, third person singular masculine, feminine and neuter, third person plural common gender), and an anaphor, *sich*, which only occurs in the third person (no singular/plural contrast) and which superficially resembles an SE-anaphor. In the type of environments that require the anaphor for the third person, the first and second person are realized by a canonical pronominal form. There is an anaphoric form *sich selbst* which superficially resembles a SELF-anaphor. In the first and second person it is realized as the corresponding pronominal with *selbst*. Antecedents for these forms need not be strictly local. The theoretical implications of this are difficult to assess, given the fact that *selbst* occurs as a focalizing particle and focalization generally contributes to exemption (see Reinhart and Reuland 1993).[4] Also an interplay between Binding and argument structure is less easily observable in German. The form *sich* can be used in most positions where Dutch has *zichzelf*. Yet some contrast shows up in restrictions for *sich* to bear stress. For further discussion of *sich* versus *sich selbst*, see chapter 9.

Interestingly, in positions corresponding to those of exempt anaphors in English, *sich selbst* or *ihn selbst* are preferred, as in (18):[5]

(18) Max_i zählte fünf Turisten im Zimmer ausser *$sich_i$/sich $selbst_i$/*ihm_i/ihm $selbst_i$.
'Max counted five tourists in the room apart from himself.'

Logophoric interpretation of *sich* and *sich selbst* with non-local antecedents is impossible in German. It is possible to have *sich* in a true expletive construction, though, as in (19):

(19) Es hat sich ausgekuschelt.
It has SE out-schmoezed
'Schmoezing is over now.'

Logophoric interpretation of first and second person *selbst*-forms is available under similar conditions to those for the corresponding SELF-anaphors in Dutch and English.

Long-distance Binding of *sich* is possible, but, as in Dutch, it is more limited than long-distance Binding of Icelandic *sig* and Norwegian *seg*. *Sich* in *zu*-infinitives (corresponding to *to*-infinitives) cannot be bound from the outside, as in (20) and (21), whereas, to a certain extent, *sich* in causative or perception verb complements can, as in (22):

(20) $Hans_i$ befahl Peter [PRO ihn_i/*$sich_i$/*$sich_i$ selbst jeden Tag zu rasieren].
John ordered Peter him/*SE/*SE SELF every day to shave
'John ordered Peter to shave him every day.'

(21) Ich hörte, dass $Johann_i$ Peter gebeten hat ein Buch für *$sich_i$/ihn_i mitzunehmen.
I heard that John Peter asked has a book for SE to bring
'I heard that $John_i$ has asked Peter to bring a book for SE_{*i}.'

(22) $Johann_i$ hörte Maria ein Lied für $sich_{\%i}$/ihn_i pfeifen.
John heard Mary a song for SE/him whistle
'John heard Mary whistle a song for SE/him.'

Apparently there is variation in the acceptance of the *sich*-variant in (22), indicated by the % sign before the subscript. Insofar as there is such latitude in ECM, it is limited to *sich* in PPs. In the following cases, with *sich* in direct object position, Binding is only local (in (23a) both readings are pragmatically OK; in (23b), where the local reading is pragmatically less plausible, the non-local reading is still impossible):

(23) a. $Johann_i$ fühlte $Maria_j$ $sich_{*i/j}$/sich $selbst_{*i/j}$ verteidigen.
John felt Mary SE/SE-SELF defend
'John felt Mary defend SE/SE-SELF.'

b. Johann$_i$ hörte Maria$_j$ sich$_{*i/j}$/sich selbst$_{*i/j}$ verwünschen.
John heard Mary SE/SE-SELF curse
'John heard Mary curse SE/SE-SELF.'

With causative ECM constructions, judgments about object *sich* are essentially the same (note that a main clause reading of the pronoun is unobjectionable, unlike the case in Dutch):

(24) Karl$_i$ liess Paul$_j$ sich$_{*i/j}$/ihn$_{i/*j}$/ihn selbst$_{i/j}$ rasieren.
Charles let Paul SE/him shave
'Charles let Paul shave SE/him.'

Indirect object *sich* does not allow a non-local reading either:[6]

(25) Karl$_i$ liess Paul$_j$ sich$_{*i/j}$/ihm$_{i/*j}$ ein Buch besorgen.
Charles let Paul SE/him a book bring
'Charles let Paul bring SE/him a book.'

Gunkel (2003) reports the following variation. Whereas adjunct PPs equally allow both the anaphor and the pronominal in ACI, as in (26), there is a difference between two types of complement PPs in (27) and (28):[7]

(26) Karl$_i$ liess mich neben sich$_i$/ihm$_i$ schlafen.
Charles let me next to SE/him sleep
'Charles let me sleep next to SE/him.'

(27) a. Karl$_i$ liess uns nur ungern über ??sich$_i$/ihn$_i$ schimpfen.
Charles let us only unwillingly at SE/him scold
'Charles let us scold him only unwillingly.'
b. Karl$_i$ liess mich an ?sich$_i$/ihn$_i$ einen Brief schreiben.
Charles let me to SE/him a letter write
'Charles let me write a letter to SE/him.'

(28) Er$_i$ liess mich mit sich$_i$/ihm$_i$ spielen.
He let me with SE/him play
'He let me play with SE/him.'

From the perspective of our discussion of long-distance anaphora, it is important that German exhibits the same type of restrictions in this domain as Dutch and is quite unlike the Scandinavian languages.

2.7 *Frisian and Yiddish*

Frisian and Yiddish are to be mentioned only for sake of completeness in this connection. Since Frisian lacks an SE-anaphor and the forms used instead are

truly pronominal, the question of long-distance Binding of SE-anaphors does not arise. Long-distance Binding of pronominals is, of course, possible throughout. One might still wish to understand, though, what is precisely the nature of the difference between *himself*, etc., in English, and *himsels*, etc., in Frisian. This issue still requires further investigation.

In exempt positions, the form *pronominal-SELF* has the same full range of logophoric possibilities as its counterpart in English and Dutch. For the purpose of the discussion of long-distance anaphors in Germanic it can, henceforth, be ignored.

Yiddish has a simplex anaphor *zikh*, which as in many Slavic languages is used for all persons, and a complex form *zick aleyn*, which in its use appears to be closer to German *sich selbst* than to Scandinavian *seg selv*.[8] A thorough analysis of Yiddish anaphora appears to be lacking. The literature (for instance, Weinreich 1971: 100–101) provides no indication that Yiddish has any long-distance or logophoric use of *zick* or *zick aleyn*.

3 Capturing the variation

As described in the previous section, there is considerable variation within Germanic in the domains in which SE-anaphors must be bound. As we saw, SE-anaphors may allow their antecedent in a position considerably beyond the governing category as computed in the canonical Binding Theory. The pattern has been taken to suggest that there are at least three possible (non-local) Binding domains across languages.

Systematic attempts to account for the variation observed include parameterized versions of the Binding Theory, with Binding-Theory-specific parameters, as proposed in Koster (1985) and Manzini and Wexler (1987), and a chain-based analysis in which the variation follows from chain formation interacting with independent structural differences, as proposed in Everaert (1986b). Manzini and Wexler, for instance, hypothesize that the governing category may vary across languages and anaphor types in terms of an opacity factor. The notion of an opacity factor generalizes the role of the subject in the canonical formulation of the Binding Theory:

(29) a. *b* is a governing category for *a* iff *b* is the minimal category containing *a*, a governor of *a* and F (F an opacity factor).
b. Possible values of F include: (i) (accessible) SUBJECT, (ii) Agr, (iii) Tense, (iv) indicative Tense, (v) Root Tense.

Descriptively, this approach is quite successful. However, it leaves open by what principles the set of possible values of F can be restricted (otherwise predicting too many possible domains). Moreover, it treats Binding in all domains on a par, not distinguishing between logophoric dependencies and structural Binding.

Everaert (1986b) summarized the variation in the Binding of SE-anaphors we observed in terms of the following three domains:

(30) i. small clauses (causatives and complements of perception verbs);
ii. non-finite clauses (including both *to*-infinitives and small clauses);
iii. non-indicative clauses (including subjunctive tensed clauses and non-finite clauses).

Since the extension of the third domain involves logophoricity, variation in structural Binding domains appears to be limited to just domains (i) and (ii). Moreover, we saw that in Dutch and German the possibility of long-distance Binding does not extend to anaphors in the object position of the embedded verb. So the two relevant domains can be characterized as follows:

(31) i. small clauses (causatives and complements of perception verbs, except for the object argument of the lower verb);
ii. non-finite clauses (including both *to*-infinitives and small clauses).

Everaert, followed by Reinhart and Reuland (1991), observes that the choice between (i) and (ii) is linked to an independent syntactic factor: (i) is found in the Germanic OV languages Dutch and German, (ii) in the Scandinavian VO languages.

There is a variety of proposals in the literature to capture the subject orientation and non-locality of SE-anaphors. Most of them explore the idea in Lebeaux (1983) and Chomsky (1986b) that restrictions on Binding correlate with restrictions on movement (cf. Pica 1985, 1987; Battistella 1987; Cole et al. 1990; Huang and Tang 1991; Hestvik 1991, 1992).

That SE-anaphors move can be argued to follow from the fact that they are underspecified for phi-features. Bouchard (1984) argued that in order to be interpreted, an argument requires a full specification of phi-features. From that perspective, being underspecified, SE-anaphors must acquire phi-features in the course of the derivation. This requirement can be met by association with an element carrying them.

One line, then, is to analyze the association of SE with a source for phi-features as an instance of X^0- (head-) movement (assuming that SE is a head in, for instance, the D-position). The set of available sources is restricted: since heads can only move to head positions, the SE-anaphor can only receive the necessary features from another head. Verbs will not do (nor will prepositions, etc.), since they do not contain phi-features. A c-commanding NP will not do either, since it is a maximal projection. The only element that meets the requirements that it c-commands the anaphor, is in head position, and carries phi-features is AGR.[9] The result is summarized in (32):

(32) SE-heads associate with AGR at LF.

One may assume here that AGR is inside T (so the movement is to T), though nothing hinges on this detail. Since AGR is always co-indexed with the subject and SE-anaphors always associate with AGR, it follows that SE-anaphors, in their grammatical (non-logophoric) use, are subject-oriented.

This general approach raises a number of issues, both internal to the general theory in its form near the end of the 1980s, and with respect to subsequent developments.

3.1 LF-movement of SE and Relativized Minimality

Everaert (1986b) formulated a representational theory of anaphoric dependencies where proper Binding requires that the co-indexing between anaphor and antecedent creates a licit chain-type object. The anaphor must be properly governed by the index of its antecedent. This, in turn, requires a *Barriers*-style licensing of indices by a sequence of governing heads (see the discussion of NP-raising in Chomsky 1986b):

(33) $DP_i\ [_Z \ldots Z_i\ [_Y \ldots Y_i\ [_X \ldots X_i \ldots SE_i]]]$

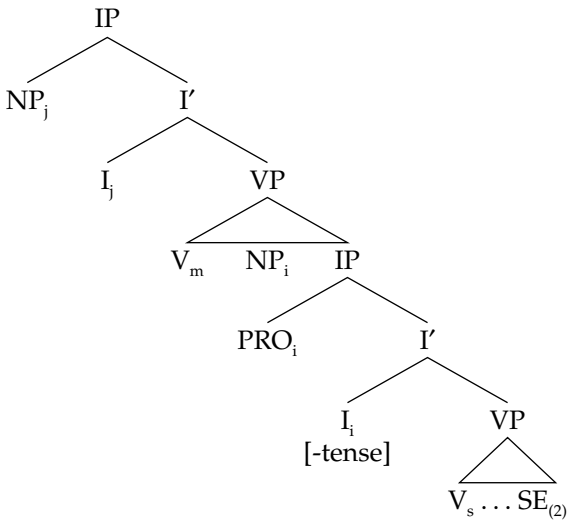
Lebeaux (1983) and, subsequently, Chomsky (1986a), in an endeavor to subsume Binding Theory under Movement Theory, developed an approach to Binding involving covert movement (LF-movement). Near the end of the 1980s it was found that movement obeys some form of Relativized Minimality condition (Rizzi 1990b). If SE-movement instantiates head-movement, it follows from any implementation of Relativized Minimality that subjects are not intervenors. In principle this could yield an extension of the Binding domain beyond the minimal governing category. However, the framework of Chomsky (1986a) puts severe limitations on head-to-head movement. The movement 'passing through H' sketched in (34a) is always illicit, since the intermediate trace violates the Empty Category Principle (ECP) (as discussed in, for instance, Baker 1988a). 'Long' head-movement skipping H as in (34b) is also ruled out:[10]

(34) a. $[_b\ a_i\ b] \ldots [_H\ t_i\ H] \ldots t_i$
b. $[_b\ a_i\ b] \ldots H \ldots t_i$

Roberts (1991b) argued that long movement is allowed if H is not a head of the same type, i.e., not an intervenor in the sense of Relativized Minimality. However, if (34b) is taken as the general model, it is predicted that SE always associates with the nearest source of phi-features, namely the local AGR. Since the actual binder may be higher up, one must either assume a dissociation between being a binder and being a source for phi-features, or assume that Binding is a by-product of attracting a larger constituent than just the anaphor. The former option underlies approaches modeled after Chinese (see Battistella 1987; Cole et al. 1990; Huang and Tang 1991; Huang and Liu 2001; see also chapter 9).

Another approach models the LF domain extension of anaphors on the overt formation of complex predicates in verb-raising languages like Dutch (Reinhart and Reuland 1991). This comes down to claiming that such anaphor movement uses massive covert pied-piping. SE first adjoins to its governing verb.[11] From there, V moves to I, taking SE along. The V/I complex thus formed may then move up further to a higher V, yielding a new complex, then to yet a higher I, etc., until SE with the V/I complex arrives at a position where SE associates with AGR. For an object control complement the structure is illustrated in (35). AGR is represented by the index on I; the SE-anaphor is, then, eventually bound by the subject of the matrix clause, as, e.g., in Norwegian (36) and (37):

(35)



First $V_sSE_{(2)}$ is formed. Subsequently, $V_sSE_{(2)}$ moves to I_1, amalgamating in that position, then $SE_{(2)}/V_s/I_i$ moves up to V_m, and finally, $SE_{(2)}/V_s/I_i/V_m/$ moves up to I_j. Here the SE-marked Verb is amalgamated with I_j, and SE may pick up the latter's phi-features. Interpretability only requires that SE gets its features at some point, not whether this happens when the verb merges with the lower I_i, with the higher I_j, or even with some higher-up I. Thus, in both (36) and (7) (repeated here as (37)) the anaphor will be able to be bound by the highest subject as required:

(36) Jon$_j$ bad oss snakke om seg$_j$.
John$_j$ asked us to talk about SE$_j$

(37) Jon$_i$ bad oss forsøke å få deg til å snakke pent om seg$_i$.
John asked us to try to get you to talk nicely about SE

Since finite clauses are opaque for 'Verb raising' and similar head-to-head movements, it follows that the upper bound for the Binding of an SE-anaphor is the first finite clause containing it (thus, this type of Binding observes the 'Tensed-S Condition'). One may still wonder, though, what triggers such generalized verb raising. So far, this theoretical problem has no generally accepted solution.

3.2 The VO–OV contrast

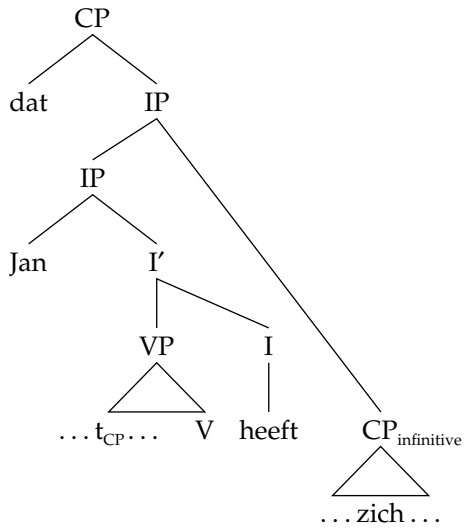
An important question arising from this body of facts is how the contrast in Binding possibilities between Scandinavian VO and Dutch/German OV languages follows. As we saw, reporting an observation by Everaert (1986b), in Dutch and German *zich/sich* in *to*-infinitives cannot be bound from the outside, as illustrated in the Dutch example (38), whereas in causative or perception verb complements they can, as in (39). In Scandinavian languages, Binding is possible into both types of clauses:

(38) Ik hoor dat Jan_i Piet gevraagd heeft een boek voor $zich_{*i}$ mee te brengen.
I hear that John Peter asked has a book for zich to bring
'I hear that John has asked Peter to bring a book for him.'

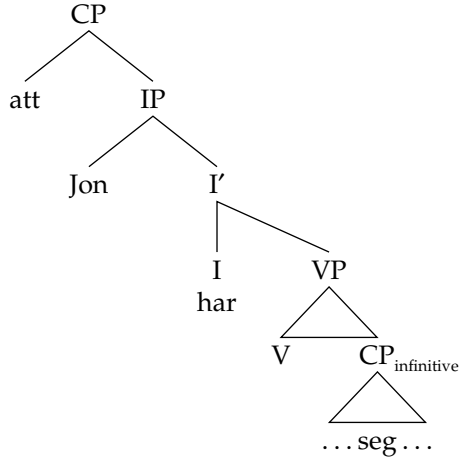
(39) Jan_i hoorde Marie een lied voor $zich_i$/hem_i fluiten.
John heard Mary a song for SE/him whistle
'John heard Mary whistle a song for SE/him.'

Everaert (1986b) was the first to propose that this contrast follows from a difference in the configuration involving binder, matrix verb, and bindee, due to a difference in the position of attachment of the infinitival clause in OV/VO languages (using a framework in which the base position of the infinitival clase is to the left of the verb in OV languages, and to its right in VO languages). Reinhart and Reuland (1991) implemented this idea as follows. The embedded clause originates to the left of the verb, and is subsequently extraposed, leaving the trace indicated by t_{CP} in (40) (using the then standard idea of rightward extraposition). If the extraposed *te*-clause moves to the right of the finite verb in Dutch (there is no possibility of attachment between V and I), the lowest available attachment site is that of adjunction to IP; thus the clause must end up higher than the finite verb, as indicated in (40a), omitting details. *Zich* and any verb within $CP_{infinitive}$ it attaches to are not c-commanded by the higher V-I complex (e.g., *heeft* in (40)). Hence, they cannot form a chain headed by a higher I/AGR using the procedure illustrated in (35). This makes it impossible for *zich* to be interpreted. In Scandinavian, being VO, the complement clause stays in the VP (possibly after VP-adjunction) and is c-commanded by I, so the necessary chain can be formed. This is illustrated in (40b):

(40) a.



b.



The general structure of this account is thus based on the idea that the OV structure creates a discontinuity in any chain-type dependency between anaphor and antecedent that is mediated by the governing verb of the constituent containing the anaphor. As such it is independent of the specific mechanism for chain formation assumed.

This particular implementation depends on the assumption that there is rightward movement/extraposition of *te*-infinitives. As is well known, this assumption is incompatible with most versions of current syntactic theory.[12]

However, Everaert's insight that the OV structure creates a discontinuity prohibiting the establishment of the relevant dependency is not dependent on this particular implementation. In the next section it will be shown that it can also be implemented in theories without extraposition.

The other contrast between the OV and the VO languages concerns the impossibility of LD Binding of direct object *zich/sich* in Dutch and German (and indirect object *sich* in German) even in small clauses. This fact is also discussed in Everaert (1986b) (see also Reis 1976). Everaert notes that overt verb raising applies in Dutch and German, but not in the Scandinavian languages. On the basis of this fact Everaert proposes that the contrast can be reduced to a difference between full verbs and verb traces as licensers of anaphors. It will be interesting to investigate to what extent this view of the contrast can be maintained in current conceptions of clausal structure.

4 Conclusion: long-distance Binding and Minimalism

There is a tension between the requirement that arguments require a full specification of phi-features in order to be interpreted, and the fact that logophoric *sig* in Icelandic can be interpreted without an overt source for phi-features. This tension can be resolved by abandoning the requirement of full specification. This is discussed in chapters 33 and 38.

The general line that SE-anaphors move in order to acquire phi-features is also problematic from the perspective of the Minimalist program (Chomsky 1995c, 2000, 2001b), insofar as it is based on a self-serving movement of the anaphor that is not triggered by an independent requirement of feature checking. In this respect, a composite movement in which the anaphor associates with a verbal projection for Case checking, and the verbal projection moves further for independent reasons, holds more promise.

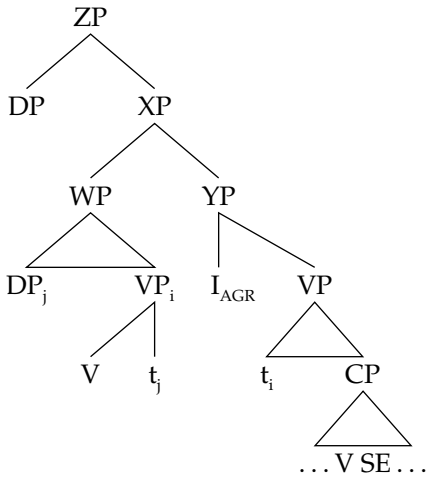
Any approach should do justice to the fact that these anaphoric dependencies are sensitive to variable properties of syntactic structure. That is, at least part of the computations involved is carried out within the computational system of human language in the Chomsky (1995c) sense (C_{HL}). This requires implementing subsystems of Binding in terms of merge, move, and check. Also, any analysis should enable one to capture the role of the SOV/SVO contrast. For sake of concreteness, let's therefore assume that establishing a syntactic dependency with the antecedent is at least the preferred mode of interpretation of SE-anaphors (see Reuland 2001), and that this is accomplished by movement and chain composition (Chomsky and Lasnik 1993), leaving aside the precise specification of the triggers.

What most current approaches to the phrase structure of Germanic SOV languages have in common is that an 'extraposed' clause is in fact assumed to have been left behind in a low position by movements depleting the original verb phrase from verb and nominal arguments, where the latter material actually moves higher in the structure. There are two types of approach: one in which the VP gets depleted by a combination of head-movement and XP-movement, the other in which there is only XP-movement; cases where prima facie only V is

moved are analyzed as involving moving a remnant VP (as for instance in Koopman and Szabolcsi 2000). For reasons of space it will not do to go into the details of the various extant analyses. It is important to note that there is a considerable class of analyses that all share the following structural pattern (for ease of exposition I am using traces and X'-notation with some unspecified labels in the representations; no theoretical status should be attributed to these notations).

In an SOV structure there is at least one step in which a phrase, properly containing the verb that originated as a sister to the complement clause, moves up to a position to the left of its inflection:

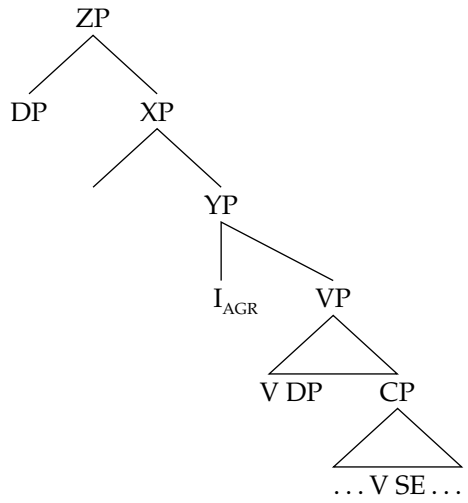
(41)



Suppose this position is combined with our earlier assumption that the verb must mediate in forming a chain-based relation between SE-anaphor and I_{AGR} and subsequently the antecedent. For the sake of concreteness, one may assume that this is accomplished by post-cyclic chain composition along the lines discussed by Chomsky and Lasnik (1993) and subsequently Reuland (2001). It is easily seen that moving the verb (or a constituent containing it) from the sister position of the infinitival clause (indicated by t_i), crossing I_{AGR}, disrupts the possibility of forming a DP, I_{AGR}, V, . . . SE chain. Assume that a dependency (checking relation, or agreement) holds between DP and I_{AGR}. The next link in the dependency cannot be V, since it moved across. It cannot be t_j either, since, being the tail of the V-constituent that crossed I_{AGR}, it is inert. Hence, t_j cannot participate in the formation of the dependency. Other options are equally unavailable, hence forming the dependency is blocked, and SE in the lower clause cannot be syntactically linked to the matrix DP.

In the Scandinavian SVO languages the verb stays to the right of inflection, hence lower than the latter. Since there is no crossing, nothing prohibits the matrix V from mediating in establishing a chain relation between SE and the matrix I_{AGR} and subsequently the subject:

(42)



Precisely because in small clauses and bare infinitivals in Dutch and German, no 'extraposition' structures obtain, binding into these constructions is possible, except when some other process interferes. Further research is necessary to determine how Yiddish could fit in with this pattern.

Obviously, this sketch can be no more than a suggestion, since the details of timing and computation need more justification than can be provided here.

A precise analysis clearly depends on a very important issue, namely the identity of the precise mechanism involved in establishing a dependency between anaphor and antecedent. In principle, the process that previous analyses analyze as LF-movement of SE-anaphors can be implemented as feature movement in the sense of Chomsky (1995c), triggered by standard checking requirements involving EPP and Case (as, for instance, in Reuland 2001) followed by chain composition. Alternatively, the basis of the dependencies could be found in the AGREE relation (Chomsky 2001b). Hornstein (2001) and Kayne (2002) develop analyses in which at least some Binding relations are directly encoded by movement. Discussing these implementations would carry us beyond the scope of this chapter, and will have to wait for another occasion.

NOTES

I would like to thank Patrick Brandt, Martin Everaert, and two anonymous reviewers for their very helpful comments. The usual disclaimers apply.

1 Note that the first GB account of the contrast between local and long-distance binding is Giorgi (1984), which is mainly based on Italian.
2 I will put aside reciprocals, since they would not add much to the main issues that should be discussed.
3 The subscript *0* indicates that the pronominal is free.

4 Non-local antecedents of *selbst*-forms are illustrated in (i) and (ii), provided by an anonymous reviewer:

(i) Ich möchte nicht dass Hans für jemand anderen arbeitet. *Ich* möchte dass er für *mich selbst* arbeitet.
'I do not want John to work for somebody else. I want him to work for myself.'

(ii) Hans will nicht, dass ich für jemand anders arbeite. Deshalb lässt er mich nur für sich selbst arbeiten.
'John does not want me to work for somebody else. Therefore he lets me work only for himself.'

Note that in these cases the *selbst*-form is heavily focused. The precise role of structure vs. focus still merits further investigation. As the reviewer points out, *selbst* combines with third person pronouns as well, but there is no reason to treat such forms as anaphors (or logophors).

5 See, among others, Reis (1976), Everaert (1986b), and Gunkel (2003) for discussion of the German facts. I would like to thank Patrick Brandt (p.c.) for help with the data.

6 Some speakers marginally allow this reading, however. An anonymous reviewer points out that there is one type of exception to this locality pattern. It involves ECM constructions in which the embedded verb is non-agentive, as illustrated in (i):

(i) a. ?Hans$_i$ sah sich$_i$/*ihm$_i$ den Gegner unterliegen.
John saw SE/him$_{DAT}$ the opponent$_{ACC}$ underlie
'John saw that the opponent was being defeated by him.'
b. Sie$_i$ liess sich$_i$/*ihr$_i$ die Sonne ins gesicht scheinen.
She let SE/her the sun in the face shine
'She let the sun shine in her face.'

As the reviewer notes, there is extensive discussion of these data in the literature, with disagreement on their grammaticality (see among others Reis 1976; Grewendorf 1983, 1989; Gunkel 2003).

7 Gunkel (2003) attributes the difference to the semantic status of the prepositions involved. Notice, however, that some further factors may have to be controlled for in order to obtain the full picture. Patrick Brandt (p.c.) reports that if *nur ungern* is omitted from (27a) the contrast gets much sharper, as in (i), and similarly if one has the DP–PP order as in (ii):

(i) Karl$_i$ liess uns über *sich$_i$/ihn$_i$ schimpfen.
Charles let us at SE/him scold
'Charles let us scold him.'

(ii) Karl$_i$ liess mich ein Päckchen zu ??sich$_i$/zu ihm$_i$ schicken.
Charles let me a package to SE/him send
'Charles let me send a package to him.'

Further research will no doubt shed more light on these contrasts.

8 I am very much indebted to Sten Vikner (p.c.) and Beatrice Santorini (p.c.) for their help in clarifying the status of Yiddish.

9 With Borer (1989), one may assume that both infinitival and finite INFL are associated with AGR, which is anaphoric in the former case. Anaphoric AGR bears phi-features just like finite AGR; hence it is equally suitable as a 'host' supplying these features to the SE-anaphor. In order to allow subjects of small clauses as antecedents of SE-anaphors, we have to assume that small clauses carry AGR too. Much of the current literature makes this assumption, although direct empirical arguments like those for anaphoric AGR in infinitival clauses are lacking.

10 Note that we are assuming that SE-movement is an instantiation of canonical head-movement. Although it may be tempting to equate SE-movement with clitic movement of some sort, clitic movement seems to be freer (see Kayne 1990 for discussion), and may well be a different phenomenon. (It certainly involves different conditions; also witness the fact that languages may have SE-anaphors without having true clitics.)

11 This has no effect on the verb's interpretation, since SE is neither a reflexivizer nor a clitic which satisfies a grid position lexically; it just leaves the relevant thematic position unsaturated, until it receives phi-features.

12 As noted by an anonymous reviewer, another problem appears to be posed by the fact that at least German CP-infinitives (*zu*-infinitives) need not be extraposed. Yet in these structures also long-distance Binding from outside the *zu*-infinitive is prohibited, as illustrated in (i):

(i) dass Hans_i uns_j $[_{CP}$ PRO_j ihm_i/*sich_i ein Buch mitzubringen] bat

Pursuing this issue would lead us beyond the scope of this chapter, however.

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41 Long NP-Movement

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1 Introduction

Our current understanding of 'locality' conditions on movement goes back in one form or another to Ross's (1986) Constraints on Variables in Syntax (originally a 1967 PhD dissertation), and Chomsky's (1973) Conditions on Transformations. We will here follow the tradition of Ross and Chomsky in analyzing these relations in terms of 'movement', although the issues we explore arise in similar fashion under alternative approaches to these long-distance relations. Ross claimed that movement is essentially unbounded (limitations arising from islands). By contrast, Chomsky argued that movement is required to take place in short successive steps. As we will see, the issue re-emerges in the most modern version of generative grammar, the Minimalist program. For the phenomenon we investigate here, long NP-movement, we take Chomsky's view as a starting point, since it has been so influential.

'Long NP-movement' is an umbrella term for cases of non-local A/NP-movement,[1] where the locality factors are traditionally considered to be (i) tense

(1), and (ii) the presence of a subject (2), reflexes of Chomsky's (1973) Tensed-Sentence Condition (3), and Specified-Subject Condition (4) respectively:

(1) *Mary is believed ___ like**s** John.

(2) *John is believed **Mary** to like ___ .

(3) **Tensed-Sentence Condition (TSC):**
No rule can involve X, Y in
. . . X . . . [$_{\alpha}$ . . . Y . . .] . . .
where α is a finite clause.

(4) **Specified-Subject Condition (SSC):**
No rule can involve X, Y in
. . . X . . . [$_{\alpha}$Z . . . Y . . .] . . .
where Z is the subject of α.

One of the major discoveries of the early 1970s was that in certain central respects, NP-movement obeys the same constraints as the process associating an anaphor with its antecedent. Chomsky's (1973) explanation was that this fact is simply a special case of the generalization that all rules obey (3) and (4). The significance of such an approach was that it allowed for a great reduction in the descriptive power of transformations, leading ultimately to the modern notion of Move α. Thus, (1–2) are similar to (5–6):

(5) *Mary believes [*herself* **is** likely to win the race].

(6) *Mary believes [that **John** likes *himself*].

Chomsky's approach by no means claimed that NP-movement and anaphor binding are a 'natural class' of processes. They pattern alike only because all rules of grammar behave this way. Of course, in Chomsky (1973), it was noted that pronominal coreference did not in fact obey the constraints, and *wh*-movement obeyed them only by stipulation. Moreover, the constraints were specifically stated in such a way that (COMP-to-COMP) movement was granted an exemption. Apparently, certain rules had to be designated as obeying the constraints, others as not obeying them.

Chomsky (1976) proposed an alternative. There is exactly one type of rule conforming to the constraints, namely, rules of construal (which concern themselves with antecedent relations). Other rules are not constrained (if we set aside Lasnik's 1976 Rule of Disjoint Reference). Thus, NP-movement itself is not constrained. Rather, the 'trace' left behind by movement is an anaphor, subject to the same rule of construal as any other anaphor. This approach ultimately led to Binding Condition A (Chomsky 1981):

(7) **Binding Condition A:**
An anaphor must be bound in its governing category (GC) (where GC is defined in terms of tense and subject).

For Chomsky (1973), some instances of long-distance movement fell under the purview of Subjacency:

(8) **Subjacency:**
No rule can involve X, Y, if Y is not subjacent to X. (Y is subjacent to X if they are contained in all the same cyclic categories [clause or NP] or if they are in adjacent cyclic domains.)

But, at the time, there was no particular application of Subjacency to NP-preposing, presumably because SSC and TSC imposed tighter constraints. With the Chomsky (1981) reformulation and incorporation of SSC and TSC into Condition A of the Binding Theory, Subjacency did become potentially relevant to NP-preposing, particularly the instances which came to be known as 'superraising', a name due to Guiseppe Longobardi. We turn to these instances now.

2 Superraising

The first published discussion of the phenomenon appears in Chomsky (1981: 58). Chomsky presents the following example, of a type reportedly considered by Longobardi:

(9) *John seems [that it is certain [*t* to like ice cream]].

According to Chomsky, Longobardi noted the potentially problematic nature of such examples. The name 'superraising' was by analogy with the super-Equi of Grinder (1970), illustrated in (10):

(10) John_i said that it would disturb Sue [PRO_i to make a fool of himself in public].

But while Equi (i.e., control of PRO) is possible at a distance (in particular, across an expletive subject), raising is evidently not, and that is Chomsky's concern. Chomsky reasons that the trace *t* in (9) is governed, satisfying one of its requirements, and its antecedent is in a non-theta-position, satisfying another. He concludes that Subjacency is responsible for the ungrammaticality of (9). Chomsky mentions, but immediately rejects, the possibility that (9) is an SSC (later in the book incorporated into Condition A) effect: "While there are, as we shall see, binding theory violations of a structural form similar to [(9)], they seem very different in level of acceptability from the completely ungrammatical [(9)], indicating that [(9)] is not a binding theory violation" (1981: 58). Chomsky does not

explicitly spell out this point either here or later in the book, but he presumably has in mind the kind of example he discusses on (1981: 214):

(11) They think it is a pity that pictures of each other are hanging on the wall.

The point is that the distance between *each other* and its antecedent *they* here is comparable to or greater than the distance between *t* and its antecedent *John* in (9). Thus, even under the Chomsky (1981) assumption that the trace of NP-movement is an anaphor, Condition A of the Binding Theory, repeated in (12), cannot handle (9) without incorrectly ruling out (11):

(12) An anaphor must be bound in its governing category.

There is one other construction on which the Chomsky (1973) and Chomsky (1981) accounts diverge. As Lasnik (1985) pointed out, (13) is indistinguishable from (14), as far as TSC and SSC are concerned:

(13) *John$_i$ is believed [that he$_i$ likes t_i].

(14) *John$_i$ is believed [that Mary$_j$ likes t_i].

The movement of *John* in both examples unequivocally violates both TSC and SSC, since the movement is out of the bracketed finite clause, and is across a subject. Yet in (13), unlike in (14), the trace left by movement conforms to (12): the governing category of *t* is the embedded S, and in that embedded S *t* is bound by *he*. Lasnik (1985), extending the ideas of Rizzi (1986b), proposes to account for (13) by the condition in (15), from Chomsky (1981: 333):

(15) Where α_i,α_{i+1} are successive members of a chain, α_i must locally bind α_{i+1}.

In (13), this condition is violated since *he*, rather than *John*, locally binds *t*. Hence, *John* and *t* cannot constitute a chain, and the theta-criterion is violated. Chomsky (1986b) also proposed an analysis of examples like (13) in terms of a chain requirement, but a different one: that a chain can't contain two Case positions.

3 An ECP account

As noted above, Chomsky (1981) proposes that Subjacency is responsible for the unacceptability of superraising examples as in (9), repeated here as (16):

(16) *John seems [that it is certain [*t* to like ice cream]].

Chomsky's initial argument for a Subjacency account was that (16) is worse than a typical Condition A violation. However, as observed by Lasnik and Saito (1984),

it is also worse than a typical Subjacency violation. They go on to point out, following an observation of Chomsky's, that (16) falls under their formulation of the Empty Category Principle (ECP), a constraint that typically results in severe degradation. The ECP was first formulated in Chomsky (1981), and has undergone many changes. For present purposes, let us adopt the following formulation, approximately that of Lasnik and Saito:

(17) **Empty Category Principle:**
A trace must be properly governed.

In Lasnik and Saito's formulation, there are two ways to satisfy the proper government requirement, roughly as follows:

(18) **Lexical government:**
α, a lexical head, lexically governs β iff α governs β and α assigns Case or a theta-role to β.

(19) **Antecedent government:**
α antecedent-governs β iff α binds β and α and β are not separated by an S' boundary (unless β is in Comp).[2]

A sentence like (1) (repeated here as (20)) is redundantly ruled out by the ECP, since it also violates Condition A of the Binding Theory, but we saw that other cases of illicit NP-movement are not ruled out by Condition A:

(20) *Mary is believed [*t* likes John].

The trace in (20) is not properly governed. It is certainly not a complement of any head, lexical or otherwise, and it is not in a position Case-marked by a lexical head. Furthermore, its binder is too far away: *John* is outside the minimal S' containing *t*, and *t* is not in Comp. So (20) violates the ECP. (20) contrasts with the standard raising construction in (21):

(21) Mary is believed [*t* to like John].

From the definition given above, the trace in (21) is not properly governed by *believed*, since this trace is not a complement to *believed*. However, under the Lasnik and Saito formulation, antecedent government is satisfied, since the only S' that contains the trace is the entire S', given that (21) is an 'S'-deletion' configuration. On the other hand, the superraising example, repeated here as (22), is correctly excluded:

(22) *John seems [that it is certain [*t* to like ice cream]].

Note that if lexical government were simply government by a lexical head, (22) would be ruled in. Since *certain* governs the trace in (22) (S' not being a barrier

to government), it would lexically govern this trace. Under the more restrictive definition in (18), *certain* cannot properly govern the subject position of the lower clause because it assigns neither a theta-role nor Case to it. However, as Lasnik and Saito (1992: 129) note, there are examples of superraising that do not readily fall under their ECP account. One such case (attributed to Mark Baker) is shown in (23):

(23) *John seems [that it was told *t* [that Mary was a genius]].

This example involves raising of *John* from the object position of *told* to the matrix subject position, and is clearly ungrammatical. But unlike the trace in (22), *t* in (23) satisfies the ECP as stated above, since it is theta-marked, and hence lexically governed, by the verb *told*. Note that this trace is not antecedent-governed, since its antecedent is too far removed from it. Given this fact, Chomsky (1986a) suggests that all traces must be antecedent-governed regardless of whether they are lexically governed or not (see also Jaeggli 1982; Koopman and Sportiche 1985; Stowell 1986; Aoun et al. 1987).

4 Relativized Minimality

At this point, we turn to the major post-*Barriers* analysis of long NP-movement, viz. Rizzi (1990b), which also plays a crucial role in recent 'Minimalist' versions of locality. The essence of Rizzi (1990b) is a locality notion of 'Relativized Minimality'.

Rizzi's condition differs from previous ones in that it pays crucial attention to the type of position targeted for movement. Roughly speaking, Relativized Minimality prevents a syntactic dependency from being established across an intervening element of the same kind, since the intervening element would be a closer antecedent for the lower position in the dependency. Thus, the dependency in (24) is blocked if Y is a potential antecedent for Z (where potential antecedenthood is independent of indexing):

(24) . . . X . . . [. . . Y . . . Z . . .]

(24) can be seen as a generalization and extension of the condition in (15).

Rizzi investigates three kinds of syntactic dependencies, based on the types of positions involved: A-chains (the concern of this chapter), A-bar chains (operator-variable chains), and head-chains. Rizzi argues that dependencies like those in (25) are ill-formed because they are blocked by an intervening potential antecedent, the boldfaced item in each example:

(25) a. *John seems [that **it** is likely [*t* to win]].
b. *How do you wonder [**whether** [to solve the problem *t*]]?
c. *Have they **could** [*t* left]?

Under this view, superraising as in (25a) arises when an element moving to a subject position (i.e., an A specifier position) crosses another A specifier position.

As mentioned above, Relativized Minimality is an extension of the locality constraint in (15), first formulated by Chomsky (1981) and further developed by Rizzi (1986b). Rizzi (1986b) argued that a well-formed A-chain cannot be established across an intervening argument with the same 'referential index'. This configuration is schematized in (26), where Y blocks the dependency between the co-indexed X and its trace *t*. Let us follow McGinnis (1998), and refer to this type of condition as Indexical Locality:

(26) $\ldots X_i \ldots [\ldots Y_i \ldots t_i]$

Although similar in spirit to Relativized Minimality, Indexical Locality constrains dependencies only between elements with the same referential index, and not between elements of the same position type. In fact, even though Rizzi (1986b) does not discuss examples of the superraising type, Indexical Locality presupposes that an A-chain across an intervening A-position is well-formed. For example, Rizzi (1986b) contrasts ill-formed dependencies like (27) with well-formed ones like (28). By Relativized Minimality, however, depending on the details of the structure, one might expect that the A-chain between *Gianni* and its trace in (28) would be blocked by the intervening argument *gli*:

(27) *Gianni$_i$ non si$_i$ sembra t_i [t_i fare il suo dovere].
Gianni not SI seems do the his duty
'Gianni does not seem to himself to do his duty.'

(28) Gianni$_i$ non gli$_j$ sembra t_j [t_i fare il suo dovere].
Gianni not to-him seems do the his duty
'Gianni does not seem to him to do his duty.'

Rizzi's (1986b) explanation of the contrast between (27) and (28) has been applied to (abstractly) similar contrasts in Albanian (Massey 1990, 1992), and in German and Japanese A-scrambling (Miyagawa 1997; Yatsushiro 1997, 1999). We refer to Snyder (1992) and McGinnis (1998) for extensive discussion, and ramifications.

5 Raising across experiencer

A second potentially problematic case for Relativized Minimality is the possibility of raising into a higher clause past a non-clitic experiencer, as in (29):

(29) John seems to Mary [*t* to be the best].

The experiencer appears to be in an A-position c-commanding into the embedded clause, since the quantified DP experiencer *every poet* in (30a) can bind the pronoun *his* in the embedded clause, yielding the following interpretation: for each poet P, John seemed to P to be P's most devoted admirer. Further evidence appears in (30b), where the experiencer pronoun gives rise to an apparent Condition C effect:

(30) a. John seemed to every$_i$ poet [*t* to be his$_i$ most devoted admirer].
b. *Mary$_j$ seemed to him$_i$ [t_j to like John$_i$].

Further, the construction is reasonably acceptable even if the raised subject binds an anaphoric experiencer, as in (31). Cases like this potentially violate both Indexical Locality and Relativized Minimality:

(31) John$_i$ seems to himself$_i$ [t_i to be beautiful].

As we will see, the problem posed by such examples persists in the Minimalist framework.

6 Economy

The guiding intuition to capture locality in an economy-based Minimalist framework has been that in "the 'bad' cases, some element has failed to make 'the shortest move.'" (Chomsky 1993: 14). This intuition follows directly from Relativized Minimality. In a classic superraising configuration such as the following, *John* has not made the shortest move, as it has bypassed the intermediate subject position occupied by *it*:

(32) *John seems that it is likely to win.

Standard TSC examples, such as (1) (repeated here as (33)), also have a derivation that can be excluded in this manner:

(33) *Mary is believed likes John.

Assuming the VP-internal subject hypothesis (VPISH), *Mary* has moved from the lower VP-internal position. If the movement is in one fell swoop, subject position

of the lower clause is skipped, in violation of shortest move. However, it is also obvious that (33) is also excluded on standard Minimalist assumptions concerning movement and feature checking: all movement must be assumed to be triggered by feature-checking requirements. When the subject moves in one fell swoop from its base position (internal to the lowest VP) to matrix SpecIP, this creates the right configuration for checking the features (Case and agreement) of matrix I, and satisfies the Extended Projection Principle (EPP)[3] in that matrix clause, but leaves the features of embedded I unchecked, and the EPP requirement of its clause unsatisfied. This derivation, therefore, is independently excluded without appeal to locality/shortest move.

An alternative derivation might involve successive-cyclic movement, with *Mary* first moving to the Spec of the embedded IP. However, in this instance, the Case feature of the matrix finite Infl will not be checked even when *Mary* moves to the higher Spec, as the nominative Case feature of *Mary* has been checked off.[4]

Ura (1994, 1996) refers to cases like (33) as 'hyperraising'. Impressionistically, hyperraising stands for cases where an element appears to have done too much checking; superraising stands for operations which move an element across a closer potential checker. The conception of checking and movement underwent a substantial change in Chomsky (1995b). Chomsky (1995b) distinguishes between uninterpretable and interpretable features. According to Chomsky, only uninterpretable features (e.g., Case) are inaccessible after checking. Interpretable features (e.g., agreement and categorial features of a nominal expression) can participate in more than one checking operation (see Lee 1994 for further development). As for Move, Chomsky proposed a change in perspective, arguing that movement is better conceived of in terms of 'attraction'. That is, movement is driven by the needs of the position to which movement takes place. Shortest move is thus reconstrued as 'closest attract' (see also Oka 1993).

The change from Move to Attract is more than a mere terminological one. It allows a reduction in computational complexity (shifting from a global to a more desirable local type of Economy). This is so since the ultimate position where a moving item will have its features checked may be many derivational steps away from the initial position of that item. Thus, from the point of view of the moving item, all of the steps of movement prior to the final one are locally gratuitous, contributing only toward a future need. If, on the other hand, each position to which movement takes place has a requirement (e.g., the EPP) that must be satisfied, that need is determined immediately at that point of cyclic derivation.

The interpretable/uninterpretable-feature distinction meshes with this view of movement if, as suggested by Chomsky (1995b), the EPP is satisfied by the categorial D feature of a nominal expression. In successive-cyclic movement, the intermediate checking operations do not cause the moving element to lose its feature, and thereby that feature remains accessible for further attraction.

There is one type of hyperraising that is not yet accounted for. Recall that in the standard instances, such as (33) above, in the path of movement there are two (or more) Case positions. Assuming the Case feature of *Mary* is checked off in the

lower Spec of IP, the matrix Infl will wind up with its Case feature unchecked. Alternatively, if the lower Spec of IP is skipped, its Case (and agreement and EPP) features will remain unchecked. One might then expect that A-movement from a Case position to a non-Case position would be possible. But it is not:

(34) *Mary's belief [John to be likely [*t* will win]].
cf. Mary's belief that John is likely to win.

Note that the clausal analogue of (34) is easily accommodated:

(35) *Mary believes [John to be likely [*t* will win]].

Here, the accusative Case feature of the matrix verb *believe* will not be checked, since *John* must have checked the nominative Case feature of the embedded finite Infl. But in (34), there is no such Case feature in the matrix, since nouns have no structural Case feature. This is evidenced by the contrast in (36):

(36) a. Mary believes John to be likely to win.
b. *Mary's belief John to be likely to win.

Another type of example abstractly displays the same problem. Eduardo Raposo notes (p.c. to Noam Chomsky; see also Raposo and Uriagereka 1996: 775, fn. 35) that Chomsky's (1995c) system incorrectly rules in a particular variant of superraising:

(37) *It seems [that *t* was told John [that IP]].

Raising of *it* to matrix Spec of IP is evidently legitimate, because its interpretable EPP/categorial feature still makes it accessible for further computation. Having lost its Case feature in the embedded clause, *it* cannot check the uninterpretable Case-feature of matrix Infl. But as Raposo observes, it is still possible to raise *John* (or its relevant formal features) in the LF component to check the Case features of both matrix finite Infl and *John*.[5] No uninterpretable features remain unchecked (being interpretable, the categorial/EPP features of *John* need not be checked), so the derivation converges, incorrectly in this instance. To rule out this possibility, Chomsky (2000) postulates that an element having checked its Case features cannot be 'attracted' for mere EPP-checking. In particular, Chomsky argues that the role of Case in the grammar is to make an element visible for Attraction (of the A-movement sort). This correctly rules out (37): having checked its Case features, *it* cannot Move to matrix I. The uninterpretable Case feature of matrix I remains unchecked, causing the derivation to crash.

Note that care is required if we are to continue to rule out the classic superraising configuration, as in (23), repeated here as (38):

(38) *John seems [that it was told *t* [that Mary was a genius]].

Even though *it* is no longer a potential attractee (having already checked its Case), it must still count for the purposes of closest Attract, thus preventing the attraction of *John*, an instance of what Chomsky (2000) calls 'defective intervention'.

7 Equidistance

Chomsky (1993: 182ff.) considers an apparent instance of superraising (a violation of the 'Shortest Movement' requirement) that arises in the context of his claim that an object NP must raise to SpecAGRoP to check off its Case feature. The combination of an Object-related functional projection (AGRoP) outside of VP and the VPISH gives rise to a situation where the object must cross either the subject or its trace (depending on the timing of Object raising):

(39) $[_{\text{AGRoP}}$ ___ $[_{\text{AGRo'}}$ AGRo $[_{\text{VP}}$ Subject-NP/$t_{\text{subject-NP}}$ $[_{\text{V'}}$ V Object-NP]]]]

To avoid a violation of Shortest Move, Chomsky proposes a mechanism of Equidistance according to which two targets of movement (i.e., two potential landing sites) are equidistant if they are in the same minimal domain. The minimal domain of a head H is (roughly) the specifier of HP and the complement of H. Crucially, Chomsky allows for the possibility of 'domain extension'; in particular, the minimal domain of H may be extended if H moves to a head X. When that happens, the minimal domain of the chain headed by H comprises SpecXP, SpecHP, and Complement of H (in addition to any adjoined elements, which we ignore here). Returning to (39), Chomsky's characterization of Minimal Domain and Equidistance allows for the object NP to move to SpecAGRoP across the subject NP or its trace without causing a Shortest Move/Minimality violation only if V moves to AGRo. Chomsky's Equidistance account has played a major role in the analysis of overt Object raising for Case (especially in instances of Object Shift in Scandinavian languages), since the operation appears to be tied to verb raising ('Holmberg's Generalization'; see Holmberg 1986 and much subsequent work). Contrast (40) and (41)[6] (we follow the literature in assuming that negation *ekki* marks the left-edge of VP):

(40) a. Jólasveinarnir borðuðu ekki búðinginn.
The Xmas troll ate not the pudding
'The Xmas troll didn't eat the pudding.'
b. Jólasveinarnir borðuðu búðinginn ekki.

(41) a. Jólasveinarnir hafa ekki borðað búðinginn.
The Xmas troll has not eaten the pudding
'The Xmas troll has not eaten the pudding.'
b. *Jólasveinarnir hafa búðinginn ekki borðað.
c. *Jólasveinarnir hafa búðinginn borðað ekki.

As an alternative to the admittedly complex definition of Minimal Domain and the relaxation of locality under Equidistance, several researchers (notably, Koizumi 1995 and Lasnik 1999a) have adopted a VP-structure in which AGRoP is located below the base position of the subject, the so-called 'Split-VP' hypothesis in (42):

(42) $[_{VP}$ Subject-NP $[_{V'}$ V $[_{AGRoP}$ AGRo $[_{VP}$ [V Object-NP]]]]]

If (42) is adopted, the issue of superraising in situations of overt Object raising is eliminated entirely.

8 Typological variation?

Given how 'deep' the principles are preventing long NP-movement, one would a priori expect such movement to be prohibited universally. However, Ura (1994, 1996) has presented evidence that many languages differ from English in accepting hyperraising and/or superraising constructions. The following are examples from Romanian (hyperraising; Grosu and Horvath 1984: 351) and Mandarin Chinese (Ura 1994: 10):

(43) a. S-a nimerit ca toţi băieţii să fie bolnavi.
refl-have.3sg hit-part that-subj all boys subj be-3pl.subj sick
'It happens that all boys were sick.'
b. Toţi băieţii s-au nimerit să fie bolnavi.
all boys refl-have.3pl hit-part subj be-3pl.subj sick
'All the boys happened to be sick.'

(44) a. Keneng Zhangsan reng le nei kuai rou gei la.
possible Zhangsan throw ASP that piece meat to he
'It is possible that Zhangsan tossed that piece of meat to him.'
b. Ta_i keneng Zhangsan reng le nei kuai rou t_i.
He possible Zhangsan throw ASP that piece meat
'He is possible that Zhangsan tossed that piece of meat.'

Ura argues that all languages that allow superraising or hyperraising also have 'multiple subject constructions', which, if analyzed as involving multiple specifiers, make all 'subjects' equally accessible to a higher target position, hence equally eligible for attraction. In this type of language, a nominal expression can escape from a clause by first moving to a specifier position in that clause. Note, though, that while that might permit derivations of superraising constructions, it does not suffice to allow hyperraising. For the latter construction, as Ura observes, it is necessary to weaken the normal requirement that a Case 'assigner' check a Case. He thus proposes that languages that allow hyperraising have optional Case-feature checking in certain circumstances. How to fit this naturally

into the Minimalist program is not entirely clear. However, see Zwart (1997b), where it is claimed that Ura's generalization about multiple Specs is spurious. Zwart explains away many of the problematic illicit NP-movements as cases of non-raising (hyperraising) or topicalization (superraising). Clearly, further research is needed in that area before theoretical conclusions can be drawn.

An area where the logic of Ura's account is widely assumed is double object constructions. It is now generally accepted that languages split into two groups when it comes to the behavior of the two objects in ditransitive structures (see Anagnostopoulou 2003 for a comprehensive survey and justification of the dichotomy). Some languages are said to be symmetric, allowing both objects to take part in the same set of operations (passivization, incorporation, reflexivization, etc.), while other languages are asymmetric: they invariably favor the indirect object (Goal NP) for syntactic purposes. On the basis of pairs like (45) and (46), English is characterized as an asymmetric language, whereas the Bantu language Kinyarwanda falls into the symmetric language type (data from Baker 1988a: 175):

(45) a. John was given the book (by Frank).
b. *The book was given John (by Frank).

(46) a. Umugore y-a-haa-w-e igitabo.
Woman SP-Past-give-Pass-Asp book
'The woman was given the book.'
b. Igitabo cy-a-haa-w-e umugore.
Book SP-Past-give-Pass-Asp woman
'The book was given (to) the woman.'

Anagnostopoulou (2003) shows in detail that the contrast between symmetric and asymmetric languages does not reduce to a Case difference (say, availability of inherent Case), and argues that the contrast must be accounted for in terms of locality. She follows Ura (1996) and McGinnis (1998, 2002) in taking the structure in (47) to be the base structure for ditransitives cross-linguistically:

(47) $[_{\text{VP-1}}$ Goal-NP [V-1 $[_{\text{VP-2}}$ V-2 Theme-NP]]]

The asymmetry observed in (45) falls out immediately from (47): the Goal NP is closer than the Theme-NP for movement. Symmetry of the type found in (46) arises from the possibility of 'leapfrogging': movement of the Theme-NP to an extra specifier position made available by V-1 (48):

(48) $[_{\text{VP-1}}$ Theme-NP $[_{\text{VP-1}}$ Goal-NP [V-1 $[_{\text{VP-2}}$ V-2 $t_{\text{Theme-NP}}$]]]]

Once the Theme-NP has moved to SpecVP-1, it can be targeted by syntactic processes taking it outside VP without superraising. The parametric difference between English and Kinyarwanda thus boils down to the availability of multiple VP-specifiers.

9 Experiencer paradox

Another item on the 'problematic' list for the Minimalist program was already a major stumbling block in the GB-era. It concerns cases of raising past an experiencer, as in (29), repeated here as (49):

(49) John seems to Mary [*t* to be the best].

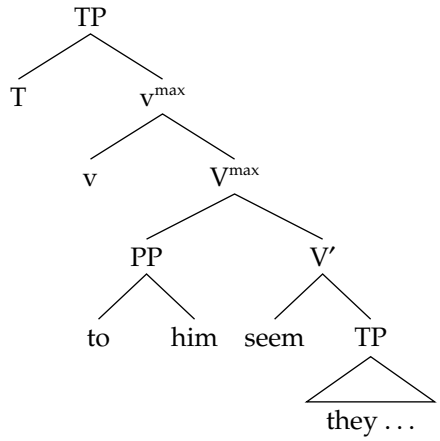
Chomsky (1995b) notes the problematic nature of these cases. He also notes, following work by Esther Torrego (1996, 1998), that some languages, like Spanish, behave as expected. That is, subject-raising past the experiencer is disallowed. Languages like French and Italian, where raising is allowed in some cases (when the experiencer is a clitic, for instance), contribute to make the area murkier still. Here, we will confine ourselves to the solutions to be found in the Minimalist literature for English, referring to Boeckx (1999) and McGinnis (1998) for discussion of the parametric issue.

Kitahara (1997) addresses the experiencer paradox, instantiated in (50), repeated from (30b) above, and suggests a derivational account, which is similar to one independently proposed by Ferguson (1994, 1996):

(50) Mary_j seemed to him_i [t_j to like John_i].

To ensure c-command by *him* into the embedded clause and thus account for the Condition C effect, and at the same time to allow raising of *they* out of the embedded clause and past *him*, Kitahara suggests that *him* does not c-command into the embedded clause at the point in the derivation when raising applies. Kitahara gives roughly the structure in (51), but his line of reasoning would be applicable on virtually any standardly assumed structure:

(51)



Assuming any of the usual definitions of c-command, in (51) *him* does not c-command *they*, since the PP-node dominates the former but not the latter. Raising is thus licit.

With respect to the disjoint reference effect, Kitahara assumes, following Chomsky (1993 and later works) that binding is an interpretive procedure established by inspecting LF. To achieve the relevant configuration, Kitahara suggests that *him* covertly raises and adjoins to P to check its Case. Following this movement, *him* c-commands into the embedded clause, which forces the disjoint reference effect. There is one immediate problem for Kitahara's account. Raising is evidently possible even across simple nominal experiencers. Parallel to (50), we find the following (which, following standard assumptions, we take to be a case of raising, although the evidence is less clear than in (49)):

(52) John strikes Mary [as *t* being the best].

And here too, there is evidence that the experiencer c-commands into the clausal complement:

(53) *They strike him$_i$ [as *t* being angry at John$_i$].

Perhaps one could argue that contrary to superficial appearances, *him* in (53) is contained in a PP, but one headed by a null P. Kitahara's account could then be maintained.

There is also a somewhat more abstract problem with Kitahara's account. Kitahara's account crucially relies on the a priori reasonable assumption that covert movement of a nominal expression can affect anaphoric possibility. However, Lasnik (1995b) argues that such movement does not affect anaphoric (or any other) interpretive relations. First, some background is in order. In a series of writings, beginning with Chomsky (1986b), Chomsky argued that the 'associate' of *there* undergoes some sort of covert raising in such a sentence as (54):

(54) There is a man here.

This provides the basis for an account of the familiar superficially bizarre agreement paradigms displayed by these constructions, with the verb agreeing with something that is not its formal subject:

(55) a. There is/*are a man here.
b. There are/*is men here.

But, as is well known, for all anaphoric purposes, the associate behaves as if it is in situ. The following data (based on Den Dikken 1995a; see Lasnik and Saito 1991 for similar examples in Exceptional-Case-Marking (ECM)/subject-to-object-raising-contexts like *John believes there to be a man in the room*) are representative:

(56) a. *Some applicants* seem to *each other* to be eligible for the job.
b. *No applicant* seems to *his* interviewer to be eligible for the job.

(57) a. *There seem to *each other* to be *some applicants* eligible for the job.
b. *There seems to *his* interviewer to be *no applicant* eligible for the job.

10 Feature movement

The movement theory of Chomsky (1995c) provides a rather natural resolution of this near contradiction, as discussed by Lasnik (1995b). Chomsky argues that when movement is for feature-checking purposes (perhaps always the case), a priori only formal features ought to move. For overt movement, Chomsky suggests that this will cause morpho-phonological problems. Hence, overt movement will typically demand the 'pied-piping' of an entire word or phrase. Covert movement, on the other hand, does not feed into the phonological component, so the more economical movement of mere formal features is possible, hence necessary. Under the reasonable assumption[7] that mere displacement of formal features (leaving behind the semantic properties of the item) is not enough to affect semantic relations, the contrast between (56) and (57) is explained. In the former examples, an entire expression, referential properties and all, has moved; in the latter, only formal features have moved, so the anaphor in (57a) and the bound variable pronoun in (57b) are unlicensed.

Returning now to Kitahara's account, we see that his covert/feature movement must affect binding relations: that is crucial to capture the Condition C effect. But there is no immediately obvious way to distinguish Kitahara's raising from that in the existential sentences. Perhaps the essence of Kitahara's account could be captured with not the nominal expression undergoing covert movement, but rather the preposition. If a preposition P were to be analyzed as just a bundle of formal features (rather plausible for *to*), covert 'incorporation' of P into the verb arguably could affect the c-command relations between the complement of that P and items outside the PP.

Feature communication triggered another proposal in the realm of A-movement. Manzini and Roussou (2000) suggest that A-movement does not exist. Rather, A-elements are base generated in their surface positions, and attract theta-roles (conceived of as features, as suggested by Lasnik 1995c). For superraising, Manzini and Roussou's proposal faces the same problem as the more conventional view of A-movement. To exclude superraising, Manzini and Roussou adopt the following principle, dubbed Scopal MLC (Minimal Link Condition):

(58) **Scopal MLC:**
A target attracts everything down to the next attractor.

As Boeckx (2000) shows, this is still inadequate in dealing with the raising-past-experiencer cases just discussed.

Note that conceiving of theta-roles as movement features brings control into the realm of raising, and suggests the possibility that Rosenbaum's (1967) Minimal Distance Principle, stated in more modern terms in (59), should be looked upon as a special case of Relativized Minimality, or one of its minimalist instantiations, as Hornstein (1999) argues:

(59) **Minimal Distance Principle:**
The subject of an infinitival complement of a predicate P selects as its controller the minimal c-commanding noun phrase in the functional complex of P.

If something like this is correct, the longstanding puzzle of shifting control (Farkas 1988, etc.) might fall under the purview of variation with respect to superraising. (For further discussion, see Boeckx and Hornstein 2003; Hornstein 2003.)

11 Agree

In 2000, Chomsky sharpened the Move-F account. Despite its adequacy in dealing with data like (57), feature movement raises a series of non-trivial technical questions. In particular, feature movement takes the form of (head-)adjunction, which violates the Minimalist conception of the Cycle known as the Extension Condition, the requirement that all operations expand the Phrase Marker. Chomsky (2000) dispensed with feature movement as such[8] and proposed the operation Agree to capture the essential effects of feature movement.[9] Agree amounts to a process of long-distance feature checking (or valuation) with no displacement. The configuration in which it obtains is very reminiscent of the notion of long-distance government under c-command (see especially Raposo and Uriagereka 1990). In an Agree analysis, a Probe (attractor) searches inside its c-command domain for a Goal (attractee) with a matching feature. Once the Goal is found, it checks the features of the Probe, triggering agreement. Viewed in this light, covert 'movement' (long-distance agreement) is decomposable into a Matching and a Checking/Valuation procedure.

Since Agree is taken to underlie Move (see Chomsky 2000, 2001b), we expect it to be subject to the same locality constraints. In particular, we expect no 'Super-agree'. The restriction on Japanese object (honorific) agreement discussed in Boeckx and Niinuma (2004) offers a relevant case.

The basic facts are as follows: if the verb is transitive and the object is of the relevant sort (appropriate social rank vis-à-vis the speaker, say), object agreement (here glossed as OH, short for Object Honorification) obtains (60). If the verb is ditransitive, the verb agrees in honorification with the indirect object (61). Crucially, the direct object is inaccessible for agreement in such cases even if it is of the relevant sort, and the indirect object isn't (62):

(60) Taro-ga Tanaka sensei-o o-tasuke-si-ta.
Taro-Nom Prof. Tanaka-Acc help-OH-past
'Taro helped Prof. Tanaka.'

(61) Hanako-ga Tanaka Sensei-ni Mary-o go-syookai-si-ta.
Hanako-Nom Prof. Tanaka-Dat Mary-Acc introduce-OH-past
'Hanako introduced Mary to Prof. Tanaka.'

(62) *Hanako-ga Mary-ni Tanaka Sensei-o go-syookai-si-ta.
Hanako-Nom Mary-Dat Prof. Tanaka-Acc introduce-OH-past
'Hanako introduced Prof. Tanaka to Mary.'

Here, the predicate is ditransitive, as in (61), but this time the NP bearing the relevant feature to trigger honorification functions as the direct object. In such a case, object honorification (i.e., agreement between the verb and the direct object) is impossible.

Boeckx and Niinuma (2004) argue that the restriction observed in (62) falls under Relativized Minimality. Since switching the surface order of the direct object and of the indirect object via overt A-movement (short-distance scrambling) does not affect agreement marking (63), these authors claim that it must be the case that object agreement takes place prior to word-order permutation:

(63) *Hanako-ga Tanaka Sensei-o Mary-ni go-syookai-si-ta.
Hanako-Nom Prof. Tanaka-Acc Mary-Dat introduce-OH-past
'Hanako introduced Prof. Tanaka to Mary.'

They take this to mean that agreement takes place under Chomsky's derivational version of Agree, which applies as soon as the Probe (say, *v*) is introduced into the derivation. The intervention effect in (62) follows if the dative element c-commands the accusative element, as in (47).

Examples like (64) (Chomsky 2000: 149, n. 93(ii), attributing the example to Erich Groat) suggest that Agree may take place more than once. Specifically, it may target more than one INFL, just like in 'hyperraising' cases (in (64) *two men* agrees with both embedded and matrix INFLs):

(64) ?There look as though there are two men in the room.

Interestingly, as Fujii (2003) observes, there exists a 'hyperraising' analogue to the 'hyperagree' case in (64). Consider (65):

(65) Two men look as though they are in the garden.

We do not know at this point why English forces the presence of a resumptive pronoun (*they*) in the embedded clause in hyperraising cases, but we find the

parallel between Agree and Move intriguing. (66) shows that Move followed by Agree is disallowed:

(66) *There look as though two men are in the room.

The unacceptability of (66) suggests that overt movement of X to Y (Move) followed by Agree between X and a higher head Z (Agree) is disallowed. More precisely, since Agree underlies Move, the sequence of operations in (67) is disallowed:

(67) Agree (X, Y) + Move (X, Y) + Agree (X, Z)

(67) is reminiscent of instances of 'Improper Movement' (an option considered in the context of superraising by Chomsky 1995b: 326):[10]

(68) A-movement + A-bar movement + A-movement

If the existence of 'Improper Agree' (67) can be confirmed, the parallelism between Move and Agree would be strengthened.

12 Conclusion

Needless to say, many mysteries remain. Perhaps the most significant of them, as noted above, is how to permit raising across an experiencer at all, but then how to block it where it is not allowed. Another, as noted by Manzini in a reprise of an observation by Lasnik and Saito discussed above, is why a violation of closest Attract in the case of A-movement leads to more severe degradation than a mere Subjacency violation, in particular, a *wh*-island violation, which has been analyzed in precisely the same terms. It seems that we have not yet found the true generalizations in this realm.

NOTES

1 Keeping definitions maximally simple, A-movement refers to movement to subject/object positions, i.e., basically anything targeting non-operator(-like) positions.
2 S' becomes CP in the extended X'-theory of Chomsky (1986a), and movement to Comp becomes movement to Spec of CP. Likewise, clause (S) becomes InflP (IP), and its subject position Spec of IP.
3 This is the requirement that every clause have a subject, suggested by Chomsky (1981) and further developed by Chomsky (1982).
4 This is, in effect, the Minimalist version of the chain condition of Chomsky (1986b).
5 Chomsky quite generally assumes that Case can be 'checked' in the covert component.
6 Overt Object Shift in Scandinavian languages correlates with overt verb raising to T (not just V-raising to AGRo). This can be captured under Chomsky's account by

forcing V-movement to T to allow for movement of the VP-internal subject NP to SpecTP across SpecAGRoP (see Bobaljik and Jonas 1996 for detailed discussion).

7 Developed in detail in Lasnik (1995b).

8 Accordingly, Chomsky also dispenses with head-movement in narrow syntax. For an argument in favor of Chomsky's position, see Boeckx and Stjepanović (2001).

9 See Lasnik (2002) for arguments in favor of feature movement over Agree.

10 Chomsky was worried about excluding a derivation in which an element X A-bar-raises across an A-element Y before landing into an A-position Z, as depicted in (i):

(i) John seems [*t'* [it was told *t* [that it was raining]]].

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42 Middles

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1 Introduction

In this chapter, we will provide an overview of the properties of so-called middle constructions. A thorny issue that immediately arises in a discussion of middles is the proper delimitation of the subject of inquiry. It is not always easy (as we will see) to distinguish middles from a wide range of related sentence types, such as passives, inchoatives or anti-causatives, instrumental subject clauses, true reflexives, and others.[1] In all cases that will be considered true middles in this chapter the following statements hold:

(1) a. The external argument of the non-middle counterpart of the middle verb cannot be expressed as a regular DP-argument in the middle.
b. If the non-middle counterpart of the middle verb has a direct internal argument role, the subject of the middle sentence carries this role.
c. The middle verb is stative, non-episodic. The middle sentence is a generic statement. It expresses that the argument mentioned in (b) has a particular individual-level property, or that events denoted by the verb or the verb–argument combination have a particular property in general.

Some examples of middle sentences as they will be understood here are given in (2):

(2) a. Bureaucrats bribe easily.
b. La Tour Eiffel se voit de loin. French
the Eiffel Tower REFL sees from afar
'The Eiffel Tower can be seen from afar.'
c. Dit boek leest als een trein. Dutch
this book reads like a train
'This book is very easy to read.'

Languages turn out to allow a range of syntactically and/or morphologically different middle constructions. Cross-linguistically, there are middles with and without a reflexive marker, agentive and non-agentive middles, personal and impersonal middles, argument and adjunct middles. Such contrasts will be discussed below.

In some languages, constructions that conform to the criteria in (1) do not have episodic counterparts, and obligatorily get a modal semantics: the middle verb is accompanied by an element expressing to what extent the activity expressed by the verb can be carried out, using an adverb like 'easily', a modal auxiliary, or negation. Such middles will be referred to as 'type I middles'. In another group of languages, middles have formally identical episodic counterparts, with a passive interpretation. (Sometimes they can even use the equivalent of a *by*-phrase, typical for passives, to express the verb's underlying subject.) Such middles will be referred to as 'type II middles' from now on.

In the next section, we will discuss in what respects middle constructions in languages with either type of middle differ from various kinds of lookalikes. Section 3 will discuss the properties of type I middles in more detail, sections 4–5 those of type II middles. In section 6 restrictions on middle formation are discussed. Section 7, finally, reviews the different analyses that have been proposed in the literature for middles.

2 What is a middle and what is not?

A description of what middles are as in (1) is in part syntactic and in part semantic. It is syntactic because it concerns the syntactic projection (or non-projection) of the base verb's external argument and the change in grammatical function of its internal argument. It is semantic because it concerns the stative character of middle verbs and the generic character of middle sentences. In this section, a number of both semantic and syntactic properties will be added to this definition, in the following way. A number of constructions from different languages will be reviewed that are similar to middles, either because they are to some extent synonymous, or they are translation equivalents of middles, or they are morphologically similar. In each case, the difference between this construction

and the middle as defined earlier will be added to the definition of the middle, unless it voids the definition, in which case the particular class is added to the class of middles.

2.1 Middles vs. the middle voice

In Ancient Greek, reflexive/passive morphology is used in a construction that is neither truly reflexive nor truly passive. An example is (3):

(3) eklegomai
choose-REFL
'choose for oneself' (not: 'choose oneself' or 'be chosen')

In such cases, the underlying verb's external argument is syntactically present, but there is a difference from the simple active use of the verb: the morphological marker provides the additional semantics that the action expressed by the verb is directed toward this external argument itself or that it is to this argument's benefit. Because this semantics gives the construction a somewhat intermediate status between the active and the passive, the verb is said to occur in the 'middle' or 'medial' voice in (3). The construction is very different from middles in the sense of (1), however. A crucial difference is the very fact that the external theta-role of the verb in (3) can still be assigned to a syntactic DP-argument. Moreover, in contrast to middles as in (1) with an overt reflexive marker, the reflexive marker in (3) expresses that there truly is a coreference relation between the subject and another argument of the verb. In many languages, the same semantics is expressed by reflexive pronouns:

(4) a. She bought herself a pen.
b. Ona kupila sebe ručku. Russian
she bought SELF-DAT a pen
'She bought herself a pen.'
c. Ze rukte zich de haren uit het hoofd. Dutch
she tore SELF the hairs out the head
'She tore the hairs out of her head.'

We can safely conclude that verbs in the middle voice in languages like Ancient Greek are not middle verbs in the sense of (1), and we will leave them out of consideration henceforth.

2.2 Middles vs. reflexives

In almost all type II and German middles, a morphological marker is present that is identical to the one occurring in reflexive sentences. There are a couple

of obvious differences between true reflexives and middles, however. In a true reflexive, the reflexive marker can be replaced by a direct object without affecting the semantic role of the grammatical subject. The grammatical subject expresses the 'logical' subject; it carries the verb's external theta-role. In a middle, replacing the reflexive marker with the direct object has the effect of changing the grammatical subject's semantic role: with the reflexive marker – i.e., as a middle – the grammatical subject carries the verb's internal argument role; with the reflexive marker replaced by direct objects, the only possible interpretation of the grammatical subject is as the logical subject. This distinction is illustrated below for German:

(5) a. Sie erschoss sich. (*sie* is logical subject)
she shot REFL
'She shot herself.'
b. Sie erschoss den Sheriff. (*sie* is logical subject)
she shot the sheriff
'She shot the sheriff.'

(6) a. Dieses Modell malt sich leicht. (*dieses Modell* is logical object)
this model paints REFL easily
'It is easy to paint this model.'
b. Dieses Modell malt ein Stilleben. (*dieses Modell* is logical subject)
this model paints a still life
'This model paints a still life.'

In some cases, reflexive verbs have no non-reflexive counterpart, in which case replacing the reflexive marker by a direct object is impossible. Such verbs are called 'inherent reflexives'. Middles are never inherent reflexives; in other words, a middle always has a corresponding non-reflexive verb. This in itself serves to distinguish between middles and reflexive verbs.

2.3 *Middles vs. inchoatives*

Inchoative verbs (also referred to as anti-causative verbs) express a change of state of their grammatical subject. They are similar to middles in lacking the expression of the logical subject argument. Also, in many languages they are morphologically identical to middles.

However, there are also substantial differences between middles and inchoative verbs. A crucial difference is that with inchoative verbs the semantics of an implied agent-like role is entirely absent, whereas in a middle this agent-like role is implicitly present (even though it is not assigned to an argument). Also, in contrast to type I middles, inchoatives can be eventive. These distinctions find their expression in a number of different properties.

2.3.1 *Full reflexive adjuncts*

In a middle sentence, a reflexive adjunct can refer to the implicit agent (see also section 7), as in the following examples from French (Fagan 1992: 58, from Ruwet 1976):

(7) a. Cela se dit facilement de soi-même.
that REFL says easily of oneself
'It is easy to say that about oneself.'
b. Ce genre d'objet s'achète facilement pour soi-même.
this type of thing REFL buys easily for oneself
'One easily buys this type of thing for oneself.'

In an inchoative sentence, this type of reflexive adjunct is impossible:

(8) Quand tout s'effond autour de soi (*même), on perd la tête.
When everything REFL collapses around one (*SELF), one loses one's head
'When everything collapses around one, one loses one's head.'

2.3.2 For-*phrases*

Middle sentences can contain a *for*-phrase, which appears to refer to the implicit agent (though see section 7.3). In a sentence with an inchoative verb this is impossible:

(9) Deze deur sluit makkelijk, zelfs voor kleine kinderen. Dutch
this door closes easily even for small children
'Even for small children it is easy to close this door.'

(10) Wilde bloemen verwelken makkelijk in een vaas (*zelfs voor ouden van dagen).
wild flowers wilt easily in a vase even for OAPs
'Wild flowers easily wilt in a vase (even for OAPs).'

2.3.3 *Interpretation of* easily

The semantic presence or absence of the agent role correlates with the interpretation of a modifier like 'easily' (Fellbaum 1986). In a middle, the interpretation of this modifier is 'not difficult to do'; in an inchoative the interpretation is 'at the slightest provocation'. This is illustrated by the contrast between (11) (middle) and (12) (inchoative):

(11) Nieuwe deuren sluiten makkelijk/zonder moeite/*zomaar. Dutch
new doors close easily/without effort/all by themselves
'It is easy to close new doors.'

(12) Wilde bloemen verwelken makkelijk/zomaar/*zonder moeite in een vaas.
wild flowers wilt easily/all by themselves/without effort in a vase
'Wild flowers wilt quickly in a vase.'

Fellbaum shows that, at least in English, the two adverbs differ syntactically as well as semantically. In the 'not difficult' reading, the adverb occurs sentence-finally, whereas it may precede the verb in the other reading:

(13) a. This book reads easily.
a'. *This book easily reads.
b. Such cups wash easily.
b'. *Such cups easily wash.

(14) a. Small chicks die easily when left alone.
a'. Small chicks easily die when left alone.
b. Glass breaks easily.
b'. Glass easily breaks.

Note also that the inchoative, with the 'at the slightest provocation' reading for the adverbial modifier, can do without the adverb without a significant change in meaning of the predicate. The middle, with the 'not difficult' reading for the adverb, is bad or degraded without it:

(15) a. *The book reads.
b. ??Such cups wash.
c. Small chicks die when left alone.
d. Glass breaks.

2.3.4 Stativity

Like any eventive predicate, an inchoative verb may occur in a stative context. When this happens, inchoatives become even more similar to middles than when they are eventive. The position and interpretation of adverbs like 'easily', however, indicate that a difference is still present. An example like (16a) thus is a stative inchoative verb, as is further illustrated by the impossibility of adding a *for*-phrase. It is also possible to derive a middle from transitive *melt*, in which case the adverb must occur sentence-finally and a *for*-phrase is possible (16b):

(16) a. Butter easily melts in the sun (*for bad cooks).
b. Butter (*most easily) melts most easily in a good frying pan (even for inexperienced cooks).

Rapoport (1999a) proposes to distinguish between two types of middles, namely agentive and non-agentive middles, which correspond to 'ordinary' middles and stative inchoatives as just discussed. The data in (16) are a first indication that non-agentive middles should not in fact be treated as middles, but as inchoative verbs in a stative context. This is further corroborated by the properties of the Norwegian 's-passive', which appears to be a Type II middle construction. Such s-passives are fine when derived from transitive verbs, but impossible when derived from unaccusative verbs (Øystein Nilsen, p.c.):

(17) a. Disse filene ødelegges lett (av analfabeter).
these files destroy-S easily (by illiterates)
b. Det bankes (mye) på døra.
it knocks-S a-lot on the-door
'(Frequently) there is knocking on the door.'
c. *Det vokses (mye) på grøten.
it grows-S a lot on the-porridge
'Somebody is growing (a lot) on the porridge.'

If stative inchoatives were a type of middle sentences, or in other words, if middle formation did not affect or use the presence of an external theta-role of the base verb, we would expect Norwegian s-passives to allow both types of verb as base. In fact, (possibly stative) inchoative verbs in Norwegian are derived using a full reflexive, and can easily be distinguished from the s-passive.[2]

To summarize, we have added the following defining property to middles (see also Iwata 1999):

(18) In a middle, the logical subject argument of the underlying verb is semantically present.

Whether or not (18) implies that this subject is also present syntactically in a middle (even though not assigned to a regular argument position: see (1a)) will be discussed in section 7.

2.4 *Middles vs.* Easy-to-please *constructions*

Easy-to-please constructions (constructions with '*tough* movement') are semantically very similar to middles. Here are some examples of this construction:

(19) a. This book is easy to read.
b. These trees are hard to cut down.

In *easy-to-please* constructions, the grammatical subject seems to be the verb's underlying object. Also like middles, *easy-to-please* constructions are generic statements and do not allow passive *by*-phrases. These two properties are illustrated below:

(20) a. *I witnessed these trees being hard to cut down.
b. *This book is easy to read by an experienced editor.

Furthermore, like many middles, the construction has a modal semantics, and as in these middles this semantics is independent of the adjective involved:

(21) Deze bomen zijn (niet/goed/moeilijk) te vellen.
these trees are (not/smooth/difficult) to cut down

If the main predicate were the adjective, it should be impossible to leave it out, contrary to the above Dutch data. We conclude that, at least in the Dutch *easy-to-please* constructions, the adjective modifies the modal semantics of the construction just as the adverb does in a middle.

However, *easy-to-please* constructions and middles also show some substantial differences, which make it impossible to treat them both on a par. A major difference involves the restrictions on either. In contrast to what seems to be the case for the *easy-to-please* construction, middles cannot be formed from just any transitive verb (see section 6). Some pairs showing this contrast are given in (22):

(22) a. *This article understands only with difficulty.
a′. This article is hard to understand.
b. *This problem explains easily.
b′. This problem is easy to explain.
c. *Geld verliest gemakkelijk. Dutch
money loses easily
c′. Geld is makkelijk te verliezen.
money is easy to lose
d. *Pijn ondergaat niet gemakkelijk. Dutch
pain undergoes not easily
d′. Pijn is niet gemakkelijk te ondergaan.
pain is not easy to undergo

Along the same lines, it is clear that the range of modifiers that can be used in *easy-to-please* constructions does not match the range of modifiers that can be used in middles. Some modifiers can only be used in *easy-to-please* constructions (23), whereas others only occur in middles (24):

(23) a. This book is impossible to read.
b. *This book reads impossibly.

(24) a. This meat cuts just like that.
b. *It is just like that to cut this meat.

There is a further distinction between *easy-to-please* constructions and middles in English. Consider an adjectival passive embedded under the verb get:

(25) I can't get this book finished.

This construction can be incorporated into an *easy-to-please* construction, but not into a middle:

(26) a. This book is easy to get finished.
b. *This book gets finished easily.

In general, it seems that middle formation targets (possibly complex) V^0s, and the grammatical subject must be an argument of this verb (see section 6). In contrast, *tough*-movement targets entire phrases and "the dependency path in a *tough* construction can be arbitrarily long" (Dalrymple and Holloway King 2000). That is, not only can logical objects of the verb in the adjective's direct complement appear as grammatical subject, but logical objects of more deeply embedded complements as well. This contrast is illustrated in (27) ((27b) and (27c) from Dalrymple and Holloway King 2000):

(27) a. Such a film is easy to make a complete mess of.
a'. *Such a film easily makes a complete mess of.
b. This book is hard to get her to avoid reading.
b'. *This book easily gets her to avoid reading.
c. This house is too old to get anyone to try to renovate.
c'. *This house easily gets anyone to try to renovate.

Concluding, middles, comprising both the English-type (type I) and the French-type (type II), have some properties which set them apart from apparently similar constructions. We will now discuss the properties of one type of middles that do not apply to the other, starting with type I middles.

3 Type I middles

Type I middles have a number of properties that allow them to be clearly identified as a class distinct not only from (stative) inchoatives, but also from many other constructions in the relevant languages.

3.1 Middles and modality: the property reading, potentiality, and stativity

A type I middle expresses a generic modal reading that can be roughly paraphrased as 'anyone could (Adv) V'. For example, *this meat cuts easily* can be paraphrased as 'anyone could cut this meat with ease'. This property of type I middles has two further properties as a necessary corollary, namely that such middles are stative predicates and that they (usually) contain some form of modification of the modality. These properties will be expanded on in this subsection.

3.1.1 Middles as stative predicates

A type I middle sentence is always stative. It cannot be used in any context that forces eventivity, like perceptual report, or as the answer to a question like 'what are you doing?' or 'what is happening?':[3]

(28) a. *Ik zie het boek moeilijk lezen. Dutch
I see the book with-difficulty read
b. Wat gebeurt er? #De baby verschoont moeilijk.
what happens EXPL? the baby cleans with-difficulty
'What is happening? It is difficult to change the baby's nappies.'

This is an obvious difference between middles and use of the same underlying verb in other diatheses, like active, passive, inchoative, etc.:

(29) a. Ik zie Marie de suiker oplossen.
I see Mary the sugar dissolve.
'I see Mary dissolve the sugar.'
b. Ik zie de suiker opgelost worden (door Marie).
I see the sugar dissolved be (by Mary)
'I see the sugar being dissolved (by Mary).'
c. Ik zie de suiker oplossen.
I see the sugar dissolve
'I see the sugar dissolve.'

(30) What is happening?
a. Marie lost de suiker op.
Mary dissolves the sugar
b. De suiker wordt opgelost (door Marie).
the sugar is dissolved (by Mary)
'The sugar is being dissolved (by Mary).'
c. De suiker lost op.
the sugar dissolves

The stativity of middles, or more precisely their genericity, has been analyzed in different ways semantically. For example, Condoravdi (1989) argues there is quantification over events in middles, as in habituals (i.e., *bureaucrats bribe easily* is supposed to mean 'all events of bribing a bureaucrat will be easy events'). Fagan (1992), on the other hand, argues there is quantification over potential subjects (i.e., *bureaucrats bribe easily* is supposed to mean 'all instances of a bureaucrat will have the property of being easy to bribe'). Either way, the stative (perhaps habitual) reading of middles is always accompanied by potentiality (maybe modified by the adverb or other modifier: see below): a middle expresses any subject's ability to perform the action expressed by the predicate. The modality results in the stativity, not the other way around. This can be seen from examples like (31–32), which contrast ordinary stative predicates to middles:

(31) a. John plays Mozart beautifully, but I can't (play Mozart/play Mozart beautifully).
b. John loves to ski, but I can't (ski).

c. *This book reads easily, but I can't (read it).
d. *This egg peels easily, but I can't (peel it).

(32) a. #John plays Mozart beautifully, so I can do so too.
b. #John loves to ski, so I do too.
c. This book reads easily, so I can read it too.
d. This egg peels easily, so I can peel it too.

These examples show that potentiality does not occur without stativity, but stativity is fine without potentiality.

3.1.2 Modification of potentiality

A very well-known property of middles in languages like English, German, and Dutch is that they almost invariably come with a modifier like 'easily':

(33) a. Bureaucrats bribe ??(easily/only after a good lunch/ . . .).
b. Dieses Buch liest sich *(leicht/schwer/ . . .). German
this book reads REFL easily/with-difficulty
c. Zo'n stuk zingt *(niet gemakkelijk/lekker/ . . .). Dutch
such-a piece sings not easily/comfortably

We have to say 'almost invariably', because such modification is in fact not necessary under specific circumstances (Roberts 1987; Fagan 1992). First of all, the presence of a modal voids the need for an adverb:

(34) This meat may cut, but you never know.

When it is not obvious from the meaning of the verb and its arguments that a particular action is in fact possible, modification can also be left out altogether. In that case, merely expressing the fact that anybody can do it fulfills the Gricean maxim of relevance:

(35) a. This dress buttons.
b. Dieses Kleid knöpft sich zu. German
this dress buttons (Fagan 1992: 147)

Alternatively, all modification present might be negation, expressing the absence of potentiality, or focus, emphasizing the nature of the potential event:

(36) a. Dit vlees snijdt niet. Dutch
this meat cuts not
'This meat won't cut.'
b. Die aardappels ROOIEN, niet te geloven! Dutch
those potatoes dig-up, not to believe
'I can't believe how easy to dig up those potatoes are!'

In similar cases, there is no potentiality modification either, but the way the action is carried out is specified to some extent. See (37) (cf. Fagan 1992):

(37) a. Stows on floor or shelf. (Fagan 1992)
b. Das Wort *Thron* schreibt sich mit *th*.
the word *Thron* writes REFL with *th*
'The word *Thron* is spelled with *th*.' (Drosdowski 1970: 601)
c. Deze bloes sluit met een enkele knoop. Dutch
this blouse fastens with a single button
'This blouse is fastened with a single button.'

3.2 Middles and passives: the external theta-role

In a middle sentence, in most cases the underlying verb's internal argument surfaces as the grammatical subject of the sentence. In this respect, middles are very similar to passives. It is nevertheless quite clear that type I middles are not passive. First of all, they don't show passive morphology; in fact, in Dutch and English they do not show any morphology at all. Second, type I middles do not allow the expression of the base verb's external theta-role in a *by*-phrase:

(38) a. Such texts are usually translated by a professional translator.
b. Such texts do not translate easily (*by professional translators).

We can add two more defining properties to type I middles:

(39) a. Type I middles lack passive morphology.
b. Type I middles do not allow (the cognate of) passive *by*-phrases.

Despite the absence of passive *by*-phrases, type I middles do allow a *for*-phrase, as briefly discussed above. It has been argued, notably by Stroik (1992a), that this phrase is the expression of the logical subject role of the middle verb, like the *by*-phrase is in a passive. On the other hand, it has also been argued that the *for*-phrase is licensed by the adverbial modifier typically present in a middle (Hoekstra and Roberts 1993a) or by the modal semantics of the complete middle sentence (Zribi-Hertz 1993; Ackema and Schoorlemmer 1995). We will come back to this issue in section 7. For now, we note that, on an observational level, not all middles allow a *for*-phrase:[4]

(40) a. This book reads like mud (*for John).
b. These pizzas deliver very smoothly (*for anyone with a moped).
c. This dress buttons (*for everyone).

3.3 Middles and **lassen***-middles*

Many languages have a construction that is semantically very similar to middles, but which involves an auxiliary verb. Following Fagan's (1992) terminology, we will

refer to such sentences as '*lassen*-middles' (a term referring to the auxiliary *lassen* 'let' that occurs in them in German). Examples are given below:

(41) a. Dieses Buch lässt sich leicht lesen. German
this book lets REFL easily read
'This book is easy to read.'
b. Het antwoord laat zich raden. Dutch
the answer lets REFL guessed
'The answer is easy to guess.'

These constructions are sometimes synonymous with middles, but they do not share the restrictions found on middle formation in the relevant languages. For example, *lassen*-middles allow the expression of the main verb's external theta-role in a *by*-phrase, which is impossible in true type I middles:

(42) a. Dit probleem laat zich door schoolkinderen niet makkelijk oplossen.
this problem lets REFL by schoolchildren not easily solve
'This problem cannot easily be solved by schoolchildren.'
b. *Dit boek leest niet makkelijk door schoolkinderen.
this book reads not easily by schoolchildren

Second, *lassen*-middles can be episodic, which, as noted, is impossible in type I middles:

(43) a. Het probleem liet zich in tien minuten oplossen.
the problem let REFL in ten minutes solve
'The problem could be solved in ten minutes.'
b. ?*Het bleek dat dit boek makkelijk in tien minuten leest.
it turned out that this book easily in ten minutes reads
'It turned out that it is easy to read this book within ten minutes.'

Third, the formation of *lassen*-middles does not show the same restrictions that hold for middle formation with respect to what kind of verbs undergo it. This will be discussed in section 6, when we have seen what those restrictions are.

Finally, a difference between real middles and *lassen*-middles that shows up in Dutch is that, whereas the real middle does not contain a reflexive marker in this language, such a marker is obligatory in the *lassen*-middle:

(44) Het antwoord laat *(zich) raden.
the answer lets REFL guess

We conclude that *lassen*-middles are not type I middles (see also Fagan 1992). This leaves two possibilities. Either they are not middles at all, or they are the counterpart in the relevant languages of type II middles (on which, see sections 4 and 5).

3.4 Impersonal middles

Some languages with type I middles have a construction very similar to middles, but which differs from 'ordinary' middles in being derived from intransitive verbs. Some examples of such 'impersonal middles' from Dutch are given in (45):

(45) a. Het loopt lekker op deze schoenen.
it walks comfortably on these shoes
'These shoes are comfortable to walk in.'
b. Het zit lekker in deze stoel.
it sits comfortably in this chair
'This chair is comfortable to sit in.'
c. Het rijdt moeilijk met slecht zicht.
it drives difficult with poor view
'It is difficult to drive when the view is poor.'

The question is whether these constructions should be treated as middles. They presumably should, since they fulfill all criteria identified for middles in general. Impersonal middles are stative predicates:

(46) a. *Ik voelde het lekker zitten op deze stoel.
I felt it comfortably sit on this chair
'I could feel it was comfortable to sit in this chair.'
b. Wat gebeurt er? #Het zit lekker op deze stoel.
what happens? it sits comfortably on this chair

Moreover, impersonal middles do not allow the expression of the verb's logical subject as an argument. They also fulfill all criteria identified specifically for type I middles. For instance, they express potential modality or a value judgment. Thus, *het rijdt lekker op deze fiets* 'it rides comfortably on this bike' can be paraphrased as *op deze fiets kun je lekker rijden* 'you can ride comfortably on this bike'. This modality is identical to what is found in personal middles. Also like ordinary middles, impersonal middles do not allow *by*-phrases:

(47) a. *Door ouden van dagen zit het lekker op deze stoel.
by old-of-days sits it comfortably on this chair
'This chair is comfortable for the elderly.'
b. *Het rijdt prettig op deze fiets door grote mensen.
it rides nicely on this bike by tall people
'Tall people can ride very well on this bike.'

As can be seen from the examples above, impersonal middles have the same morphological form as other middles, meaning they do not show any particular morphology at all in Dutch.

Our conclusion is that impersonal middles are true middles without any reservations. This, of course, has interesting consequences for the restrictions on middle formation, to be formulated below.

3.5 Adjunct middles

Dutch has a further type of middle-like sentence, which seems related to impersonal middles. Some examples are provided in (48):

(48) a. Deze stoel zit lekker.
this chair sits comfortably
'This chair is comfortable to sit on.'
b. Deze tafel eet prettig.
this table eats pleasantly
'This table is pleasant to eat at.'
c. Deze naalden breien lekker.
these knitting-needles knit nicely
'These knitting-needles are nice to knit with.'

In such sentences, the grammatical subject is an element that would seem to be expressed as an adjunct in the active counterpart of the sentence. This is why they are generally called 'adjunct middles'. Like impersonal middles, they derive from intransitive verbs (as in (48a, c)), or from transitive verbs whose objects are not expressed (as in (48b)). Thus, from some verbs it is possible to form both an ordinary middle, with the logical object functioning as the grammatical subject, and an adjunct middle. An example is given in (49):

(49) a. Ik stop de deken in in het bed.
I put the blanket in in the bed
'I tuck in the blanket in the bed.'
b. Deze deken stopt makkelijk in.
this blanket puts easily in
c. Dit bed stopt makkelijk in.
this bed puts easily in

Like impersonal middles, adjunct middles behave like true middles of the type I persuasion. Thus, they are stative, and the sentence they head is a generic statement expressing potential modality (*deze stoel zit lekker* 'this chair sits comfortably' roughly means the same thing as *op deze stoel kun je lekker zitten* 'you can sit comfortably in this chair'). Also, like any middle, adjunct middles do not allow the expression of the logical subject of the verb as a syntactic argument, nor do they allow this element to be expressed in a *by*-phrase:

(50) a. Deze fiets rijdt lekker (*door studenten).
this bike rides comfortably (by students)

b. Dit bureau schrijft lekker (*door romanschrijvers).
this desk writes nicely (by novelists)

They also show the same morphology as other middles, i.e., none in Dutch. We will come back to this interesting construction in section 6.2. For now, we conclude that it is to be included in the general class of middles.

3.6 Middles and instrumental subject clauses

There is a close similarity between Dutch adjunct middles, as discussed in the previous subsection, and another sentence type in which instruments can surface as grammatical subjects of transitive verbs. This latter type is quite common across languages (in contrast, it seems, to adjunct middles, which do not occur in any of the languages mentioned so far except Dutch). Some examples of these so-called 'instrumental subject clauses' are given in (51):

(51) a. This pen/ink writes very well.
b. The key opened the door.
c. Deze pen schrijft heel goed. Dutch
this pen writes very well
d. De zon droogt de tomaten. Dutch
the sun dries the tomatoes

At first sight, this construction might seem to be a type of adjunct middle after all, which would mean that adjunct middles are much more wide-spread than it seemed. However, there are good reasons to distinguish instrumental subject clauses from adjunct middles (cf. Hoekstra and Roberts 1993a; Cornips 1996).

First and foremost, instrumental subject clauses may be transitive (see (51b, d)), whereas adjunct middles can never be transitive:

(52) Deze theedoek droogt (*de borden) lekker.
this towel dries (the dishes) nicely
'This towel is good to dry (the dishes) with.'

Second, instrumental subject clauses, although often used to express properties and therefore stative, can be used in eventive sentences:

(53) a. I thought you wanted to get rid of that pen? I did, but look: now it's writing well!
b. Wat gebeurt er? De zon droogt de tomaten!
what happens? the sun dries the tomatoes!

Finally, Cornips (1996) provides evidence for the distinction from the diachrony of dialects on the southern Dutch–German border, in the area of the Limburg province, and in the adjoining Rhineland. In the late nineteenth century, three

dialect groups allowed instrumental subject clauses without a reflexive marker. Adjunct middles either do not exist in these dialects or, which is more relevant to the argument, require a reflexive marker. (The modern variants of these dialects all allow instrumental subject clauses with a reflexive.) Relevant examples from Rhineland dialects are provided below (from Cornips 1996: 51–52):

(54) a. Der Saal sengt sich legt. (adjunct middle with reflexive marker)
this hall sings REFL easily
b. Der Enk schrief got. (instrumental subject clause without reflexive marker)
this ink writes well

Following Cornips, we conclude that instrumental subject clauses should be distinguished from middles even in languages that allow adjunct middles.

4 Type II middles

Many languages have middle constructions that differ from type I middles according to a number of important criteria, probably the most salient of which is the ability of these middles to occur in episodic sentences. It seems all languages of this type use the (historical) equivalent of a reflexive morpheme in middle sentences. Such middles occur, for example, in Italian, Spanish, French, Greek, Norwegian, Russian, and Serbo-Croat. We illustrate this with French:

(55) a. Cette étoffe se repasse rapidement.
this fabric REFL irons rapidly
'This fabric can be ironed rapidly.' (Zribi-Hertz 1993: 348)
b. La Tour Eiffel se voit de loin.
the Eiffel Tower REFL sees from afar
'The Eiffel Tower can be seen from afar.' (Hulk and Cornips 1998)
c. Cette histoire se raconte facilement.
this story REFL tells easily
'This story can be told easily.' (Gross 1975: 102)
d. Les enfants, ça s'invite facilement.
the children, that REFL invites easily
'It is easy to invite children.' (Fagan 1992: 99)

Above we have shown that any middle, whether type I or type II, differs from passives and inchoatives in the same language. Type II middles may be harder to distinguish from inchoatives because they can be episodic, but still there is a distinct sense in which the original verb's external theta-role is involved in the event in a middle, whereas it is not in the inchoative counterpart.

Type II middles need to be distinguished from different types of reflexive constructions that occur in the relevant languages. First and foremost, it needs to

be established whether or not type II middles can be distinguished from reflexive-marked passives, whose argument configuration is identical to that in middles. Section 5 will be devoted to that issue. In this section, we will review the differences between middles and other types of reflexive constructions in languages with type II middles.

4.1 Impersonals and transitivity

The first distinction we need to make is between type II middles and impersonals. Languages like French and Italian have impersonal constructions that superficially look like impersonal middles in languages like Dutch and German. Some examples are given in (56):

(56) a. Si lavora sempre troppo. Italian
REFL work always too-much
'One always works too much.' (Cinque 1988: 522)

b. Oggi, a Beirut, si è sparato tutta la mattina. Italian
today, in Beirut, REFL is shot whole the morning
'Today, in Beirut, one shot the whole morning.' (Cinque 1988: 542)

c. Il se chante/dort/travaille souvent ici. French
it REFL sings/sleep/works often here
'People often sing/sleep/work here.' (Zubizarreta 1987: 153)

Such impersonal sentences are not middles. They freely occur with specific time reference, in which case they have a (generic) third person plural subject interpretation. Also, as opposed to Dutch and German impersonal middles, they can never occur with the adverbial modification typical for middles. On this basis alone, we conclude that impersonals in Italian and French should not be treated as type II middles. We therefore also conclude that French and Italian middles cannot be derived from intransitive verbs. This property they share with English middles, but not German and Dutch ones.

4.2 Middles and intrinsic reflexives

Some intrinsically reflexive verbs look very much like middles, but they have a special semantics of their own that cannot be derived from the combination of the verb's semantics and the semantics of a middle. Consider, for instance, the meaning of the French examples in (57) (from Zribi-Hertz 1982: 348):

(57) a. Cette couleur se voit.
this colour REFL sees
'This colour is gaudy.'

b. Cela s'entend bien.
this REFL hears well
'Of course.'

It is more than likely that these inherent reflexives are in fact lexicalized true middles.[5]

5 Type II middles and reflexive-marked passives

5.1 The same or different?

Type II middles in many languages are formally indistinguishable from a sentence type most easily described as 'reflexive-marked passive'. Reflexive-marked passives use the formal markers of reflexives in a sentence with an argument configuration similar to a passive. An example from Italian (from Cinque 1988: 554) is given in (58):

(58) Qui, gli spaghetti si mangiano spesso.
here the spaghetti REFL eat often
'Here spaghetti is often eaten.'

Such reflexive-marked passives allow episodic use, unlike the strictly stative type I middles. Specific time reference in such examples results in a passive reading, including a syntactically active agent (compare section 7). In some languages, reflexive-marked passives can even take the equivalent of a passive *by*-phrase, sometimes depending on style or register of the utterance (as an Italian: see Cinque 1988: 529).

These reflexive-marked passives raise some interesting questions with respect to the properties and analysis of middles. The first one is, of course, whether we can distinguish between type II middles and reflexive-marked passives. Should the middle be separated from the reflexive-marked passive, or be treated as a special instance of the latter? If we do want to distinguish the two, then what is the nature of the distinction between middles and reflexive-marked passives in languages that have them?

In distinguishing between type II middles and reflexive-marked passives we will first take the narrow view of middles as 'the equivalent of a type I middle'. The question we want to answer then is the following: in a language with type II middles, are there systematic differences between the equivalent of a type I middle and reflexive-marked passives?

The literature seems to be divided on this issue. On the one hand, emphasis is put on the similarities between middles and reflexive-marked passives, leading to a view that there is no true distinction between the two (see, for instance, Authier and Reed 1996). On this view, there is no special category of middle sentences, because any middle sentence will have an episodic, and therefore by the narrow criterion just mentioned non-middle, counterpart. These counterparts may even take *by*-phrases in some languages (French, Greek), apparently voiding the dichotomy between passives and middles in these languages.

In contrast, there are those authors who concentrate on the differences between 'true' middles and reflexive-marked passives, and conclude that, even though episodic counterparts exist, middles have special behavior of their own that needs an explanation (Cinque 1988, among others).

In this section, we will provide an overview of reflexive-marked passives in languages with type II middles to see how and whether the properties of reflexive-marked passives (in their passive reading) have been found in the literature to be distinguishable from those of sentences with the middle interpretation found in type I middles. Relevant issues to be addressed are modality and aspect, the presence of the external theta-role, and restrictions on the formation of either construction.

5.2 *Genericity and modality*

The first difference between reflexive-marked passives and type I middles is that these passives lack the obligatory modal character of type I middles and the obligatory generic character that seems to come with it. Also, they allow a wider range of modal shades than the potential reading that is always a property of type I middles.

5.2.1 *Modality*

Reflexive-marked passives either have no intrinsic modality to their semantics, or they express prescriptive modality (Fagan 1992). In the latter case, they focus on how something is always done and therefore should be done, and not, like a type I middle, on the fact that anybody could do it in some way. This semantic property is illustrated by the French examples in (59):

(59) a. Les maximanteaux, ça se porte sur une minijupe.
the maxi-coats, that REFL wears on a mini skirt
'Maxi-coats, they're worn over a mini skirt.' (Ruwet 1976: 89)

b. Le bébé se change toutes les trois heures.
the baby REFL changes every three hours
'The baby is changed every three hours.' (instruction to babysitter)
(Zribi-Hertz 1982: 349)

c. Les cuisses de grenouilles se mangent avec les doigts.
the legs of frogs REFL eat with the fingers
'Frog's legs are eaten with one's fingers.' (Boons et al. 1976: 131)

5.2.2 *Events and event quantification*

Earlier (see section 3.1) we have seen that the stative aspectual properties of type I middles are a direct consequence of the type of modality expressed in them. It is therefore only to be expected that the different modal properties of reflexive-marked passives lead to different aspectual properties as well. In particular, the potential absence of modal semantics in such passives corresponds to the absence of the obligatorily stative properties of type I middles:

(60) a. La question se traite actuellement à l'Assemblée.
the issue REFL discusses now in Parliament
'The issue is being discussed now in the National Assembly.'
(Zribi-Hertz 1982: 349)

b. La question est en train de se discuter dans la salle du conseiller.
the issue is in process of REFL discuss in the hall of Council
'The issue is being discussed at the council hall.'
(Zubizarreta 1987: 150)

c. Les vivres se distribueront tout à l'heure au premier étage.
the victuals REFL distributes all-at-the-hour on-the first floor
'The food will be distributed in a while on the first floor.'
(Zribi-Hertz 1982: 349)

Because of the eventivity of reflexive-marked passives, generic quantification over the event will lead to something like a middle reading, but with the modal distinction observed at the beginning of section 5.2.1. A true middle expresses potentiality; the generically used reflexive-marked passive expresses how things are always done, which leads to prescriptive modality.

There are two different views on the nature of the stativity found in middles across languages, which seem to correspond to whether the authors are dealing with type I or type II middles. As described earlier, type I middles are generally treated as true statives, which Fagan (1992) argues should be treated as quantifying over potential subjects (not events). The opposite is argued for by Condoravdi (1989), whose view on stativity in (type II) middles involves quantification over events. Unfortunately, these authors do not generally narrow down their sample of middles sentences to those that, if such a distinction were warranted, would be likely to be true middles instead of reflexive-marked passives. A notable exception is Cinque's (1988) article on Italian reflexives, in which it is argued that Italian middles are true statives in exactly those cases where they are true middles, and not otherwise. Cinque (1988: 563) provides the following example from Italian:

(61) *?Il sindaco ha il vantaggio di essersi già corrotto ieri.
the mayor has the advantage of already REFL being bribed yesterday

The ungrammaticality of specific time reference in this middle indicates its stative character.

A similar view is found in (Fagan 1992). Fagan argues that Condoravdi's (1989) argument concerning type II middles is based on what Fagan refers to as non-core cases of middles – in other words, reflexive-marked passives.

5.2.3 Adverbial modification

It is quite clear that there is a correlation between the notion that type II middles may just be passives and the absence in such passives/middles of the obligatory adverbial modification found in type I middles. The ambiguity of the following

French example shows that such modification may not even have a middle reading when present:

(62) Le grec se traduit facilement.
the Greek REFL translates easily (Fellbaum and Zribi-Hertz 1989: 23)

This example can either mean 'Greek has the property of being easy to translate' (property reading typical for 'true' middles) or 'Greek is translated with ease' (passive-like reading). A minimal pair like this suggests that there may be a true structural and/or semantic distinction between reflexive-marked passives and true (type II) middles. The presence of a truly passive reading distinct from a middle reading is further corroborated by the fact that the passive can have an episodic counterpart:

(63) Les examinateurs constatent que le grec se traduit ce jour-là plus facilement que l'araméen.
the examiners note that the Greek REFL translates that day more easily than the Aramaic
'The examiners note that on that day Greek is translated more easily than Aramaic.' (Fellbaum and Zribi-Hertz 1989: 23)

There is no evidence for an episodic counterpart of the true middle reading.

The hypothesis that the true middle should be distinguished from a reflexive-marked passive in languages with type II middles is further supported by cases like those in (64):

(64) a. Ce genre de livres s'achète surtout dans les gares.
this type of books REFL buys especially in the stations
'This type of book is bought especially in train stations.'
(Hirschbühler 1988: 105)

a'. *Ce roman s'achète bien.
this novel REFL buys well (Hirschbühler 1988: 105)

b. Ce client se reçoit au petit salon.
this client REFL receives in-the small parlour
'This client is received in the small parlour.' (Zribi-Hertz 1982: 349)

b'. ?Les petits colis se reçoivent facilement.
the small packages REFL receive easily (Fagan 1992: 98)

It turns out that reflexive-marked passives do not always have correlates that can be modified by the typical middle modifiers 'easily' or 'well'.

5.2.4 Type II middles and capability

Both type I and type II middles express potentiality, i.e., any subject's ability to perform the action. However, even within this middle reading there is an important distinction. Whereas type I middles usually require a modifier of this

potentiality, type II middles may express a middle reading without modification. The middle reading without modification is illustrated in (65) (cited in Fagan 1992: 184, from Zribi-Hertz 1982: 348). Note that the English equivalents in (66) are ungrammatical:

(65) a. Ce papier se lave.
this paper REFL washes
'This paper is washable.'
b. Cette racine se mange.
this root REFL eats
'This root is edible.'
c. Cette solution se discute.
that solution REFL debates
'That solution is debatable.'

(66) a. *This paper washes.
b. *This root eats/consumes.
c. *That solution debates.

Other cases of what Fagan refers to as non-core middles are also of this type, lacking the type of modification that is obligatorily found in type I middles (see the examples in (59) above).

If such sentences are treated as true middles, their existence should be interpreted as an argument in favor of the idea that there is no real distinction between type II middles in their middle and passive readings. If the truly middle reading were a different animal, as suggested by the evidence from the type of genericity involved (sections 5.2.1 and 5.2.2) and the interpretation of adverbs (section 5.2.3), we would expect the same degree of obligatoriness of the adverbial modification in the true middle reading as in type I middles.

This suggests that examples like (65) should in fact not be treated as middles in the narrow (type I) sense. The difference between their reading and the one found in type I middles is clear from the following two general paraphrases:

(67) a. **Type II middle without adverbial modification (X se-V):**
'X has a property such that it is possible for X to be V'ed.'
(e.g., *ce papier se lave* (65a) 'this paper has a property such that is possible for it to be washed')
b. **Type I middle (X V Adv):**
'X has a property such that it is possible for anyone somehow to V X.'
(e.g., this paper washes easily 'this paper has a property such that it is possible for anyone to wash it with ease')

The paraphrase of the type II middles without modification actually involves a passive, and although it is of course dangerous to base arguments on paraphrases, this suggests that they might be variants of the reflexive-marked

passive, not the true middle. It follows that in order to maintain a real semantic and/or syntactic distinction between a reflexive-marked passive and the true middle in a language with type II middles, we need to classify the rather middle-like reading of examples like (65) as being really passive. This means it must be shown that it patterns with the passive and not with true middles with respect to the type of genericity involved, as well as with respect to the other criteria that will be discussed in the remainder of this section: the status of the external argument and restrictions on the formation of these constructions.

5.3 Properties of the understood subject

As has been shown above, there is a difference between the status of the external theta-role of the underlying verb in passives and type I middles (see also section 7 for discussion of this difference). In order to establish the status of the middle reading of type II middles, the status of the original verb's external theta-role needs to be demonstrated.

5.3.1 By-*phrases*

Some languages with type II middles allow reflexive-marked passives that contain the equivalent of English *by*-phrases. (68a) is an example from older/non-standard French (from Fagan 1992: 184, Zribi-Hertz 1982: 348); (68b) is a Greek example (from Lekakou 2002: 28):

(68) a. Les permissions de copier s'accordent par le directeur.
the permits to copy REFL grant by the director
'Permission to copy is grant by the director.'
b. Afto to vivlio diavazete efxarista akomi ki apo megalus.
this the book read-PASS-3sg with pleasure even and by grown-ups
'This book is a pleasure to read even for grown-ups.'

Such reflexive-marked passives either are episodic or have an episodic counterpart, as opposed to true middles, which can never be used episodically. This can be shown by forcing a true middle interpretation on a reflexive-marked passive, in which case adding a *by*-phrase makes the example ungrammatical:[6]

(69) a. *Ce genre de surface se nettoie bien par les femmes de ménage.
this type of surface REFL cleans well by the housewives
'This type of surface is easy to clean for housewives.'
b. *Les livres de poche se vendent bien par les petits marchands.
the books of pocket REFL sell well by the small merchants
'Small paperback books are easy to sell for small merchants.'

The occurrence of a *by*-phrase in some variants of type II middles is an indication of the distinction that can be made in all languages with such middles, regardless of the properties of the reflexive-marked passives in them: in the reflexive-marked

passive, the underlying verb's external theta-role is syntactically active in a way that it is not in a type I middle. There are some further observable consequences of this difference.

5.3.2 Controlling a purpose clause

The understood agent of a reflexive-marked passive may control the PRO subject of a purpose clause, whereas the understood agent of a type I middle may not. An Italian example (from Cinque 1988: 562) is provided in (70):

(70) Quell'uomo politico si può corrompere (facilmente) per dimostrare la propria influenza.
that politician REFL can bribe (easily) to show one's influence
'It is easy to bribe that politician to show one's influence.'

5.3.3 Secondary predicates

Similarly, a reflexive-marked passive may control the subject of a small clause, but not in its true middle reading. This is shown for Italian in (71) (from Cinque 1988: 562):[7]

(71) a. Il museo del campo si può visitare facilmente anche nudi.
the camping museum REFL can visit easily even naked
'The camping museum can easily be visited even when nude.'
b. Il museo del campo ha il vantaggio di potersi visitare facilmente (*anche nudi).
the camping museum has the advantage of REFL visiting easily (even naked)
'The camping museum is easy to visit (even when nude).'

5.4 Restrictions

Above, we have seen that the formation of type I middles shows lexical and other restrictions that are not found in the formation of passives in the same language. (This issue is discussed in more detail in section 6.) In order to establish whether type II middles should be treated as variants of reflexive-marked passives or not, it is worth taking a look at the existence of restrictions on the formation of these constructions.

5.4.1 Non-finite contexts

Reflexive-marked passives are claimed not to occur in infinitival contexts. Nevertheless, some exceptions to this generalization have been identified in the literature. This might also be an indication of distinctions in the behavior of true middles and (other) reflexive-marked passives.

The exception concerns control in Italian. Only middle-like reflexive-marked passives are to some extent acceptable in this context, as opposed to obvious passive reflexives (Cinque 1988: 560):

(72) a. (?)Questo vestito ha il vantaggio di lavarsi più facilmente di altri.
this suit has the advantage of washing-REFL more easily than others
'This suit has the advantage of being more easy to wash than others.'
b. (?)Questo tavolino ha il vantaggio di trasportarsi con estrema facilità.
this table has the advantage of transporting-REFL extremely easily
'This table has the advantage of being extremely easy to transport.'
c. *Neanche il nemico ha la proprietà di uccidersi senza rimorsi.
not even the enemy has the property of killing-REFL without remorse
d. *Carlo ha il vantaggio di odiarsi facilmente.
Carlo has the advantage of hating-REFL easily

This seems to distinguish exactly between what we have been referring to as true middles and reflexive-marked passives.[8]

However, there is a second class of cases where type II middles occur in infinitival contexts, but which are unlikely to have the status of true middles. This class of examples concerns reflexive-marked passives in Spanish and Italian ECM constructions involving verbs of perception, as in (73) ((73a) from Cinque 1988: 561; (73b) from Suñer 1975). The Spanish example especially does not seem to have generic time reference, which means a true middle reading is excluded. It seems, then, that occurrence in an infinitival context does not discriminate between a true middle reading and a passive reading of the reflexive-marked passives:

(73) a. Non ho mai visto spendersi cosí tanti soldi come quest'anno. Italian
I've never seen spend-REFL so much money as this year
'I've never seen so much money being spent as this year.'
b. Al anunciársele a Juan el resultado le echaron chispas los ojos. Spanish
at-the announce-INF-REFL-him to John the result from-it threw sparks the eyes
'When one announced the result to John, his eyes sparkled.'

5.4.2 *Non-third person*

It is sometimes claimed that type II middles may occur with third person grammatical subjects only. The question is whether this holds for such middles in their passive reading, the middle reading, or both. Also, if it should hold, the question is whether it is a grammatical restriction or something else, for example an anti-animacy condition on the subject.

In Italian, the restriction holds at least in the middle reading. The following example is provided by Cinque (1988: 565):

(74) *Io mi trasporto facilmente.
I REFL transport easily
'I'm easy to transport.'

It should be noted that this restriction does not hold for other uses of the reflexive element, such as with unaccusatives/inchoatives or inherent reflexives.

In French, the restriction does not hold at a grammatical level, given examples like the following (from Grimshaw 1982: 146):

(75) Si tu étais une chemise, tu ne te vendrais pas pour trop cher.
if you were a shirt you NEG REFL sell-SUBJ NEG for too expensive
'If you were a shirt, you would not be sold for much.'

However, it looks as though the restriction might hold at the level of animacy: a middle like this may be awkward to derive for a first or second person subject because, everything else being equal, this imposes animacy on the subject. If this animacy effect of a first or second person pronoun is explicitly excluded, as in the metaphorical example in (75), the middle is grammatical.[9]

The Italian example is provided in an explicitly middle reading; the French one looks more like a reflexive-marked passive. As a result, the examples illustrating compatibility with first and second person subjects provide no additional insight into the properties of the middle reading of type II middles.

5.5 Conclusion

So should we conclude that there is only one reflexive middle/passive construction in languages with the 'type II middle', or that there is a real distinction between a reflexive-marked passive and a true middle with reflexive marking in the relevant languages? Probably we want to say both, but at different levels: the construction does seem to have two truly distinct readings, which impose their own restrictions on the environments they occur in. However, almost all the distinctions discussed were of this semantic nature, so there is very little evidence on which to base a syntactic distinction between the two constructions. On the basis of the evidence presented in the literature, therefore, we conclude that type II middles are true middles that are syntactically parasitic on an independently occurring reflexive-marked passive construction. Note that type I middles are parasitic on an independently occurring syntactic construction as well, namely on simple active sentences. In fact, we do not know of any language that has a special morphological or syntactic form for middles only. It would seem to make sense, then, to define the middle as a semantic category which can be expressed by a variety of syntactic constructions cross-linguistically, as argued by Condoravdi (1989) and Lekakou (2002).[10]

6 Restrictions on middle formation

Not every verb can undergo middle formation. The proper characterization of the verbs that can undergo the process – i.e., the question of what exactly makes these different from those that are not eligible for middle formation – is notoriously difficult. A number of proposals have been made, which we will discuss in this section. Many of them manage to adequately capture a large number of

verbs that can undergo middle formation with a single generalization. Not surprisingly, these characterizations often overlap to a significant extent. We will see that none of these generalizations is without its problems, however, and it seems fair to say that the jury is still out on the issue.

In the discussion that follows, it is important to keep the distinction between type I and type II middles in mind. Type I middles seem to impose more restrictions on the type of verb that can occur in them than type II middles, and the discussion has mainly focused on the former in this respect. Where appropriate, we will make a comparison with type II middles.

Roughly, one can focus on three things when trying to establish the proper restrictions on middle formation: it may be that the verb itself must have a particular property for middle formation to be possible; it may be that the logical object/grammatical subject must have a particular property; or it may be that the logical subject must have a particular property. Of course, properties of these three elements are often linked, so, as noted, the proposed restrictions overlap to a significant extent. Also, combinations of demands on properties of these three elements are possible. Nevertheless, to get a clear classification of the various approaches it is useful to distinguish these factors.

6.1 *Properties of the verb*

Fagan (1992) proposes that aspectual properties of the verb are crucial in determining whether or not it can undergo MF (see also Roberts 1987). Fagan uses Vendler's (1967b) classification of verbs into four aspectual types:[11]

(76) a. activities: express an ongoing action with no inherent end-point (examples are *run*, *smoke a pipe*, *play the piano*, *push something*);
b. accomplishments: express an event with an internal time structure and an end-point (examples are *paint a picture*, *make a chair*, *build a house*);
c. achievements: express instantaneous events (examples are *recognize something*, *reach the summit*, *cross the border*);
d. states: do not express an event or activity (examples are *have something*, *love somebody*, *know something*).

According to Fagan, the crucial restriction on middle formation in English and German is the following:

(77) **Aspectual condition:**
Only (transitive) activities and accomplishments undergo middle formation.

Consider how examples of each aspectual class fare with respect to middle formation. The contrast in grammaticality between the examples in (78) and (79) on the one hand and those in (80) and (81) on the other lends support to Fagan's generalization in (77):

(78) a. This pipe smokes nicely.
b. Die Butter schmiert sich wie von selbst. German
this butter butters REFL as-though by itself
c. A Steinway piano plays easily.
d. Diese Gitarre spielt sich leicht. German
This giutar plays REFL easily

(79) a. Bob Ross-style pictures paint easily.
b. Dieses Buch liest sich leichter als das andere. German
this book reads REFL more easily than the other
c. Sturdy clear plastic boxes . . . assemble in seconds.
(Fagan 1992: 68)

(80) a. *A red-winged blackbird recognizes easily.
b. *Ein Spatz erkennt sich leicht. German
a sparrow recognizes REFL easily
c. *Such high summits do not reach easily.
d. *Hohe Gipfel erreichen sich nicht leicht. German
high summits reach REFL not easily

(81) a. *That answer knows easily.
b. *Diese Antwort weiß sich leicht. German
this answer knows REFL easily
c. *Such a nice person loves only too easily.
d. *Ein solcher netter Mensch liebt sich leicht. German
a such nice person loves REFL easily

However, there are also some more recalcitrant data for (77), as also discussed by Fagan. A famous contrast in middle formation is that between *sell* and *buy*. The former but not the latter can undergo the process (see (82)). Nevertheless, *buy something* is an accomplishment no less than *sell something*, and hence it should be eligible for middle formation according to (77):

(82) a. The new Saramago sells like water in a desert.
b. *The new Saramago buys with great difficulty, the distribution is bad.

To account for this contrast, Fagan proposes an additional constraint, which must hold of the grammatical subject of the construction (see also the next subsection). The condition is that the entity expressed by this subject (i.e., the logical object) must have properties such that it can be held responsible for the action that the predicate expresses (see also Van Oosten 1977, 1986):[12]

(83) **Responsibility condition:**
The grammatical subject of a middle (if present) must have properties such that it can be understood to be responsible for the action expressed by the predicate.

Consider how this accounts for the *sell–buy* contrast. A book can have properties which make it responsible for being sold easily: it can be well written, or have an attractive cover, or contain a lot of sex and violence, and so on. In contrast, although it can be difficult to buy a book because it is hard to find, or because you do not have enough money, those are not properties of the book itself. It is very hard, if not impossible, to imagine a book having intrinsic properties which makes buying it easy or difficult. Hence the unacceptability of (82b). Other verbs that pass the aspectual condition in (79), but nevertheless fail to undergo middle formation because of (83), include *discuss* and *invite*.

Some other potential counterexamples to (79), which nevertheless do comply with (83), include achievement verbs, as illustrated in (84) and (85):

(84) a. The glass broke.
b. The children broke the glass.
c. Glass breaks easily.

(85) a. The explosives detonated.
b. The engineer detonated the explosives.
c. High explosives detonate easily.

The problem here is that most of these verbs take part in the causative–inchoative alternation (see the (a) and (b) examples in (84–85)). This makes it unclear whether the (c) examples in (84–85) just involve generic instantiations of the inchoative alternant in the (a) examples (which we have assumed to not involve middle formation: see section 2.3), or whether they can also be genuine middles based on the transitive causative alternant in the (b) examples. (The former analysis is possible for the relevant examples in any case, so the question is whether they are ambiguous between a middle and a generic inchoative reading or only have the latter reading.) Note that, if the (c) examples are middles, they can be explained by an appeal to (83): glass certainly has properties which make it easy to break it, and explosives can be made in such a way that it is easy to detonate them.

Semantically, the (c) examples do appear to be ambiguous between a reading in which an external causer is implied and a reading in which this is not the case (compare *glass breaks easily, it is so brittle* with *glass breaks easily, you can do it with your bare hands*). This might indicate that middle formation is applicable to the (b) examples, which, given that they are achievements, would run counter to (77). Nevertheless, this should be established on the basis of more solid syntactic evidence for the supposed ambiguity of the (c) examples. For English, such evidence is hard to come by, although in section 2.3.3 we discussed the interpretation of *easily*, data that Fellbaum (1986) advances as evidence for the distinction.

For Dutch, it is a bit easier to distinguish the inchoative reading of examples like (84c) and (85c) from their potential middle reading. Dutch shows solid evidence for a syntactic distinction between unergative and unaccusative verbs (see, for instance, Hoekstra 1984b; Hoekstra and Mulder 1990; Ackema 1999). As is

apparently the case in every language showing the distinction, inchoatives are unaccusatives syntactically (cf. Hale and Keyser 1993a; Levin and Rappaport Hovav 1995; Reinhart 2000b). Middle verbs behave like unergatives in Dutch, however (Ackema and Schoorlemmer 1995; see also section 7).

One test distinguishing unergatives from unaccusatives in Dutch is auxiliary selection in the perfect tense: unergatives take *hebben* 'have', unaccusatives *zijn* 'be'. The perfect tense of an example like (86a) can be formed with either. Use of *hebben* goes together with a middle reading, in which an implied logical subject argument is present (see (86b)). Use of *zijn* goes together with an inchoative reading, with no implied second argument present (see (86c)):

(86) a. Vazen breken gemakkelijk.
vases break easily
b. Dit soort stenen heeft/*is altijd gemakkelijk gebroken. (said by one stonecutter to another)
this sort stones has/is always easily broken
'Stones of this type always have had properties such that it is easy for people to break them.'
c. Dit soort glazen ??heeft/is altijd nogal gauw gebroken.
this sort glasses has/is always rather quickly broken
'Glasses of this type have always had properties such that they break rather quickly.'

It turns out that examples like (84c) and (85c) in this language can have either an unergative or an unaccusative structure, and that this corresponds to the two different readings, with an external cause implied in the former but not in the latter case.

Of course, as already noted, there is language variation with respect to which verbs can undergo middle formation, so it might be that Dutch and English differ with respect to the aspectual constraint in (77). In this respect, Fagan notes that at least in French (with type II middles in our terms) middle formation is much less restricted, compared to English. Even some apparent state verbs are possible targets for the process, as the example in (87) shows:

(87) La Tour Eiffel se voit facilement de ma fenêtre.
the Tower Eiffel REFL sees easily from my window
'The Eiffel Tower can easily be seen from my window.'

The question is whether we can link such language variation to other differences between the languages. Is there any reason why English should comply with the aspectual restriction in (77) while French apparently should not?

Hulk and Cornips (1998, 2000) argue that the presence of a reflexive marker in French but not English middles is responsible for the different aspectual restrictions on middle formation in both languages. They argue that the relevant aspectual restriction really is the same for all languages, but that the reflexive can help

in complying with this restriction. Their aspectual treatment is slightly different from Fagan's. In particular, they argue that only so-called incremental verbs – i.e., verbs whose object delimits or 'measures out' the event referred to by the predicate (cf. Tenny 1987) – are eligible for middle formation:

(88) **Delimited event condition:**
Only verbs with a logical object argument that delimits the event expressed by the predicate can undergo middle formation.

An object delimits and measures out an event when the progress of the event can be measured by looking at how far the object is 'affected' by it (see also the next subsection on the general notion of affectedness). For example, the event described by *mow the lawn* is measured out by properties of the object: we know that the mowing of the lawn is halfway when half the lawn is affected by it, and that the end-point of mowing the lawn is when the entire lawn is affected. Compare this with *listen to music*: this is an event that is not measured out by properties of the object. The music is not affected by listening to it, so we cannot say that we have ever done half or whole of listening to music, in contrast to having done half or whole of mowing the lawn.[13] This contrast comes close to the distinction between activities and accomplishments in Vendler's classification in (76). This means Hulk and Cornips's restriction to incremental verbs would seem to be somewhat overly restrictive, in that it is difficult to account for the cases of true activity verbs that Fagan cites as undergoing middle formation in English. Consider *this piano plays easily: play a piano* is an activity, not a delimited event measured out by how it affects the piano. (Also, as we will see in the next subsection, in Dutch and German it is possible to form middles of some verbs that do not have a direct object at all, which consequently cannot fall under this classification.)

Be that as it may, the point Hulk and Cornips want to make is that the reflexive element can turn a non-delimited event into a delimited one. They argue that the reflexive "has the effect of presenting the situation expressed by the predicate as involving a transition" (p. 212). This has the effect that the predicate now complies with the above-mentioned criterion of being delimited, so that it is eligible for middle formation. Hulk and Cornips present minimal pairs from Standard Dutch and a dialect spoken in the southern province of Limburg, Heerlen Dutch. In contrast to Standard Dutch (and English), Heerlen Dutch uses the reflexive element *zich* in middles. It turns out that Heerlen Dutch, like French, allows middles of some verbs which in standard Dutch do not undergo the process. Hence, this might be attributed, as it is by Hulk and Cornips, to the aspectual effect the reflexive is supposed to have on the predicate. The relevant examples are given in (89–90):

(89) a. *Frans verwerft gemakkelijk. Standard Dutch
French acquires easily
b. *French acquires easily.

c. Frans verwerft zich gemakkelijk. Heerlen Dutch
French acquires REFL easily
d. Le français s'acquiert facilement. French
the French REFL-acquires easily

(90) a. *Dat herkent gemakkelijk. Standard Dutch
that recognizes easily
b. *That recognizes easily.
c. Dat herkent zich gemakkelijk. Heerlen Dutch
that recognizes REFL easily
d. A quoi ça se reconnait un flic belge? French
at what that REFL recognizes a cop belgian
'How do you recognize a Belgian cop?'

The reflexive cannot turn just any predicate into a delimited one, however. Apparently, for some events it is impossible altogether to construe them as a transition, and thereby as delimited. Such predicates do not undergo middle formation even in languages in which the construction contains a reflexive. Hence, as Hulk and Cornips note, it cannot be said that the 'affectedness' condition simply does not apply to languages like French and Heerlen Dutch (cf. Zubizarreta 1987; Cinque 1988). There still are aspectual restrictions on middle formation in French (see (91)) and Heerlen Dutch (see (92)) too (examples from Hulk and Cornips 1998):

(91) a. *Les pommes, ça s'aime beaucoup.
the apples, that REFL likes a lot
'Apples are very nice.'
b. *Ça se hait partout.
that REFL hates everywhere
'People hate that everywhere.'

(92) a. *Die antwoorden weten zich gemakkelijk.
those answers know REFL easily
b. *Zo'n dingen haten zich vreselijk.
such things hate REFL terribly

Although the contrast between standard Dutch and Heerlen Dutch is very suggestive, the proposal that the presence of a reflexive element affects the aspectual characteristics of a predicate in such a way that it becomes possible to make a middle from it is not without its problems either. One problem that presents itself is constituted by German. Like Heerlen Dutch, German uses reflexive *sich* in middles. Nevertheless, according to Fagan (1992), in German more or less the same aspectual restrictions on middle formation hold as those operative in English, rather than the more liberal ones of French. Compare (93) (from Wagner 1977 and Fagan 1992) with (91) and (92):

(93) a. *Diese Krankheit erkennt sich nicht leicht.
this illness recognizes REFL not easily
b. *Deine Unsicherheit bemerkt sich unschwer.
your uncertainty notices REFL easily
c. *Der Kirchturm sieht sich leicht trotz des Nebels.[14]
the church tower sees REFL easily despite the mist

Conversely, though less clearly for reasons we will see directly, it might be that there are languages that do not use a reflexive in middles but which are nevertheless more liberal in their choice of eligible verbs than English, Dutch, and German. In particular, languages that lack a special marker or morphology not only in middles (like English, etc.), but also in passives seem to be more like French/Heerlen Dutch in this respect. For instance, in a number of (heavily deflected) creole languages like Negerhollands (with Dutch-based lexicon), examples like the following are possible (see Bruyn and Veenstra 1993):

(94) Am sal graf mi am. Negerhollands
he will bury with him
'He will be buried with him.' (Bruyn and Veenstra 1993: 65)

Of course, as in languages with reflexive-marked passives (section 5), the question here is whether such sentences are truly ambiguous between a passive and a middle.[15] At least in the case of Sranan (another such creole), it appears that sentences of this types are ambiguous and do have both a middle and a passive reading (Lilian Adamson, p.c.).[16]

Another problem for restricting middle formation to predicates with a 'delimiter' object, at least if this were to be regarded as a universal constraint, is the existence of languages with impersonal middles, that is, middles formed from verbs that do not take an object argument (section 3.4). This will be discussed in more detail in the next subsection.

6.2 Properties of the grammatical subject/logical object

The 'classical' restriction concerning the properties the grammatical subject/logical object must have in order for a middle to be well-formed is the following:

(95) **Affectedness condition:**
The logical object/grammatical subject in a middle must be affected by the action expressed by the middle verb.

We have already seen a particular implementation of this condition in the previous subsection, where we discussed proposed aspectual restrictions on middle formation. Recall that Hulk and Cornips (1998) argue that (95) is really a condition on the aspect a VP must have in order for middle formation to be possible.

(In particular, the VP must express an event that is delimited and 'measured out' by the object.) However, the condition has also been put forward in more general terms: only when the properties of the thing denoted by the logical object argument are affected by the action denoted by the verb is middle formation supposed to be possible.

Jackendoff (1990b) supplies the following test to distinguish affected objects ('Patients' in his terms) from non-affected ones. Take a transitive sentence of the type XP V YP. If this fits into the frame 'what happened to YP was XP V YP' or into the frame 'what XP did to YP was (XP) V YP', then YP is a Patient. So the difference in acceptability between (96) and (97) indicates that the object arguments of verbs like *invade* and *destroy* are Patients, whereas the object arguments of verbs like *know* and *recognize* are not:

(96) a. What happened to Afghanistan was both the USSR and the US invaded it.
b. What the Russians and the Americans did to Afghanistan was destroy it.

(97) a. #What happened to the answer was everybody knew it.
b. #What the tourists did to the Eiffel Tower was recognize it.

The condition in (95) can hence be restated more concisely as follows:

(98) **Affectedness condition:**
A middle verb must have a Patient argument.

A condition like (98) was originally proposed to account for a difference between verbal passives and passive nominals. Whereas virtually any object can be promoted to subject in the former, the latter is restricted by an affectedness condition on this argument (Anderson 1977b):

(99) a. Afghanistan was invaded by the USSR and by the US.
b. Afghanistan was destroyed by the USSR and by the US.
c. The answers to most of the exam questions were known in advance.
d. The spy was not recognized even by his mother.

(100) a. Afghanistan's invasion by the US
b. Afghanistan's destruction by the US
c. *the answer's knowledge by the students
d. *the spy's recognition by the secret service

Now, as noted by Jaeggli (1986a) and others, a similar restriction appears to apply to middle formation. For instance, the contrast in (100) can be replicated with (type I) middles:

(101) a. Defenseless countries invade easily (said by one aggressor to another).
b. Defenseless cities destroy easily (said by one bomber to another).
c. *Simple answers know easily (said by one student to another).
d. *Security staff recognizes easily (said by one thief to another).

Given that this condition is a more general version of the one in (88), we have also already encountered some potentially problematic data, even if we leave out of consideration that languages with type II middles are more flexible in how to comply with it (recall the French–English contrast). In fact, it would seem that, in its general form in (98), it is relatively easy to think of counter-examples even in languages like English. Consider, for example, the following examples (see also Hale and Keyser 1986; Fagan 1988):

(102) a. Greek does not translate easily.
b. Zulke stukken zingen lekker. Dutch
such pieces sing nicely
c. Das Buch liest sich leicht. German
the book reads REFL easily

Neither of these cases complies with the affectedness condition: you cannot say 'what he did to Greek was translate it' or 'what happened to the piece was the choir sang it.'

As already hinted at, another problem for the affectedness condition on middles, at least as a universal condition, is formed by impersonal middles in Dutch and German. Consider the following examples:

(103) a. Het werkt lekker met een muziekje op. Dutch
it works nicely with a music-DIM on
'It is nice to work with some music on.'
b. Het loopt prettig op deze schoenen. Dutch
it walks comfortable on these shoes
'These are comfortable shoes to walk in.'

(104) a. Es lebt sich gut als Sekretärin in Bonn. German
it lives REFL well as secretary in Bonn
(Brinker 1969: 9)
b. Über dumme Fehler schimpft sich es leicht German
about dumb mistakes grumbles REFL it easily
(Fagan 1992: 44)

The pronoun in subject position in such cases is, of course, in no way affected by the action expressed by the verb. This expletive-like element, though it may function as grammatical argument (see Bennis 1986), is not referential at all, let alone referring to some affected entity.

As already discussed in section 3.5, Dutch has yet another variant of middle in which an unexpected entity appears in subject position, namely what seems to be an adjunct rather than an argument of the verb (cf. Hoekstra and Roberts 1993a; Ackema and Schoorlemmer 1994). For example, next to (103b), (105) is also possible:

(105) Deze schoenen lopen prettig.
these shoes walk comfortably

Middles of this type, too, are productive. Some more examples are given in (106):

(106) a. Deze naalden breien lekker.
these needles knit nicely
b. Deze stoel zit prima.
this chair sits fine
c. De snelweg rijdt makkelijker dan de binnenstad.
the highway drives easier than the inner city

The grammatical subjects here correspond to adjuncts in the active non-middle counterparts of these sentences (see (107)). Note that these are PP-adjuncts and that the preposition is not realized when the adjunct is promoted to subject under middle formation in (106):

(107) a. Ze breit altijd met deze naalden.
she knits always with these needles
b. Ze zit altijd in dezelfde stoel.
she sits always in the same chair
c. Ze rijdt liever op de snelweg dan in de binnenstad.
she drives preferably on the highway than in the inner city

So it seems clear that the grammatical subjects in (106) are not Patient arguments of the verb (compare *#what happened to the needles was she knit with them*, *#what she did to the chair was sit in it*, etc.). Indeed, they do not appear to be arguments of the verb at all, given their apparent adjunct status in (107). Though they are genuine counter-examples to the affectedness condition, there is a snag here, however. It turns out that you cannot just promote any adjunct to subject in a Dutch middle. Compare (106) with (110), for example. It is possible to make impersonal middles from the active examples in (108), as illustrated in (109), but adjunct middle formation is not felicitous now:

(108) a. Ze breit altijd met een muziekje op.
she knits always with a music-DIM on
b. Ze zit altijd voor de tv.
she sits always in-front-of the tv
c. Ze rijdt altijd met grote haast.
she drives always with great hurry

(109) a. Het breit lekker met een muziekje.
it knits nicely with a music-DIM
b. Het zit het beste voor de tv.
it sits the best in-front-of the tv
c. Het rijdt niet prettig met grote haast.
it drives not comfortably with great hurry

(110) a. *Een muziekje breit lekker.
a music-DIM knits nicely
b. *De tv zit het beste.
the tv sits the best
c. *Grote haast rijdt niet prettig.
great hurry drives not comfortably

The question, then, is what the difference is between the subjects/logical adjuncts in (106) and those in (110). It might be that the difference is spurious, and that it is just less straightforward to think of a sensible interpretation for the missing preposition in (110) than it is in (106). This is more or less the line Kerstens (2000) takes. According to Kerstens, any adjunct can become subject in a middle. Hence, he would presumably argue that the examples in (110) really are fine, although they may be pragmatically odd. On the other hand, Ackema and Schoorlemmer (1994) argue that there is a syntactic difference between the sources of (106) and (110), residing in a different status of the PPs in (107) and (108). According to Ackema and Schoorlemmer, in the former case the PPs are not adjuncts at all, but rather arguments of the verb.

There are several tests to distinguish argumental PPs from adjunct PPs (see Hornstein and Weinberg 1981; Baker 1988a; Neeleman 1997; among others). For example, according to Hornstein and Weinberg, preposition stranding in English is allowed only with argumental PPs, not with adjunct PPs. At least colloquial Dutch allows for P-stranding (though it is considered substandard by some speakers), and the same distinction seems to apply here. Compare, for example, (111) with (112):[17]

(111) a. Welke naalden breide je mee?
which needles knitted you with
b. Welke stoel zat je in?
which chair sat you in
c. Welke weg reed je op?
which road drove you on

(112) a. ?*Welk muziekje breide je mee?
which music knitted you with
b. ?*Welke tv zat je voor?
which tv sat you in-front-of
c. ?*Hoeveel haast reed je mee?
how-much-hurry drove you with

Another test is whether or not the PP can be extracted from a weak island: arguments are extractable from such islands; true adjuncts are not (see Chomsky 1986a; Cinque 1990c; Rizzi 1990b). Let us see how the PPs in question behave when extracted from an indirect question (a *wh*-island). Although the contrast is not always very clear, in general there does seem to be a contrast, with the PPs splitting along the same lines again:

(113) a. ??Met welke naalden vroeg je wie er breide?
with which needles asked you who THERE knitted
b. ??In welke stoel vroeg je wie er zat?
in which chair asked you who THERE sat
c. ??Op welke weg vroeg je wie er reed?
on which road asked you who THERE drove

(114) a. ?*Met welke muziek vroeg je wie er breide?
with which music asked you who THERE knitted
b. ?*Voor welke tv vroeg je wie er zat?
in-front-of which tv asked you who THERE sat
c. *Met hoeveel haast vroeg je wie er reed?
with how-much hurry asked you who THERE drove

If these tests, and the rather shaky judgments on examples like this, can be considered reliable enough, then this would indicate that the examples in (106) are derived from sources which have an argumental PP rather than a true adjunct. If so, Dutch does not have real adjunct middles. Rather, what seems to happen in 'adjunct' middle formation is that an argument that is normally expressed as a PP loses its P when promoted to subject in a middle. Barring a few exceptions, PPs do not make good subjects (see Neeleman 1997 for discussion), so it seems what happens here is that the argument is stripped of its P specifically to make it an eligible subject.

The process by which a PP loses its P and is turned into a direct argument of the verb is reminiscent of so-called applicatives in some languages (e.g., Bantu languages like Kinyarwanda and Chimwi:ni). In applicatives, too, a dependent of the verb that is usually expressed as a PP is turned into a direct NP argument. In this case, the process is marked by special morphology on the verb, an applicative morpheme. An example from Kinyarwanda is given in (115) (from Baker 1985a: 400 – as can be seen from the glosses, the applicative is very similar to the English dative alternation, though it applies to more types of arguments):

(115) a. Umugabo y-oohere-je ibaruwa kw'iiposita.
man send letter to-post-office
b. Umugabo y-oohere-je-ho iposita ibaruwa.
man send-APPLIC post-office letter

According to Baker (1988a), an applicative morpheme is in fact the preposition of the PP in the (a) example, now incorporated into the verb. Baker shows that this process of P-incorporation is possible only from argumental PPs, not from adjunct PPs (as expected, given that adjuncts are strong islands; cf. Huang 1982a). Given that adjunct middle formation in Dutch seems to be sensitive to this same distinction, a process similar to applicative appears to take place here. There is of course a clear difference: no overt reflex of the preposition is present on the verb in Dutch adjunct middles. It is absolutely impossible to express the P:

(116) a. *Deze naalden mee-breien/breien-met prima.
these needles with-knit/knit-with fine
b. *Deze stoel in-zit/zit-in lekker.
this chair in-sits/sits-in nicely

Ackema and Schoorlemmer (1994) therefore propose that in Dutch P-incorporation does not take place in syntax, as in Kinyarwanda, but at the level of Conceptual Structure (cf. Jackendoff 1990b); i.e., before projection to syntax (to two separate syntactic heads) takes place.

In short, it seems that when 'promotion to subject' in middles takes place (impersonal middles aside), only arguments can be so promoted. Then there is language variation as to whether an applicative-like process is available that can turn argumental PPs into argumental DPs and thus into potential grammatical subjects.

In fact, not every DP argument can always be promoted to subject under middle formation, not even when it would be of the right type semantically (so when it is a bona fide Patient, or a delimiter, or something similar). In particular, middle formation turns out to give bad results when a verb takes more than one internal argument. In other words, it is sensitive to the following condition:

(117) **Anti-double object condition:**
Verbs in a double object construction do not undergo middle formation.

Consider a verb like *sell*, which can optionally take a second internal argument, namely a Goal, next to its Patient argument. This verb forms perfectly acceptable middles (as in (118b)), but when the Goal argument is present in a double object construction, middle formation is not possibly any more (as shown in (118c)). Note that middle formation is equally impossible when the Goal argument rather than the Patient is promoted: see (118d) (cf. Kayne 1982):

(118) a. I sold (the linguists) the books.
b. Such books sell well.
c. *Such books sell linguists well.
d. *Linguists sell such books well.

It seems fair to say that this restriction is still ill understood (but see Everaert 1990b, Ackema and Schoorlemmer 1994, Hulk and Cornips 1998, Zwart 1998, Kerstens 2000, and Steinbach 2003 for some suggestions).

Another proposed restriction on the grammatical subject is one that we have taken for granted so far, but which is certainly not trivial: it must be an argument of the middle verb:

(119) **Argument sensitivity:**
The grammatical subject of a middle (if present) must be an argument of the middle verb.

That this is not trivial can be seen when we consider the grammatical subject in passives, for which this condition does not hold. Thus, exceptionally, case-marked subjects of some infinitival complements can become the grammatical subject of the matrix verb under passivization, but not under middle formation:

(120) a. He was believed to be a rich man.
a'. *He believes to be a rich man easily. (*on middle reading)
b. She was expected to win the race.
b'. *She expects to win the race only with difficulty. (*on middle reading)

This concludes the syntactic restrictions on the subject (the logical object) of the middle verb.

A final generalization that has been proposed is a semantic one again. This a restriction on what this argument should not be, rather than what it should be, for it to be promotable under middle formation:

(121) **Anti-effectedness condition:**
The subject in a middle should not be an effected object of the verb.

This restriction has been proposed by Zwart (1998), who derives it from an incompatibility between the syntactic structure he proposes for middles and the one in which verbs with effected objects occur. The notion 'effected' should not be confused with the notion 'affected' in (95). An effected object is one that comes into existence by the action denoted by the verb. So verbs like *build*, *paint*, *write*, and *knit* can take an effected object, as the Dutch examples in (122) illustrate:

(122) a. Bob bouwde een nieuw huis.
Bob built a new house
b. Bob schilderde een landschapje.
Bob painted a landscape-DIM
c. Bob schreef een detectiveroman.
Bob wrote a detective novel
d. Bob breide een nieuwe trui.
Bob knitted a new sweater

The house in (122a) comes into existence as a result of the building. Similarly, the picture is created by the painting, the novel by the writing, and the sweater by the knitting. Note that, looking at it from an aspectual point of view, this is a subcase of Vendler's class of accomplishments, or, in Tenny's (1987) terms, these are subcases of the aspectual type in which the object 'measures out' the event described by the verb. That means the condition in (121) seems to be in opposition to both Fagan's aspectual condition in (77) and the one proposed by Hulk and Cornips (1998) (see (88)). Nevertheless, the following examples appear to indicate that middle formation is indeed impossible with verbs with an effected object:

(123) a. ??Dit huis bouwt niet makkelijk.
this house builds not easily
b. ?*Dit schilderij schildert gemakkelijk.
this painting paints easily
c. ?M'n nieuwe boek schrijft niet gemakkelijk.
my new book writes not easily
d. ?*Deze trui breit moeilijk.
this sweater knits difficult

Note, however, that examples like this are independently ruled out by another restriction on middle formation we have already encountered, one that seems to be necessary next to other conditions one might want to propose anyway (see also the next subsection). This is the 'responsibility' condition in (83), which states that the subject of a middle "must have properties such that it can be understood to be responsible for the action expressed by the predicate". The subjects in (123) cannot possibly comply with this restriction, precisely because they only come into existence as a result of that action.

This interfering factor can be neutralized by using generic arguments as subjects (logical objects). A specific house that comes into being as a result of some building action cannot have any properties before it is finished (i.e., before it actually is that specific house) which could make it responsible for building being difficult.[18] However, a generic class of (a particular type of) houses certainly can have properties such that building a house of that type is difficult. As it turns out, examples like (123) are fine with generic subjects:

(124) a. Dat soort huizen bouwt niet makkelijk. (said by one builder to another)
that kind houses builds not easily
b. Zo'n landschapje schildert gemakkelijk.
such-a landscape-DIM paints easily
c. Dat soort flutromannetjes schrijft gemakkelijk.
that kind dross-novel-DIM-PLUR writes easily
d. Zulk soort truien breit niet moeilijk.
that kind sweaters knits not difficult

On the whole, we have seen that, at least cross-linguistically, various types of constituent can become the subject of a middle. An attempt to capture the restrictions on middle formation by invoking a particular condition concerning properties of this element is therefore likely not to work for all instances of middles. Nonetheless, it remains to be explained why, although there are other possibilities, the 'affected object' seems to be the prototypical thing to get promoted to subject in a middle. In the next subsection we will see that this might be a side effect of a condition about what properties the logical subject argument must have for middle formation to be possible.

6.3 Properties of the logical subject

Just as there is a 'classic' condition on the grammatical subject of a middle, namely the affectedness condition discussed in the previous subsection, there also is a 'classic' condition on the logical subject (i.e., the suppressed argument), namely that it be an Agent (Abraham 1986; Pitz 1987; Roberts 1987):

(125) **Agentivity condition:**
The logical subject in a middle must be an Agent.

Consider again the contrast between the possible middles in (126) and the impossible ones in (127):

(126) a. Bureaucrats bribe easily.
b. That book reads well.
c. Greek does not translate easily.

(127) a. *The Eiffel Tower sees easily.
b. *The answer knows easily.
c. *Spies don't recognize easily.

It seems clear that, whether or not other conditions are capable of capturing this distinction, it (also) follows from (125). Useful tests that indicate whether or not an argument is an Agent in the relevant sense are the possibility of using agent-oriented adverbials like *intentionally* or *on purpose*, and use of the 'what XP did to YP' frame (see section 6.2), in which XP is an Agent.[19] These tests indicate that the subject argument of *bribe*, *read*, and *translate* are Agents, whereas the subject arguments of *see*, *know*, and *recognize* are not:

(128) a. The Mafia boss intentionally bribed the bureaucrats.
b. What Mary did was read a good book.
c. What Harry did was translate a Greek text.

(129) a. #The tourist intentionally saw the Eiffel Tower.
b. #What most of the students did was know the answer.
c. #James Bond intentionally recognized the other spy.

Nevertheless, Fagan (1992) argues that (125) fails to be general enough, for both English and German. She gives an example from German of a verb which appears to have a very non-Agent-like subject argument, but which is nevertheless attested to form a middle, namely *sterben* 'die':

(130) So schnell stirbt es sich nicht.
thus quickly dies it REFL not
'One doesn't die that quickly.' (Brinker 1969: 9)

This example is remarkable for another reason, namely that *sterben* is an unaccusative verb in German, which means an internal rather than an external argument has been suppressed. Such verbs do not usually undergo middle formation. In Dutch, too, the same verb, *sterven*, can marginally occur as a middle, as in (131) (from Ackema and Schoorlemmer 1994):

(131) ??Het bejaardenhuis sterft rustiger dan het slagveld.
the old-people-home dies more-quietly than the battlefield

The example has a similar status to examples of passives formed from unaccusatives (on which, see Everaert 1986b; Zaenen 1993); that is to say, it has an 'intentionally playing with language' effect with somewhat jocular overtones. This same effect in fact holds of the German example in (130), as well as of other constructed examples of middles from unaccusatives (thanks to Susi Wurmbrand for discussion of the German data):

(132) a. ?Een judomat valt beter dan een betonnen vloer. Dutch
a judomat falls better than a concrete floor
b. ?In Schiphol kommt es sich leicht an. German
in Schiphol arrives it REFL easily PARTICLE

What is crucial is that such examples have precisely the same status as an active example in which the verb in question is deliberately used agentively in contrast to its normal usage, giving rise to the 'funny' effect:

(133) a. ☺ Grootvader stierf opzettelijk te vroeg om het testament nog te kunnen laten veranderen.
Grandfather died on-purpose too early to the testament still to can let change
'Grandfather intentionally died too early (for us) to have the testament changed.'
b. ☺ Wat de minister van buitenlandse zaken steeds doet is te laat arriveren
what the minister of foreign affairs constantly does is too late arrive
'What the minister for foreign affairs constantly does is arrive too late.'

Hence such examples are not counter-examples, but rather seem to give extra support to the agentivity condition: it is possible to construct them to the same extent that it is possible to use the verbs in question agentively.

However, counter-examples to (125) in the other direction are rather more easy to come by. That is to say, there are cases in which a verb that does have an Agent for its subject argument nevertheless cannot undergo middle formation. Fagan cites the following examples from English and German (the latter from Wagner 1977):

(134) a. *The finish line reaches easily.
b. *This wall hits easily.
c. *That dog kicks easily.

(135) a. *Mit der Bundesbahn kommt es sich leicht zur vorgesehenen Zeit an.
with the national-railway arrives it REFL easily at-the planned time PARTICLE
b. *Dieses Ziel erreicht sich nicht leicht.
this goal reaches REFL not easily

Concerning these, we must first remark that (134b) and (135a) do not seem to have implicit Agent arguments in the relevant sense (i.e., Actor arguments in Jackendoff's sense; see note 19): #*What the car did was hit the wall*, #*Sue and Mary intentionally arrived on time*. The former does have an agentive use, however (*John hit Bill on purpose*), and at first sight middle formation is not much better in this use (??*Bill hits easily*; although there is a movie in which Humphrey Bogart states *"I don't slap that easily"*).

However, it seems these examples are again independently ruled out by the responsibility condition in (83), which, as noted, appears to be needed next to whichever other conditions on middle formation might hold. (As noted in section 6.1, Fagan, too, explicitly argues that it is needed alongside the aspectual condition in (77).) Consider the example in (134a): a finish line cannot have any properties that make reaching it easy. (The distance between start and finish line can be such that reaching the finish line is easy – but that distance is not a property of the finish line. A crooked finish line is not easier or more difficult to reach than a straight one, nor a white one easier to reach than a red one, etc.) Examples with (the agentive use of) verbs like *hit* and *kick* appear to improve considerably when a generic subject is used (see (136)), as it is more easy to imagine a class of things having properties which make it easy or difficult to hit/kick them than an individual object (compare also the previous subsection on effected objects), indicating that (83) is responsible for the deviance of at least (134b, c).

(136) a. Big dogs kick more easily than little ones. (said by one utter bastard to another)
b. Quick opponents do not hit easily. (said by one boxer to another)

There is a close relation between the agentivity condition on the logical subject in (125) and the affectedness condition on the grammatical subject in (95) (and as we have seen, in turn there is a close relation between this affectedness condition and the aspectual conditions on middle formation in terms of the *Aktionsart* that the active VP counterpart to the middle must have; see (77) and (88)). Many verbs that have an Actor/Agent for their subject argument will have a Patient for their object argument.

This brings up the question of whether the agentivity condition and the affectedness condition are just two sides of the same (perhaps aspectual) coin, or whether one takes precedence over the other. Ackema and Schoorlemmer (1994) argue that the agentivity condition must take precedence, since it can explain some exceptions to the affectedness condition, as we have encountered them in section 6.2. These are repeated below:

(137) a. Greek does not translate easily.
b. Zulke stukken zingen lekker. Dutch
such pieces sing nicely
c. Das Buch liest sich leicht. German
the book reads SICH easily

These cases are formed from verbs that take an Actor as their first argument, but a non-Patient as their second one ('What Harry did was translate Greek', #'What happened to Greek was Harry translated it'; 'What the choir did was sing Handel's *Messiah*', #'What happened to Handel's *Messiah* was the choir sang it'; etc.). Their well-formedness therefore indicates that (95) is a consequence of (125) in combination with the fact that many Actor-verbs also take a Patient, rather than the other way around.

More importantly, perhaps, is that cases for which (95) cannot be relevant, namely impersonal middles in German and Dutch (see section 3.4) – that is, middles of verbs with an apparent non-argument as grammatical subject – still must comply with (125). As Ackema and Schoorlemmer show for Dutch, the same distinction between Actor-taking verbs and non-Actor-taking verbs is relevant for impersonal middle formation on the basis of intransitives:

(138) a. Jan werkte opzettelijk zonder overall.
Jan worked on-purpose without overall
a'. Het werkt prettig in zo'n overall.
it works comfortably in such overalls
b. Marie liep opzettelijk de verkeerde kant op.
Marie walked on-purpose the wrong way to
b'. Het loopt prettig op deze schoenen.
it walks comfortably on these shoes
c. Carolien zat opzettelijk op de verkeerde plaats.
Carolien sat on-purpose on the wrong seat
c'. Deze stoel zit niet lekker.
this chair sits not comfortably

(139) a. #De zwerver stonk opzettelijk naar alcohol.
the tramp stank on-purpose to alcohol
a'. *Het stinkt gemakkelijk zonder je tanden te poetsen.
it stinks easily without your teeth to brush
b. #De oorlogsveteraan trekkebeende opzettelijk.
the war-veteran limped on-purpose
b'. *Het trekkebeent niet gemakkelijk over grote afstanden.
it limps not easily over great distances
c. #Marie vergiste zich opzettelijk.
Marie erred REFL on-purpose
c'. *Het vergist zich vlug in ingewikkelde situaties.
it errs REFL quickly in complicated situations

Let us make a short summary of where we stand at this point concerning the restrictions on middle formation. The first thing to note is that these restrictions differ significantly from language to language, to the point that, as argued by Authier and Reed (1996), some constructions that have been termed middles because of their form might be more properly labeled as a type of passive (see also section 5). At least for type I middles it can be said that, when looking at which verbs can occur in the construction, there seems to be some sort of core type. The core type is a verb that takes an Actor for its logical subject and a Patient for its logical object, which in its active use forms a VP with these arguments that, aspectually speaking, expresses a delimited event or accomplishment.

Nevertheless, there can be exceptions with respect to all three separate factors that play a role here (the presence of an Actor argument, a Patient argument, the expression of a delimited event). Middle formation is sometimes possible when one of these factors is not complied with, and it is sometimes impossible even when all of them are. At least some of these exceptions are captured by a separate condition on the middle verb's grammatical subject/logical object argument, namely that it must be possible to hold it responsible for the action denoted by the middle verb.

6.4 Comparison with passive and **lassen***-middles*

We have discussed similarities and differences between middles, passives, and so-called *lassen*-middles already in sections 3.2–3.3. Now that we have seen which restrictions appear to apply to (type I) middle formation (with all due caution because of the exceptions we have also seen), it is useful to come back to this issue, to put it in sharper relief as it were.

Here are the various restrictions that have been claimed to hold of middle formation, as we discussed them in the previous subsections, in a row:

(140) a. **Aspectual condition:**
Only (transitive) activities and accomplishments undergo middle formation.

b. **Responsibility condition:**
The grammatical subject of a middle (if present) must have properties such that it can be understood to be responsible for the action expressed by the predicate.
c. **Delimited event condition:**
Only verbs with a logical object argument that delimits the event expressed by the predicate can undergo middle formation.
d. **Affectedness condition:**
A middle verb must have a Patient argument.
e. **Anti-double object condition:**
Verbs in a double object construction do not undergo middle formation.
f. **Argument sensitivity:**
The grammatical subject of a middle must be an argument of the middle verb.
g. **Anti-effectedness condition:**
The subject in a middle should not be an effected object of the verb.
h. **Agentivity condition:**
The logical subject in a middle must be an Agent (Actor).

Let us see how the constructions that appear to be similar to middles fare on these. First consider passives. These in fact comply with not one of these restrictions. Thus, achievements are often expressed by unaccusative verbs, which cannot be passivized for independent reasons (Perlmutter 1978; Burzio 1986; Zaenen 1993), but in other cases they can undergo passivization as readily as accomplishments and activities (see (141a–b)). A number of statives, too, can be passivized (as in (141c–d)):

(141) a. The spy was not recognized by anybody.
b. Op 23 januari werd eindelijk de top bereikt. Dutch
on 23 January was finally the top reached.
c. Cecilia Bartoli's voice is universally loved.
d. Dat wordt door veel mensen niet getolereerd. Dutch
that is by many people not tolerated

The grammatical subject in a passive need not have properties which can make it responsible for the action expressed by the verb:

(142) a. The new Saramago can be bought in any good bookshop.
b. Het voorstel werd uitvoerig besproken in het parlement. Dutch
the proposal was elaborately discussed in the parliament

These same examples show that verbs with non-delimiting, and non-Patient, objects can be passivized. Double object constructions usually allow for passivization, although there is language variation as to which object can be promoted to subject. Thus, in standard English only the IO can be promoted, in Dutch only the DO, whereas in Norwegian either one can be promoted (Åfarli 1992):

(143) a. Mary was given some books.
b. Die boeken werden Marie tegen een spotprijs aangeboden. Dutch
those books were Marie against a cheap-price offered

We have already discussed the fact that passives do not comply with Argument Sensitivity: see (120). The grammatical subject in a passive can also be an effected argument:

(144) a. This picture was painted by Picasso.
b. Toen werden er minder huizen gebouwd dan nu. Dutch
then were there fewer houses built than now

Finally, the logical subject argument, which can be expressed in a *by*-phrase in passives, can be virtually any type of argument. It need not be an Agent (or Actor):

(145) a. The Eiffel Tower could be seen in the distance.
b. De herrie werd gelaten door het publiek ondergaan. Dutch
the noise was resignedly by the audience undergone

Consider next so-called *lassen*-middles (cf. section 3.3). In some respects this construction behaves just like the middle (it is presumably for this reason that the construction has been termed a middle in the first place). Typically, for example, the grammatical subject must obey the responsibility condition; see (147) below. Let us see how *lassen*-middles fare on the list of proposed restrictions in (140).

First, the only aspectual class of verbs that seems to resist *lassen*-middle formation are states – achievements are fine:

(146) a. De roodgestreepte buikschuiver laat zich gemakkelijk herkennen aan zijn rode strepen. (accomplishment verb) Dutch
the red-striped bellyslider lets REFL easily recognize on his red stripes
'The red-striped bellyslider is easily recognizable by its red stripes.'
b. *Anne-Sofie laat zich makkelijk bewonderen. (state verb) Dutch
Anne-Sofie lets REFL easily admire
'It is easy to admire Anne-Sofie.'

As noted, *lassen*-middle formation is restricted by the responsibility condition:

(147) a. *De nieuwe Saramago laat zich moeilijk kopen. Dutch
the new Saramago lets REFL difficult buy
'It is difficult to buy the new Saramago.'
b. ?*Zo'n voorstel laat zich niet gemakkelijk bespreken. Dutch
such-a proposal lets REFL not easily discuss
'It is not easy to discuss such a proposal.'

The logical object/grammatical subject need not be a delimiter or Patient argument:

(148) a. Deze piano laat zich moeilijk bespelen. Dutch
this piano lets REFL difficult play
'This piano is difficult to play on.'
b. Zo'n daad laat zich moeilijk verklaren. Dutch
such-a deed lets REFL difficult explain
'Such a deed is difficult to explain.'

Lassen-middle formation is also possible from double object constructions in Dutch. Interestingly, it seems that in contrast to what happens in passives, it is the IO rather than the DO that gets promoted to subject:

(149) a. *Boeken laten zich bezwaarlijk dat soort mensen verkopen. Dutch
books let REFL problematically that sort people sell
'It is problematic to sell books to such people.'
b. ?Dat soort mensen laat zich bezwaarlijk boeken verkopen. Dutch
that sort people let REFL problematically books sell
'It is problematic to sell books to such people.'

Lassen-middle formation is not possible from ECM verbs, apparently showing its argument sensitivity (see (150a)). However, for rather ill-understood reasons, not even passive is possible from ECM verbs in Dutch and German (see (150b); cf. Bennis and Hoekstra 1989). So in this respect there is no difference between these constructions:

(150) a. *Zo'n man laat zich makkelijk liedjes horen zingen. Dutch
such-a man lets REFL easily songs hear sing
'It is easy to hear such a man sing songs.'
b. *Kaatje werd een liedje horen zingen. Dutch
Kaatje was a song heard sing
'Kaatje was heard singing a song.'

It seems effected objects do not make very good grammatical subjects in *lassen*-middles (perhaps in contrast to true middles – see (124)):

(151) a. ?*Dat soort truien laat zich moeilijk breien. Dutch
that sort sweaters lets REFL difficult knit
b. ?*Zo'n soort boek laat zich gemakkelijk schrijven. Dutch
such sort book lets REFL easily write

Finally, where it concerns the logical subject, *lassen*-middles behave like passives rather than middles. This argument can be expressed in a *by*-phrase, and need not be an Agent/Actor:

(152) a. Deze componist laat zich inspireren door de schilderkunst.
this composer lets REFL inspire by the fine-arts
'This composer draws his inspiration from the art of painting.'
b. Het begrip 'subject' laat zich door postmodernisten begrijpen als 'individu.'
the notion 'subject' lets REFL by postmodernists understand as 'individual'
'The notion of "subject" is understood by postmodernists as "individual."'

We may conclude that *lassen*-middles are similar to middles in the kind of semantics they express: they are generic statements, ascribing a property to the grammatical subject. Presumably as a result of this, a number of similar restrictions apply to *lassen*-middles and true middles. However, in other respects the *lassen*-middles are more like passives, which might indicate that syntactically they are unlike real middles. This brings us to the question of what the proper analysis of middle formation is, and whether or not this motivates a syntactic difference with passives.

7 Possible analyses

7.1 Preliminary: what is a middle in the first place (again)?

To repeat an important point, the proper analysis of middles crucially depends on what is included in the category 'middle' and what is not. If we define the category semantically, every construction that expresses the same type of semantics that an English sentence like *this books reads easily* expresses qualifies as a middle. In that case, constructions with different syntax will fall under this rubric, both cross-linguistically and within a single language.

Above, we have seen that middles in French potentially have different syntactic properties from those in English. Similarly, given a semantic definition *lassen*-middles would fall under the same class as 'true' middles in Dutch and German, but we have also seen that, syntactically speaking, this construction deviates in a number of respects from the plain middles. It is a very interesting question in its own right what causes this variation in the way the 'middle semantics' can be expressed. In this section, however, we will consider what the proper syntactic analysis of individual middle constructions is. We will focus on type I middles. Given that type II middles behave very much on a par with passives syntactically, we might assume, following Authier and Reed (1996) and Lekakou (2002), that, syntactically, they *are* passives. Without further discussion, we will assume that in passives the object is promoted to subject by an instance of A-movement, and that the logical subject is still present syntactically (it may be assigned to the participial morphology, for instance; see Jaeggli 1986a; Baker et al. 1989).[20] Alternatively, type II middles must be assumed to have the syntax of type I middles. See section 5 for details of this discussion.

7.2 Two types of analysis

Let us consider, then, how to analyze type I middles; that is, middles in which the verb appears in its active form and without any special morphology. Very roughly, two types of analysis can be distinguished.

According to one analysis, there is no significant difference in the way the verb projects its arguments in an active construction, a passive, or a middle. Only the type of element that receives the external argument is different: in an active sentence this is a subject DP, in a passive and a middle it is an empty pronominal argument which does not end up in the surface subject position. This position is subsequently filled by moving the object, which has received the verb's internal theta-role, to this position. In other words, in this approach middles are analyzed just like passives; the differences between the two constructions then follow from their different semantics. Such an analysis was proposed by Keyser and Roeper (1984), and has been developed in various detailed ways, notably by Hoekstra and Roberts (1993a) and Stroik (1992a). In (153) the analysis Hoekstra and Roberts would assign to a middle like *bureaucrats bribe easily* is given; in (154) the analysis Stroik would assign to it:

(153) $[_{IP}$ bureaucrats$_i$ $[_{VP}$ pro $[_{V'}$ bribe t_i easily]]]

(154) $[_{IP}$ bureaucrats$_i$ $[_{VP}$ $[_{VP}$ $[_{V'}$ bribe t_i easily]] PRO]]

In both analyses it is assumed that the object is promoted to subject by an instance of A-movement. Both analyses also assume the verb assigns its external theta-role to an empty pronoun in the syntactic structure. The only difference (which we will not go into here) is that Hoekstra and Roberts assume this pronoun is an instance of *pro* (an empty subject of the type that occurs in finite clauses in pro-drop languages like Italian) in VP-internal subject position, whereas Stroik assumes it is an instance of PRO (an empty subject of the type that occurs in infinitival clauses) in VP-adjoined position.

In the second type of analysis it is assumed that the way the verb's arguments are projected syntactically is different in middles, compared to the way they are projected in active and passive clauses. Such approaches presuppose that at the semantic level of representation at which the verb's argument structure is defined, operations are defined that can affect the way these arguments are projected syntactically.[21] (For various approaches along these lines, see Williams 1981a; Di Sciullo and Williams 1987; Grimshaw 1990; Jackendoff 1990b; Reinhart 2000b). What happens in a middle, then, is that the verb's highest theta-role (the role for the logical subject) is not assigned in syntax at all, and that the role for the logical object is assigned directly to the syntactic subject. According to this type of analysis, of which instances can be found (Fagan 1988, 1992; Roberts 1987; Ackema and Schoorlemmer 1994), the middle *bureaucrats bribe easily* would be analyzed as in (155). (To keep the comparison with (153–154) clear, it is assumed in (155) that subjects in English are merged in a VP-internal position and undergo

A-movement to spec-IP to check their case features – but the point is that the logical object argument is projected as a subject directly, not as an object.)

(155) $[_{IP}$ bureaucrats$_i$ $[_{VP}$ t_i $[_{V'}$ bribe easily]]]

Thus, we see that the two types of analysis differ on two main points, concerning the status of the logical subject argument and of the logical object argument. The points of contention are:

(156) What happens to the verb's logical subject theta-role?
Answer of the 'syntactic' account of middles: it is assigned to an empty pronoun in syntax.
Answer of the 'argument structure' account: it is not assigned syntactically.

(157) How can the element that receives the logical object theta-role become the grammatical subject?
Answer of the 'syntactic' account: the verb's logical object theta-role is assigned regularly to a DP in object position, and this DP undergoes A-movement to subject position.
Answer of the 'argument structure' account: the verb's logical object theta-role is promoted from an internal theta-role to the external theta-role.

It is important to note that these two properties of these analyses are really independent of one another.[22] It is imaginable, for instance, that the object is promoted to subject by A-movement in syntax while the logical subject is not represented syntactically. We will therefore discuss these issues separately.

7.3 Is the logical subject syntactically present?

Like black holes in astronomy, invisible syntactic elements can be detected indirectly, by the effect they have on their environment. If an empty subject argument is present in syntax, we expect it to have syntactic effects; if it is not, no such effects should be observable. For example, the empty subject *pro* assumed to be present in finite clauses in pro-drop languages like Italian lets itself be detected by the effect it has on the agreement on the verb: *parl-o* 'talk' is only possible in the presence of a first person singular subject, *parl-a* 'talk' only in the presence of a second person singular subject, and so on. The question is then whether we can detect a potentially present empty logical subject argument.

We will discuss four different types of argumentation that have been put forward to argue for the syntactic presence of the logical subject in a middle.

7.3.1 'Classic' agent identifiers

At least for passives, it seems we can identify a syntactically present logical subject. There are some 'classic' arguments for this.

It turns out that an Agent argument uniquely licenses some other syntactic elements. Examples of such elements are agent-oriented adverbs, purpose clauses (where the PRO subject of the purpose clause is controlled by the logical subject argument of the passive verb; see Chomsky 1981; Manzini 1983b; Jaeggli 1986a), and of course *by*-phrases, which overtly express the relevant argument.[23] Relevant examples of these agent-diagnostics are given in (158):

(158) a. The boat was sunk on purpose.
b. The boat was sunk ec_i [PRO_i to collect the insurance].
c. The boat was sunk by the enemy.

In this respect, middles differ from passives:

(159) a. *Such texts translate easily deliberately.
b. *Such texts translate easily to win the Translator's Prize.
c. *Such texts translate easily by an experienced translator.

However, there are also some phenomena that indicate syntactic activity by the logical subject argument in middles. For example, secondary predicates predicating over the logical subject are sometimes acceptable in a middle:

(160) a. Physics books read poorly when drunk.
b. Dat soort artikelen leest gemakkelijker met een slok op. Dutch
that sort articles reads easier with a drink up
'That sort of article is easier to read when drunk.'

Possibly related to this is the fact that, as observed by Stroik (1992a), certain gerundive adjuncts are acceptable in middles with an understood subject that appears to be controlled by the middle verb's logical subject argument (examples from Stroik):

(161) a. Most physics books read poorly [even after [PRO reading them several times]].
b. Bureaucrats bribe best [after [PRO doing them a favor or two]].

Hence, as opposed to control into purpose clauses, control of the logical subject into such gerund clauses is possible. The question is then whether the type of control that occurs in these examples necessitates the syntactic presence of the controller or not. This matter will be the topic of the next subsection.

7.3.2 Control

There are two types of control, usually termed 'obligatory control' and 'non-obligatory control' (cf. Chomsky 1981; Bresnan 1982c; Manzini 1983b; Bouchard 1984; Koster 1987; Landau 2000; Wurmbrand 2002). In certain syntactic environments, the empty subject of an infinitive needs to be controlled by a syntactic

constituent in a c-commanding position, so-called 'obligatory control'. In other syntactic environments, there can also be a syntactic controller, but in this case it need not c-command the PRO subject of the infinitive. This kind of control is referred to as 'non-obligatory control'. In cases of non-obligatory control there need not be a syntactic controller at all, and PRO can have arbitrary reference. In this second type of environment, PRO can also be controlled by a non-syntactically realized, so-called 'implicit', argument of the matrix verb. A good example of this is dative control, as discussed by Rizzi (1986a) and Roeper (1987a). They note that, in contrast to a direct object controller (Bach 1979), a dative controller can be freely omitted in English:

(162) John shouted/said/gave the order (to Bill) [PRO to leave].

If the dative argument of verbs like *shout* is left implicit, it can nevertheless function as a controller. Crucially, as shown by Rizzi (1986a: 550–551), there are reasons to believe that implicit dative controllers of this type are not syntactically represented as an empty *pro*. Rizzi shows that implicit dative objects in English differ from empty direct objects in Italian (which he argues should be represented as *pro*) in not being able to function as antecedent in a binding relation. He concludes from this that "the understood dative . . . does not correspond to a structurally represented position" (1986a: 551). This means that control by an implicit, not syntactically realized, argument is possible in principle. According to Koster (1987), the only infinitivals whose PRO subject must be obligatorily controlled in English are argumental infinitivals that resist a *for*-complementizer. If this is correct, it would mean that the subject PRO of the adjunct gerunds in (161) need not be controlled by a syntactically present c-commanding antecedent, but can be controlled by an implicit argument as well. This is corroborated by the observation that a typical implicit argument like the Experiencer argument of adjectives like *difficult* or *cooperative* can also control this subject, as is shown in (163) (from Ackema and Schoorlemmer 1995):[24]

(163) a. Most physics book are very difficult [even after [PRO reading them several times]].
b. Bureaucrats usually are more cooperative [after [PRO doing them a favor or two]].

In short, whether or not examples like (161) indicate the syntactic presence of the logical subject argument depends on whether the type of control they involve requires the syntactic presence of the controller. It is doubtful that they involve obligatory control.

7.3.3 Binding

In contrast to some control relations, anaphoric binding relations always require the antecedent to be syntactically present. A stronger argument could, therefore,

be made if the logical subject argument could also function as the antecedent in a binding relation.

Stroik (1992a) argues that, indeed, the middle verb's logical subject can act as antecedent in a binding relation. In particular, it seems that it can bind anaphors that occur in the grammatical subject/logical object:

(164) a. Books about oneself never read poorly.
b. Letters to oneself compose quickly.

Although on the surface there is no c-command relation between the *pro* or PRO that is supposed to receive the verb's logical subject theta-role and the grammatical subject, such a c-command relation obtains before the object moves to subject position in an analysis like that in (154):

(165) $[_{IP}\ [_{VP}\ [_{VP}\ [_{V'}$ compose letters to oneself$_i$ quickly]] PRO$_i$]] $\rightarrow$
$[_{IP}$ letters to oneself$_i$ $[_{VP}\ [_{VP}\ [_{V'}$ compose t$_i$ quickly]] PRO]]

Belletti and Rizzi (1988) have shown on the basis of Binding facts with experiencer verbs in Italian that A-moved elements can optionally reconstruct for Binding purposes. Put differently, Condition A of the Binding Theory can be satisfied both before and after A-movement. Thus, the *oneself*s contained in the surface subjects in (165) can be bound by the empty pronoun representing the logical subject in the underlying representation of these sentences.

In turn, Ackema and Schoorlemmer (1995) argue that, in examples like (164), the anaphoric elements need not be bound at all. In general, anaphoric elements that are contained inside larger NPs behave like logophoric elements, which do not need a syntactic antecedent. Pollard and Sag (1992) and Reinhart and Reuland (1993) argue that only co-arguments of a predicate are subject to the conditions imposed by the Binding Theory. Hence, if an anaphoric element is contained within such an argument, rather than constituting an argument itself, it escapes Binding Principle A. In that case, it can occur in a position in which its apparent antecedent does not c-command it (as in (166a), from Jackendoff 1972) or in which no such antecedent is even present (in (166b), from Ross 1969b):

(166) a. The picture of himself that John saw in the post office was ugly.
b. Physicists like yourself are a godsend.

According to Ackema and Schoorlemmer, the same holds for the examples in (164) as well. They point out that the same NPs, containing the same anaphoric elements, can occur in the subject position of a VP headed by a (non-middle) unergative verb, in other words by a verb that does not have a suppressed/empty/implicit argument in any case:

(167) a. Books about oneself cause headaches.
b. Letters to oneself usually stink.

This means that the data in (164) are inconclusive with respect to the question about the syntactic presence of the implicit argument of the middle verb. If the argument of the middle verb is itself a licensed anaphoric element, we may conclude that an indivisible syntactic binder is present. However, such cases are impossible, as shown by (168):

(168) *Yourself photographs easily.

This example does not show the *non*-presence of the logical subject argument either, because anaphors cannot occupy nominative positions anyway (see the Icelandic examples discussed in Maling 1984; Everaert 1986b). This independent explanation for the ungrammaticality of (168) makes it impossible to judge whether the subject is a bound anaphor, and therefore whether an invisible binder should be assumed in this sentence.

All in all, we conclude that this piece of evidence for a syntactically active logical subject is flawed.

7.3.4 For-*phrases*

Another empirical argument for the syntactic presence of the logical subject argument that Stroik (1992a) puts forward is quite straightforward: it seems this argument can be expressed overtly after all, namely as a *for*-phrase (similar, then, to the *by*-phrase in passives). Some examples are given in (169):

(169) a. No Latin text translates easily for Bill.
b. ?Die stoel zit niet lekker voor opa. Dutch
that chair sits not comfortably for grandpa
'That is not a comfortable chair for granddad.'

Judgments about such sentences tend to diverge. Some speakers find *for*-phrases in middles odd, in both English and Dutch (the question mark in (b) reflects our own judgments). However, let us focus on the issue of whether, for those speakers that accept them, *for*-phrases are the overt realization of the logical subject argument of the middle verb. There are alternative possibilities. For example, Hoekstra and Roberts (1993a) assume that the *for*-phrase is an Experiencer argument of the adverb (*easily* in (169a), *lekker* in (169b)). This is somewhat hard to maintain in general, however, since *for*-phrases can also be present when there is no adverb (when the modal semantics is only expressed by negation or a modal verb, for example):

(170) (?)That Ancient Greek text won't translate for Bill.

However, the *for*-phrase could also be an adjunct that expresses the experiencer that is induced by the modal semantics associated with the construction as a whole (see Zribi-Hertz 1993; Ackema and Schoorlemmer 1995). In general, it appears that in active sentences with similar modal semantics, similar *for*-phrases

can occur, as illustrated in (171).[25] Since every argument of the verbs in (171) is already syntactically expressed, at least in these cases the Experiencer *for*-phrase cannot be an argument of the verb:

(171) a. As both of those spells do not cost anything in material components, she may cast these things easily for herself.
b. In counseling, he was not able to express feelings easily for himself.
c. He was surprised the arrangements went so smoothly for himself, his wife, and four children.

Stroik (1999) addresses this issue and presents an interesting argument for the assumption that in middles like (169) the *for*-phrase is really an argument of the verb. It is based on Reinhart and Reuland's (1993) assumption, mentioned above, that only co-arguments of a predicate enter into binding relationships. In particular, it is based on Reinhart and Reuland's version of Condition B of the Binding Theory, which reads as follows:

(172) **Condition B:**
A reflexive semantic predicate is reflexive-marked.

Stroik's argument is as follows. In an example like (173) below, the logical subject argument and the logical object argument seem to refer to the same entity, so that the predicate is reflexive:

(173) Mary photographs easily only for *her/herself.

In this case the *for*-phrase needs to contain a reflexive-marking element, namely a *self*-anaphor. This appears to be unexpected in case the *for*-phrase is not an argument but an adjunct, since in that case it cannot reflexive-mark the predicate – only arguments of the predicate can. If it were an adjunct, the reflexivity of the predicate would be unlicensed, in violation of Condition B in (172).

There is a difficulty with this argument, however. It tries to establish that the *for*-phrase is an argument of the middle predicate, but it appears that in order for it to go through it must presuppose precisely that: only when the *for*-phrase is an argument do we know for sure that the middle predicate is in fact reflexive in (173). It is not a priori clear that we are dealing with a reflexive predicate here. To us, the semantics of the example seems to indicate that this is not so, as the proper meaning of (173) would appear to be 'an arbitrary person photographing Mary is only easy for Mary herself', rather than 'Mary photographing Mary is only easy for Mary herself'. If the predicate is indeed non-reflexive it may not be reflexive-marked (as stated by Condition A of Reinhart and Reuland's Binding Theory: a reflexive-marked predicate is reflexive). In that case, the *for*-phrase in fact must be an adjunct rather than an argument (since it should not reflexive-mark the non-reflexive predicate), and the *self*-anaphor it contains must be logophoric (see above).

At least for Dutch, it can be shown that the *self*-form in examples like (173) is indeed logophoric, not anaphoric. In contrast to English, where *himself* can be either anaphoric or logophoric, the third person reflexive in Dutch has a different form in the two uses. When it is anaphoric it has the form *zichzelf* 'ZICH-self'; when it is logophoric it has the form *hemzelf/haarzelf* 'himself/herself' (cf. Anagnostopoulou and Everaert 1999: 115–116). It turns out that, insofar as *voor*-phrases are acceptable in Dutch middles in the first place, it is the logophor that can occur here, while the anaphor leads to unacceptable results:

(174) a. ?Marie fotografeert alleen gemakkelijk voor haarzelf.
Marie photographs only easily for herself
b. ?*Marie fotografeert alleen gemakkelijk voor zichzelf.

(175) a. ?Dit model schildert alleen voor hemzelf gemakkelijk.
this model paints only for himself easily
b. *Dit model schildert alleen voor zichzelf gemakkelijk.

There is a distinction with passives again. In passive *by*-phrases the anaphor rather than the logophor is used when the predicate is reflexive, which indicates this phrase is indeed the overt expression of the suppressed argument here:

(176) a. Marie werd door ?*haarzelf/zichzelf gefotografeerd.
Marie was by herself/REFL-self photographed
b. Rembrandt werd regelmatig door ?*hemzelf/zichzelf geschilderd.
Rembrandt was frequently by himself/REFL-self painted

If the *for*-phrase is not an argument in (173), this leaves open the question of why the bare pronoun *him* cannot be used in it just as well as logophoric *himself*. We will not offer an account of this here, but it is presumably related to the focus that *only* induces on the relevant phrase. Compare the following cases in which an adjunct containing a pronominal element receives a similar focus reading:

(177) a. John_i allows Bill to drink from the flask only after himself_i/$*\text{him}_i$
b. Mary_i reads books with herself_i/$*\text{her}_i$ on the cover only.

This concludes the discussion of the empirical arguments that have been given for the presence of the logical subject argument in type I middles.

7.3.5 A conceptual argument and conclusions

A conceptual argument for the syntactic presence of the logical subject in middles has also been put forward, the most explicit form of which can be found in Hoekstra and Roberts (1993a). The argument is one of the 'Occam's Razor' type. In general, it is better, because more explanatory, in theory construction to assume less than to assume more. Therefore, it is better to do without rules or

principles that can manipulate a verb's argument structure. It is simpler to assume a verb always projects its arguments in the same way in syntax (compare Baker's 1988a Uniformity of Theta Assignment Hypothesis). If so, there is no way that the logical subject argument is not projected in a middle too.

Of course, Occam's-Razor-type arguments only go through if all else in the two theories compared is equal. This is not the case here, however. Almost inevitably, there is a cost to not assuming there are operations on argument structure, namely having to assume there are empty subjects in finite clauses in non-pro-drop languages like English and Dutch. Hoekstra and Roberts (1993a) give an account of why this element can be licensed in these languages in restricted circumstances only. In this account they extend case theory so as to include a special *pro*-licensing inherent accusative case (alongside structural accusative case) in English and Dutch. This means that the two approaches do not make more vs. fewer assumptions; rather, they make different assumptions. One elaborates on the theory dealing with how arguments are projected in syntax; the other elaborates on the theory dealing with how syntactically projected arguments are licensed. It is not a priori clear which one should be enriched and which one should be cut down on.

We conclude that the evidence brought forward to show that the verb's logical subject argument is syntactically present in type I middles is not convincing. It may well be that type II middles differ from type I middles in precisely this respect (see above).

7.4 How is the logical object promoted to subject?

In theories assuming there is no place for operations affecting the way a verb's basic argument structure is realized syntactically, the middle verb's logical object argument must be merged as an object. That it ends up as the surface subject must therefore be a consequence of syntactic movement, namely the well-known 'raising to subject' type of A-movement that has also been argued to occur in passives (Chomsky 1981; Jaeggli 1986a), with unaccusative verbs (Burzio 1986), and from the complement of so-called 'raising' verbs (Chomsky 1981). Under this view, then, middles are seen as another instance of such unaccusative constructions.

In theories in which operations can be defined over argument structures such that a verb does not project the same arguments in the same way in every instance, promotion of an internal argument to an external argument can be seen as the result of such an operation. Williams (1981a) indeed proposes that there are general Externalize(X) operations, where X is some designated argument. Roberts (1987) proposes that the logical object argument of the middle verb ends up as its grammatical subject as a result of an Externalize(Theme) operation applying to the argument structure of the middle verb. In this scenario, the logical object argument is merged directly as an external argument, in the subject position. As a result, the middle is not an unaccusative, but rather an unergative construction.

As Hoekstra and Roberts (1993a) point out, however, any rule of the type Externalize(X), with X a particular type of argument, is unlikely to capture the full range of data. Various types of argument can become the subject in a middle, not only Themes (as in (178a)) but also Locations (as in (178b) or Experiencers (as in (178c)):

(178) a. Hay loads easily.
b. This truck loads easily.
c. Children scare easily.

An analysis in terms of Externalize(X) also does not extend to impersonal middles as they occur in Dutch and German, and presumably also not directly to adjunct middles as they occur in Dutch (see sections 3.5 and 6.2).

Ackema and Schoorlemmer (1994) argue that, nevertheless, the relevant data are not incompatible with approaches in which the logical object is merged as an external argument. For this to be possible, the property of being an external argument must not be regarded as a designated property of a particular argument in the verb's argument structure, as in Williams's (1981a) original conception. Instead, argument structures as a whole can have the property that one of the arguments they contain must be projected as an external argument.[26] The one that is normally projected as such is the one that is highest on some thematic hierarchy (cf. Baker 1988a; Grimshaw, 1990; Jackendoff 1990b). According to Ackema and Schoorlemmer, the defining property of a (type I) middle is that precisely this argument receives arbitrary interpretation and is not projected syntactically. They suggest that in case the a-structure is marked as having to project one of its arguments externally, the argument that is the next one down on the thematic hierarchy automatically becomes the external argument (see also Bouchard 1984).

This approach can be extended to impersonal middles and adjunct middles, as follows. If the Actor/Agent is suppressed, intransitive verbs have no other argument left that can be merged as a DP subject. If the a-structure nevertheless contains the instruction that there should be an external argument, a language may have either or both of two last resort strategies. One is to insert a dummy external argument, resulting in an impersonal middle. The other is to turn a PP argument into a DP argument, eligible for being a subject, before projection to syntax takes place. (This is effected by an applicative-type operation; see section 6.2.) This results in an adjunct middle. This, of course, does not account for why these constructions are limited to certain languages only.

As far as the theory goes, then, both approaches can account for promotion of the logical object. Recall that under the 'move the object to subject position' approach, middles are expected to pattern with unaccusative constructions, whereas under the 'pick the next argument after the suppressed one as external argument' approach, middles are expected to pattern with unergative constructions. Ackema and Schoorlemmer (1995) argue that, at least for Dutch, the data seem to indicate that middle verbs behave like unergatives. We will mention two of the clearer pieces of data here.

A first difference between unergatives and unaccusatives in Dutch concerns their choice of auxiliary in the perfect tense. As in Italian, unergatives take the cognate of *have*, namely *hebben*, as perfect auxiliary, whereas unaccusatives take the cognate of *be*, namely *zijn* (cf. Perlmutter 1978; Burzio 1986):[27]

(179) a. Ze hebben/*zijn gelopen/gefietst/gezwommen/gedineerd.
they have/are walked/cycled/swum/dined
b. Ze *hebben/zijn gearriveerd/gevallen/gestorven/ontsnapt.
they have/are arrived/fallen/died/escaped

Middles uniformly take *hebben*:

(180) a. Dit soort vlees heeft/*is altijd gemakkelijk gesneden.
this type meat has/is always easily cut
'This type of meat has always been easy to cut.'
b. Deze trui heeft/*is altijd gemakkelijk gewassen.
this sweater has/is always easily washed
'This sweater has always been easy to wash.'

Second, unaccusatives but not unergatives allow their past participle to function as an attributive modifier of a noun:

(181) a. *de gelopen/gefietste/gezwommen/gedineerde mensen
the walked/cycled/swum/dined people
b. de gearriveerde/gevallen/gestorven/ontsnapte mensen
the arrived/fallen/died/escaped people

Middles again pattern with unergatives in not being able to occur as a prenominal past participle:

(182) a. *het altijd gemakkelijk gesneden vlees
the always easily cut meat
'the meat that has always been easy to cut'
b. *de altijd lekker gelopen schoenen
the always comfortably walked shoes
'the shoes that have always been nice to walk in'

If such data tell us anything about whether the argument of the verb is an external one or an internal one (cf. note 27), then middles in Dutch are part of the class of verbs whose argument is external. (Note, again, that there may be language variation in this respect, and that possibly type II middles as they occur in Romance and Slavic are different.)

Another type of evidence that might decide between the two views was already briefly mentioned in section 6.2. A-movement of NPs to subject position is not restricted to arguments of the verb whose subject position they fill. For example, the subject of the complement to a verb like *believe* (an 'Exceptionally Case Marked' subject) can be raised to the matrix subject position in a passive:

(183) a. I believe [John to be a fool].
b. $John_i$ is believed [t_i to be a fool] by everyone.

If promotion to subject is the result of an operation over the argument structure of the middle verb, then of course an element that is not part of that argument structure cannot be thus promoted.

In contrast to passives, middle verbs appear to disallow promotion of an element that is an argument in their complement rather than being an argument of the middle verb itself. Compare (183b) and (184):[28]

(184) *John believes to be a fool easily.

Hoekstra and Roberts (1993a) argue that there is a class of examples in which a non-argument of the verb is promoted to subject, namely resultative constructions. They argue that in such constructions the internal argument of the verb is a Small Clause (SC). The second DP in the clause then is not an object of the verb, but the subject of the secondary predicate in this SC (see (185)). Nevertheless, such DPs can become the subject of a middle (see (186)):

(185) a. Mary hammered [$_{SC}$ the metal flat].
b. Jan maakte [$_{SC}$ de kwast schoon]. Dutch
John made the brush clean
'John cleaned the brush.'

(186) a. Such metal hammers flat easily.
b. Deze kwast maakt gemakkelijk schoon. Dutch
this brush makes easily clean

The strength of such arguments, of course, depends on the strength of the syntactic analysis according to which the promoted DP is or is not an argument of the middle verb. Thus, not everyone would agree that ECM subjects are not arguments of the matrix verb (see, e.g., Bierwisch 1990), thus making the impossibility of promoting them in a middle no argument for the a-structure approach. Similarly, but to opposite effect, it has been argued that the second DP in (185) is an argument of the verb as well as of the secondary predicate (see Carrier and Randall 1992; Neeleman and Weerman 1993; Neeleman 1994a; Williams 1980, 1994), so in that case the possibility of promoting it to subject is not an argument for the A-movement approach.

8 Conclusion

As we have seen, when we define 'middle' as a particular type of semantics, then languages vary considerably in the syntactic means they use to express this semantics. At least, it seems safe to conclude that the constructions that have

been put into the rubric 'middle' in various languages differ significantly in their syntactic properties. The question is whether this language variation can be connected to other properties of the languages. In other words, we should wonder why in Dutch and English a middle verb, in contrast to a passive, does not show any special morphology or other marker indicating that we are dealing with a middle; why in German, French, and Serbian a reflexive is used; and why in French and Serbian but not in German this makes the construction identical to one type of passive. This interesting issue has not been addressed very often yet, though see Hulk and Cornips (1998) and Lekakou (2004) for some suggestions. There is certainly a lot more to be said about middles.

NOTES

1 A note on the terminology used here: when it is important to distinguish between the verb when it is used in the particular non-active mood under discussion here, and the complete construction in which such a verb is used, we will use the term 'middle verb' for the former and 'middle sentence' (or 'middle construction') for the latter. Where this distinction is not relevant, we will simply use 'middle' to refer to both.

2 It might be argued that the *s*-passive really is a true passive, in which case the impossibility of derivatives from unaccusative verbs is predicted and the construction would not bear on the issue at hand. It does not, however, take ordinary passive morphology. This is exactly equivalent to the status of other type II middles, which are almost indistinguishable from passives except morphologically.

3 Note that adding a time adverbial to a generic sentence is possible without necessarily affecting its generic character. Consider a clause with an individual-level predicate like *resemble*. It is perfectly feasible to add *yesterday* to such a clause without this turning the clause into an episodic one. Consider example (i):

(i) Yesterday Frida resembled her grandfather.

If Frida has had cosmetic surgery since yesterday, (i) makes perfect sense. The same holds for middles. One can add a time adverbial to *bureaucrats bribe easily* without this meaning that middles (of type I) lose their genericity; for example, *bureaucrats bribed easily last year, but since the anti-corruption campaign they don't any more*.

4 There is also considerable speaker variation in how good *for*-phrases in middles are considered to begin with, but we will ignore this here.

5 The existence of such cases is used by Fagan (1992) to argue for a lexical derivation of all middles in French. However, by this argument the same should be true for reflexive-marked passives, because some reflexive-marked passives also have special, non-compositional semantics, as the following example from Fagan (1992: 145) shows:

(i) Cela ne peut pas se payer.
that not can not REFL pay
'That cannot be had for money.'

We think that basically any syntactic construction can give rise to lexicalized instances (cf. Jackendoff 1996).

6 Authier and Reed (1996) claim that in Canadian French, episodic middle sentences obligatorily take *by*-phrases. Even if we follow their argument that this pleads for a unitary approach to the passive and the middle readings, it seems a very unlikely generalization, given that neither French nor related languages show this pattern in ordinary passives. We expect to find at least an equally passive variant of such a clause in which the *by*-phrase can be left out, and probably also a stative variant of such a middle which also allows a *by*-phrase. In any event, such a correlation is not valid cross-linguistically, since, for example, Russian reflexive-marked passives with *by*-phrases can only be statives (Gerritsen 1990).

7 Perhaps unexpectedly, some examples of this with type I middles are in fact acceptable: see section 7.

8 A similar phenomenon can be found in Norwegian, where the middle-like *s*-passive can be found in control structures, but the morphological passive cannot, as illustrated in the following examples (Øystein Nilsen, p.c.):

(i) Denne suppa må spises kald.
this soup must eat-S cold

(ii) *Denne suppa må bli spist kald.
this soup must be eaten cold

9 Treating the restriction as one on animacy is not possible for Italian, since it is unproblematic to have an animate subject in Italian type II middles also when they have the middle reading:

(i) Quell'uomo politico ha il vantaggio di potersi corrompere facilmente.
this politician has the advantage of be-able-REFL bribe easily
(Cinque 1988: 562)

10 An interesting question, then, is whether we can predict which languages will use reflexive-marked passives to express the middle and which will use the active. According to Lekakou (2002), it can be made to follow that if a language has imperfective aspectual morphology available to make generic sentences, it will have type II middles; otherwise it will have type I middles.

11 These classes really express VP-aspect, in that properties of the object are relevant in determining in which class a certain expression belongs (see Tenny 1987; Verkuyl 1972, 1993). It might hence seem to be more appropriate to refer to this approach as one based on *Aktionsarten* rather than verb aspect, but since the latter is how Fagan refers to the approach herself, we will keep it under this rubric.

12 The 'if present' clause must be added because of the existence of impersonal middles (see section 3.4), which do not have a subject. Obviously, this shows that (83) cannot be taken to be an absolute condition on all middle formation.

13 That in practice you stop listening to music after a while is not described by *listen to music* itself. This predicate is not delimited; it does not have an inherent end-point (readers who do not see this are advised to listen to Wagner's *Parsifal*).

14 Interestingly, Hulk and Cornips (1998) note that *see* is a verb which in Heerlen Dutch, too, is not eligible for middle formation (**De Eiffeltoren ziet zich gemakkelijk*; compare with (87)), making it not entirely comparable to French after all. We might speculate that this 'in-between' status of Heerlen Dutch is due to pressure from Standard

Dutch, with its restricted aspectual possibilities for verbs to undergo middle formation; see Cornips (2000) for interesting sociolinguistic research and relevant data with respect to this issue.

15 Compare also Verrips (1996), where it is shown that Dutch L1 learners go through a stage in which a construction that is clearly a passive rather than a middle is not marked morphologically.

16 For Negerhollands this cannot be ascertained directly any more, since the language is extinct.

17 The preposition *met* 'with' changes its form to *mee* when stranded.

18 In normal usage, though, *this house* can also refer already to the unfinished thing, and that thing can have properties which make the continuation of the building difficult. Presumably because of this, the example really does not seem so bad to us at all.

19 This test is from Jackendoff (1990b), where the relevant argument is termed Actor. The distinction Jackendoff makes between two tiers at Conceptual Structure, a thematic tier and an action tier, allows him to distinguish the highest argument at the action tier, termed Actor, from the highest argument at the thematic tier, termed Agent. The latter is a general Cause argument which can but need not be an Actor (cf. also Grimshaw 1990, Levin and Rappaport Hovav 1994, and Reinhart 2000b for somewhat comparable proposals, worked out differently). Ackema and Schoorlemmer (1994) argue that the relevant argument for the condition on the logical subject in middle formation is the Actor in Jackendoff's sense, not the Agent/Cause.

20 But see Di Sciullo (1990) for an analysis of middles in Italian that goes against this assumption.

21 It is sometimes argued that two different types of such levels and/or two different types of such operations should be distinguished (see, for instance, Spencer and Sadler 1998; Aranovich and Runner 2001), but our discussion does not hinge on this.

22 To illustrate that partitioning into these two types of analysis is necessarily simplifying things somewhat, Massam (1992) proposes an interesting analysis of middles in which the verb's internal theta-role is assigned regularly to object position, but in which there nevertheless is no A-movement to subject position. This is possible because Massam assumes that the DP we see in subject position is really a non-thematic element, which functions as antecedent for an empty pronoun in object position. Hence, Massam would assign the *bureaucrats bribe easily* example the following structure (where 'ec' stands for the appropriate empty category, according to Massam an empty reflexive pronoun):

(i) $[_{IP}$ bureaucrats$_i$ $[_{VP}$ $[_{\bar{V}}$ bribe ec$_i$ easily]]]

The same analysis is proposed by Steinbach (2003) for German middles (for discussion see also Lekakou 2004).

23 However, it should be noted that, certainly where purpose clauses are concerned, the claim that these must be licensed by an Agent argument has not gone unchallenged; see, for instance, Grimshaw (1990).

24 At least, there does not seem to be an independent reason to assume that in English the Experiencer argument of such psych-adjectives is syntactically present. Tóth (2000) argues that in Hungarian this type of argument must be syntactically represented.

25 A reviewer remarks that the *for*-phrases in middles differ from experiencer *for*-phrases. Thus, she or he finds there is a contrast between (i) and (ii):

(i) No Latin text translates easily for Bill.

(ii) It happened much too quickly for me.

According to the reviewer, the *for*-phrase in (ii) is an experiencer adjunct that can be paraphrased as 'from X's perspective'. In contrast, the *for*-phrase in (i) can only be interpreted as the logical subject of *translate*, according to the reviewer: she or he totally rejects a paraphrase 'from Bill's perspective, no Latin text translates easily' for this example. In our view, this paraphrase expresses exactly what (i) means. A syntactic difference between the two *for*-phrases does exist, but not the one intended by the reviewer. Rather, the *for*-phrase in (ii) is an argument of the degree word *too*, whereas the one in (i) is an adjunct to the verb.

26 There is a lively debate on whether this property can be reduced to some semantic property of the predicate and, if so, what the proper semantic property is in this respect. For various views see Borer (1994); Levin and Rappaport Hovav (1994); Van Hout (1996); Reinhart (2000b); and the papers in Alexiadou et al. (2004).

27 It should be noted here that there is disagreement in the literature on whether the different choice of auxiliary is connected to a syntactic difference between unergatives and unaccusatives (taking an external or an internal argument). Several authors have argued that auxiliary selection is related to semantic differences between the two classes of verbs alone (see, for instance, Van Valin 1990; Zaenen 1993; and Lieber and Baayen 1997). Fagan (1992) argues that this holds for German as well and that syntactic unaccusativity in fact does not exist in this language. However, others argue that the differences between unergatives and unaccusatives do reflect a syntactic distinction in the languages under discussion (see, for example, Burzio 1986, 2000; and other papers in Reuland 2000). Specifically with respect to auxiliary selection see (Hoekstra 1986b, 1999; Vikner and Sprouse 1988; Ackema 1999). Finally, it is also possible that in constructions like (180) it is the auxiliary *hebben* itself that undergoes middle formation (!), which would presumably also void the argument. An analysis along these lines is developed by Kerstens (2000).

28 Ackema and Schoorlemmer (1995) also mention the impossibility of promoting an idiom chunk to subject in a middle, vs. the possibility of doing this in a passive:

(i) a. Advantage$_i$ was taken t_i of John.
b. *Advantage takes easily of naive customers.

However, it seems clear that (ib) is impossible for independent semantic reasons: it does not make sense to make a generic statement ascribing some property to an idiom chunk.

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43 Mittelfeld Phenomena (Scrambling in Germanic)

HUBERT HAIDER

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1 Introduction: the mittelfeld in OV and VO

1.1 What is the 'mittelfeld'?

The term 'mittelfeld' refers to one of five segments ('fields' in the topological model) of a clause. The topological field scheme (for an accurate exposition based on German see Höhle 1986) partitions a clause into five segments: pre-field (Vorfeld) – left bracket – midfield (Mittelfeld) – right bracket – post-field (Nachfeld). The example sentence in (1) illustrates the maximal expansion. It provides material in all five standard segment frames plus the left dislocation frame (LD), preceding the clause proper:

(1) (Wer das liest)$_{,\text{LD}}$ dem$_{\textbf{pre-F}}$ *fällt*$_{\textbf{LB}}$ nicht sofort$_{\textbf{MF}}$ *auf*$_{\textbf{RB}}$
(who this reads) him$_{\text{dat}}$ *falls* not immediately *up*
wo es sich befindet$_{\textbf{post-F}}$
where it itself locates
'He who reads this surely does not immediately realize where it is located.'
(auf-fallen 'fall up' = realize, come to mind; particle + verb combination)

The mittelfeld (MF) is that segment of a clause that is sandwiched by the left bracket *segment* (LB; Germ. *linke Klammer*) and the *right bracket segment* (RB; Germ. *rechte Klammer*). It is worth emphasizing that the MF does not correspond to a constituent in terms of a phrase structure representation, simply because the verb position is assigned to a separate segment frame, namely the right bracket. In phrase structure terms, the left bracket position is C^0. The right bracket is the position of the clause-final verb. So the mittelfeld includes everything between C^0 on the left and the verbs on the right. The exact mapping is theory-dependent and therefore differs, depending on the chosen model (see section 3.1).

For the left bracket frame, the alternative realizations are as follows: the finite verb in a verb-first (2a) or verb-second clause (1), the imperative verb form in a clausal imperative construction, or a complementizer (2b). The left bracket may be empty as in infinitival clauses (2c) or embedded *wh*-clauses (2d). The pre-field (Germ. *Vorfeld*) immediately precedes the left bracket; the post-field (Germ. *Nachfeld*) follows the right bracket. In GB-terminology, the post-field is the extraposition area. The left dislocation segment is external to the clause frame, and therefore it requires pronominal coreferencing as a mechanism of linking its content to the clause. In (1), the demonstrative pronoun in the pre-field is coreferent with the left-dislocated free relative. In clauses without accessible pre-field (e.g., in verb-first interrogative clauses), the resumptive demonstrative is located in the middle field:

(2) a. $_{LB}$ *Fällt* $_{MF}$ der Leserin sofort etwas *auf*?
strikes the reader immediately something up?
'Does something immediately come to the mind of the reader?'

b. $_{LB}$ *daß* $_{MF}$ der Leserin sofort etwas *auffällt*
that the reader immediately something up-strikes

c. (*ohne*$_{Prep.}$) $_{MF}$ der Leserin sofort *aufzufallen*
(without) the reader immediately up-to-strike
'without coming immediately to the mind of the reader'

d. $_{PF}$ wem $_{LB}$ – $_{MF}$ sofort etwas auffällt
whom immediately something up-strikes

In OV-languages, the mittelfeld is easy to identify. It is the segment of a clause whose left boundary is immediately after the position of the sentence-initial complementizer or the finite verb and whose right boundary is right before the position of the clause-final verb(s) or stranded verbal particles (see 2a, b).

1.2 The mittelfeld in German as an OV language

In German, an OV language, the mittelfeld is in principle open for all constituents of a clause, that is, arguments (3b, d, e), adjuncts (3c, d) and predicates (3b), of all categories, namely noun phrases, PPs, clausal constituents (3c, d, e), or particles (3d). Unlike Dutch, German allows a genuinely empty mittelfeld (3a), and in fact it must be empty in constructions as in (3a), since an expletive pronoun is ruled out. As for clausal constituents, the preferred though not grammatically enforced position is the post-field (see section 2.5 for more details). In the post-field, predicates, particles, and noun phrases are generally ungrammatical, except for heavy-NP-shift constructions. The post-field hosts extraposed clauses and PPs.

(3) a. **Intransitive passive:**
$_{LB}$ als $_{MF}$ [*empty*] geschossen wurde *empty post field*
when shot was

b. **Secondary predicates:**
daß $_{MF}$ er sein Steak *betrunken roh* aß
that he^{i} his steak^{j} drunk^{i} raw^{j} ate

c. **Adverbial case:**
daß $_{MF}$ [als wir vorbei fuhren] geschossen wurde
that [when we passed by] shot was
'that (someone) shot when we passed by'

d. **Finite argument clause:**
Ich habe $_{MF}$ ja [*daß die Erde rund sei*] nie bezweifelt.
'I have *PART*. [that the earth is flat] never doubted.'

e. **Infinitival clause:**
Bis jetzt hat $_{MF}$ [diese Frage zu stellen] noch keiner gewagt.
until now has *PART*. [this question to ask] not-yet anyone dared

Note that in Dutch there is a stricter ban against clausal arguments in the MF (see section 2.5). Infinitival argument clauses in the MF must undergo V-raising (= clause union operation that integrates parts of the infinitival clause into the matrix clause). Clausal infinitivals are therefore found only in extraposed or topicalized positions, that is, in the post-field or the pre-field, respectively. This is not the only reason why the Dutch equivalent of (3e) is ungrammatical: the first reason is that a clausal infinitive must not occur in the MF, and second, a (clausal) object cannot occur in front of the transitive subject in Dutch.

1.3 The mittelfeld in a VO language

What corresponds to the OV-Mittelfeld in a VO language? The Scandinavian Germanic languages are both VO and V2-languages; English is a 'residual' V2-language (notably in interrogative constructions). So, the topological segmentation tailored to capture the main subparts of a clause in a V2-language can be applied in an analogous manner to a VO-clause. The pre-field and the left bracket are easy to identify. But where exactly is the MF located?

(4) a. $_{pre\text{-}F}$ Never before [$_{LB}$ had] he *read* such a good article.
b. $_{pre\text{-}F}$ Aldrig før [$_{LB}$ had] han *læst* sådan en god artikel. Danish[1]
c. $_{pre\text{-}F}$ Nie zuvor [$_{LB}$ hatte] er so einen guten Artikel *gelesen*. German
d. $_{pre\text{-}F}$ Nooit tevoren [$_{LB}$ had hij zo'n goed artikel *gelezen*. Dutch

The MF is less easy to identify. In OV languages, the right bracket is the position of the verbal head of the main VP. Thus, the entire VP is part of the MF, if we stretch the notion *mittelfeld* and include the right bracket into the MF, as its right boundary. With this proviso, it does not seem to be too difficult anymore to identify the MF in an VO language, despite the absence of a manifest right boundary: the MF in a 'verb-second' VO language is that segment of a clause that is in between the V2 position (= the position of a clause initial complementizer or the fronted finite verb) as the left boundary and the right edge of the VP as

the right boundary. The extraposition area corresponds to the post-field of an OV clause:

(5) Did $_{MF}$ more people misidentify the mittelfeld $_{post\text{-}F}$ than the prefield?

In OV languages, it is easy to see that a comparative clause that is split off is necessarily extraposed. Hence, it is safe to conclude that the comparative clause in (5) is in the post-field of the VO clause.

For descriptive purposes, the primary utility of the notion MF rests on one's non-commitment in terms of the fine-grained details of phrase structure. It can serve as a theory neutral label for a well-defined portion of a clause in an OV language whose exact phrase structure analysis may remain open or even controversial. The prima-facie utility of the notion MF for VO languages is less obvious than for OV languages. Nevertheless, it can serve as a frame of reference for issues of cross-linguistic comparison. It is of considerable heuristic value for questions regarding the proper analysis of the crucial grammatical parameters that are constitutive of the OV vs. VO clause type, however.

2 Mittelfeld phenomena: a survey

2.1 Serialization variation: scrambling

The model language for this survey is German because of its wealth of word-order alternations in the mittelfeld. Compared to other Germanic OV languages, as for instance Dutch, the potential of word-order variation in German is very great. For example, all six possible serialization permutations of the three DPs in the mittelfeld of (6a) yield a fully grammatical order. One of the five alternative serializations for (6a) is given in (6b). In Dutch, however, DP arguments must not be permuted.

(6) a. daß das Objekt dem Subjekt den ersten Platz streitig macht
that the object$_{NOM}$ the subject$_{DAT}$ the initial place$_{ACC}$ contested makes
'that the object competes with the subject for the initial place'

b. daß dem Subjekt den ersten Platz das Objekt streitig macht
that the subject$_{DAT}$ the initial place$_{ACC}$ the object$_{NOM}$ contested makes

Ross (1986), who furnished not only the name for this phenomenon, placed it outside grammar proper and treated it as a stylistic rule. In *The Minimalist Program* (1995c: 324), Chomsky considers a similar move. However, the fact that scrambling interacts with structurally determined phenomena (e.g., anaphor and variable binding) plus the fact that the very existence of scrambling in a given language is grammatically conditioned[2] militates against attempts to disqualify scrambling as a genuine phenomenon of grammar. The following grammatical properties characteristic of scrambling in German (Stechow and Sternefeld 1988;

Grewendorf and Sternefeld 1990; Müller 1995: 95–102; Haider and Rosengren 1998), some of which are inappropriately characterized in the literature, will be discussed in the given order:

(i) Scrambling proper (in German) is clause-bound and confined to the mittelfeld.
(ii) There is no instance of obligatory scrambling.
(iii) Scrambling applies to arguments of all categories (i.e., DP, PP, CP).
(iv) Scrambling of potential binders extends their respective binding domains.
(v) Scrambling produces scope ambiguities (as a chain effect).
(vi) Scrambling can be iterated.
(vii) Scrambling reorders arguments (object shift does not; see section 2.3.1).

Scrambling is usually discussed as a clausal phenomenon, but in fact it should be seen as a more general phenomenon in the context of head-final projections (Haider 1991a; Corver and Van Riemsdijk 1997; Haider 1997c). In German, scrambling is found within VPs (see (2)) and within APs (see (3)), but not within NPs and PPs, as they are head-initial.

(7) a. [$_{VP}$ Dem Subjekt den ersten Platz streitig gemacht] hat das Objekt.
b. [$_{VP}$ Den ersten Platz$_i$ dem Subjekt e$_i$ streitig gemacht] hat das Objekt.

(8) a. der [$_{AP}$ *dem Briefträger* in vielen Merkmalen nicht unähnliche] Sohn
the [the postman in many features not dissimilar] son
der Nachbarin
(of)-the neighbour
'the son of the neighbour resembling the postman in many features'
b. der [$_{AP}$ in vielen Merkmalen *dem Briefträger* nicht unähnliche] Sohn
the [the in many features the postman not dissimilar] son
der Nachbarin
(of)-the neighbour

Property (i): Scrambling is clause bound, in contrast to *focus fronting*.

The claim that scrambling is clause bound is uncontroversial for cases of extraction out of finite clauses, as illustrated in (9), but it holds also for extraction out of infinitival clauses. Apparent counterevidence is controversial. It is open to an alternative analysis as a clause-union construction, due to V-raising.

Sentences (9a) and (9c) are unacceptable. The examples (9b) and (9d) are cases of focus fronting (FF; see Neeleman 1994b: 395f. for Dutch), a construction that occurs less frequently in written than in oral style, presumably because of the necessity of a manifest intonation contour, namely, a rise–fall contour, here indicated by / and \, respectively. Keep in mind that scrambling and FF are two clearly distinct phenomena. For instance, FF may be applied to elements that do not scramble, such as selected manner adverbials or VPs (see the contrasts in (9f) and (9g)).

(9) a. *daß die Lösung$_i$ niemand geglaubt hat, [daß er e$_i$ gefunden hätte]
that the solution no one believed has that he found had

b. daß /SO eine Lösung$_i$ NIE\mand geglaubt hat,
that such a solution no one believed has
[daß einer e$_i$ gefunden hätte][3]
that someone found had
'that no one believed that anyone had found such a solution'

c. *daß niemand [sie zu besuchen]$_i$ geglaubt, [dass er sich e$_i$ leisten kann]
that no one [her to visit] believes that he REFL afford can

d. daß [sie zu be/SUchen]$_i$ NIE\mand glaubt, dass er sich e$_i$ leisten kann
that [her to visit] no one believes that he REFL afford can
'that no one believes that he can afford to visit her'

e. Da habe ich mich$_i$ angefangen, e$_i$ damit zu beschäftigen.[4]
there have I myself$_i$ begun [therewith to engage]
'So I began to engage myself for it.'

f. daß sie ja [/SO viel]$_i$ NICHT\ geglaubt hat
that she Prt [so much] not believed has
[daß man dafür e$_i$ bezahlen müsse]
[that one for-that pay must]

In (9a) and (9c), the scrambled constituent is in the mittelfeld of the matrix clause, that is the clause that embeds the clause with the trace of the scrambled constituent. This type of long-distance displacement is ungrammatical in German, with one exception however: (9b) and (9d) are acceptable, but only with a specific intonation contour. This construction is the result of long-distance movement. Sentence (9e) is an example of a construction whose analysis is controversial ('third infinitival construction', see Den Besten and Rutten 1989; Grewendorf and Sabel 1999; Haider 1993: ch. 9, 2002).

Excursion 1: topicalized V-projections are VPs

Scrambling is found within topicalized V-projections. For the theoretical modeling of scrambling it is relevant whether these constituents are just VPs or VPs within higher functional projections. In the first case, scrambling must be analyzed in terms of the structure of the VP. In the latter case, however, the analysis of scrambling may be framed in terms of movement to specs of functional heads.

Claim
Topicalized projections must not contain the trace of the finite verb. Therefore, topicalized V-projections are VPs, rather than VPs *within* functional projections.

Background
If the fronted constituent contains a functional projection on top of VP, part of the head chain of V-movement that relates the finite verb in V2-position and its base position in the VP would be within the topicalized constituents. This would incur a crossing violation in that the trace is not within the non-breaking hyphen domain of its antecedent. This is easy to demonstrate with the contrast between (1a) and (1c) because in German, stranded particles of verb–particle combinations identify the base position of the verb:

(1) a. [Einen Fehler nachgewiesen] hat er ihm noch nie.
[*Einen Fehler nachgewiesen*] *hat er ihr noch nie.*
[a mistake PRT-proven] has he her never ever
'given her proof of a mistake, he never ever has'
b. *Er wies*$_j$ *ihr noch nie einen Fehler nach-e*$_j$.
he proved$_i$ her yet ever a mistake PRT-e$_i$
c. *[*Einen Fehler nach-e*$_j$] *wies*$_j$ *er ihr noch nie.*
[a mistake PRT-e$_i$] proved$_i$ he her never ever
'Given her proof of a mistake, he never ever has.'

The examples in (1) feature a particle verb. When the finite verb moves to [Spec, C], the particle is stranded (1b). Example (1c) shows that the stranded particle cannot be part of the fronted constituent. In other words, the trace of the finite verb must not be part of the topicalized constituent. Sentence (1c) demonstrates that the topicalized constituent cannot contain the trace of the finite verb: its unacceptability is due to a crossing violation. The trace of the verb in (1c) fails to be in the c-command domain of the moved verb.

The argument
If the topicalized constituent in (1a) contained the trace of the finite verb it would be predicted to be ungrammatical, contrary to the facts. The conclusion must therefore be that the topicalized phrase does not contain the trace of the finite verb. For (1a) this means that the topicalized constituent must be a complement of the auxiliary. It is only in this case that the finite auxiliary would not have to pass through the functional head of a functional projection that hosts arguments of the main verb (see 2a). So if the topicalized constituent in (1a) is not a VP but a VP within a functional projection, this functional projection must be a complement of the auxiliary (2a).

Unavoidable though this conclusion is, it is unwanted because it is bound to overgenerate. The structure in (2a) induces ungrammaticality, as (2b), illustrated in (3b), indicates.

(2) a. $[_{\text{AUX-VP}}\ [_{\mathbf{FP}}\ \text{XP}\ \text{F}^0\ [_{\text{VP}}\ \ldots\ \text{YP}\ \ldots\ \text{V}^0]]\ \text{V}_{\text{AUX}}]$
b. $[_{\text{AUX-VP}}\ [_{\mathbf{FP}}\ \text{XP}\ \text{F}^0\ [_{\text{VP}}\ \ldots\ \text{YP}\ \ldots\ \text{V}^0]\ (\mathbf{*ZP})]\ (\mathbf{*ZP})\ \text{V}_{\text{AUX}}]$

(3) a. Gesprochen *mit ihr* / *Mit ihr* gesprochen hat er nicht mehr.
spoken to her / *to her* spoken has he not any-more
b. *daß er nicht mehr gesprochen *mit ihr hat*
c. daß er nicht mehr *mit ihr* gesprochen *hat*
d. daß er nicht mehr gesprochen *hat* mit ihr

PP objects may be 'extraposed'. The first chunk in (3a) (*Gesprochen mit ihr*) is VP topicalization with an extraposed PP. A VP with extraposition is ungrammatical in the base position (see 3b). If the topicalized constituent in (3a) is a functional projection that allows extraposition, it should allow extraposition in the base position, but this is not the case. Example (3c) is the version with the unextraposed PP. Extraposition of the PP targets a position after the finite verb (3d). One might object that the distributional properties in the base position are obscured by an intervening factor, namely, V-raising. Each verb is raised to the next higher V-position, forming a head cluster. But this objection is without force. If it were so, (4c) would be predicted to be grammatical: If V-raising out of the VP amalgamates the sequence of verbs at the end of the clause, the VP nevertheless remains a target of extraposition. The prediction is then that in a double-object clause extraposition may place a relative clause that goes with the first object in between the second object and the verb cluster:

(4) a. daß er *jenen*^{i} etwas gegeben hat, *die*^{i} *ihn darum*
that he those something given has who him therefore
gebeten haben
asked have
'that he gave something to those who had asked him for it'
b. [*jenen*^{i} etwas gegeben *die*^{i} *ihn darum gebeten haben*] hat er noch nie
c. *daß er *jenen*^{i} etwas, e_i *die*^{i} *ihn darum gebeten haben* [gegeben hat]$_i$

Relative clauses can be extraposed in a fronted VP (4b). Example (4c) is ungrammatical, although it could be analyzed as a functional projection with extraposed relative clause and the verb raised to the higher verb, which subsequently moves to the right hand functional head.

In sum, there is robust enough evidence for VP topicalization and against topicalization of VP within functional projection(s). Hence, topicalized V-projections are a valid testing ground for VP-internal structure.

Property (ii): Syntactically, scrambling is optional. There is no obvious *syntactic* trigger.

Scrambling is optional in the sense that there is no syntactic context that makes an unscrambled order ungrammatical. This is generally acknowledged (see for instance Müller 1995: 95–100). However, there are semantic and pragmatic

aspects of word-order variation. But, the semantic and/or pragmatic effects induced by scrambling cannot be taken to be grammatical triggering factors of Scrambling since the specific interpretation effects that are claimed to trigger Scrambling are found in unscrambled structures as well. Scrambling seems to reduce, but not to induce or replace, the interpretation potential. Sentence (10a) has the definite DP after an indefinite pronoun (morphologically identical with the interrogative form and specifically chosen here because it does not scramble). So the definite DP is likely to be in situ. Analogous considerations apply to (10b, c). Generic interpretation (10a), indefinite specific (10b), and definite specific (10c) interpretations of DP are available for DPs in situ as well as for scrambled DPs. What can get lost by the scrambling of indefinites is the existentially bound interpretation. Note, however, that the strong interpretation (generic (10a) or specific (10b)) is available in the base position as well. The grammar-theoretic reason will be analyzed below.

(10) a. **Existential or generic:**
dass ja wer *(die) Pockenviren* ausrotten sollte
that PRT who the pockvirus exterminate should
'that surely someone should exterminate the pockviruses'

b. **Indefinite specific:**
wenn wer *eine rothaarige Frau* sucht, dann ist das Maria
if who a red-haired woman seeks, then is this Mary
'if someone is looking for a red-haired person, then this is Mary'

c. **Definite specific:**
daß er wem *ihr Kleid* gezeigt hat, hat Anna nicht gefallen
that he who_{DAT} her Dress shown has, has $Anna_{NOM}$ not liked'
'that he has shown her dress to someone Anna did not like'

The only case for allegedly obligatory Scrambling (cf. 11a) – indefinites cannot occur in the domain of negation in German – rests on a controversial premise, namely, the premise that the negation universally c-commands the whole VP. This premise is unfounded, at least for German and Dutch.[5] There are elements, for instance indefinite W-pronouns, that do not scramble (cf. 11b) but occur in front of the negation (11c).

(11) a. *daß jemand nicht *wen* verjagte
that someone not someone chased

b. */??Daß mitunter wen_i jemand e_i beleidigt, kommt vor.
that sometimes someone someone offends, happens

c. daß mitunter wer wen nicht beleidigt, kommt vor
that sometimes someone someone not offends happens
'that it sometimes happens that someone does not offend somebody'

The fact that scrambled indefinites may lose their indefinite or unspecific interpretation is but an epiphenomenon, and not the trigger, of Scrambling. Example

(11b) is ungrammatical because an indefinite scrambled out of the minimal domain of argument-projection (MAC = minimal argument complex)[6] cannot receive an existential reading: it has left the domain of existential closure. The generic or indefinite–specific interpretation that indefinites receive outside the MAC is incompatible with the lexical semantics of indefinite pronouns.

The examples in (12) illustrate that the very interpretation (cf. 12) that is applicable to scrambled indefinites is available already in the base position. In other words, scrambling eliminates interpretation options, but it does not add or generate them. In a triggering account, the 'generated' interpretation would be an element of the triggering mechanism.

(12) a. daß ja Fisch/einen Fisch keiner bestellte
that PRT fish/a fish nobody ordered
'that nobody ordered fish/a fish'
b. daß ja keiner Fisch/einen Fisch bestellte
that PRT nobody fish/a fish ordered

The bare indefinite in (12) is interpreted generically in (12a), and so it can be interpreted in (12b). With an indefinite article, the NP in (12a) can be interpreted as specific, and so it can in (12b). The loss of the existential reading in (12a) is a by-product of scrambling, however. The scrambled DP has left the minimal argument complex, which means that it has left the domain of existential closure.

Property (iii): Scrambling applies to arguments of all categories (i.e., DP, PP, CP).

Irrespective of the category of an argument, namely as a DP, as a PP (13a), as a finite CP (13b), or as an infinite CP-construction (13c), an argument may scramble.[7]

(13) a. daß dort jetzt [auf Peter]$_i$ jemand e_i wartet
that there now for Peter someone waits
'that someone is waiting for Peter there now'
b. $^{(?)}$weil ja heutzutage [daß die Erde rund ist]$_i$ niemand e_i ernsthaft bezweifelt
since PRT today [that the earth round is] nobody seriously doubts
c. daß doch [diese Tür aufzubrechen]$_i$ keiner je e_i versucht hat
that PRT [this door to open] nobody ever tried has
'that nobody ever tried to open this door'

Note that the examples have the scrambled constituent to the left of the subject but to the right of modal particles and temporal adverbials. This, plus the fact that they are well-formed in the absence of focus intonation, indicates that focus movement is not at stake. However, as the question mark in (13b) indicates, non-extraposed finite (scrambled) clauses are slightly marginal; but they are equally marked in the position of the trace as well. They are best when extraposed or in the position immediately after C^0, the focus movement position.

A remark on the scrambling properties of adjuncts seems to be appropriate here: if there are alternative positions, this is not enough for claiming scrambling. Scrambling can be assumed only if there is a privileged start position. This is not entirely clear for adjuncts. If, however, adjuncts can be generated in alternative positions, scrambling is not at stake. This is claimed for Dutch by Neeleman and Weerman (1999). Arguments for base positions of adverbials in German are developed in Frey and Pittner (1998).

Property (iv): Scrambling of possible binders extends their respective binding domains.

Scrambling a potential binder creates new binding possibilities if scrambling enlarges the c-command domain on the binder. This holds for principle-A effects (14a), for principle-C effects (14b), and for Q-binding of pronouns (14c). Note that the discussion of variable binding in scrambling constructions in the literature may involve controversial data judgments (see Frey 1993; Müller and Sternefeld 1994). In all cases, binding in the base-positions[8] is impossible: the non-scrambled version of (14a) would be ungrammatical, (14b) would be grammatical, and in (14c) the pronoun could not get a Q-bound reading.

(14) a. daß man die Zeugenaussagen$_i$ einander^i e$_i$ anglich
that one the testimonies$_{ACC}$ each other$_{DAT}$ adjusted
'that the testimonies were adjusted to one another'

b. *daß man Peter$_i$ [Peters$_i$ Vater] e$_i$ nicht übergeben hat
that one Peter Peter's father$_{DAT}$ not surrendered has

c. daß man fast jeden$_i$ seinem^i Vorgesetzten e$_i$ ankündigte
that one almost everyone his boss$_{DAT}$ announced
'that almost everyone was announced to his boss'

The counterpart of an extended binding domain as an effect of scrambling a potential binder is the destruction of a binding configuration by scrambling the bindee across a binder. Note that this is a property of A-movement, but not A'-movement. A'-moved bindees are reconstructed for binding.

Scrambling of a bindee across a binder destroys binding relations that hold in the base position for principle-A effects (15a), for principle-C effects (15b), and for Q-binding (15c). Binding of a fronted reflexive by a nominative (15d) is exceptional, since in this case F-binding applies, that is, binding by the functional head, whose F-features agree with the nominative (see Haider 1989, 1993: 167; for a detailed implementation see Frey 1993).[9] This is a nominative, not a subject effect: ECM-subjects (for instance, in ECM-constructions) behave like objects: scrambling of the bindee across the binder in (15e) is ungrammatical.

(15) a. *daß man aneinander$_i$ die Bilder^i e$_i$ anglich
that one to-each-other the pictures assimilated

b. daß man [den Vater des Polizisten^{i}]$_{j}$ dem Polizisten/ihm^{i} e$_{j}$
that one the father$_{ACC}$ of-the policeman the policeman/him$_{DAT}$
nicht übergeben hat
not handed over has
'that the father of the policeman was not handed over to the policeman/him'

c. ?daß man [seinen^{i} Vorgesetzten]$_{j}$ jedem^{i} e$_{j}$ ankündigte
that one his boss$_{ACC}$ everyone$_{DAT}$ announced

d. daß sich$_{i}$ bei diesem Fall viele^{i} e$_{i}$ geirrt haben
that REFL with this case many erred have
'that in this case many erred'

e. *daß man sich$_{i}$ keinen^{i} e$_{i}$ vorstellen ließ
that one himself nobody introduce let

These examples demonstrate that binding applies at the target position of Scrambling and not at the respective base positions (see Frey 1993). Hence, reconstruction is not at issue. Note that this distinguishes structures resulting from scrambling from those resulting from topicalization (16a, b):

(16) a. Aneinander$_{i}$ hat man die Bilder^{i} e$_{i}$ angeglichen.
to-each-other has one the pictures assimilated
'The pictures were assimilated to one another.'

b. *[Aus Peters^{i} Wagen]$_{j}$ hat man ihn^{i} e$_{j}$ gezerrt.
out of Peter's car has one him dragged
'Peter was dragged out of his car.'

In A'-chains, binding is checked in the lower position. So (16a) meets condition (A) and (16b) violates condition (C). The relevant contrasts are (15a) versus (16a) and (15b) versus (16b).

Property (v): Scrambling produces scope ambiguities.

Scrambling of quantifiers across quantifier-sensitive elements produces scope ambiguities. Unlike binding, which depends on the surface position of the head of a movement chain, scoping refers to chain-links (cf. Frey 1993): a quantifier Q can get a wide-scope reading with respect to a phrase E, if at least one member of the chain of E is c-commanded by Q (see also Aoun and Li's (1993b) scope principle[10]). Since scrambling – under some of the current analyses – produces chain links, it is predicted to produce scope-ambiguities.

(17) a. **Ambiguous scope:**
daß man [*mindestens ein* Bild]$_{i}$ *fast* *jedem* Experten e$_{i}$ zeigte
that one at least one picture$_{ACC}$ (to) almost every expert$_{DAT}$ showed
'that at least one picture was shown to almost every expert'

b. **Unambiguous scope:**
daß man *mindestens einem* Experten *fast jedes* Bild zeigte
that they (to) at least one $\text{expert}_{\text{DAT}}$ almost every $\text{picture}_{\text{ACC}}$ showed

The ambiguity of (17a) is a scrambling effect. The wide-scope reading of the existentially quantified expression follows from its surface position. It c-commands the universal quantifier. The universally quantified expression, on the other hand, c-commands a trace of the scrambled existential-quantifier expression. Hence this phrase can be assigned to the scope of the lower quantifier. The order of the objects in (17b) – DAT before ACC object – is a base order, given the head verb *zeigen* ('show').

Property (vi): Scrambling can be iterated.

Example (6), repeated for convenience, is representative: In the mittelfeld of a clause with three arguments, the arguments can be serialized in any order. So, there are orders in which more than one argument changes place. Hence, scrambling, unlike wh-movement, is not restricted to a single application.

(6) a. daß das Objekt dem Subjekt den ersten Platz streitig macht
that the $\text{object}_{\text{NOM}}$ the $\text{subject}_{\text{DAT}}$ the initial $\text{place}_{\text{ACC}}$ contentious makes
'that the object disputes the right of the subject for the initial place'
b. daß dem Subjekt den ersten Platz das Objekt streitig macht
that the $\text{subject}_{\text{DAT}}$ the initial $\text{place}_{\text{ACC}}$ the $\text{object}_{\text{NOM}}$ contentious makes

If (6a) reflects the base order, (6b) is the result of scrambling the objects across the subject. Note that the resulting order of the scrambled objects is free: changing the order of the dative and the accusative object in (6b) does not affect grammaticality.

Property (vii): Scrambling reorders arguments (*object shift* does not; see 2.3.1).

In a genuine scrambling language like German (or e.g. Japanese), scrambling produces the complete permutation set of argument order variants for a given clause (see the discussion of ex. 6). The term 'scrambling' is sometimes used in a wider sense: in the discussion of Dutch word order, 'scrambling' is used to refer to the order variation between an argument and an adverbial (see section 2.2.1). 'Object shift' denotes a phenomenon found in Scandinavian languages: pronominal objects (in Icelandic any kind of object) may precede pre-VP adverbials if the VP is beheaded, that is, if the verb is finite and moved to the V2 position. The Dutch phenomenon and the Scandinavian object shift share the property of order conservation: the relative order of arguments must not change. So, it is justified and necessary – at least on the descriptive level – to distinguish scrambling proper from variants of object shift, as in Scandinavian languages and Dutch. It is still an unsettled issue as to whether object shift should be analysed as an argument-movement phenomenon or as an adverb-related pheonomenon (see Neeleman and Weerman 1999: 38ff.).

2.2 Base positions of arguments

2.2.1 Base order as a function of A-structure projection

In German, scrambling cannot be identified without reference to the A-structure of the particular verbal head. The reason is this: the German base order is not a function of grammatical relations (e.g. Case), but directly reflects the ranking of the arguments in the A-structure of the given head. The ranking is a function of the hierarchical organization of lexical–conceptual structure in the lexical entry of a head.

Several verb classes can be distinguished in German with respect to the serialization type determined by their respective A-structure. It is worth emphasizing that this is not a peculiarity of German. German compares with Icelandic in this respect. V-class dependent base orders are also familiar from Icelandic (Kress 1982; Yip et al. 1987). In this language, variant base orders are easy to identify just because of the lack of scrambling. They can be read off from the surface order of DPs inside a VP. Thus, this is a safe indicator that the ordering type is neither an idiosyncratic property nor dependent on scrambling.

A given order of arguments that is the result of scrambling for one verb class (cf. 18a, c, e) may be a base order for another verb class (cf. 18b, d, f). Therefore, a naive inspection of the order of DPs in terms of their case functions does not reveal whether a given order is a base order or a scrambling order. What is needed is an empirically reliable test criterion for the identification of antecedent–gap configurations that are indicative of scrambling. The patterns in (18) are possible base orders for nominal arguments in German (cf. Haider 1997d).

(18)	a.	NOM > ACC:	anfassen	bedauern	interpretieren. . . .
			'touch'	'regret'	'interpret'
	b.	ACC > NOM:	ängstigen	beeindrucken	interessieren. . . .
			'frighten'	'impress'	'interest'
	c.	NOM > DAT:	helfen	gratulieren	widersprechen. . . .
			'help'	'congratulate'	'oppose'
	d.	DAT > NOM:	gefallen	fehlen.	imponieren. . . .
			'appeal/please'	'lack'/'be missing'	'impress'
	e.	NOM > DAT > ACC:	anvertrauen	verbieten	zeigen. . . .
			'entrust'	'forbid'	'show'
	f.	NOM > ACC > DAT:	aussetzen	unterordnen	zuschreiben. . . .
			'expose' to	'subordinate'	'attribute'

The verbs listed in (18a) through (18f) are all verbs that require *have* as an auxiliary, so the patterns (18b, d) cannot be explained away as an ergative–unergative effect. The subject of the verb in these two classes receives a Theme interpretation. If an Agent interpretation is chosen, the verbs must be allocated into classes (18a) and (18c), respectively.

It is worth emphasizing that in Dutch, a language without nominal case-marking,[11] base orders with a nominative following an object are found only with unaccusative verbs.[12] What is called Scrambling in the literature on Dutch is the

variation in the relative order of arguments and certain adverbials. Genuine Scrambling is the permutation of arguments. This is absent in Dutch. The reason has to be sought in the implementation of case checking.

What determines the base order? The base order reflects the order in which the arguments are discharged into the syntactic structure: the asymmetric ranking order of the arguments in the argument grid is mapped onto an asymmetric syntactic structure. A higher ranked argument ends up in a higher position in the syntactic constituent structure (c-structure).

(19) A-structure c-structure (head-final)
H^0: <A <B <C>>> $_{\text{(ranked) lexical A-structure}} \Rightarrow$ [A [B [C h^0]]] $_{\text{syntactic c-structure (head-final)}}$

For present purposes it is sufficient to accept that ranking is a function of the A-structure of a lexical head. The ranking of the A-structure in the lexical entry is not idiosyncratic (but see also Emonds 1991b). It seems to be determined by the conceptual structure.

In order to avoid begging the question, syntactic criteria for the identification of base vs. derived order are needed in order to ascertain whether a given serialization is the result of scrambling or whether it is a base order. Moreover, the test should be sensitive for antecedent–gap constellations that go together with scrambling in order to verify or falsify the assumption that scrambling involves chain formation.

A set of diagnostics with the desired property is found at the phonology–syntax interface. The first diagnostic property is the availability of a maximal focus potential under a nuclear stress intonation. The second property is scope inversion under rise–fall intonation. This property can be explained without additional assumptions if there is an antecedent–gap configuration with the rise intonation on the antecedent and the fall intonation on the constituent adjacent to the gap.

2.2.2 Focus potential

It is by now widely accepted that maximal or wide focus (the whole utterance focused) is possible only in clauses where the focus exponent (i.e., the constituent carrying the nuclear accent) is both in its base position and in the sister position of the head. In order to be a felicitous answer to a question like 'What is the case?' or 'What has happened?', wide focus potential is required. Scrambling of the most deeply embedded argument destroys this constellation since then the most deeply embedded A-position is a trace – and traces cannot be stressed. Stress on any other position yields only a restricted focus domain. So, scrambling of the lowest argument in the base order results in the loss of maximal focus potential. With this in mind, let us test utterances for the potential extension of their focus domain by looking at them in the question context mentioned above. Whenever the focus of a clause with a V-adjacent argument is restricted (and the utterance is consequently an unacceptable answer in the given context) we know that the expected focus exponent in structural terms is not the closest argument to the verb. A closer argument must have left a trace in its own base position closer to the verb and thereby lower in the VP. This test will therefore not only tell us

which one of two alternative constellations is the base constellation, but also that the scrambled phrase has left a trace. Let us look at some representative examples. The examples in (20) contrast a verb with NOM > ACC base order (*interpretieren*, 'interpret') and one with ACC > NOM base order (*interessieren*, 'interest'):

(20) a. **Maximal focus:**
daß Linguisten Bal***LAD***en interpretieren
that linguists$_{NOM}$ ballads$_{ACC}$ interpret$_{3pl}$
b. **Maximal focus:**
daß Linguisten Bal***LAD***en interessieren
that linguists$_{ACC}$ ballads$_{NOM}$ interest$_{3pl}$
c. **Minimal focus:**
daß Balladen$_i$ Lingu***IST***en e$_i$ interpretieren
that ballads$_{ACC}$ linguists$_{NOM}$ interpret$_{3pl}$
d. **Minimal focus:**
daß Balladen$_i$ Lingu***IST***en e$_i$ interessieren
that ballads$_{NOM}$ linguists$_{ACC}$ interest$_{3pl}$

In (20c, d) only the DP with the focus exponents are possible focus domains. They do not allow maximal focus. Note that the order of arguments in terms of case is different in (20c, d). The utterances would be felicitous answers only to questions such as 'Who interprets ballads?' for (20c) and 'Who do ballads interest?' for (20d), but not to a question such as 'What happened?'. Equally felicitous answers to the questions would be the sentences in (20a, b), respectively, but with stress on the first DP:[13]

(21) a. **Minimal focus:**
daß Lingu***IST***en$_{NOM}$ Balladen$_{ACC}$ interpretieren
that linguists ballads interpret
b. **Minimal focus:**
daß Lingu***IST***en$_{ACC}$ Balladen$_{NOM}$ interessieren
that linguists ballads interest

The stress pattern in (20c, d) is identical with the stress pattern in (21a, b) – a DP preceding another DP is stressed – and so is the focus potential, namely, minimal focus only. This parallelism is evidence for the existence of a trace in (20c, d): Only with the trace in the base positions are the structures of (20c, d) and (21a, b) equivalent with respect to the positioning of the focus stress.

The same contrast as illustrated in (20) for subject and object can be observed with pairs of verbs that differ in the base order of double objects: For a minority class of verbs, ACC–DAT, and not DAT–ACC, is the base order:

(22) a. **Maximal focus:**
Es hinterließ jemand einer Frau eine ***NACH***richt.
there left someone a woman$_{DAT}$ a message$_{ACC}$

b. **Non-maximal focus:**
Es hinterließ jemand eine Nachricht einer ***FRAU***.
there left someone a message$_{ACC}$ a woman$_{DAT}$
c. **Maximal focus:**
Ein Lehrer setzte einen Schüler einer großen Ge***FAHR*** aus.
a teacher exposed a pupil$_{ACC}$ (to) a great danger$_{DAT}$
d. **Non-maximal focus:**
Ein Lehrer setzte einer großen Gefahr einen ***SCHÜ***ler aus.
a teacher exposed (to) a great danger$_{DAT}$ a pupil$_{ACC}$

The basic difference between the two verb classes is obvious: in the DAT–ACC class, the dative argument is typically an experiencer; hence it denotes an animate discourse referent. In the ACC–DAT class, the dative-marked argument frequently has a non-animate denotation since it typically codes for a goal or source relation. This difference – experiencer vs. goal – is reflected as a difference in the argument ranking in the argument structure of the respective verbs. Note, however that it is not simply an animacy-triggered difference:

(23) a. **Maximal focus:**
daß man ja seine Kinder$_{ACC}$ den *LEH*rern aussetzen muss
that one PRT one's children (to) the teachers expose must
b. **Non-maximal focus:**
daß man ja den Lehrern seine ***KIN***der$_{ACC}$ aussetzen muss
that one PRT (to) the teachers one's children expose must
c. **Maximal focus:**
Er hat das erste Gedicht$_{ACC}$ seiner ***MUT***ter gewidmet.
he has the first poem (to) his mother devoted
d. **Non-maximal focus:**
Er hat seiner Mutter das erste Ge***DICHT***$_{ACC}$ gewidmet.
he has (to) his mother the first poem devoted

In (23a, b) all DPs involved denote animate individuals, but nevertheless the base order is identical with the base order in (22c), namely ACC–DAT. On the other hand, an animate dative as in (23c) has no influence on the base order. This becomes understandable if one bears in mind that in the lexical–conceptual structure of a verb like *devote*, animacy is irrelevant for ranking because the animate argument nevertheless is a goal argument.[14] Analogously, in the DAT–ACC class, animacy has no effect on the base order either:

(24) a. **Maximal focus:**
daß er dem Buch das *VOR*wort hinzufügte
that he (to) the book the preface added
b. **Non-maximal focus:**
daß er das Vorwort dem BUCH hinzufügte
that he the preface (to) the book added

c. **Maximal focus:**
daß er der Firma den Fi*NANZ*chef abwarb
that he the company the financial manager levied
'that he enticed the financial manager away from this company'

d. **Non-maximal focus:**
daß er den Finanzchef der *FIR*ma abwarb
that he the financial manager the company levied

In sum, the only word order that allows maximal focus is the order in which the stress exponent is not higher than the lowest argument position in the VP. Stress on a higher position yields minimal focus potential only. This is the key for identifying a scrambling trace in between a focus exponent that is adjacent to the verb in PF and the verb. Of course this test is intrinsically limited, since it is applicable only for the A-position closest to the verb.

2.2.3 Scope

Scrambling changes scope relations. If the scrambled element is a scope-sensitive one, its scope domain gets wider by virtue of being moved to a position higher in the tree. If it moves across another scope bearing element, scope ambiguities arise (see Frey 1993). Let us examine the following example:

(25) Question: Wie steht es mit der Beantwortung all der Fragen?
how stands it with the answering all the questions?
'What about the answers to all the questions?'
Answer: Du weißt doch, . . .
you know PRT, . . .
You know, . . .

a. daß mindestens einige Schüler fast ALLe Fragen beantworten
that at least some pupils almost all questions answer
konnte
could
'that some pupils could answer almost all questions'

b. daß [mindestens einige Fragen]$_i$ fast ALLe Schüler e_i beantworten
that at least some questions almost all pupils answer
konnten ∃∀,∀∃
could

In (25a), the only unforced reading is scope according to the overt order. In (25b) two readings are available; one corresponds to the surface linear order, the other reading, to the base order: Since the trace of the scrambled object is in the scope of the subject, the subject can get scope over the scrambled DP. This is in accordance with our assumption that (25a) is the base order and (25b) the scrambled order, resulting in a chain. Let us now apply this diagnostics to a verb with the base order pattern ACC–NOM, namely *interessieren* ('interest').

(26) a. daß einige Linguisten fast ALLe Balladen interessierten ∃∀
that some linguists almost all ballads interested
'that some linguists were interested in almost all ballads'
b. daß [einige Balladen]$_i$ fast ALLe Linguisten e_i interessierten ∃∀,∀∃
that some ballads almost all linguists interested

The verb *interessieren* projects the argument structure EXP < THEME/CAUSE into the base order with the result that ACC precedes NOM. We, therefore expect (26b) but not (26a) to give rise to two readings. This expectation is fulfilled. Analogous considerations apply to the other verb classes mentioned in section 2.2.1. Compare the following examples:

(27) a. daß er einen Kandidaten fast ALLen Tests unterzogen hat ∃∀
that he one candidate almost all tests subjected has
'that he subjected one candidate to almost all tests'
b. daß er [einem Test]$_i$ fast ALLe Kandidaten e_i unterzogen hat ∃∀,∀∃
that he one test almost all candidates subjected has

As expected, (27a) with the base order ACC > DAT yields only one reading, whereas (27b) gives rise to two readings. The converse pattern is characteristic for verbs with the base order DAT > ACC:

(28) a. daß er zwei Kandidaten fast ALLe Fragen stellte ∃∀
that he two candidates almost all questions put
'that he asked two candidates almost all questions'
b. daß er [zwei Fragen]$_i$ fast ALLen Kandidaten e_i stellte ∃∀,∀∃
that he two questions almost all candidates put

In both cases, thus, the scrambled order and only the scrambled order – DAT > ACC in one case, and ACC > DAT with the other V-class – results in two readings.

2.2.4 The base order of arguments in German is not a function of their grammatical relations

German does not provide compelling evidence for, but displays considerable amount of evidence against, the contention that the base order is a function of the syntactic licensing relation (case checking), and in particular against the contention that case-checking obligatorily requires a functional head in the Spec position of which case-features are checked, overtly or covertly. The data presented in the scrambling section in connection with the issue of semantically determined base order types is one body of evidence.

In this section, four issues will be addressed. First, the exclusion of non-argumental expletives. If there is a functional Spec position for subjects, this Spec position would license clause internal, non-argumental expletives. But, this kind of clause internal expletives is ungrammatical in German, and this cannot be attributed to pro-drop. Second, the opacity of spec-positions. A phrase in a

Spec position and in particular a subject is predicted to be opaque for extraction. This prediction is incorrect. Third, even covert movement to a spec-position must be ruled out, since the LF resulting from LF-raising out of fronted VPs is ill-formed. The conclusion must be that the unscrambled positions of arguments in the German clause structure are the base generated, preverbal argument positions within the V-projection.

In addition to these three areas of theory-internal considerations there is a set of data that bears directly on phrase-structure decisions, namely, evidence from VP topicalization in German. It provides as immediate as possible evidence for the claim that in German clause structure, unlike in English, all argument positions may remain in their VP-internal position in surface structure (see also Excursion 1).

2.2.4.1 Subject inside topicalized VPs

Subjects may appear in the topicalized V-projection if two conditions – a semantic and a syntactic one – are met. First, the subject must be non-specific. At best, the VP denotes a property of an event in the scope of a quantifier, which accounts for the contrast between (29a) and (29b). This instance of a specificity effect was first noted by Kratzer (1984).[15]

(29) a. **Indefinite unspecific subject:**
[Ein Außenseiter gewonnen] hat da nie.
an outsider won has here never

b. **Definite specific subject:**
*[Der krasse Außenseiter gewonnen] hat da nie.
the rank outsider won has here never

c. [Linguisten gespeist] haben hier schon oft.
linguist dined have here already often

d. *[Die Linguisten aus Wien gespeist] haben hier schon oft.
the linguist from Vienna dined have here already often

e. [Kinder gespielt] haben hier nie.
children played have here never

f. *[Ihre Kinder gespielt] haben hier nie.
her children played have here never

It is worth emphasizing that subjects within topicalized VPs do not prevent the licensing of anaphors as in the following examples. A solution is proposed in Frey (1993): The anaphor is bound by the functional head that licenses the nominative, which in turn functional head c-commands the anaphor.

(30) a. [Ein Wunder^{j} ereignet]$_{i}$ *hat* sich^{j} hier noch nie e_{i}.
a miracle occured has REFL here never ever
'A miracle has never ever occured here'

b. [Wunder^{j} ereignet]$_{i}$ *haben* sich^{j} hier noch nie e_{i}.
miracles occured have REFL here never ever

Note that these facts are highly problematic for remnant topicalization analyses (see Den Besten and Webelhuth 1990). According to this analysis, what appears to be the topicalization of a part of the VP is analyzed as the result of the interaction of VP-topicalization and scrambling: scrambling removes constituents from the VP. Then, the partially emptied VP is fronted across the elements that have been moved out. However, this analysis overgenerates in the crucial case, namely, with unergative subjects whose base position precedes the base positions of the objects.

(31) a. daß er das Beste$_i$ [den Armen e$_i$ geschenkt] hat
that he the best the poor given has
b. [Den Armen geschenkt] hat er das Beste.
the poor given has he the best
c. daß heute den ersten Preis$_i$ [ein Außenseiter e$_i$ gewonnen] hat
that today the first prize an outsider won has
d. ??/* [Ein Außenseiter gewonnen] hat heute den ersten Preis.
an outsider won has today the first prize
e. [e$_{(i)}$ e$_{(j)}$ gewonnen] hat heute den ersten Preis$_j$ ein Aussenseiter$_i$.
won has today the first prize an outsider

The very same analysis that has been proposed for the handling of (31a) fails with (31d), although the crucial part of the derivational procedure would be identical: Scramble the object out of the VP (31c), and then topicalize the VP. The same procedure must be iterated in (31e). The ungrammaticality of (31d), however, remains a surprise under remnant VP movement.

Ergative subjects whose base position is lower than the position of an object behave as expected. This is no surprise, since the nominative DP is generated in the position of the direct object. Note, however, that the remnant-topicalization approach must allow vacuous scrambling for non-scrambling items: if in (32a, b) the dative is an indefinite pronoun, which does not scramble, it must nevertheless be considered to have been scrambled out of the VP before the VP has been moved to the clause initial position.

(32) a. [Ein Fehler unterlaufen] ist hier noch nie einem
a mistake 'under-occured' is here never ever a
Professor/wem.
professor/someone$_{DAT}$
'Never ever has here a professor committed a mistake'
b. Unangenehme Fragen gestellt werden auch hier manchmal den
unpleasant questions asked were also here sometimes the
Professoren/wem.
professors/someone$_{DAT}$

The crucial difference between the subjects in the examples above and the unergative subjects is this: the base position of the ergative subjects (32) in the

VP is lower than the base position of the dative object. This is not an exclusive property of ergative subjects. Transitive subjects in idiom chunks behave as expected, for the following reason: the specificity constraint (Kratzer 1984) applies to subjects in fronted VPs. This constraint becomes void for non-referential subjects, hence subjects as parts of idioms are possible. Syntactically, they are nevertheless true subjects of transitive verbs.

(33) a. daß den Mann dabei schon oft die Wut gepackt hat
that the man it-with already the the anger seized has
'that at this occasion the man often got angry'
b. [Die Wut gepackt] hat ja den Mann dabei schon oft.
the anger seized has the man it-with already often

In sum, transitive subjects in topicalized VPs are grammatical and the VP-internal position is therefore a licit surface position for nominative DPs in German. The counterpart in the VO language family is Icelandic. Postverbal nominatives in combination with a non-nominative preverbal subject evidence the possibility of VP-internal nominative assignment.

2.2.4.2 Expletive non-argumental subjects

Descriptively speaking, a subject is a non-argument expletive subject if there is a lexical item for the canonical subject position for which the verb does not provide any argument relation. The test case is the passive of an intransitive verb. In German, expletive subjects in the mittelfeld are ungrammatical. It is instructive to compare Dutch and German in this respect. The examples and the judgments in (34a–c) are taken from the descriptive grammar of Paardekooper (1963: 55). He states explicitly that the apparent optionality of an expletive in constructions like (34b) – that is, with a non-extraposed local adverbial – is an effect of the presence of a (local) adverbial. This can be observed in English as well, in a different construction, though (see 34d).

(34) a. In deze Hoek wordt volgens mij gefluisterd. Dutch
in this corner is according to me whispered
b. ?Volgens mij wordt in deze Hoek gefluisterd.
c. *Volgens mij wordt gefluisterd in deze Hoek.
d. On this spot (there) will stand a huge tower.
e. dat *(er) gelachen werd
that (there) laughed was
f. daß (*es) gelacht wurde German
that (there) laughed was
g. Er werd gelachen. Dutch
there was laughed
h. Es wurde gelacht. German
there was laughed

In Dutch, the expletive subject in clause-internal position in (34e) is obligatory, in German it is obligatorily missing (34f), although the respective elements can be found as expletives, but only in the spec-C position (34g, h). If German had an obligatory Spec position for the subject in the *mittelfeld*, the expletive would have to appear in this position, just like in Dutch.

The fact that in Dutch, but not in German, there is a structural subject position (arguably either as a [Spec, VP] or as a functional Spec position) finds support in the distribution patterns of fronted pronouns: in German and in Dutch, pronouns are fronted to the left edge of the VP. In Dutch, this is a position following the Spec position that hosts the subject. Hence fronted pronouns in Dutch but not in German must not precede the subject if the subject occurs in the Spec position (cf. Kieft 1967: 301; see also section 4.3).

(35) a. Toen vond mijn broer *het* opeens tussen oude kranten. (= 35c)
then found my brother it suddenly between old newspapers
b. *Toen vond *het* mijn broer opeens tussen oude kranten.
c. Damals fand *es* mein Bruder plötzlich zwischen alten Zeitungen.
d. Nog nooit had de jongen *zich* meer ingespannen dan dit jaar. (= 35f)
never ever had the boys REFL more struggled than this year
e. *Nog nooit had *zich* de jongen meer ingespannen dan dit jaar.
f. Noch nie hatte *sich* der Junge mehr angestrengt als in diesem Jahr.

This set of data indicates that the subject position in Dutch is structurally different from the subject position in German. Given that pronoun fronting targets the left edge of the VP, the subject is VP-internal in German, but VP-external in Dutch. The contrast in (35) is easy to account for if the absence of an expletive subject in German is a function of the absence of a functional subject position. If there is a Spec position for the subject, on the other hand, this position legitimates and triggers the presence of an expletive. The obligatory absence of a subject-expletive in intransitive passives and in presentative constructions (see 36) in German calls for a structural explanation (cf. Haider 1993, 1990a). Invoking a language-specific pro-drop option is an ad-hoc patch-up strategy that does not adequately capture the empirical situation.

(36) a. dat (er) gisteren iemand vertrokken is
b. daß (*es) gestern jemand abgereist ist
that (there) yesterday someone left has
'that someone left yesterday'

Accounts in terms of pro-drop as an independent parametric difference disregard an important fact, namely, that there are semantically empty subjects in German

which must not be dropped (see 37). If German were pro-drop, pronominal subjects in these constructions would have to be expected to be dropped. Alleged semi-pro-drop languages such as German should drop exactly these pronominal subjects. These data are counter-evidence for the semi-pro-drop hypothesis.

(37) a. **Quasi argument:**
daß *(**es**) sich dabei um einen Irrtum handelt
that (it) REFL. it-by at an error deals
'that it is a mistake'

b. **Intransitive middle construction:**
daß *(**es**) sich in dieser Stadt gut lebt
that (it) REFL. in this city well lives

c. **Extraposition:**
daß *(**es**) zu gefährlich ist, diese Route zu benützen
that (it) too dangerous is this route to take
'that it is too dangerous to take this route'

The verb *handeln* in (37a) takes two semantically empty arguments, namely, *es* ('it') as a subject and a reflexive as an object, plus PPs that host the DPs that are equated. Semantically, the verb establishes an equation relation between the DPs contained in the PPs. Example (37b) is the intransitive middle construction with the verb *leben*. In German, the middle of an intransitive verb introduces an expletive subject and a reflexive object. The example in (37c) is an extraposition construction. Dropping the pronominal subject that goes together with the extraposed subject clause is optional for some predicates but not for all, as the predicate in (37c) illustrates. A pro-drop account that treats German as a semi-pro-drop language, which drops non-referential pronouns, would incorrectly predict that the pronominal subject should drop in all these constructions.

If, on the other hand, no functional projections in the mittelfeld call for lexical material for at least their Spec positions, the absence of obligatory Spec positions in the mittelfeld is the direct grammatical reason for the absence of subject expletives. There is no room for an expletive subject and consequently no need for invoking an exceptional type of pro-drop (cf. Haider 1990a).

2.2.4.3 Extraction out of subjects

Further corroborative evidence for the claim that subjects in German are VP-internal is the lack of opacity effects with subjects in German: there are no clear-cut structural subject–object asymmetries for extraction or *wh*-in-situ constructions. If a subject were moved to a Spec position, this would render it an opaque domain for extraction out of this phrase. A decade of research on extraction restrictions proved the 'subject condition' to be a robust phenomenon. A subject in a functional Spec position is opaque for extraction because phrases in functional Spec positions are opaque. Consequently, non-opaque subjects must be subjects that are not in functional Spec positions. They are VP-internal:

(38) a. *What$_i$ would [to discuss e$_i$ with him] be worthwhile?
b. $^{(?)}$What$_i$ would it be worthwhile [to discuss e$_i$ with him]?
c. Was$_i$ würde sich [mit ihm e$_i$ zu besprechen] denn noch lohnen?
what would itself with him to discuss PRT PRT pay
d. Nur das$_i$ würde sich [mit ihm e$_i$ zu besprechen] ja noch lohnen.
only this would itself with him to discuss PRT PRT pay
e. Was/das$_i$ würde [mit ihm e$_i$ zu besprechen] wohl noch Spaß machen?
what/this would with him to discuss PRT PRT fun make

Since the subject clause in (38c–e) is systematically not opaque for extraction, it cannot be assigned to a functional Spec position. So, if there were a medial Spec position in (38c–e), its status would be that of a pronominal empty category. Fronting the clause across this empty pronominal element in (39b) should produce the same effect as fronting a clause across an overt pronominal antecedent in (39a). In addition, the empty pronominal in the [Spec, I] position would force extraposition. Examples (39c–e) illustrate the contrast between extraposed and non-extraposed complements in the presence of a pronominal antecedent.

(39) a. *[Alles mit ihm zu besprechen]$_i$ würde *es*^{i} sich nicht lohnen e$_i$.
everything with him to discuss would it itself not pay
b. [Alles mit ihm zu besprechen]$_i$ würde e$_i$ sich nicht lohnen.
everything with him to discuss would itself not pay
c. daß *es* sich nicht lohnen würde [alles mit ihm zu besprechen]
that it itself not pay would everything with him to discuss
d. daß (**es*) [alles mit ihm zu besprechen] sich nicht lohnen würde
that (it) everything with him to discuss itself not pay would
'that it would not pay to discuss everything with him'

The contrasts in (39) follow immediately if the embedded-subject clause is not in relation with an empty pronominal in an [IP, Spec] of the matrix clause. The empty category in (39b) is the single trace of the fronted clause and there is no other empty category the clause is coindexed with.

Please bear in mind that the structural conditions are necessary but not sufficient for extraction. The 'bridge verb quality' (remember that verbs of saying are bridge verbs for clausal objects, but not factive verbs like *regret*) is an additional independent factor that should be controlled if you try to countercheck the generalizations. Sometimes the impression of a subject–object contrast may arise because therere are only few subject-related bridge verbs, that is, verbs with a semantic relation to the subject argument that is of a similar semantic quality as the thematic relation to the objects of verbs like verbs of saying, etc. (Try *träumen* 'dream' with a subject clause and a dative object and you have a candidate for extraction out of a finite subject clause; see Haider 1993: 158ff.)

2.3 Pronouns

Unstressed pronouns have properties of their own that differ from non-pronominal DPs:

- Serialization preference: fronting to the left edge (see the parametric factors below).
- Order pattern by case: nominative before accusative before dative (same for Dutch).
- Serialization restrictions with respect to information-structure-sensitive particles and adverbials.

2.3.1 Fronting

Unstressed pronouns tend to be fronted. Pronoun fronting applies both to argumental pronouns as well as to pronominal adjuncts as *there*. Cross-linguistically, the domain of fronting may appear to be different at first glance on comparing the patterns. In German, object pronouns are fronted to a position following the topmost functional head, that is, the complementizer or the finite verb. In Dutch, an object pronoun must not be fronted across an unergative subject (40b). In English, pronouns are fronted within the VP to a position after the verbal head. In the continental Scandinavian languages (41), pronouns must be fronted across clause-internal adverbials and negation in the so-called obligatory object-shift configuration (cf. Vikner 1995 and chapter 46 in this *Companion*).

(40) a. daß [es$_i$ jeder e$_i$ zurücksteckte]
that it everyone back-put
b. *dat het$_i$ iedereen [e$_i$ terugzette]
that it everyone back-put
that everyone [put it back e$_i$]

(41) a. Studenterne læste den$_i$ alligevel ikke e$_i$. Danish
students read it/there after-all not
b. Studenterne læste alligevel ikke artiklen/*den.
students read after-all not article-the/it/there

Despite the apparently diverse patterns, the serialization of unstressed pronouns in the Germanic languages is uniform. It is the parametric diversification of a single condition: if a pronoun can be fronted, it is fronted as close as possible to the left edge of the VP. Once it is realized that in general in German but not in Dutch, the surface-subject position is VP-internal it is easy to provide a simple descriptive generalization for the range of fronting in a Germanic OV language: Pronoun fronting targets the highest accessible VP-internal position. In German this is the left edge of the mittelfeld. In Dutch it is a mittelfeld-internal position, namely, the left edge of the VP with the transitive subject in a (functional) position outside the VP. In VO languages, pronouns targeting the left edge of the VP

end up in positions immediately following the V. In English and in Scandinavian languages, pronoun fronting can be observed only in contexts in which fronting does not affect argument order. The position targeted by fronting is closest to the left edge of the VP. In the Scandinavian languages there is an additional possibility, namely object shift. The pronouns may be fronted to the left edge of the VP provided that the overt head of the VP is not crossed. This is possible only if the verb has moved as the finite verb to the V2-position (see 41).

In German there are distributional restrictions that seem to differentiate between pronoun fronting and scrambling. Fronted negation ('light negation') in non-asserted clauses (i.e., conditionals, indirect questions) and information-structuring particles may precede scrambled NPs, but not fronted pronominals (see Haider 1997c):

(42) a. wenn damals *nicht/doch* den {Mann$_i$, *ihn$_i$} jemand e$_i$ gewarnt hätte
if then not/PRT the man, *him someone warned had
'if/since someone would have warned {the man, him} then'
b. wenn damals {den Mann$_i$, ihn$_i$} *nicht/doch* jemand e$_i$ gewarnt hätte

In (42a) the object is fronted across the subject. The result is ungrammatical for a pronominal but it is perfect for a non-pronominal DP if a particle of the kind discussed above precedes. The following example, however, shows that the restriction against pronouns in the c-command domain of the particles including negation is independent of fronting. It holds in the base position, too:

(43) a. daß der Mann ja doch die Frau/*sie gesehen hat
that the man PRT PRT the woman/her seen has
'that the man has seen her/the woman after all'
b. daß der Mann sie/die Frau ja doch gesehen hat
that the man her/the woman PRT PRT seen has

The contrast between (43a) and (43b) parallels the contrast in (42) and it is therefore independent of scrambling. The only difference between scrambling and pronoun fronting is an order restriction. The preferred order for fronted pronouns is NOM–ACC–DAT; there is no such restriction for scrambled non-pronominal DPs (cf. Lenerz 1993).

2.3.2 Order restriction for pronouns: NOM–ACC–DAT

The order restriction holds uniformly, that is, irrespective of the base order induced by the verbal head. Whatever base-order pattern the verbal head requires for is arguments; pronominal arguments are ordered according to the template in the headline. If the order deviates from the standard serialization nominative < accusative < dative (cf. 44b with a stressed pronominal subject), then the pronoun that follows, and thereby deviates, is stressed and as a stressed (= strong) pronoun exempted from the restriction.

(44) a. daß niemand/er$_{NOM}$ ihn$_{ACC}$ ihr$_{DAT}$ vorstellte
b. daß *ihn ihr* niemand/**ER** vorstellte

The same ordering patterns are found in Dutch. This is remarkable because of the Dutch prohibition against scrambling a direct object in front of the indirect object. So, this is additional evidence that the order of pronominal arguments cannot be a result of scrambling, nor can it be taken as an indicator of the base order for arguments. For both issues Dutch provides the relevant counterevidence. Since DP objects cannot be reordered by scrambling, the pronoun order cannot be achieved by scrambling. On the other hand, if the pronoun order would be the base order for arguments, the canonical Dutch order for non-pronominal arguments – IO before DO – would have to be analyzed as an instance of scrambling the IO across the DO. The result would be over-generating an ungrammatical DO before IO order as a base order.

The examples under (45) show that the demonstrative *dat* ('that') (see 45b) and the strong form *haar* appear in the order of non-pronominal forms, whereas the other pronouns come in the order direct object before indirect object.

(45) a. Had Jan/*hij het zich* niet ingebeeld?
had Jan/he it himself not imagined
b. Had Jan/*hij zich dat* niet ingebeeld?
had Jan/he himself it not imagined
c. Eigenlijk had Jan/*hij zich haar* heel anders voorgesteld.
actually had Jan/he himself she completely different imagined
d. Eigenlijk had Jan/*hij ze zich* heel anders voorgesteld.
actually had Jan/he she himself completely different imagined

The Dutch data provide immediate evidence for a general, cross-linguistically relevant, issue that is hard to tackle with German data, namely, that the difference between the Dutch patterns of pronominal and non-pronominal DPs is evidence against the assumption of a case driven underlying order for DPs in general.

The invariant pronoun order in German might be (and has in fact been, see Müller 1995) identified with an invariant case-driven underlying order for DPs in general, and the V-dependent serializations discussed above could be taken to be scrambling variants. The Dutch data clearly forbid this hypothesis, however. As in German, the pronominal direct object precedes a pronominal indirect object. For non-pronominal objects, the inverse order is required. But Dutch scrambling does not cross DP arguments. So the order of non-pronominal DPs cannot be a scrambling effect, and consequently, the pronominal order cannot be the base order of DPs in general.

If the pronoun order were the underlying order for DPs in general, non-pronominal DPs would have to be scrambled obligatorily into the opposite order. But there is neither a trigger nor positive evidence for this kind of scrambling so these data support the hypothesis of an A-structure determined base order for

non-pronominal arguments in German. But what is the source of the order restriction for personal pronouns?

It is worth emphasizing that the order pattern NOM–ACC–DAT is not triggered by fronting. It applies also to pronouns that are not fronted to the left edge of the MF, as (46) illustrates, and it holds also for non-adjacent sequences of pronouns (see 47). Of course, non-pronominal DPs (see 47c) do not follow this restriction.

(46) a. daß endlich einer sie uns vorstellen/zeigen sollte
that after-all someone them$_{ACC}$ us$_{DAT}$ introduce/show should
b. *daß endlich einer uns sie vorstellen/zeigen sollte
that after-all someone us$_{DAT}$ them$_{ACC}$ introduce/show should

(47) a. daß bei dieser Gelegenheit *sie* einer *uns* kurz
that at this occasion them$_{ACC}$ someone us$_{DAT}$ briefly
vorstellen/zeigen sollte
introduce/show should
b. ?daß bei dieser Gelegenheit *uns* einer *sie* kurz
that at this occasion us$_{DAT}$ someone them$_{ACC}$ briefly
vorstellen/zeigen sollte
introduce/show should
c. daß bei dieser Gelegenheit *den Besuchern* einer *die Bilder*
that at this occasion den Besuchern someone the pictures
kurz zeigen sollte
briefly show should

2.3.3 Particle distribution

Particularly instructive for the analysis of pronoun positions is the serialization pattern with respect to certain sentence particles (e.g. *ja*, *denn*) are used for information structuring. They partition the clause into the backgrounded and the asserted part:

(48) a. weil *sich*$_j$ **ja** niemand dem Mob e$_j$ in den Weg gestellt hat
since PRT nobody the mob in the way put has
'since nobody tried to stop the the mob'
b. *weil ja *sich*$_j$ niemand dem Mob e$_j$ in den Weg gestellt hat
c. wenn *sich*$_j$ nicht noch jemand der Meute e$_j$ in den Weg wirft, . . .
d. *wenn nicht *sich*$_j$ noch jemand der Meute e$_j$ in den Weg wirft, . . .
e. weil ja unter diesen Umständen *sich* niemand dem Mob in den Weg stellen könnte

The descriptive generalization behind the pattern (48) is this: if a pronoun is fronted, it cannot exclusively constitute the extendable VP-domain in the scope of a sentence particle. Thus in (48b, d), the extendable VP-domain contains only a pronoun that follows a sentence particle. This is unacceptable. The well-formed

serialization is (48a, c), with the pronoun preceding the particle. It is worth emphasizing that this is not a strict positional effect of an edge effect. Note that the fronted pronouns may be separated from the preceding functional head position (see 48e) by frame adverbials such as *unter diesen Umständen* ('under these circumstances'), *angesichts der drohenden Gefahr* ('in view of the threatening danger'). The resulting expression becomes acceptable.

It would be premature to conclude that if pronouns are fronted they must be fronted to a specific position preceding sentence particles. What we suggest is that the crucial factor behind the ungrammaticality of (48b, d) is a stress property, in that personal pronouns avoid accented positions. The position following the particle receives secondary stress. If this is the correct characterization, this implies that a fronted pronoun *can* occur in the c-command domain of a sentence particle, provided the pronoun is not the highest element within the c-command domain of the particle.

The examples in (49) contrast, as expected, with the corresponding examples in (48). If a scrambled DP (preceding the fronted pronoun in this case) ends up higher than the domain of the particle, this DP receives the secondary stress. The slight degradation in (49) is to be blamed on the pronoun in this domain for a semantic reason. As non-referential material it could and hence should precede the particle.

(49) a. $^{(?)}$weil ja [*dem Mob*$_i$ sich$_j$ niemand e$_i$ e$_j$ in den Weg gestellt hat]
b. $^{(?)}$wenn nicht [*der Meute*$_i$ sich$_j$ noch jemand e$_i$ e$_j$ in den Weg wirft], . . .

The distribution with respect to adjuncts is analogous to the pattern found with sentence particles. Pronouns may be preceded, as mentioned above, by frame adverbials and adverbials of reasoning but not by lower adverbials.

(50) a. daß *unter diesen Umständen* sich$_i$/sie$_i$ Max (ja) e$_i$ verstecken hätte müssen
b. daß *in vielen Fällen* sich$_i$/sie$_i$ Max e$_i$ (ja) nicht rechtzeitig informiert hat
c. $^{??}$daß (ja) *hier* sich$_i$/sie$_i$ niemand e$_i$ verstecken mußte
d. $^{??}$daß (ja) *gestern* sich$_i$/sie$_i$ niemand e$_i$ rechtzeitig informiert hat

The deviant sentences in (50) contain two candidates whose serialization disobeys the interface condition of mapping syntactic domains properly onto semantic domains: the pronoun is in too low a domain and the adjunct is too high. The pronoun as a background item is in the domain of an event adjunct that modifies the assertion part and the adjunct c-commands an unnecessary big domain.

2.4 Constraints on a well-formed mittelfeld

2.4.1 Empty mittelfeld

In this section, syntactic restrictions on elements in the mittelfeld are briefly reviewed (see also section 2.2.4.2). The trivial case to start with is an empty

mittelfeld. As mentioned in the introduction section, the mittelfeld in German, but not in Dutch, may be radically empty, as in (51a) versus (51b). An expletive subject is ungrammatical in German, but mandatory in Dutch.

(51) a. Wurde (*es) gelacht?
was (there) laughed
b. Werd *(er) gelachen?

As in English locative constructions (52a), a locative PP may substitute for the expletive in Dutch in an intransitive passive (52b). That the PP replaces the expletive in English becomes obvious in wh-constructions. The locative PP as wh-element does not trigger *do*-support (52c, d).

(52) a. On this spot (there) will stand a huge tower.
b. In deze hoek werd gefluisterd.
c. *Out of which* box jumped a rabbit?
d. Out of which box did *there* jump a rabbit?

It would be misleading in my opinion (I will motivate this later) both for German and for Dutch or English to characterize the absence of an expletive as a case of (semi-) *pro-drop*. Quite a few attempts in that direction have been made in the 1980s (McKay 1985; Safir 1985a, 1985b; Koster 1987; Platzack 1987; Grewendorf 1989).

It is misleading for German because German does not allow pro-drop for expletives in the clear cases. It is misleading for English and Dutch because (52a) and (52b) are not cases of pro-drop, but cases of locative preposing. If pro-drop of expletives would be available for Dutch, dropping the expletive in (51b) should not be ungrammatical. Independent evidence can be found in presentative constructions. An expletive in the otherwise empty mittelfeld is required in Dutch but forbidden in German.

(53) a. Es ist jemand gekommen – Ist (*es) jemand gekommen?
b. Er is iemand gekomen – Is (er) iemand gekomen?

The absence of an expletive in the German mittelfeld is the reflex of a structural condition and not a case of expletive pro-drop, because there are obligatory expletive subjects in German:

(54) a. **Quasi argument:**
Gestern hat *(es) geregnet.
Yesterday has it rained
b. **Expletive subject of intransitive middles:**
Hier plaudert *(es) sich angenehm.
here chats it itself pleasantly
'Here it is pleasant to chat.'

c. **Pronominal correlate of extraposition:**
War *(es) sehr peinlich, daß . . . ?
Was it embarrassing that . . . ?

Next, let us briefly look at a derivationally emptied mittelfeld. Although the mittelfeld may be empty from the beginning, it must not be emptied derivationally. In other words, topicalization of the whole mittelfeld as in (55a) is ungrammatical if the mittelfeld portion of the resulting clause thereby becomes empty. This must not be confused with the case of (55c), in which the mittelfeld contains only a single constituent that is fronted to the pre-field. For details see Haider (1988, 1997b).

(55) a. *[Eine Hymne gesungen]$_i$ wurde$_j$ e_i e_j.
a hymn sung was
b. [Eine Hymne gesungen]$_i$ wurde$_j$ dabei noch nie e_i e_j.
a hymn sung was it-with never ever
c. [Eine Hymne] erklang.
a hymn sounded

The crucial difference between (55a) and (55b) is that the movement in (55a), but not in (55b), is string-vacuous. But why should string-vacuous movement matter in (55a) but not in (55c)? An answer is suggested in Haider (1988): in string-vacuous derivations, the well-formedness conditions for the target and the source structure must be met simultaneously. This is the case for (55c). In the base structure, the order conforms with the Complement+head configuration, as a derived structure is conforms to a (Spec–Head) configuration. In (55a), the Spec constituent in the derived structure is not a possible constellation in the non-derived order because of obligatory V-raising (i.e., cluster formation): the participle and the auxiliary ought to be adjoined to each other. Of course this is not the case in (55a) because the functional-head position targeted by the finite verb would not accept a verb cluster, only the single finite verb.

2.4.2 Banned from the mittelfeld

Let us turn now to the next question: are there grammatical restrictions for phrases in the mittelfeld? First, there are no category restrictions. Arguments and adjuncts in the mittelfeld are allowed in all possible categories, that is, DP, PP, and CP, infinitival, and to some extent, finite CPs as well.

(56) a. Ich habe ja [daß 2 plus 2 vier ergibt] nicht bezweifelt.
I have prt [that 2 plus 2 four yields] not doubted
b. Du mußt aber [sobald das Licht erscheint] sofort den
you must however [as-soon-as the light appears] immediately the
Knopf drücken.
button press
c. Ich werde [was ich gefunden habe] niemandem zeigen.
I shall what I found have nobody show

d. ??Mich hat ja [ob er es getan hat] nicht wirklich interessiert.
me$_{ACC}$ has PRT [whether he it done has] not really interested
e. ??Mir hat sie [wer es getan hat] ja nicht gesagt.
me$_{DAT}$ has she [who it done has] PRT not said
f. *Zu mir hat sie [er sei krank] gesagt.
to me has she [he is$_{SUBJ}$ ill] said

Finite CPs in the mittelfeld are found as declarative argument clauses of a subset of verbal predicates (56a) or as adverbial clauses of all kinds (56b) or as free relatives (56c). Argumental CPs in the function of indirect *wh*-clauses are unacceptable or at least highly marginal (56d, e). Embedded V2-clauses are ungrammatical in the MF (56f); they must be extraposed.

Second, there are strict dependency restrictions. Constituents that are not 'VP-compatible' are excluded from the German mittelfeld. A constituent XP is VP-compatible if it is an argument of V^0, or an adjunct of V^0, or its extended projection, or a secondary predicate of an argument of V^0 (57). VP-incompatible constituents are phrases without a dependency relation to the V^0 head of the VP, for instance 'wrongly extraposed' elements.

(57) a. Er^i hat [das Steak^j betrunken roh^j gegessen^i].
he has the steak drunk raw eaten
b. He^i [ate the steak^j raw^j drunk^i].

Note that secondary predicates and extraposable attributes like relative clauses behave differently. The former can be part of a topicalized VP (58a), while the latter cannot (58b), unless the antecedent is contained in the VP (58c).

(58) a. [Betrunken roh gegessen] hat nur einer sein Steak.
drunk raw eaten had only one his steak
'Only one has eaten his steak raw drunk.'
b. *[Entdeckt, [den^i er gemacht hat]] hat er ja einen Fehler^i.
discovered [which he made has] has he indeed a mistake
c. [Einen Fehler^i entdeckt, [den^i er gemacht hat]] hat er in der Tat.
a mistake discovered [which he made has] has he well indeed has
'He has indeed discovered a mistake that he made.'

The examples in (59) illustrate that wrongly detached (= extraposed) clauses (e.g., relative clauses, comparative clauses) cannot occur in the MF but only in the post-field. The relation between an extraposed argument clause and the correlate pronoun in the MF follows the same pattern (60). Fronting to the pre-field is unacceptable in all these cases. Note that this asymmetry (OK in post-field, but not OK in pre-field) raises a non-trivial problem for movement approaches to extraposition (see Culicover and Rochemont 1990; Haider 1997c) since in both cases the trace would guarantee the proper identification of the extraction site.

(59) a. *Er hat alles^{i} auf Anhieb [was sie gesagt hat]^{i} auch verstanden.
b. Er hat auf Anhieb [was sie gesagt hat] auch verstanden. (note that this is a free relative)
c. *Sie hat mehr^{i} Leuten die Geschichte [als^{i} notwendig war] erzählt.
d. Sie hat mehr^{i} Leuten die Geschichte erzählt [als^{i} notwendig war].

(60) a. Bisher hat (*es^{i}) den meisten [per e-mail benachrichtigt zu werden]$^{(i)}$ genügt.
b. Bisher hat (es^{i}) den meisten genügt [per e-mail benachrichtigt zu werden]$^{(i)}$.
c. [Per e-mail benachrichtigt zu werden]$^{(i)}$ hat (*es^{i}) bisher den meisten genügt.

Let me repeat: structural expletives, that is, expletives for Spec–Head positions, are banned from the German MF, but obligatory in the Dutch one, as the contrast between (61a) and (61b) illustrates. Note that the very same element is the required expletive for the pre-field in the respective language. It would be misleading to attribute the absence of an expletive in German to pro-drop of non-referential subjects because quasi arguments (62a), subjects of middle constructions (62b) and the correlates of extraposed clauses (62c) cannot be dropped freely.

(61) a. Mitunter steht (***es***) jemand an der Tür.
sometimes stands it someone at the door
'Sometimes there is someone at the door.'
b. Soms staat *(**er**) iemand aan de deur.
c. **Es** steht mitunter jemand an der Tür.
d. **Er** staat soms iemand aan de deur.

(62) a. Heute hat *(es) gehagelt.
today has it hailed
b. Mit ihm plaudert *(es) sich.
with him chats it itself pleasantly
'He is pleasant to chat with.'
c. Eigentlich ist *(es) peinlich, daß man das häufig übersieht.
actually is it embarassing that one this frequently overlooks

2.4.3 Remarks on the IPP

The IPP construction (*infinitivus pro participio* 'infinitive instead of a past participle') raises a problem – at least in German – for the delimitation of the MF because in this construction, at least the finite verb (in a non-V2 clause type) may apparently appear in the MF, as the following examples illustrate.[16] In Dutch IPP-constructions the finite verb cannot precede a non-verbal intervener (63d).

(63) a. daß er für ihn nicht *hatte* die Firma am Leben halten wollen
that he for him not had the company at life keep want$_{\text{Infinitive}}$
(Mann)

b. Gerda, die sie nicht *hatte* in der Familie grau werden sehen
Gerda, who she not had in the family grey become see$_{\text{Infinitive}}$
(Mann)

c. daß der Tod ihr *werde* in unabsolviertem Zustand auflauern dürfen
that the death her would in unabsolved state waylay may$_{\text{Infinitive}}$
(Werfel)

d. *dat hij graag wilde kraanvogels fotograferen
that he with-delight wanted cranes photograph
(Haeseryn et al. 1997: 949)

Presently, the theoretical modeling of the IPP construction is still controversial. Basically there are two competing approaches: either the finite verb is moved to a position in the MF, or (portions of) the VP (are)/is moved out of the MF to the right.

2.5 Differences between German and Dutch word order in the MF

2.5.1 Do not change the relative order of DP arguments in Dutch

It is handbook-knowledge for Dutch (see Haeseryn et al. 1997)[17] that – contrary to German – the relative order of DP arguments must not be permuted in the mittelfeld. This holds for subject–object order (64), as well as for the order of the indirect object before the direct object (65).

(64) a. dat (er) iemand krakers oppakt
that (there) someone squatters arrests
'that someone arrests squatters'

b. *dat (er) krakers$_i$ iemand e$_i$ oppakt
that (there) squatters someone arrests

(65) a. dat ik de jongen het/een boek gegeven heb
that I the boys the/a book given have
'that I gave the/a book to the boys'

b. *dat ik het/een boek$_i$ de jongen e$_i$ gegeven heb
that I the/a book the boys given have

What is called a Scrambling order in the literature on Dutch refers to the serialization options of adverbials relative to arguments. If there are two possible serializations, one with a DP following an adjunct (66a) and one with a DP preceding an adjunct (66b), scrambling refers to the latter order.

(66) a. dat de politie/iemand *altijd/vandaag* krakers oppakt
that the police/someone always/today squatters arrests that
'that the police/someone always arrests squatters'
b. dat de politie/iemand krakers$_{(i)}$ *altijd/vandaag* (e$_i$) oppakt
that the police/someone squatters always/today arrests

If (66b) is indeed a result of scrambling (either by adjunction or by substitution into a suitable [F, Spec], (65b) should in principle be a potential result of the same process that derives (66b). The Scrambling analysis of (66b) presupposes that the time or frequency adverb precedes the VP boundary. So the object is moved across the VP boundary into a position preceding the VP, suitable for hosting a scrambled direct object. But this is exactly what would be necessary to derive (65b): the indirect object would stay in situ and the direct object would be scrambled. Since (65b) is ungrammatical, Scrambling does not provide a satisfactory solution for (66b) as long as the ungrammaticality of (65b) remains unaccounted for.

A satisfactory account must pay attention to the Dutch–German contrasts in addition to the argument–adjunct contrasts above. In section 2.2.1, a crucial difference was located in the case system, namely, the lack of morphological case in Dutch, which has consequences for case checking. The lack of morphological case distinctions for DPs requires a hierarchical implementation of case checking. First come, first checked. This implies that objects cannot be permuted unless they are morphologically identifiable. PP-arguments can scramble but DPs cannot.

In sum, scrambling of DP objects is ungrammatical in Dutch if arguments are permuted. The grammar-theoretical reason seems to be the identification of object arguments in terms of their abstract case ranking. This statement does not include subjects and PP-objects, and for a good reason: they are morphologically identifiable and may therefore enter chain relations in the middle field, that is, they may scramble. The subject is identifiable by overt agreement, PPs are categorially identified. This fact is not properly stressed in current syntactic literature, although descriptive grammars like Haeseryn et al. (1997)[18] are quite explicit in this respect. As for scrambling of PP-objects, see (67):

(67) a. Het is verkeerd om [een huis *aan Jan* te schenken].
it is wrong C^0 [a house to Jan to give-away]
b. Het is verkeerd [om [*aan Jan* een huis te schenken]].
it is wrong [C^0 [to Jan a house to give-away]]
'It is wrong to give a house to Jan.'
c. Toen heeft hij [de oplossing aan de studenten verteld].
then has he [the solution to the students told]
d. Toen heeft hij [aan de studenten de oplossing verteld].
then has he [to the students the solution told]
'Then he told the solution to the students.'

One of the alternative orders in the bracketed constituents in (67) is a scrambling order. Since PP objects follow DP objects in the base order, it is safe to assume that (67b) and (67d) are the result of Scrambling with a trace in the base position of the PP object to the right of the direct object.

Fronting of subjects (see (68)) is found with passive and unaccusative subjects, that is nominative DPs whose base position follows an object position. In this case there are two options. The nominative DP may stay in situ in itsVP-internal position or it may move across the object. The following examples are quoted from Haeseryn et al. (1997: § 22.5.6.2.). The existential-closure reading is lost if an indefinite nominative is fronted, unless *er* is inserted, as in (68c). This is the reason why (68b), with an indefinite article and an existential reading, is unacceptable:

(68) a. Daarom werd de burgermeester het/een schilderij aangeboden.
therefore is the mayor the/a painting offered
'Therefore the/a painting is offered to the mayor'
b. Daarom werd [het/*een schilderij]$_i$ de burgermeester e_i aangeboden.
therefore is the/a painting the mayor offered
c. Daarom werd er [een schilderij]$_i$ de burgermeester e_i aangeboden.
Therefore is there a painting the mayor offered

If *er* in (68c) is analyzed as an expletive for a subject position as a functional Spec position, the fronted nominative is VP-internal, that is, adjoined to the VP, as a consequence of scrambling. So, there exists genuine scrambling in Dutch, that is, permutation of the order of arguments. This is support for the theory of scrambling described in section 3.6 that Dutch is an OV language with hierarchical identification of case for DP objects. A nominative DP is not confined to a structurally unique configuration. This can be inferred from the fact that a nominative can appear in the position of the direct object (cf. 68a) or in a VP-initial position (cf. 68c). The preconditions for Scrambling are therefore met for a nominative DP that follows an object in the base order: there is more than one position available in the domain of the projection of the verbal head.

Similar considerations apply to PP objects. PPs are not identified by case. Rather the head of the PP, which is selected by V, identifies them^0. There is no structurally unique identification position for a PP. The PP may in principle appear in any position in the VP: it can precede or follow a DP object (see 67) or a subject, as in (69).

(69) a. dat (er) voor je vader niemand wat meegebracht heeft
that (there) for your father no one something presented has
'that no one brought father anything'
b. dat (er) aan dit jongetje niemand snoepjes gegeven heeft
that (there) to this boy no one cookies given has
'that no one gave this boy cookies'

2.5.2 No infinitival clauses in the midfield in Dutch

In Dutch, sentential infinitival complements cannot be projected in the position in which nominal complements would be projected (70a): They are either replaced by a clause union construction ('V-raising', 70d) or they are extraposed (70e).

(70) a. *dat Jan [het boek terug te geven] (niet) vergat
that Jan [the book back to give] (not) forgot
b. daß Jan [das Buch zurückzugeben] (nicht) vergaß
that Jan [the book back-to-give] (not) forgot
c. eine Kür, die$_i$ sicher [*pro* e$_i$ spektakulär zu nennen] nicht
a free-exercise, that surely [spectacular to call] not
übertrieben wäre[19]
exaggerated would-be
d. dat Jan het boek niet vergat terug te geven
e. dat Jan niet vergat [het boek terug te geven]
f. daß [sein Buch zurückzugeben] keiner vergaß
that [his book return] nobody forgot

German allows infinitival clauses as objects (70b) and subjects (70c), and the sentential argument may scramble (70f). The clause-union construction is available in German, too, but it is optional. For verbs that optionally allow a clustering construction in German, these sentences are systematically ambiguous between a construction with clausal embedding and a simple clause structure with V-clustering:

(71) a. daß uns [zwischen zwei Strukturen zu wählen] erlaubt wird
that us [between two structures to choose] permitted is
b. daß uns zwischen zwei Strukturen [zu wählen erlaubt wird]
that us between two structures [to choose permitted is]

This ambiguity is the source for the case alternation in the construction with a passive matrix verb or a matrix unaccusative verb that selects an infinitival complement:

(72) a. daß der$_{NOM}$/den$_{NOM}$ Brief einzuwerfen vergessen wurde
that the letter to post forgotten was
b. daß uns $^{(?)}$der$_{NOM}$/den$_{NOM}$ Text zu entziffern gelungen ist
that us$_{DAT}$ the Text to decipher succeeded is

If the clausal construction is forced by splitting the potential verbal cluster (73), the nominative option is cancelled, as expected, since the nominative is licensed only in the clustering (= clause union) construction.

(73) a. daß [*der$_{NOM}$/den$_{NOM}$ Brief einzuwerfen] *leider* vergessen wurde
that [the letter to post] unfortunately forgotten was
b. daß uns *l*[*der$_{NOM}$/den$_{NOM}$ Text zu entziffern] *endlich* gelungen ist
that us$_{DAT}$ [the Text to decipher] finally succeeded is

It is presently not evident what the (micro-)parametric source of this grammatical contrast between the German and the Dutch system of sentential complementation is.

3 Theoretical accounts of word-order variation in the MF: Scrambling

Theoretical accounts of scrambling are directly connected with particular assumptions on clause structure. The given clause structure determines whether scrambling is applicable and what the range of word-order variation is. As for clause structure, there is much more consensus on the empirically adequate structure for VO languages, notably English, Romance, and Scandinavian languages, than there is consensus on what the proper clause structure for an OV language like German or Dutch is. Section 3.1 highlights two controversial issues, namely, the positioning of the argument under agreement (i.e., the nominative subject) and the positioning of functional heads targeted by the finite verb – and their implications for the implementation of adequate scrambling mechanisms. Section 3.2 briefly surveys the theoretical approaches on scrambling that are discussed one after the other in section 3.3.

3.1 Clause structure controversies

- Where are – if there are any – the (covert) functional head positions in the mittelfeld?
- Where are – if there are any – the specs of the functional head positions in the mittelfeld?

In current Generative versions of German grammar, the mittelfeld is equated with the VP plus the cascade of functional projections above the VP. The functional head positions are assumed either to be clause final or clause medial and empty, except the top V2 position. Most if not all phrases in the mittelfeld, notably the arguments, are taken to be moved to distinct functional Spec positions.

The resulting structures are in conflict with a wide range of empirical issues of German syntax, however. Presently, its plausibility is borrowed more from the relative success of the structural analysis for VO languages than from the satisfactory coverage of German data. In the following section two problem areas will be highlighted. One is the position of the clause-final finite verb; the other, the evidence for or against Spec positions in the MF.

3.1.1 Is the overt position of the clause-final finite verb a functional head position?

There is good evidence for the claim that the surface position of the finite verb in the clause-final position in a German or Dutch clause is not a derived position, that is, not a functional-head position (e.g., associated with features like finiteness, agreement, or tense). Its positional properties are those of the position of the lexical head of the VP. Like an English finite main verb (cf. 74a), the finite verb in German stays in its head position as the head of the V projection. For verb-final clauses, there is no evidence of overt movement of the finite verb to the right or of movement to the left, and there is robust counter-evidence for the assumption that a clause-final finite verb in German or Dutch is moved to a functional-head position. An overt V-to-F-movement analysis for the positioning of the finite Verb – either to an F-head that follows (cf. 74b) or to a preceding F-head (74c) – is in conflict with evidence that bears directly on V-movement:

(74) a. [C^0 [. . . [F1-e [F2-e [V^0. . .]]]]] [VO, e.g., English]
b. *[C^0 [[[. . . V^0] F2-e] F1-e . . .]] [OV + final functional heads]
c. *[C^0 [. . . F1-e [F2-e [. . . V^0]]]] [OV + preceding functional heads]

As originally noted by Höhle (1991) and discussed in Haider (1993: 62f.), finite denominal verbs derived from complex nouns occur in verb-final clauses in German, but not in V2 or V1 clauses (see (75)). The corresponding case of Dutch (cf. Koopman 1995) is the case of complex verbs (see (76)) with a separable prefix preceded by an inseparable one (*her-* as in 76b, c).

(75) a. daß sie es uraufführten
that they it ur-performed (*ur* = as a premiere)
b. *Uraufführen$_i$ sie es e$_i$?
ur-perform they it?
Do they ur-perform it?
c. *Führen$_i$ sie es urauf-e$_i$?

(76) a. dat hij het *her*opbouwde
that he it re-up-built
b. *Hij bouwde het *her*op.
c. *Hij *her*opbouwde het.
d. Hij bouwde het op.

In descriptive terms, the problem seems to arise because two requirements get into conflict, namely, the requirement to strand a prefix (separable prefix, *an-* in German, *op-* in Dutch) with the requirement to pied-pipe a prefix (inseparable prefix, like *her-* in Dutch and *ur-* in German).

The most straightforward case is that of verbs with two prefixes, each one of the class of separable prefixes (see also Vikner 2002). Each of these prefixes

requires stranding, so there is no way to meet these requirements if there is more than one prefix. Since prefixing is a productive word-formation rule in German, it is safe to presusuppose that these verbs illustrate a phenomenon of German core grammar.

(77) a. wenn sie den Kurs *mit-an*-kündigen
if they the course with-an-nounce (= announce together)
b. *Man *kündigt*$_i$ den Kurs *mit-an*-e$_i$.
c. *Man *an-kündigt*$_i$ den Kurs *mit*-e$_i$.
d. *Man *mit-an*-kündigt$_i$ den Kurs e$_i$.

Both prefixes, *an-* in (78a) and *mit-* in (78b), require stranding. In the combination (77a), there is no possibility to simultaneously meet this requirement. If *an-* is stranded (77b), *mit-* remains attached to the following prefix and hence is not stranded. Stranding the prefix *mit-* (77c), however, is possible only if the following prefix is pied-piped with the verb. But this violates the stranding requirement of the second particle. Needless to say, pied-piping both particles is ungrammatical as well (77d).

(78) a. Sie kündigen$_i$ den Kurs an-e$_i$.
b. Sie diskutieren$_i$ heute mit-e$_i$.

What these data show is that the conflict arises once the verb is overtly moved. As long as it stays, the issue of stranding does not arise. So the fact that finite forms are possible even for these verbs shows that they do not require overt movement.

If they had to be moved in order to become finite, further movement to the V2 position could not be blocked, except by ad-hoc mechanisms. 'I-to-C' is an automatic process that cannot be blocked by idiosyncrasies of the morphological make-up of verbs. English proves this point: if a verb does not move to I' it does not move to C, and if it moves to I, it moves to C in the contexts of I-to-C movement. It is safe to conclude, therefore, that clause-final finite verbs are not overtly moved to intermediate functional head positions. If overt V-to-I were required, doubly prefixed verbs would be predicted to occur only in nonfinite forms (because of the impossibility of licit V-to-I). The fact that they are grammatical as finite forms, but only in clause-final position, is a clear case against overt V-to-I in German and Dutch. Thus, if there is no overt movement, there is no need to assume a post-VP functional-head position. If there are covert positions they can just as well be assumed to be in pre-VP positions.

3.1.2 Are there positions in the German MF that are functional Spec positions?

In this section, three issues will be addressed that are problematic for a [Spec, F] analysis of the subject position or other argument positions. First, if there were a functional Spec position for subjects, this Spec position would license

clause-internal expletives. But clause-internal expletives are ungrammatical in German, and this cannot be attributed to pro-drop. This point was already addressed in section 2.2.4.2. Second, subjects in Spec positions are predicted to be opaque for extraction. This prediction is incorrect (cf. 3.1.2.1). Third, covert movement can be ruled out, since the LF resulting from LF-raising out of fronted VPs is ill-formed (cf. 3.1.2.2).

3.1.2.1 Expletive subjects as evidence for a functional Spec position

The ungrammaticality of non-argumental expletive subjects in the mittelfeld in German is direct evidence against the need of a functional Spec position for the subject if pro-drop can be excluded. The relevant data are discussed and analyzed in section 2.2.4.2. German does not allow non-argumental expletive subjects and their absence cannot be attributed to pro-drop. We therefore conclude that if there were obligatory functional Spec positions in the MF, at least one of them would require lexical support. In all languages with a functional subject position, this position must be lexicalized unless the language is pro-drop. This is a consequence of the EPP (Extended Projection Principle). The fact that German requires overt argumental expletive subjects but forbids purely structural expletives points directly to the conclusion that structural expletives do not occur because there is no structural position to host them. If this is correct, the overt positions of the subject and the objects are VP-internal in German.

3.1.2.2 Covert movement to a Spec position?

Finally, the fact that VP topicalization with a VP-internal unergative subject is grammatical in German (cf. 79) is clear and sufficient evidence at least for the following conclusion: no (obligatory) overt movement of a nominative to a functional Spec position – that is, movement to AgrS – in German.

(79) a. [Ein Wunder^j ereignet]$_i$ *hat*^{j} sich^j hier noch nie e_i.
a miracle occured has REFL here yet never
'A miracle has never ever occured here.'
b. [Wunder^j ereignet]$_i$ *haben*^{j} sich^j hier noch nie e_i.
miracles occurred have REFL here yet never
c. [Aussenseiter^j gewonnen]$_i$ *haben*^{j} es noch nie e_i.
outsiders won have it never ever

VP-topicalization in (79) cannot be reanalyzed as the topicalization of a functional projection in order to save the claim that nominatives are overtly moved to a functional Spec position: if the topicalized projection in (79) contains the functional head in whose Spec position the nominative occurs, this functional head is a head position. The topicalized constituent would then have to contain the trace of the finite verb as well. Clear instances of this structure are ungrammatical, however. In German, the topicalized constituent cannot contain the trace of the finite verb. It must be analyzed as VP and not as a more complex functional projection containing the VP (cf. the discussion of example (77)):

(80) a. [Ein Schiff$_{NOM}$ untergegangen]$_j$ ist$_i$ hier noch nie e$_j$ e$_i$.
[a boat down-went] has here yet never
'A boat did not yet sink here'
b. *[Ein Schiff$_{NOM}$ unter-$_i$]$_j$ ging$_i$ hier noch nie e$_j$.
[a boat down-e$_i$] went$_i$ here yet never
c. Ein Schiff ging$_i$ hier noch nie unter-e$_i$.
a boat went$_i$ here yet never down-e$_i$

Example (80a) is compatible with the standard analysis, that is, VP topicalization, as well as with the alternative analysis as a topicalized functional projection. If it were a functional projection, however, (80b) would be structurally parallel to (80a) – both would contain the trace of the finite verb – and therefore both should be grammatical or ungrammatical. That the topicalized constituent in (80b) contains the trace of the finite verb is signaled by the stranded verbal prefix *unter*, because *untergehen* is a verb with a separable prefix (cf. 80c). The prefix is stranded in the base position of the verb. The standard analysis correctly predicts (80b) to be ungrammatical because the trace of the topicalized VP is not lexically head-governed. In (80a), the topicalized VP is a complement of the copular verb.[21]

Having established that there is no overt movement of the subject to Agr-S, we have to check the possibility of covert movement. Again, VP topicalization with a subject is a suitable testing ground: The topicalized VP as a *wh*-moved phrase in a Spec position is opaque for extraction, and, consequently, covert movement, that is, extracting the subject out of the topicalized VP, is ruled out. Reconstruction of the VP plus subsequent extraction would violate the cycle. So, there is no covert movement either. A re-check with quantifiers confirms the opacity of a fronted VP for covert extraction with or without reconstruction:

(81) a. **Wide scope of the universal Q:**
Jeden Passagier hat er zweimal befragt.
every passenger has he twice questioned
b. **Narrow scope of the universal Q:**
[Jeden Passagier befragt] hat er zweimal.
every passenger questioned has he twice
c. **Wide scope of the universal Q:**
[Zweimal befragt] hat er jeden Passagier.
twice questioned has he every passenger

In (81b) the domain of the universal Q is the fronted VP; it does not c-command into the MF. The quantifier in the mittelfeld c-commands the trace of the fronted VP, so the VP belongs to the scope domain of the mittelfeld quantifier. If a quantifier could be Q-raised out of the fronted VP, it ought to get scope over the Q in the mittelfeld. Moreover, (81b, c) show that the fronted VP cannot be treated as a remnant VP, that is, it cannot contain the trace of either the frequency adverbial (81b) or the quantified object. Since one would c-command the trace of

the other within the fronted VP, either (81b) or (81c) would get a second scope reading, but this is not the case.

3.2 A grammar-theoretic perspective on free word order in the MF

The key issues to be addressed in this section are:

- Is scrambling base-generated free word order?
- Is scrambling the result of movement?
- Is scrambling triggered movement?
- Movement by adjunction or movement to functional Spec positions (or both)?
- A- or A'-chains? Are parasitic gaps evidence for scrambling as A'-chaining?

The theoretical positions available in syntactic theory have all found their (at least part-time) advocates. Nevertheless, the ultimate and uncontroversial insight is still missing. It is therefore worthwhile to focus on the problematic areas of each of the competing candidates for an empirically and theoretically satisfactory theory of scrambling. Here is the set of theoretically available options to chose from. The position of a phrase in a clause-bound scrambling position is:

- a base-generated argument position;
- a base-generated adjunct position;
- the head of an A'-chain targeting a Spec position;
- the head of an A'-chain targeting an adjoined position;
- the head of an A-chain targeting a Spec position;
- the head of an A-chain targeting an adjoined position.

The baseline hypothesis to start with is that scrambling does not involve any derivational machinery at all. The word-order variation called scrambling is but a set of individually available serialization patterns, each of which is a possible base-generated order of A-positions. This possibility for German – suggested first in Haider (1984) as an option provided by the German case system – has been revived vigorously in more detail and greater theoretical depth and on theoretically up-to-date foundations by Fanselow (1998) for German. Scrambling as base-generated A'-positions with subsequent lowering to theta positions on LF has been suggested by Bošković and Takahashi (1998). These approaches will be referred to as the base-generation approaches. In this perspective, a scrambling language is characterized as a language with a clause structure that allows a choice of positions for arguments. Potential sources of counter-evidence are phenomena indicative of antecedent–gap relations and typological overgeneration.

The next and more widely assumed general option is the derivational approach, in which scrambling is the result of re-arranging a given base order.

This general option is narrowly channeled by syntactic theory. The two main channels are A-chaining or A'-chaining with the additional bifurcation as to whether movement targets a Spec position or a position adjoined to a (lexical) projection. The evaluation of these proposals calls for a clarification of the basics of German clause structure as the underlying source of some controversies. A crucial theoretic issue is the issue of optionality vs. triggered movement. Traditionally, scrambling is considered to be optional modulo various side effects. Of course, these side effects could be reflexes of a hidden triggering mechanism. Explorative attempts to uncover these mechanisms produced various triggering scenarios, syntactic ones (e.g., movement to case-checking positions) as well as semantic (e.g., movement triggered by definiteness features) or pragmatic ones (e.g., movement triggered by information structuring features like topicality). Undoubtedly, scrambling influences the information structure conveyed by a clause, but it is far from obvious that this is the result of a grammatical causality of movement.

Once movement is granted, several questions arise. What type of movement is scrambling an instance of? The two basic options – A'-movement or A-movement – have been exploited and even been combined because of an apparent simultaneous aggregate of A- and A'-properties (Webelhuth 1992). The grammatical phenomenology of the parasitic-gap construction has played an important role in this respect. Another question relates to the nature of movement. Is it movement to a Spec position or is it adjunction? Adjunction is a less well-studied area and tends to be shunned in current grammar research in favor of movement-by-substitution into Spec positions. Here is a selection of suggestions from the scrambling literature:

Structure:

- Base generated A-positions: Haider (1984); Kiss (1994); Fanselow (1998).
- Base generated A'-positions: Bošković and Takahashi (1998).
- Scrambling as A-movement: De Hoop and Kosmeijer (1995).
- Scrambling as A'-movement: Müller and Sternefeld (1994).
- Scrambling as the result of both A and A' movement: Webelhuth (1989); Mahajan (1994b).

Triggers:

- Untriggered scrambling (syntactically optional): Haider and Rosengren (1998); Saito and Fukui (1998).
- Scrambling triggered by (strong/weak) case features: De Hoop (1992).
- Scrambling triggered by a topic-feature: Müller (1995: 107, 1998).
- Scrambling triggered by a scrambling-feature: Grewendorf and Sabel (1999).
- Scrambling triggered by theta-features on LF: Bošković and Takahashi (1998).

3.3 The grammar-theoretic modeling of scrambling: a critical survey

3.3.1 Scrambling: base-generated word order?

Pro:

- Occam's razor: if base-generated, no additional derivational devices required.
- Shifts the optionality issue to structure generation rather than to the application of movement.

Con:

- Positive evidence for antecedent-gap properties.
- Missing generalization on the OV vs. VO asymmetry (esp. Icelandic).

The idea that the 'scrambled' order is a base-generated order can be implemented in various ways. The common property is that there are no antecedent – gap relations, that is, movement chains, involved. The first possibility is the single level implementation. The alternative orders are taken to be alternative realization of V projections. In this perspective, scrambling languages are languages with free base orders. The second possibility is a dual level implementation: the alternative surface orders are related to a single structure on a hidden level, namely, LF. Again, this allows various alternative implementations. One possibility is the combination of a free base order with LF movement to checking positions. This characterizes a scrambling language as a language that differs from non-scrambling language in the checking system. The relevant feature is checked covertly rather than overtly. For a particular implementation of this strategy, see Fanselow (1998). Another possibility for base-generating scrambled order is suggested by Bošković and Takahashi (1998). The scrambled positions are base-generated adjunction positions generated in a generalized merger operation that need to be related to base position. This is managed at LF. The difference between this hypothesis and a movement hypothesis is that at surface structure there are no movement chains, and on LF, operations are foreseen that are forbidden for overt movement processes (e.g., lowering).

The direct criterion of success for these hypotheses is obvious. If they are right, scrambling does not involve antecedent gap relations on surface structure. On the other hand, evidence of movement traces is counterevidence for these proposals. A more indirect criterion is the typological question: Why is (clause-bound) scrambling strongly correlated with head-final projections? How is this captured in a theory of base-generable alternative orders.

Note that in a VO language like Icelandic, VP-internal reordering is in general ungrammatical, despite of the fact that there are alternative, verb specific ordering patterns. Only for the *give*-type double object constructions, both, DAT–ACC and ACC–DAT order is available (see Holmberg and Platzack 1995, ch. 7; Haider

2000d). If this order variation is interpreted as scrambling (rather than alternative base orders), it strengthens the point that scrambling is confined to the domain of the verb. Scrambling to the left, accross the verb, is not possible.

The base-generation approach opens various possibilities for a specific interplay between PF and LF. For instance, a subset of the scoping data could be captured in the following way: scope could either be read off the PF order or from the LF configuration, given that there is a fixed order of feature-checking positions at LF (cf. Fanselow 1998, sect. 3.5) or a fixed order of base positions in Bošković and Takahashi's (1998) approach. Lets assume the LF-order is DAT–ACC:

(82) a. **PF:**
daß er [mindestens eine $\text{Frage}_{\text{ACC}}$] [fast jedem $\text{Kandidaten}_{\text{DAT}}$] stellte
that he at least one question almost every candidate put
'that he asked almost every candidate at least one question'

b. **LF:**
[jedem $\text{Kandidaten}_{\text{DAT}}$ [mindestens eine $\text{Frage}_{\text{ACC}}$ [stellte . . .]]]
every candidate at least one question put

The fact that the sentence in (82) is ambiguous with respect to the scope of the quantified DPs can be captured in the following way. Scope is read off either at Spell Out, that is, from the surface order, or after Spell Out, that is, from LF. If scope is read off the surface order (82a), the accusative DP has wide scope. But at LF (82b), the dative feature has wide scope by virtue of LF-movement into the checking position for dative, which is higher than the position for accusative.

This approach has shortcomings, however. If it is assumed that in general dative is checked at LF in a higher position than the accusative, then the inverse scoping effects for the base order class ACC–DAT (18f) would not follow (cf. 83). Analogous considerations apply to the class ACC–NOM (18b), DAT–NOM (18d). Whatever order is taken to be the LF order will run into problems with the converse base-order class of verbs:

(83) a. **Unambiguous scope:**
daß man ja fast alle Kandidaten mehr als einem Test
that one PRT almost every candidate more than one test
unterzog
undergo
'that almost all candidates had to undergo more than one test'

b. **Ambiguous scope:**
daß man ja [mehr als einem Test]$_i$ fast alle Kandidaten e_i
that one PRT more than one test almost every candidate
unterzog
undergo
'that almost all candidates had to undergo more than one test'

Scoping either at surface structure or at LF, with the dative higher than the accusative at LF, predicts (83a) to be scope-ambiguous: at the surface, the accusative c-commands the dative and at LF the converse applies. Example (83b), on the other hand, is predicted to have the unique scope property that corresponds to the surface order because surface order and LF order coincide. In fact, the scope data do not match these predictions. They follow from an ACC–DAT base order (83a) plus Scrambling (83b): Scrambling introduces the ambiguity because of chain formation (see the discussion of property (vi), section 2.2.1).

From a more general theoretic perspective, first, the free choice between surface structure and LF as the relevant level of representation for the semantic interface would be unique for scoping and therefore ad hoc, since the fact that all binding relations are determined by the surface order in German forbids the going to and fro between surface structure and LF. Note that in our approach the surface structure is the relevant representation at the syntax–semantic interface. Second, and most importantly, the interplay between PF and syntax (cf. the data discussed in section 2) that becomes manifest in a structurally determined position of sentence accent, focus potential, and chain-connectivity for topic–focus accent (rise–fall intonation), would have to be discarded in order to await redesigning in yet unexplored ways. Third, and most important on the theoretical level, the base-generation approach does not provide insights as to why Icelandic – a language with as rich a case system as German – does not allow free argument order, although it allows various verb-specific order patterns that parallel the German verb-specific base-order patterns. In Icelandic the same verb-class-dependent word orders as in German are attested (cf. Haider 2000d). But still there is neither free word order within VP nor, in the case of Object shift, outside of VP (cf. Collins and Thráinsson 1996: 418; but see Holmberg and Platzack 1995, ch. 7). The fact that, for instance, a dative may precede or follow an accusative, depending on verb class, is incompatible with the assumption that checking is taking place in specific Spec positions of functional heads before Spell Out. So checking features have to be diagnosed as weak for Icelandic. But if checking is postponed to LF, the free word order in the VP, if there were any free word order, should be visible just as in German. But this is not the case and therefore these data are in conflict with the assumption of a correlation of strict word order and feature strength.

If scrambling were just free base-ordering in a language with morphologically identifiable grammatical functions, the clear-cut OV–VO contrast is unaccounted for. If, however, Scrambling word order is the result of chain-formation, the OV–VO contrast is expected: in VO languages, Scrambling chains would sandwich the verbal head, that is, the target position of Scrambling would precede the head, but the base position would be in the domain of the head. In VO languages, however, left-adjunction to VP projects structures in which the target as well as the gap are in the domain of the verbal head. This is an essential fact for the understanding of the grammatical nature of scrambling; in languages with mixed head directionality, scrambling is confined to constituents with final heads. An example is German, with Scrambling in VP and AP, but not in NP and PP.

Finally, 'free' word order is not 'arbitrary' word order (in the absence of factors that are instrumental for grammatical reordering preferences) in German. What is the only word order in English is exactly what is the only neutral word order – which we equate with base order – of the corresponding V-class in German, which of course can be checked only with verbs with the same meaning and, *ceteris paribus*, the same construction type:

(84) a. **Maximal focus:**
Peter zeigte seiner Schwester das neue RAThaus.
Peter showed his sister the new town hall
'Peter showed his sister the new town hall.'
b. **Minimal focus:**
Peter zeigte [das neue Rathaus]$_i$ seiner SCHWEster e_i.
Peter showed the new town hall his sister
'*Peter showed the new town hall his sister.'

Of course, English may use a PP instead of a bare DP with the inverted order between the objects. This is the only option for the verbs in (85), however.

Dative functions like Goal (85a) or Beneficiary (85b) are not coded with bare DPs in languages without morphological relation marking. So English does not allow double-object constructions corresponding to ACC–DAT base orders in German. Instead, the argument coded with dative in German appears as a PP in English (*aussetzen*, 'expose to'; *unterordnen*, 'subject to'; *unterwerfen*, 'submit to', etc.):

(85) a. Er hat uns einer ernsten Gefahr ausgesetzt.
he has us a severe danger exposed
'He exposed us to a severe danger.'
b. Er hat der Frau die Tür geöffnet.
he has opened the woman the door
'He opened the door to the woman.'

This fact, however, is additional support for our assumption that the argument order in the lexical entry (as the result of mapping the lexical–conceptual structure on the lexical argument structure) is not arbitrarily but semantically determined and that it determines the syntactic configuration by ranking-geared discharge of the A-structure into syntactic structure.

3.3.2 Does scrambling target functional Spec positions?

Pro:

- It gives simple characterization of the movement targets: Spec positions of empty functional heads.
- It is a widespread assumption in the literature because of its immediate compatibility with widely accepted assumptions on the organization of clause structure.

Con:

- Scrambled XPs lack the syntactic properties of phrases in functional Spec positions.
- Scrambling, unlike object shift in Scandinavian languages, does not reflect a unique order of functional projections.

There are at least three independent issues that are hard to reconcile with the assumption that the scrambled constituent is in a Spec position. First, scrambled XPs are transparent for extraction (contra Diesing 1992b; see also Müller 1998). Second, Scrambling may occur within a constituent fronted to [Spec, C]. If this constituent is a higher functional projection, crossing violations are predicted for head-movement chains that involve the finite verb. Third, neither a multiple F-spec analysis nor a multiple F-projection analysis can capture the freedom of scrambling orders in German. An analysis in terms of functional projections would be justified if there were a strictly fixed sequence of scrambled XPs as in the case of Icelandic Object shift.

Let us start with the argument from extraction patterns, that is, transparency for extraction. In a language with easily identifiable Spec positions, for example English, XPs in Spec are opaque for extractions:

(86) [Spec, IP]: *Who$_i$ has [a picture of e$_i$] been sold?

XPs, topicalized to positions between [Spec, IP] and C^0, are opaque as well (cf. 87b). This indicates that this position is either a Spec position or it is a position adjoined to IP. In both cases, extraction is illicit, as the evidence suggests:

(87) a. (that) [a picture of this painter] virtually everyone has admired
b. *Who$_i$ has [a picture of e$_i$] virtually everyone admired?
c. (that) [with him] I should talk at once
d. *Who$_i$ should [with e$_i$] I talk at once?

The ungrammaticality of (87d) cannot be attributed to an adjacency requirement for V and the preposition.[22] Cross-linguistic evidence can be found, for instance, in Danish (see Vikner 1995: 248) where prepositions can be stranded at some distance from the verb.

In German, Scrambling does not create opaque domains for extraction. This is easy to demonstrate for scrambled infinitival clauses. Neither Scrambling nor 'extraposition' has any effect on extractability:

(88) a. daß schon mal jemand [ihn damit zu überzeugen] versucht hat
that already PRT someone him with-that to convince tried has
'that someone already tried to convince him with this'

b. Wen$_i$ hat (denn) [e$_i$ damit zu überzeugen]$_j$ schon mal jemand e$_j$
who has PRT [with-that to convince] already PRT someone
versucht?
tried
'Who did someone try to convince with this?'

c. Wen$_i$ hat (denn) schon mal jemand versucht [e$_i$
who has PRT already PRT someone tried
damit zu überzeugen]?
with-that to convince

Diesing's (1992b: 32f.) claim that scrambling creates opaque domains is based on inadequately chosen data. She adduces '*was-für* split' constructions as the main body of evidence. The contrast in (89) is interpreted as the result of an opacity effect incurred by Scrambling.

(89) a. Was$_i$ hat denn jeder von euch [e$_i$ für Witze] erzählt?
what has PRT everyone of you for jokes told
'What kind of jokes did everyone tell?'

b. ??Was$_i$ hat [e$_i$ für Witze] denn jeder von euch erzählt?
what has for jokes PRT everyone of you told

The degraded acceptability of (89b) cannot be the result of scrambling, however. Sentence (90a), with a scrambled object DP, is perfectly acceptable. The degradation is of a different nature: it is not extraction out of, but scrambling of, a *wh*-marked DP across a particle like *denn* that induces ungrammaticality (cf. 90b). Example (89b), just like (90b), is ungrammatical, not because of extraction, but because of illicit scrambling of a *wh*-DP to the left of the particle, as the contrast between (90b) and (90c) illustrates. Sentence (89b) is the counterpart of (90b), just like (90a) is the counterpart of (90c).

(90) a. Was$_i$ hat denn damals [e$_i$ für Witze]$_j$ jeder von euch e$_j$ erzählt?
what has PRT at that time for jokes everyone of you told
'What kind of jokes did each of you tell at that time?'

b. *Wem hat [was für Witze]$_i$ denn damals jeder von euch e$_i$
whom has what for jokes PRT at that time everyone of you
erzählt?
told

c. Wem hat denn damals [was für einen Witz]$_i$ jeder von
whom has PRT at that time what for a joke everyone of
euch e$_i$ erzählt?
you told
'To whom did each of you tell what kind of jokes at that time.'

What is essential, though, is not so much the particle as such but the adjacency to the C^0 position: dropping the intervening adverbial in (91a) reduces

the acceptability considerably. The marginality of (91b) is of the same nature, but this is completely unexpected in Diesing's account because the subject of (91b) is the subject of an unaccusative verb and it may stay in its base position.

Whatever theoretical reason might be behind this restriction, it is independent of structural considerations with respect to the position of the particle *denn*. In (91a), the split is possible despite the presence of *denn* if the phrase with the extraction site is preceded by another element.

(91) a. Was$_i$ hat ??(*damals*) [e$_i$ für Ergebnisse] (*denn*) jeder von euch
what has at that time for results PRT everyone of you
erzielt?
achieved
'What kind of results did at that time everyone of you achieve?'

b. ??Was$_i$ fielen$_j$ [e$_i$ für Gläser] um-e$_j$?
what fell [for glasses] down
'What kind of glasses fell down?'

The fact that extraction out of a scrambled constituent in front of the particle is perfectly grammatical (see 91a) proves that what rules out (89b) and (90b) cannot be a positional effect on extraction proper.

Next, let us inspect the second area of counter-evidence and examine the hypothesis that scrambled XPs are hosted by F-specs above VP. If this is the case, a topicalized constituent with scrambled arguments must be analyzed as a topicalized functional projection, whose Spec is hosting the scrambled XP. It is important, however, to note that these F-projections must be lower than the starting point of the head chain that leads to the V2 position of the finite verb. That this is so, is easy to demonstrate with the contrast between (92a) and (92b).

(92) a. [Ein Fehler$_i$ einem Linguisten e$_i$ *auf*gefallen] ist dabei noch nie.
an error a linguist *up-struck* is at-that yet never[23]
'In this connection, no linguist ever noticed an error.'

b. *[Ein Fehler$_j$ einem Linguisten e$_j$ *auf*-e$_i$] fiel$_i$ dabei noch nie.
[an error a linguist up-e$_i$] struck$_i$ at-that yet never

c. [Einem Linguisten *ein Fehler* aufgefallen] ist dabei noch nie.
a linguist an error conspicuous-made is at-that yet never

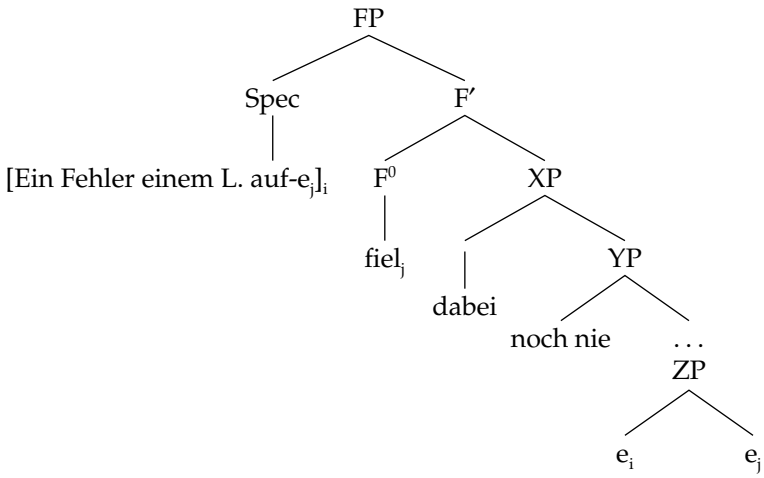
d. Es fiel$_j$ dabei einem Linguisten ein Fehler auf-e$_j$.
it fell at-that a linguist an error on-e$_i$
'In this connection, a linguist noticed an error.'

The examples in (92) feature an unaccusative subject. Its base position is the position following the indirect object (92c). In (92a, b), the subject is scrambled across the indirect object. If the target position of Scrambling in (92a, b) is the Spec of a functional projection that dominates the base position of the finite verb, the corresponding functional head is a head on the movement path of the finite verb from its base position to the V2 position. For the example chosen in (92b)

this conclusion is unavoidable since the clause contains only the main verb. When it leaves its basic V-projection in order to start its travel up to the topmost F-projection, it will unavoidably travel through all the intermediate functional heads up to the top projection.

With this in mind, let us proceed to the argument that (92b) demonstrates that the topicalized constituent cannot contain the trace of the finite verb. The particle in (92b, d) is an indicator for the position of the trace of the finite verb, since the verb is one with a so-called separable particle (cf. 92d) that is stranded by V2. Topicalizing the constituent that contains the trace of the verb incurs a crossing violation: the trace of the verb in (92b) fails to be in the c-command domain of the moved verb.

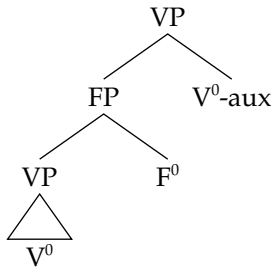
(93)



Thus, if the topicalized constituent in (92a) contained the trace of the finite verb, it would be predicted to be ungrammatical, contrary to the facts. The conclusion must be, therefore, that the functional projection that hosts the scrambled item cannot contain the auxiliary. It must be a complement of the auxiliary. Only in this case does the finite auxiliary not pass through the functional heads of the Scrambling domain:

(94) a. $[_{\text{Aux-VP}} \ldots [_{\text{FP}} \text{XP}_i \text{ F}^0 [_{\text{VP}} \ldots \text{e}_i \ldots \text{V}^0] \text{ V}_{\text{Aux}}]$

b.



Unavoidable though this conclusion is, it is unwanted, and so is the premise, therefore, which it is derived from. It is unwanted for at least the following two reasons (i) there are no plausible candidates for FP; (ii) this structure leads to overgeneration. As for the first reason, the Scrambling domain indicated in (93) is confined to the complement domain of the auxiliary, that is the FP in (94a, b). This domain cannot contain the subject-agreement projection because of (92b). So the Scrambling of the nominative in (92a) cannot have targeted the default A-position for the subject (AgrS) because this projection is higher and includes the base position of the auxiliary. This implies that Scrambling must stop short exactly in case the projection is topicalized. In all the other cases Scrambling may target higher positions. This is unavoidable again because adverbials that relate to the finite verb must be higher in the structure, but scrambled items may precede these adverbials.

On the one hand, scrambled constituents may precede these adverbials in the middle field (95d, f) but, on the other, Scrambling may take place within the topicalized constituent that must not contain these adverbials (95b, e).

(95) a. *[Sein Argument *leider/vermutlich* allen mehrmals
his argument unfortunately/probably everyone many-times
erklären] mußte er.
explain had-to he

b. [Sein Argument$_j$ allen e$_j$ erklären]$_i$ mußte er *leider/vermutlich*
his argument everyone explain had-to he unfortunately/probably
mehrmals e$_i$.
many-times
'Unfortunately/probably, he had to explain his argument more than once to everyone.'

c. daß er sein Argument allen *leider/vermutlich* mehrmals
that he his argument everyone unfortunately/probably many-times
erklären mußte
explain had-to
'that unfortunately/probably he to explain his argument to everyone had more than once'

d. *[Sein Argument$_j$ *gestern* allen e$_j$ erläutert] hat er doch.
his argument yesterday everyone explained has he PRT

e. [Sein Argument$_j$ allen e$_j$ erläutert]$_i$ hat er doch *gestern* e$_i$.
his argument everyone explained has he PRT yesterday
'He explained his argument to everyone yesterday.'

f. daß er sein Argument doch *gestern* allen erläutert hat
that he his argument PRT yesterday everyone explained has
'that he explained his argument to everyone yesterday'

What this entails is at least that a Spec position targeted by Scrambling cannot be a single uniquely identified position. Scrambling in this scenario must be able to optionally target either a Spec position that is lower than certain adverbials or

one that is higher. It is unclear, moreover, what kind of functional heads could provide these lower Spec positions. It cannot be an agreement position because of (92b): AgrS would have to be higher in the structure. It cannot be an aspectual position either, because these F-heads must be accessible for the respective auxiliaries and therefore higher. In fact, there is no obvious candidate. Postulating an F-head in this case is motivated only by the premise that Scrambling targets an F-spec. What this amounts to is equivalent to what is defended in section 4, namely, that the extended VP is the Scrambling domain.

As to the second reason, overgeneration is a serious problem for (93). If an auxiliary selects an FP rather than a VP, this opens room for elements intervening between the VP that contains the main verb and the following auxiliary. But in German this room is not available though extraposed prepositional objects are VP-final (96a), they may not intervene between the VP and the following verb (96b).

(96) a. [Gewartet *auf uns*]$_i$ hat sie nicht e$_i$.
waited for us has she not
b. *daß sie nicht [gewartet *auf uns*] hat
that she not waited for us has
c. daß sie nicht gewartet hat *auf uns*
that she not waited has for us

The third issue mentioned at the beginning of this section is the complete permutation potential of scrambling in German. This calls for an adequate structural solution. Cascading functional projections are ordered and so would be the outcome of scrambling. Scrambling would map one particular order onto another particular order. From this perspective, scrambling would not be equivalent to the permutation of arguments. It should rather behave like Scandinavian Object Shift, which is not the case, however. Cumulating scrambled items in a multiple Spec projection would not be adequate either because scrambled items may be separated by intervening adverbials. They do not come in packages.

3.3.3 Is scrambling triggered by a functional feature?

Pro:

- A syntactic trigger feature provides a grammar-internal causality for movement. This is favored by economy-based accounts.

Con:

- The various triggering properties suggested in the literature do not single out scrambled items. The alleged triggering properties are also found with phrases in situ.

This section is to complete the evidence against scrambling as movement targeting a functional projection. In section 3.2.1, evidence has been accumulated that

militates against movement to a functional Spec position. This section argues against a trigger-account in terms of feature checking.

If the proposed feature has content (in contrast to a merely technical implementation like Sauerland 1999a), the issue of optionality can be put to test easily. Let us take De Hoop's distinction between weak and strong interpretations of indefinite DPs. If scrambling were triggered by a specific interface feature, (97a) and (97b) would differ precisely to the extent defined by the presence or absence of that feature.

(97) a. daß ja Max Primaballerinas bewundert
that PRT Max primaballerinas admires
'that Max admires primaballerinas'
b. daß ja Primaballerinas Max bewundert
that PRT primaballerinas Max admires

But (97a) can receive the same interpretation as (97b), namely a generic one: if someone is a primaballerina, Max admires this person. Therefore, the claim that a strong feature 'generic' is the trigger of scrambling cannot be satisfactory, because of the licit generic interpretation of (96a). If it were indeed a strong feature, it would obligatorily trigger movement. If, on the other hand, the generic interpretation is available in situ, there is no justification for a contentful triggering feature.

The fact that there is a difference between (97a) and (97b) – the existential interpretation is lost in the scrambled order (97b) – is irrelevant in this context of argumentation. What is essential is not the loss but the exclusive gain. The loss of an interpretation in the course of movement does not differentiate between optional or triggered movement. It is simply a domain effect: if scrambling makes a DP leave the MAC, it leaves the domain of existential closure.

There is also a technical solution, of course, if one wants to enforce obligatoriness in face of optionality, namely, to stipulate some changes in the minimalist program which would bring about the 'overt' optionality in terms of invisible obligatoriness. Measures in this direction have been suggested by Haeberli (1993). He proposes that "the positions for case checking do not have to be fixed. Case checking projections are unspecified [. . .] projections in German [. . .] Thus, any NP can check its Case in any specifier position of these CasePs." The result is that argument Scrambling in German is tied to obligatory A-movement above VP into any of the CasePs. Even if one would accept this as an ad hoc measure for protecting the MP-axioms that do not admit optional movement – although it is not in any way supported by independent theoretical or empirical considerations – it is too weak: as emphasized earlier, scrambling does not single out DPs. A case-driven account is therefore bound to fail. Scrambled PPs and CPs remain unaccounted for.

Finally, if there were a triggering feature for Scrambling, this feature should be found at work in some other Germanic languages as well, for instance, in Icelandic, with its rich morphological system of case-marking and a movement

phenomenon called Object shift. This is not the case however (cf. Collins and Thráinsson 1996: 410). Although a pre-VP position is accessible for Object shift, this movement conserves the base order, both for subject-object (98a, b) as well as for double object constructions (98d, e). In German, both orders are available (98c, f).

(98) a. Í gær las Jón bækurnar ekki.
yesterday read John books-the not
'John did not read the books yesterday.'
b. *Í gær las bækurnar$_i$ Jón e$_i$ ekki.
yesterday read books-the John not not
c. Gestern las die Bücher Hans nicht. (= 98b)
yesterday read the books Hans not
'Hans did not read the books yesterday.'
d. Forstjórinn svipti mannin vinunni.
the boss deprived man-the (ACC) work-the (DAT)
'The boss deprived the man of the work.'
e. *Forstjórinn svipti vinunni$_i$ mannin e$_i$.
the boss deprived work-the (DAT) man-the (ACC)
f. Der Chef hat die Arbeit$_i$ dem Mann e$_i$ entzogen. (= 98e)
the boss has the work the man deprived
'The boss deprived the man of the work.'

If there were a trigger feature for Scrambling in German, the difference between the availability of scrambling in German and the lack of scrambling in Icelandic would have to be reduced to an accidental property; it so happens that the relevant feature is strong in German but weak in Icelandic. The difference is not accidental, however. It is a difference that relates directly to the OV vs. VO difference. So, arbitrary assignment of strong/weak values is thus but a technical option, but the relevant generalization is not to be captured.

3.3.4 Parasitic gaps as evidence for scrambling as A'-chaining?

This section provides reasons to dismiss so-called parasitic-gap evidence. The phenomena suspected to be parasitic-gap constructions in German are ellipsis constructions with properties known from coordination. Hence it need not come as a surprise that their grammatical behavior is different. The background: if scrambling licensed parasitic gap constructions, it would have to be an instance of A'-movement.

The binding data discussed in section 2.2.1. (Property (v)) suggest that Scrambling chains are A-chains rather than A'-chains (cf. Grewendorf 1989; Webelhuth 1992). But there seems to be a contradicting piece of evidence, namely, parasitic gaps apparently licensed by Scrambling. The phenomenon of parasitic gaps has been considered the cardinal evidence for A'-dependencies. However, as has been pointed out by Webelhuth (1989: 410f.), its impact is more confusing than revealing in German:

(99) a. ?Er hat jeden$_i$ Gast [ohne *pg*$_i$ anzuschauen] seinem$_i$ Nachbarn e$_i$
he has every guest [without to-look-at] (to) his neighbor
vorgestellt.
introduced
b. ?Er hat die Gäste$_i$ [ohne *pg*$_i$ anzuschauen] einander$_i$ e$_i$ vorgestellt.
he has the guests [without to-look-at] (to) each other introduced

If (99) is a parasitic gap construction, its pattern is inconsistent with standard assumptions. On the one hand, a parasitic gap needs an A'-chain for licensing, but on the other hand, A'-antecedents cannot bind anaphors and would trigger weak cross-over violations. In (99a) the scrambled quantified DP binds a pronoun without a weak crossover effect, and in (99b) the scrambled object binds an anaphor. These properties are associated with A-positions, however. Since under standard understanding a position cannot simultaneously be treated as A and A', there are either two movement steps involved (cf. Mahajan 1994b), or the dichotomy must be relaxed (cf. Déprez 1994), or the data must be re-evaluated for their validity. We advocate pursuing the last option.

At least for German, the identification of constructions like (99) as parasitic gap constructions is of questionable validity. First of all, the gaps in adverbial infinitival clauses do not have the properties of parasitic gaps in English, as the comparison between (100a–c) and (101a–c) illustrates. The typical cases of English (cf. 100d) are very marginal in German, however (cf. 101d). Parasitic gap constructions with the gap in a finite clause are ungrammatical in German. Only infinitival adjuncts (see 101a, b) seem at first glance to display a parasitic-gap-like behavior.

(100) a. *Where did Elaine work e$_i$ without ever living e$_i$? (Postal 1993: 737)
b. *What he became e$_i$ without wanting to become e$_i$ was a traitor. (p. 746)
c. *This is a topic about which he should think e$_i$ before talking e$_i$. (p. 736)
d. ?Which disease did everyone who caught e$_i$ want Dr. Jones to study e$_i$. (p. 738)

(101) a. Wo hat Elaine, anstatt mit dir zu wohnen, ihr (= 100a)
where has Elaine instead-of with you to live her
Büro eingerichtet?
office established
'Where did E. establish her office instead of living there together with you?'
b. Was er wurde, ohne eigentlich werden zu wollen, (= 100b)
what he became without really become to want
war ein Syntaktiker.
was a syntactician
'What he became without really wanting it was a syntactician.'

c. Das ist ein Thema, über das er, anstatt zu (= 100c)
that is a topic over which he instead-of to
schwätzen, nachdenken sollte.
talk think should
'This is a topic about which he should think instead of chatting.'

d. *Welches Haus wollte jeder, dem er e_i zeigte, e_i sofort kaufen?
which house wanted everyone who he showed at once buy

Furthermore, the same type of construction is found with elements that do not scramble easily. *Wh*-elements in situ license the alleged parasitic gaps, both in the function of a *wh*-interrogative (102a) and in the function of a *wh*-indefinite (102b). It should be noted that the alleged parasitic gap in (102a) must be interpreted like a bound pronoun.

(102) a. Wer hat seinem Nachbarn wen [ohne e_i anzuschauen] vorgestellt?
who has his neighbour whom [without to-look-at] introduced
'Who has introduced whom to his neighbour without looking at?'

b. Er hat seinem Nachbarn wen [ohne e_i anzuschauen] vorgestellt.
he has his neighbour whom [without to-look-at] introduced
'He has introduced someone to his neighbour without looking at.'

Fanselow (1993) adduces additional evidence against a parasitic-gap analysis for structures like (102a–b). He notes parallels between this construction and conjunction reduction and concludes that *ohne* ('without') and *anstatt* ('instead of') function syntactically like coordinating heads. The alleged parasitic gaps are rather the result of coordination ellipsis (cf. 103b) and not the result of the parasitic-gap type variable-binding mechanism. Viewed from this perspective, it is not surprising any more that the alleged parasitic-gap construction unlike the standard construction may contain more than one gap.

(103) a. daß er eine $Frau_i$ einem $Mann_j$ [anstatt e_i e_j vorzuziehen]
that he a woman a man [instead of to prefer (to)]
unterordnen wollte
subordinate wanted
'that he wanted to subordinate a woman to a man instead of preferring [her to him]'

b. daß er eine Frau einem Mann zuerst unterordnete und dann
that he a woman a man first subordinated and then
[– vorzog]
[preferred –]
'that he first subordinated a woman to a man and then preferred her to him'

Once it is realized that elliptic infinitivals are not cases of parasitic-gap constructions in German (and the very same considerations apply to Dutch), the

puzzling conflict between A- and A'-properties disappears, and so does the support for an A'-movement analysis of Scrambling in German.

3.3.5 Clause-bound scrambling as adjunction to VP?

Pro:

- Direct correlation with the headedness factor.
- Immediate account for the locality properties.

Con:

- Insufficiently developed adjunction/merge mechanisms.
- Insufficiently developed licensing system.
- Currently a minority position in the field. Caveat: the author belongs to this minority.

The previous sections provided evidence against all but one of the currently admissible options, namely A-chains within the projection of V^0. This seems to be an odd result. It may become less odd, however, once the two crucial factors are appreciated. One factor is the parameter of argument licensing; the other factor is the headedness parameter.

In a language like German with a relational system of argument identification (identification by case), the syntactic base order of arguments in syntactic structure is an immediate reflex of the ranking in the lexical A-structure. In particular, it is important to keep in mind that base-order patterns of one class may be identical with scrambling orders of another class. This presupposes that the identification of arguments is not a function of case checking in position that are unique for a given case. If the checking of a specific case is not tied to a unique structural configuration for the given case in a given language, case may be successfully checked in alternative positions. On the other hand, the base order must be projected because the arguments of a head are ranked in the A-structure, and the A-structure is mapped to the phrase structure projected by the head. A simple illustration is (104) and (105)

(104) a. V^0: $<A_1 <A_2>>$
b. $[_{VP}$ A1 $[A_2\ V^0]]$

Assume a verb with two arguments, ranked as in (104a). This A-structure projected on syntactic representation yields (104b), a VP with base order. If, on the other hand, the arguments appear in the reverse order as in (105a), and the first position is a possible checking position and the second position a possible base position (as in 105b), the relation between these two positions fulfills the requirements of an A-chain: the chain locally combines a checking license and a projection license.

(105) a. / . . . $A_2\ A_1\ V^0$/
b. $[_{VP}\, A_{2\text{-}i}\ [A_1\ [e_i\ V^0]$

This type of A-chain is possible only in the grammatical setting sketched above. In the following paragraphs it will be characterized more precisely.

- **Scrambling criterion** (observational):
  If a language L with head-final V-projections has different A-structure dependent base orders for argumental expressions, then L is also a scrambling language.

In other words, if there are A-structure dependent base orders, the given language allows for non-positional identification of arguments. This is a precondition for Scrambling. Note that this rules out Dutch and Icelandic as Dutch has positional identification and therefore no order alternation for DP arguments. Icelandic has different base orders for objects but it is a head-initial language.

- **Scrambling criterion** (technical):
  If in a language L the identification of argumental constituents in head-final projections is not subject to positionally fixed unique identification configurations, L is a scrambling language.

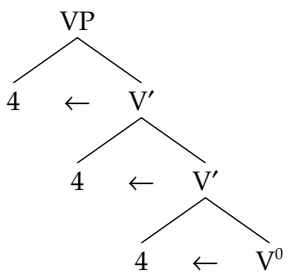
The crucial difference between a head-final and a head-initial projection is the availability of the extendable identification domain. In a head-initial projection, the extendable domain is necessarily empty; in a head-initial projection, an identification position is a position preceded by the head. So adjunction to the left creates positions that are not in the identification domain. Therefore, genuine scrambling-structures cannot arise in head-initial projections.

Excursion 2: OV vs. VO

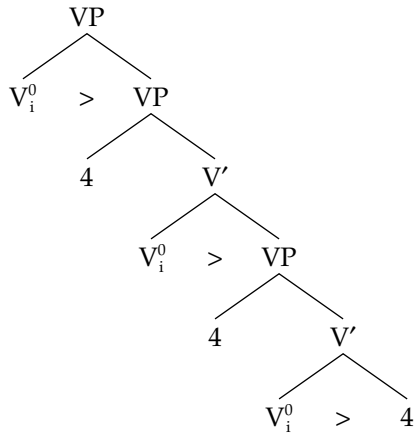
Claims:

- A head-final projection is a projection with the head in the foot position of the projection. The licensing directionality is regressive (see 1).
- A head-initial projection is a projection with an empty head in the foot position bound by the overt head in a shell projection. The licensing directionality is progressive (see 2).

(1) Head-final VP–VP



(2) Head-initial VP-shellVP



Two factors are crucial for the correlation between scrambling and headedness. First, unlike head-initial projections, head-final ones ones are simple projections, that is, binary layered structures with the head in the right foot position.

The implications for Scrambling are obvious, given that Scrambling is adjunction to the V-projection.[24] Adjunction in the structure (106a), but not in (106b), extends the identification domain of the head. Hence, left-adjoining to the projection (as in (106a)), adds one more node to the projection line and opens a position in the identification domain of the head. Left-adjunction as in (106b) creates a position that is not in the identification domain of the head of the projection. This is the basic difference between adjunction to OV and VO projections. If Scrambling structures are adjunction structures, this difference in the projection structure of head-final vs. head-initial projections entails that the grammatical properties of Scrambling in OV must be different from those that would result from an analogous operation in a VO language.

The second factor differentiates between German as a Scrambling language and Icelandic as a non-Scrambling language: the Scrambling position must be within the identification domain of the lexical head of the projection.[25] We assume that argument identification is subject to the directionality parameter. OV is – as demonstrated above – the result of regressive identification whereas VO is the outcome of progressive identification. The difference between Scrambling in an OV system, in contrast with a VO system, is illustrated in (106). In (106a) the scrambled XP is in the identification domain of V^0, but not in (106b), where it precedes a progressively identifying head:

(106) a. $[_{VP}\ XP_i\ [_{VP} \ldots [e_i \ldots V^0]]]$
b. $[_{VP}\ XP_i\ [_{VP}\ V^0\ [\ldots e_i \ldots]]]$

Arguments in positions within the identification domain of the lexical head are L-related positions. This is the reason why scrambled and non-scrambled XPs do

not differ with respect to grammatical factors conditioning opacity for extraction. It is also the reason for the lack of differences in binding. After all, a position in the identification domain of a lexical head is a position in which an XP is linked. In terms of the A'- vs. A-distinction, a linking position is an A-position. This accounts for the A-chain properties of Scrambling.

We shall have to answer the question, What determines the position of the gap in a Scrambling construction? The gap is the foot of the Scrambling chain in the base position of the scrambled element. This position is determined by the base order and hence predictable from the A-structure of the lexical head of the projection. The pertinent principle is that of the discharge of A-structure onto syntactic structure that guarantees that the ranking in the lexical A-structure is conserved in the syntactic structure:

(107) **Principle of conservative mapping of A-structure onto syntactic structure:** The A-structure ranking in the lexical A-structure of a lexical head is mapped onto a syntactic c-command hierarchy.

The lowest ranking argument in the A-structure is associated with the lowest A-position in the projection of the head, the next higher one with a position c-commanding the lower one, and so on. In terms of merging, the argument expression with which the head merges first is associated with the lowest ranking argument and merging continues in the inverse order of the ranking. The minimal domain of mapping will be referred to as Minimal Argument projection Complex (MAC).

Let us assume, for the sake of illustration, a head with a three-argument A-structure and a given ranking as in (108a). The resultant MAC, the minimal complete lexical projection that contains all A-positions, is either a structure like (108b), for head-final projections, or a structure like (108c) for head-initial ones.

(108) a. $h^0 <A_i <A_j <A_k>>>$ lexically stored information
b. $[_{HP}\ A_i\ [A_j\ [A_k\ h^0]]]$ (head final)
c. $[_{HP}\ A_i\ [\mathbf{h^0_i}\ [A_j\ [h^0_i\ A_k]]]]$ (head initial, projection shells)

An illustration for the structures (108b, c) is given in (109a, b), respectively, in the form of a German head-final and an English head-initial V-projection. For the latter we follow the standard assumption that the external argument is the only argument to the left of the head. This position is structurally a Spec position of the head-initial projection and it is identifiable as the single position to the left of the head. In head-final projections no position is singled out structurally. All positions are positions to the left of the head.

(109) a. $[_{VP}$ jemand$_i$ [jemandem$_j$ [etwas$_k$ *zeigen*]]]
someone$_{(NOM)}$ someone$_{DAT}$ something$_{ACC}$ show
b. $[_{VP}$ someone$_i$ [*show*$_q$ [somebody$_j$ [e$_q$ something$_k$]]]]

Let us now return to the question we started with, namely, the identification of the gap in a Scrambling construction like the one in (110). The gaps are identifiable in the MAC in the order of the ranking of the A-structure.

(110) daß (ja) [die Bilder$_k$ [Linguisten$_j$ [MAC niemand$_i$ [e$_j$ [e$_k$ zeigte]]]]]
that (PRT) the pictures linguists nobody showed
'that nobody showed the pictures to linguists'

The scrambled constituents are adjoined to the V-projection and thus remain in the identification domain of the head. (Note that the scrambled order could, of course, also be *Linguisten$_j$ die Bilder$_k$* since both are scrambled across the subject.) The case is checked in the overt position; linking to the A-structure position requires chain formation between the identification position and the base position. The resulting chain is thus a chain between an overt A-identification position and a covert linking position, that is, an A-chain.

In a head-initial projection, this type of structure does not give rise to A-chains for a simple reason. Positions adjoined to the MAC are positions to the left of the head position and therefore are not in the potential identification domain of the head:

(111) [$_{VP}$ something$_k$ [$_{MAC}$ someone$_q$ [*show*$_i$ [somebody [e$_i$ e$_k$]]]]] (*scrambling)

Since the position adjoined to the MAC in (111) is not in the identification domain of the lexical head because identification is subject to a directionality requirement, the chain cannot be an A-chain. It could be an A'-chain only. This is the grammar-theoretical reason for the absence of A-chain Scrambling of the German type within VO languages. The remaining possibility for scrambling within the MAC in VO languages, that is, adjunction to the left is ruled out for principled reasons as well. Adjunction to the left is not admissible in constrained phrase-structure theories as those of Haider (2000a) or Kayne (1994).

4 Conclusion: questions and answers

- What makes an SOV-language (like German, Hindi, Japanese) a scrambling language?
  - Licensing domains are non-positionally restricted.
  - V-projections are head-final.
- What prevents scrambling in SVO languages (like English, French, or Icelandic)?
  - There is no adjunction to the right (universal restriction).
  - Heads of head-initial projections do not license to the left; hence there is no adjunction to the left either.
  - Scrambling is conditioned by the headedness property (head-final). Hence a language with mixed headedness (e.g., German) does not scramble in head-initial projections (NP, PP), but only in head-final ones (VP, AP).

Typological note: VSO languages such as Tagalog allow for scrambling in the sentence domain (for Tagalog see Schachter 1996). What this indicates for our present concern is that reordering in the domain of the verb – the V-projection (plus higher functional projections) – is possible if arguments are not confined to unique licensing positions. In addition, we should take into account that languages like Polish and Russian are considered scrambling SVO languages. This is a serious challenge to the account described above, unless there is an independent factor intervening, namely, the positioning of V^0. If Slavic languages are more like Hindi (see Mahajan 1997) or Yiddish (see Haider and Rosengren 1998), the problem disappears. These languages are neither true OV nor true VO languages, but rather a combination of both OV and VO: in that the base position plus the identification directionality is OV, but the verb may move to a surface position to the left. If this characterization is correct, scrambling is possible because the identification directionality is like in an OV system. The surface position of the verb, however, masks this property.

- What prevents the permutation of DP arguments in Dutch, unlike German?
  - Positional licensing of DP objects (because of the lack of relational morphological identification).
- What is responsible for the apparent combination of A- and non-A-movement properties (crossover, parasitic gaps, etc.)?
  - (Mis)interpretation of data, (mis)interpretation of theoretical concepts.

NOTES

I want to thank Anders Holmberg and an anonymous reviewer for their valuable efforts to improve the quality and readability of an earlier version of this chapter. Please blame remaining shortcomings exclusively on the author.

1 Representative for the Scandinavian languages (Faroese, Iceandic, Norwegian, Swedish).
2 A necessary condition for scrambling within a projection P is (i) that P must be a head-final projection, and (ii) that the arguments of the head of P must be licensed relationally, that is, the identification of the given argument phrases does not depend on unique structural positions for each argument. (See Haider 1991a; Corver and Van Riemsdijk 1997; Haider 1997c; Haider and Rosengren 1998.)
3 Capitals indicate the locus of the pitch accent.
4 Stefan Heym, interview.
5 The position of a negation particle is a position that c-commands the finite verb or its trace. This is one reason why a negation particle in the role of sentence negation cannot appear in a VP-internal position in a VO language:

(i) He has talked *gently* to Mary.

(ii) *He has talked *never* to Mary.

(iii) *He has talked *not* to Mary.

But in an OV language the negation particle, just like adverbs of all semantic types, occurs VP-internally, since any VP-internal position c-commands the finite verb in its base position.

6 The MAC is the minimal projection of the head that contains all argument positions of the head. This is a modification of Diesing's (1992b) claim that the VP is the domain of existential closure. The VP in an OV language may be larger than the MAC. This is the case if scrambling is analyzed as adjunction to VP. In head-initial projections, however, the left boundary of the MAC is identical with the left boundary of the VP.

7 There are some restrictions regarding genitival objects, however (cf. Rosengren 1993). Since this is not relevant here we shall not discuss it further.

8 In the following example the subscript is the trace index; the superscript is the binding index.

9 Nominative is a bi-partite relation because the nominative DP obligatorily agrees with the finite verb. The DP and the finite verb share a feature matrix. By definition, the finite verb, as the head of the projection, c-commands all the phrases in its projection. So the feature matrix of the governor of nominative c-commands any position within the VP. If binding is defined in terms of the position of the head that agrees with the DP features rather than the DP position itself, the result is in accordance with the empirical facts. It is important to realize that overt agreement is the crucial factor and not the subject function (cf. ECM subjects).

10 'An operator A may have scope over an operator B iff A c-commands B or an A'-element coindexed with B.'

11 Nominal-case distinctions in Dutch are found only with pronouns, much as in English.

12 A derived un-accusative predicate is the passive of a ditransitive verb. An example of a primary unaccusative verb is *overkomen* ('happen to'):

(i) dat Jan boeken gegeven werden
that Jan books given were
dat Jan rampen overkomen zijn
that Jan disasters happened were

13 This is of course not the same as to say that they are informationally equivalent. The difference in position of the minimal focus exponent is of course important but not relevant in this connection.

14 Note that a reflex of this property is the fact that the verb that denotes the same concept in English – the verb *devote* – does not allow for a 'dative alternation'. An unambiguous goal relation is ranked lower than a theme argument in A-structure.

15 Note that contrary to widespread rumours there is no specificity effect in the German counterpart of the English *there*-construction:

(i) Es spielt jetzt für sie *die Academy of St. Martin in the Fields* unter Neville
there plays now for you *the Academy of St. Martin in the Fields* under Neville
Mariner.
Mariner

16 See Askedal (1986). The examples are excerpted from T. Mann, *Die Buddenbrooks* and F. Werfel, *Das Lied der Bernadette*.

17 Haeseryn et al. (1997: § 22.5.6.3) "Als lijdend voorwerp en indirect object beide een substantiefgroep zijn, moet het indirect object steeds vóór het lijdend voorwerp

staan, hoewel niet steeds vlak ervoor" ['If the direct object and the indirect object are both DPs, the indirect object must always precede the direct object, although not always immediately'].

18 Haeseryn et al. (1997: § 22.5.6.3) "dan is verplaatsing gemakkelijk mogelijk" ['then movement is well possible'].

19 Commentary (Eurosport channel, February 22, 2002) on Sarah Hughes' gold-medal-winning performance.

20 The fact that Dutch infinitival subject clauses are obligatorily extraposed supports the assumption of an IP shell for Dutch, which is confirmed by the German–Dutch contrast in the distribution of sentence internal expletive subjects discussed earlier. The Dutch restriction is the parallel of the English restriction on clause-internal clausal subjects.

21 The very same ECP effect can be seen with English VP-topicalization:

(i) a. . . . and [found a solution]$_i$ he has e_i
b. * . . . and [found a solution]$_i$ he e_i

In (b), the trace of the topicalized VP would be governed only by an empty functional head. The ECP requires a lexicalized head. Note that whatever condition is to replace the coverage of the ECP in the Minimalist Program must cover this distinction.

22 Examples such as *Who was taken advantage of?* and *Who did you give this book to?* show clearly that the verb and the preposition are not adjacent heads because in both examples the preposition is not adjacent to the verbal head.

23 *Auffallen* is a particle verb: *auf+fallen*, literally translated 'up+fall', with the meaning *to happen to notice*. The gloss uses the translational equivalent 'strike' plus a particle.

24 Adjunct(ion) is used here as a purely structural notion: the adjunction position is a position merged with the projection of a syntactic category (daughter and sister of a segment of a (maximal) projection XP), without being selected by the head. The BC (see above) allows adjunction on the left but not on the right side of a projection.

25 We assume a P-and-P-theory-checking system for overt case: a lexical head can check for a single case value per case category, that is, one structural case, one lexical case, and one oblique (e.g., prepositional) value.

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44 Multiple-*Wh*-Questions

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1 Introduction

1.1 Wh-*expressions as diagnostics of scope*

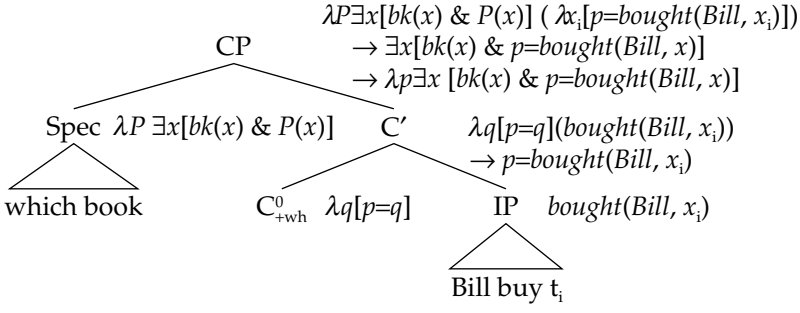
1.1.1 Fronting and possible answers as indicators of scope

I will begin this survey of multiple-*wh*-questions by outlining those theoretical claims for which the study of *wh*-dependencies has been particularly important. These include the claim that there is a level of syntactic representation intermediate between overt syntax and the interpretive module, known as Logical Form (LF), and that movement at this level is subject to the Empty Category Principle (ECP) but not Subjacency.

Wh-expressions provide a special window on the nature of syntactic dependencies because in many languages they appear at the periphery of the clause, in the position at which they are assumed to be interpreted. In this they differ from quantified expressions, for example, which also may be argued to require clausal scope for interpretation but do not seem to occur in a specially designated scope position in any language. To appreciate the diagnostic power of *wh*-expressions, consider a simple question in English, such as (1a), and one of its possible answers, given in (1b):

(1) a. Which book did Bill buy?
b. (Bill bought) *War and Peace*.

(2) a. λp ∃x [book(x) & p = bought(Bill, x)]
b. {Bill bought *War and Peace*, Bill bought *Aspects*}
c.



Intuitively, the fronted *wh*-expression is linked to the object of the verb *buy*. Syntactic tests, using agreement and binding facts, for example, can further establish the syntactic dependency between the fronted element and the gap in

argument position. In logical form this dependency is understood as an operator–variable relation. Under a standard semantics for questions such as Hamblin (1973) or Karttunen (1977), (1a) is interpreted as in (2a), yielding the set of propositions obtained by varying assignments to the variable bound by the *wh* ∃ operator.[1] In a context where the quantifier ranges over the set {*War and Peace*, *Aspects*}, we get the set of propositions in (2b) as the denotation of the question. An appropriate answer is understood to be one that picks out the true proposition from this set, specifying in effect, a value for the fronted *wh*-expression. Structure (2c) makes explicit the mapping from syntactic structure to semantic interpretation (Bittner 1994; von Stechow 1996). The crucial operation that shifts a sentence from a declarative proposition-type meaning to an interrogative set-of-propositions type meaning hinges on the propositional variable *p* over which lambda abstraction can take place. Crucially for our purposes, the fronted *wh*-expression must be interpreted outside the scope of this variable. If the +WH specification on C^0 is taken to be the position at which the propositional variable is introduced, and the fronted *wh* taken to be in [Spec, CP], the mapping from syntax to semantics is straightforwardly compositional. Thus, one might take fronting of *wh*-expressions as direct evidence of their scope position.[2]

Multiple-*wh*-questions have special syntactic and semantic properties. In English they are formed by fronting one *wh*-expression and leaving the other(s) in situ. Possible answers to such questions specify values not only for the fronted *wh*-expression but also for those in situ:

(3) a. Which student bought which book?
b. Bill bought *War and Peace*, Sue bought *Aspects*.

(4) a. λp ∃x ∃y [student(x) & book(y) & p = bought(x,y)]
b. {Bill bought *War and Peace*, Bill bought *Aspects*, Sue bought *War and Peace*, Sue bought *Aspects*}
c. $[_{CP}$ Which student$_i$ $[_{IP}$ t_i bought which book]] → $[_{CP}$ which book$_j$ Which student$_i$ $[_{IP}$ t_i bought t_j]]

If we take possible answers as a diagnostic, and assume that specification of values is due to clause external existential quantification binding variable positions inside IP, as the Hamblin–Karttunen semantics of questions suggests, multiple-*wh*-questions force us to the conclusion that there must be a way of interpreting *wh*-expressions in situ that allows them to form operator variable relations of the kind shown in (4a). Following the syntax–semantics mapping outlined above, it appears plausible to assume that the *wh*-in-situ moves covertly to a position outside C^0. A semantic argument for the existence of LF can thus be made using possible answers to multiple-*wh*-questions as indirect evidence.

1.1.2 Constraints on Scope: ECP and Subjacency

If considerations of interpretability lead us to postulate an abstract level of syntax, it should be possible to characterize it in theoretical terms. In particular, one

could ask if there are constraints on the operation of Move α at this level. In this subsection we will consider evidence that has been used to establish the status of the ECP and Subjacency as constraints on movement at LF.

To see how multiple-*wh*-questions have shaped our view of LF, consider the following questions, uttered out of the blue:

(5) a. Who saw what?
b. ?*What did who see?

(6) a. How did Bill read what?
b. *What did Bill read how?

The choice of which *wh*-expression will be fronted in a multiple-*wh*-question is clearly sensitive to the status of the argument. In (5) a subject is chosen over the object for fronting, in (6) an adjunct is preferred over the object. This phenomenon, which goes by the name of Superiority in the literature, can be accounted for by imposing syntactic requirements on traces:

(7) a. $[_{CP}\ [_{Spec\text{-}i}\ what_j\ [_{Spec\text{-}i}\ who_i]]\ [_{IP}\ t_i\ saw\ t_j]]$
b. $[_{CP}\ [_{Spec\text{-}j}\ who_i\ [_{Spec\text{-}i}\ what_j]]\ [_{IP}\ t_i\ saw\ t_j]]$

(8) a. $[_{CP}\ [_{Spec\text{-}i}\ what_j\ [_{Spec\text{-}i}\ how_i]]\ [_{IP}\ Bill\ read\ t_j\ t_i]]$
b. $[_{CP}\ [_{Spec\text{-}j}\ how_i\ [_{Spec\text{-}j}\ what_j]]\ [_{IP}\ Bill\ read\ t_j\ t_i]]$

(9) **Empty Category Principle:**
Traces must be properly governed.
A properly governs B iff A theta-governs B or A antecedent-governs B (Chomsky 1986a).

The ECP states that traces must be properly governed and an account of the Superiority effects can be given if it is assumed that [Spec, CP] carries the index of the first *wh*-expression that moves into it (Lasnik and Saito 1992). As the derivations in (7a) and (8a) show, the ECP is respected when covert movement is from the theta-marked direct object position, leaving the subject or the adjunct trace created at S-structure to be antecedent governed by the fronted *wh*-expression. In the unacceptable cases in (7b) and (8b), the situation is reversed. Though the trace created at S-structure satisfies the ECP (doubly), the trace created at LF does not.

Note that ECP as a constraint on S-structure movement can also be established on the basis of examples like (10). The explanation for the contrast between (10a) and (10b) draws on the same elements of explanation as the contrast between (7a) and (8a), and (7b) and (8b). Structure (10b) is unacceptable because an intervening complementizer blocks antecedent government of a trace in non-theta position:

(10) a. $[_{CP}\ [_{Spec\text{-}i}$ Which author$_i$] $[_{C'}$ do $[_{IP}$ you believe $[_{CP}\ [_{IP}\ t_i$ wrote the book]]]?
b. *$[_{CP}\ [_{Spec\text{-}i}$ Which author$_i$] $[_{C'}$ do $[_{IP}$ you believe $[_{CP}$ that $[_{IP}\ t_i$ wrote the book]]]?

What makes the argument from multiple-*wh*-questions for the existence of ECP effects at LF significant is that it gives content to the idea that LF is a level of syntax, with properties in common with S-structure. This result is important because it is an argument against an alternative view in which assignment of scope can be a viewed as a purely semantically driven step in the computation.

Let us turn now to constraints on scope covered by the subjacency condition. As Ross (1986) showed, though *wh*-fronting can occur across clauses, it is restricted in certain contexts:

(11) a. Which book did Mary tell John to buy t?
b. Which book does Mary think John will buy t?

(12) a. *Which book does Mary know a man who has read t?
b. Which book is such that Mary knows a man who has read it?

(13) a. *Which book does John know where Mary bought t?
b. Which book is such that John knows where Mary bought it?

Here we have evidence that *wh*-dependencies created at S-structure are syntactically constrained. In (12a), the fronted *wh*-expression associated with a position inside the complex noun phrase is clearly unacceptable (Ross's CNPC). It is easy to see that the problem is not semantic in character. Sentence (12b) shows that if the relevant dependency between the *wh*-expression and the gap inside the complex noun phrase could be established in (12a), it would be interpretable as a proper request for information. The contrast between (13a) and (13b) makes the same point for *wh*-dependencies involving embedded questions (Ross's *Wh*-Island Constraint). The two can be subsumed under the Subjacency Condition:

(14) **Subjacency Condition (Chomsky 1986a):**
If (α_i, α_{i+1}) is a link of a chain, then α_{i+1} is subjacent to α. β is n-subjacent to α iff there are fewer than n+1 barriers for β that exclude α.

Given that *wh*-in-situ in multiple-*wh*-questions moves at LF, one can test whether the Subjacency Condition also holds at that level. The following data test the relevance of the two subcases of Subjacency:

(15) a. Who knows a man who wrote which book?
b. Bill knows a man who wrote *Aspects*.

(16) a. $\lambda p\ \exists x\ \exists y$ [person(x) & book(y) & p = $\exists z$ [man(z) & wrote(z,y) & knows(x,z)]

b. {Bill knows a man who wrote *Aspects*, Sue knows a man who wrote *Aspects*, Bill knows a man who wrote *LGB*, Sue knows a man who wrote *LGB*}

(17) a. Which student knows where Mary bought which book?
b. Bill does/Bill knows where Mary bought which book.
c. Bill knows where Mary bought *Aspects* and Sue knows where Mary bought *LGB*.

(18) a. λp ∃x ∃y [student(x) & book(y) & p = know(x, λp′ ∃z [place(z) & p′ = buy(Mary, y at z)]]
b. {Bill knows where Mary bought *Aspects*, Sue knows where Mary bought *Aspects*, Bill knows where Mary bought *LGB*, Sue knows where *Mary* bought LGB}

Baker (1970) argued that the possibility of answering (17a) with (17b) or (17c) indicates a syntactic ambiguity in the scope of *wh*-in-situ. Answers like (17b), specifying values for the fronted *wh* only, can be derived if the *wh*-in-situ takes scope over the embedded clause. List answers like (17c), on the other hand, which pair students and books, indicate that the *wh*-in-situ takes matrix scope, in violation of the *Wh*-Island Constraint. A similar argument, based on possible answers, has been made for matrix scope of the *wh*-in-situ in (15), in violation of CNPC. These examples establish a difference between operator–variable dependencies created at S-structure and those created at LF. On the basis of such examples, it has been claimed that the Subjacency Condition does not hold at LF.

As in the case of the ECP, the scope of *wh*-in-situ is crucial in establishing the status of Subjacency at LF. Quantifiers, for example, do not help in this regard. Example (19) shows that a reading where for each book there is a possibly different student who thinks John will buy it is not available:

(19) Some student thinks John will buy every book.

Since we know from (11b) that this is a context which allows extraction, the inability of the ∀ quantifier to take scope over the ∃ suggests that it is a property of Quantified NPs that their scope must be clause-bounded (but see chapter 74 for discussion). The relevance of subjacency at LF, therefore, cannot be determined by examining the behavior of quantifiers, and our primary source for this claim remains the interpretive possibilities of *wh*-in-situ.

1.1.3 Alternatives to Covert Movement

We have seen that the observable syntactic structure of English multiple-*wh*-questions reveals the scopal property of one *wh*-expression directly by fronting it, while concealing that of the other(s), for which we must look to indirect evidence in the form of appropriate answers. We have also seen that these twin indicators of scope make multiple-*wh*-questions an extremely powerful diagnostic

tool. Adopting the Principles and Parameters model of grammar, I have demonstrated the power of multiple-*wh*-questions to test the syntactic properties not only of S-structure but also of LF. There are, of course, many alternative analyses of the phenomenon that have been proposed over the years and we will discuss some of them in subsequent sections. For now, I would like briefly to mention three mechanisms for interpreting *wh*-expressions which do not depend on movement, namely, Cooper-storage, Unselective Binding, and Choice Functions. My aim here is to explicate differences between them with respect to the assignment of scope as well as to note points of contact. I will not try at this point to summarize the particular arguments made or specific conclusions drawn by the proponents of each approach.

Let us take as a starting point the idea that covert movement is not essential to the interpretation of *wh*-in-situ, or other scope-bearing elements for that matter. An alternative proposed by Baker (1970) depends on co-indexation between a Q-morpheme in complementizer position and a *wh*-in-situ. His analysis of (17a), repeated below as (20a), shows the two scope possibilities discussed earlier:

(20) a. Who knows where Mary bought what?
b. $[Q_i\ who_i\ [t_i\ knows\ [Q_{j,k}\ where_j\ Mary\ bought\ t_j\ what_k]]]$
c. $[Q_{i,k}\ who_i\ [t_i\ knows\ [Q_j,\ where_j\ Mary\ bought\ t_j\ what_k]]]$

Note that given a proposal like this, the notion of LF as essential to the syntax–semantics interface can be dispensed with, but only if it is combined with an alternative way of interpreting the *wh*-expression than the one given in section 1.1. The *wh*-expression there is interpreted like an existential generalized quantifier which combines with a predicative expression built up out of the denotation of C′, the syntactic constituent it has scope over. The challenge posed by structures like (20b–c), or any other structure encoding scope without covert movement, is to find a compositional way of assigning clausal scope to expressions within the clause at the interface level.

Engdahl (1986), working within a non-derivational syntactic framework, suggests that *wh*-in-situ should be interpreted on a par with other generalized quantifiers using the storage mechanism of Cooper (1983). Briefly put, this involves interpreting the *wh* in argument position as a variable and keeping its quantificational force, the existential along with the restriction, in store till an appropriate scopal position is reached, at which point existential binding of the variable is effected. Hamblin–Karttunen denotations, equivalent to the ones derived under the movement approach, could thus be derived for multiple-*wh*-questions without having to take recourse to covert movement.[3]

A second approach for interpreting *wh*-in-situ without movement is proposed by Pesetsky (1987a) and Nishigauchi (1986, 1990). Recognizing the kinship between *wh*-expressions and indefinites, they adopt the unselective binding approach of Lewis (1975), Kamp (1981a), and Heim (1982), where the indefinite provides a variable that must be bound by sentential operators. Under this approach, we

might take the C^0_{+WH} to provide not only the propositional variable *p*, but also the existential quantifier binding the *wh*-variables. In the basic cases, the resulting set of propositions is the same as in the other proposals considered so far, but there is a crucial difference with respect to the status of the common noun inside the *wh*. In this case, it remains within the scope of the propositional variable, simply adding an additional condition on the variable:

(21) a. Which student read which book?
b. $[Q_{i,j}$ which student$_i$ [t_i read which book$_j$]]
c. $\lambda p\ \exists x\ y$ [student(x) & p = read(x,y) & book(y)]

The third approach, proposed by Reinhart (1997), is similar in that it takes the *wh*-in-situ to be an indefinite bound by existential closure. The key difference is in the interpretation of the common noun. Reinhart points to the fact that the unselective binding approach makes the wrong prediction in cases like the following:

(22) a. Who will be offended if we invite which philosopher?
b. $\lambda p\ \exists\ x\ y$ [p = [[invite(we, y) & philosopher(y)] $\rightarrow$ offended(x)]]
c. Lucie will be offended if we invite Donald Duck.

(23) a. $\lambda p\ \exists\ x\ \exists f$ [p = [[invite(we, y) & f(philosopher)] $\rightarrow$ offended(x)]]
b. $\lambda p\ \exists\ x\ \exists f$ [student(x) & p = [read(x, f(book)]]

As (22b) shows, the *wh*-in-situ is in the antecedent of a conditional. This means that any individual who is not a philosopher suffices to make the antecedent false and hence the conditional proposition true. Sentence (22c) thus qualifies as a potential answer to the question. Reinhart therefore argues for a treatment of *wh*-in-situ in terms of choice functions. Under this view the quantification ranges over functions that take a (non-empty) set and pick out an individual from that set. *Wh*-expressions, like other indefinites, do not contribute an individual variable but denote a set to which the existentially quantified function applies. The problem is resolved since Donald Duck would simply not be a possible value for *f*(*philosopher*) in (23a). For completeness I give the interpretation of the simpler case (21a) in (23b).

The availability of well-defined semantic mechanisms like Storage, Unselective Binding, and Choice Functions makes it clear that *wh*-scope phenomena are not inextricably linked to movement and successful analyses have been given which dispense with movement or combine movement with alternative scope-assignment strategies to different degrees. On the two ends of the spectrum, then, lie frameworks like the Principles and Parameters model that encode all scope relations via movement, and frameworks that eschew movement altogether, such as Head-driven Phrase Structure Grammar. For the first type of framework, alternative scope mechanisms are obviously superfluous while they are clearly essential for the second type. There are also a number of interesting possibilities that fall

between these two opposing points. One, advocated by Pesetsky (1987a), favors *wh*-movement at S-structure and LF but allows for certain (discourse-linked) *wh*-expressions to be subject to unselective binding. Pesetsky thus argues for a uniform characterization of Move α at both syntactic levels, explaining the non-standard behavior of some *wh*-in-situ as a reflection of their being a distinct phenomenon subject to distinct principles. Reinhart (1997), on the other hand, takes the possibility of covert movement to be antithetical to the basic tenets of Minimalism, and argues for a movement account for fronted *wh* only, reserving an account in terms of choice functions for all *wh*-in-situ. As is clear in even this cursory list, a number of a priori defensible positions are possible. One might wonder to what extent the issues raised by multiple-*wh*-questions, discussed within a framework utilizing movement as the sole scoping mechanism, transfer to frameworks that rely on other mechanisms. I will try to clarify below the sense in which I believe the central questions about the interface between form and meaning are maintained across these divergent views.

Consider the role of Subjacency in distinguishing between S-structure and LF in the Principles and Parameters model. As we noted, this is based on two types of evidence, evidence of Subjacency effects in fronting possibilities and absence of Subjacency effects in answers specifying values for *wh*-expressions inside islands. The first kind of evidence is direct, the second indirect in that it relies on the premise that possible answers specify values for all and only *wh*-expressions that have matrix scope. In subsequent sections we will have a chance to probe this assumption more fully. Taking it at face value for now, it can be easily shown that the descriptive generalizations revealed by multiple-*wh*-questions have equal significance in alternative models of grammar.

In a non-derivational model like Engdahl's, for example, something akin to Subjacency applies to operator–gap dependencies when *wh*-operators are in clause-initial position. The same does not apply to *wh*-in-situ, whose quantificational force can be held in store beyond the relevant bounding nodes. Approaches such as Pesetsky's, adopting unselective binding for D-linked *wh*-in-situ, or those like Reinhart's, adopting choice functions for all *wh*-in-situ, make similar distinctions. A dichotomy between two scope mechanisms is recognized, only one of which is considered sensitive to subjacency.[4] While there are substantive differences between the various positions, the point I would like to emphasize is that they share fundamental assumptions about the relation between possible answers and scope. To the extent that the argument for a particular property of abstract movement turns on the diagnostic of possible answers, and specification of values is linked to binding of a variable in argument position by an existential quantifier with scope over the propositional variable, it will also be of relevance in models employing alternative scope mechanisms. Although I will continue to talk in terms of movement much of what I say is intended to apply more generally.

1.1.4 Overview of the chapter

In the previous subsections I have tried to convey an idea of the central role that multiple-*wh*-questions play at the interface of syntax and semantics. In doing so,

I have introduced the two empirical phenomena that have been central in the analysis of multiple-*wh*-questions: Superiority effects and apparent violations of Subjacency. In the next subsection, I will broaden the empirical base by surveying languages in which multiple-*wh*-questions are formed differently from English. Section 1.2, therefore, has a primarily typological goal, after which the chapter takes up the task of examining the theoretical import of descriptive generalizations more closely. In doing so, it also tries to refine those generalizations.

Section 2 begins by noting that Superiority effects are not manifested in D-linked contexts and goes on to a survey of various accounts that have been given for the presence or absence of Superiority. It concludes by addressing the possibility of cross-linguistic variation in Superiority. Section 3 takes a closer look at subjacency violations typically associated with *wh*-in-situ. It begins by examining the nature of pair answers on which this view is based and goes on to elaborate the semantics required to derive them. It ends with a reassessment of the claims about subjacency.

It might be worthwhile, before proceeding further, to delineate the intended coverage of this survey. Using answers to questions as a guide, I confine my study of multiple-*wh*-questions to those whose appropriate answers require specification of values for more than one *wh*-expression. By this criteria, questions with the following schemata do not qualify as proper objects of this case study, if their appropriate answers give values for only one *wh*-expression:

(24) a. [. . . WH_1 . . . [. . . WH_2 . . .]]
b. [. . . WH_1 . . . [. . . WH_2 . . . t_1]]

(25) a. Who wonders when Mary will come?
b. ravi kyaa soctaa hai, ki meri kab aayegii — Hindi
Ravi what thinks that Mary when will come
(Dayal 1996a)

(26) a. Despre care$_i$ ştii [cine$_j$ t_j i-a povestit t_i]? — Romanian
about which you-know who to-him has told
'Which one do you know who told him about?'
(Comorovski 1989)
b. Ni xiang-zhidao [shei mai-le sheme]. — Chinese
you wonder who bought what (Huang 1982a)

Examples of the schema in (24a) are given in (25a–b). Example (25a) only requires information about the identity of wh_1. Example (25b) instantiates what is known as the Scope Marking or Partial *Wh* Movement construction, characterized by the fact that it appears, on surface at least, to seek for the identity of wh_2 only. The schema in (24b) is exemplified by the possibility in some languages of scoping out of a *wh*-island, whether at S-structure or LF. Sentence (26a) is a question about the fronted *wh* and although (26b) is ambiguous with regard to which *wh* takes matrix scope, only one of them can do so. Although I will mention such

cases in describing the cross-linguistic possibilities in the next section, and in other sections whenever relevant, I will not delve into issues raised by them. Scope Marking and *Wh* extraction out of islands are discussed in chapters 47 and 77, respectively, to which I refer the reader. I should also mention that this chapter should be read in conjunction with chapter 77, since there is substantial overlap between them.

*1.2 Cross-linguistic variation in multiple-*wh*-questions*

1.2.1 Non-fronting languages

English, the language I have used so far to illustrate the theoretical import of multiple-*wh*-questions, represents only one of three documented strategies for the formation of such questions. This section introduces the two other strategies, namely, the absence of fronting in some languages and the obligatory fronting of all *wh*-expressions in others. We will also briefly consider two other language types, those in which multiple-*wh*-questions are unattested and those in which *wh*-expressions are said to be optionally fronted. The section ends with a summary of some explanations that have been given for the existence of variation in (multiple) question formation across languages.

Let us begin with *wh*-in-situ languages which have played a crucial role in the development of syntactic theory. We will base our survey of such languages on Chinese and Japanese. The following illustrate simple multiple questions in the two languages respectively:[5]

(27) a. Shei mai-le sheme (ne)?
who buy-ASP what Q
b. Dare-ga nani-o katta ka?
who-NOM what-ACC bought Q
'Who bought what?'

(28) a. $[_{CP}\ WH_i\ WH_j\ [_{IP} \ldots t_i \ldots t_j \ldots]]$
b. $[_{CP}\ Q_{ij}\ [_{IP} \ldots WH_i \ldots WH_j \ldots]]$

The *wh*-expressions are in their base positions here, a fact that could be demonstrated more clearly if arguments other than the subject were being questioned.[6] Additionally, there is a morpheme identifying the clause as interrogative, either optionally or obligatorily. Broadly speaking, two proposals have been made about the interpretation of *wh* in these languages. One, schematized in (28a), treats *wh*-in-situ as moving at LF in order to be interpreted. Under this view, fronting and non-fronting languages differ only in the level at which movement takes place. The other view allows *wh*-expressions to remain in situ but interprets them via unselective binding, treating the Q-morpheme as the relevant operator. This is schematized in (28b).

I will begin by summarizing the key arguments for the movement approach, the reference point for which is Huang's (1982a) influential work on Chinese. It

is obvious that superiority effects cannot be discerned in simple questions, but Huang argued that ECP is nevertheless operative in the interpretation of *wh*-in-situ. In a context like (29a) where the matrix verb selects a +WH complement, it is possible for the object *wh*-in-situ to be interpreted with matrix scope, but not the adjunct. The availability of a wide-scope reading for the embedded object also reveals the other important property of LF movement that Huang argued for, namely, the insensitivity to syntactic islands. This is further shown by the possibility of a direct question interpretation for (29b), where the *wh*-expression is contained inside a complex NP:[7]

(29) a. Ni xiang-zhidao [Lisi zeme mail-le sheme]?
you wonder Lisi how bought-ASP what
'For what object x, you wonder how Lisi bought x?'
*'For what manner x, you wonder what Lisi bought in manner x?'
b. Ni zui xihuan [piping shei de shu]?
you most like criticize who REL book
'For which x, you like the book that criticizes x?'

Huang's characterization of the interpretive possibilities of *wh*-in-situ has been challenged on the basis of Japanese by Nishigauchi (1986, 1990) and Choe (1984). Nishigauchi argues that although the Japanese counterpart of (29b) does have a direct question interpretation, the Japanese translation for (29a) can only be understood with both embedded *wh*-elements taking narrow scope:

(30) a. Tanaka-kun-wa [Mary-ga doko-de dono hono-o katta]- ka
Tanaka-TOP Mary-NOM where which book-ACC bought Q
sitte-imasu ka?
know Q
'Does Tanako know where Mary bought which book?'
*'For which book x, does Tanako know where Mary bought x?'
b. Kimi-wa [dare-ga kai-ta] hono]-o yomi masi-ta ka
you-TOP who-NOM write book-ACC read Q
'For which x, you read the book that x wrote?'

(31) $[Q_i\ [_{DP}\ who_i\ [book\ that\ t_i\ wrote]]_j\ you\ read\ t_j]$

Nishigauchi takes (30a) as evidence that the scope of *wh*-in-situ is constrained by subjacency. This is captured in the unselective binding approach he adopts by requiring *wh*-in-situ to be bound by the closest Q-operator. The apparent wide-scope interpretation of (30b), he suggests, is due to local movement of the *wh*-in-situ to a DP adjoined position. Binding of the *wh* by the Q operator becomes possible after large-scale Pied-Piping of the DP, as shown in (31).[8]

The difference between Chinese and Japanese *wh*-in-situ has been studied by Aoun and Li (1993a) and Tsai (1994b), who argue in favor of unselective binding also for Chinese but locate the difference in the domain within which such

binding must take place in the two languages. A different account of the facts is given by Watanabe (1992a), who maintains that LF *wh*-movement is not subject to subjacency, positing S-structure movement of an abstract *wh*-element in Japanese to account for the *wh*-island effect noted by Nishigauchi.

As we see, the languages under consideration make a significant contribution to our understanding of the syntactic principles governing scope assignment for *wh*-in-situ. The issue of whether Subjacency applies to *wh*-in-situ, even in languages like Japanese, is not a settled question. Watanabe (1992a) and Dayal (1996a) both note that conclusions about subjacency have to take into account the fact that introducing a *wh* in the matrix clause in structures like (30a) has a dramatic effect. Example (32), like its English counterpart, readily allows for an answer pairing individuals with books:

(32) Dono sensei-ga [Mary-ga doko-de dono hono-o katta]- ka
which professor-NOM Mary-NOM where which book-ACC bought Q
sitte-imasu ka?
know Q
'For which professor x and book y, does x know where Mary bought y?'

In section 3 we will return to the question of subjacency effects with *wh*-in-situ, from the perspective of a more refined understanding of the role of possible answers in diagnosing scope. The brief discussion here lays out the basic facts that have been reported in the literature.

1.2.2 Multiple-fronting languages

Let us turn now to the other end of the spectrum, to languages with multiple *wh*-fronting. The primary question posed by the possibility of multiple fronting is whether all the *wh*-elements are in their final scope position in these languages or whether they move to peripheral positions within the clause. In (33a) all *wh*-expressions are in [Spec, CP] position, in (33b) they are adjoined to IP. The structure in (33c) represents a position in between where one *wh* occurs in Spec while the others are adjoined to IP:

(33) a. $[_{CP}\ WH_i\ WH_j\ WH_n \ldots [_{IP} \ldots t_i\ t_j\ t_n \ldots]]]$
b. $[_{IP}\ WH_i\ WH_j\ WH_n \ldots [_{IP} \ldots t_i\ t_j\ t_n \ldots]]]$
c. $[_{SPEC,\ CP}\ WH_i\ [_{IP}\ WH_j\ WH_n\ [_{IP} \ldots t_i\ t_j\ t_n \ldots]]]$

Various authors have argued for these possibilities, but we will base our survey of multiple-fronting languages on Rudin (1988b), who argues that multiple-fronting languages instantiate either (33a) or (33c). Her study focuses on Polish, Serbo-Croatian, Czech, Bulgarian (all Slavic languages), and Romanian (a Romance language) (see also Comorovski 1989, 1996). Rudin claims that in Bulgarian and Romanian, all *wh*-expressions move into Spec, while in Serbo-Croatian, Polish, and Czech, one *wh* moves into Spec while the others adjoin to IP. She classifies the first set as +MFS (Multiply Filled Spec) language and the second set as –MFS

language. I give examples below from Bulgarian to represent +MFS languages and Serbo-Croatian to represent the –MFS languages. I abstract away from a discussion of internal differences among the languages of each group:[9]

(34) a. Koj kogo vižda?
who whom sees
'Who saw whom?'
b. *Koj vižda kogo?

(35) Ko koga vidi?
who whom sees
'Who sees whom?'

Rudin identifies four properties distinguishing the two types of language, which she claims follow from the proposed distinction in landing sites. Only +MFS languages allow multiple *wh*-extraction from a clause and countenance *wh*-island violations. Only –MFS languages allow the insertion of clitics, parentheticals, adverbs, etc. after the first *wh*-expression and allow the *wh*-expressions to be in any order.

Consider the possibility of multiple extractions:[10]

(36) Koj_i kude_j misliš [če e ostišul t_i t_j]?
who where think-2s that has gone
'Who do you think that went where?'

(37) a. Ko_i zelite [da vam šta kupi t_i]?
who want-2p to you what buy-3s
'Who do you want to buy you what?'
b. Šta_i zelite [da vam ko kupi t_i]?
what want-2p to you who buy-3s
'Who do you want to buy you what?'

(38) $[_{CP}\ WH_i\ WH_j \ldots [_{CP}\ [_{SPEC,\ CP}\ t_i'[t_j']] \ldots t_i\ t_j \ldots]]]$

Since the matrix verb selects a –WH complement, both *wh*-expressions must take matrix scope. This happens obligatorily at S-structure in Bulgarian. In Serbo-Croatian, however, only one embedded *wh* can be fronted. The other *wh* must occur in the preverbal focus position. This is analogous to English, though it is possible to front the object *wh* as well as the subject *wh* without any apparent superiority effect. Rudin argues that languages that allow multiple *wh*s to adjoin to [Spec, CP] at S-structure (option 33a) provide an escape hatch for multiple *wh*-expressions to move through without violating subjacency, as shown in (38). Languages that adopt IP-adjunction for all but one *wh* instead (option 33c) encounter a subjacency violation if multiple *wh*s are extracted.[11]

This difference in adjunction sites, she notes, also accounts for the fact that nothing can intervene between the first *wh* and other *wh*s in Bulgarian but may

do so in Serbo-Croatian. In (39) the auxilliary obligatorily follows all the *wh*-expressions. In (40), on the other hand, it must follow the first *wh*-expression. Taking the auxiliary to be in C^0 accounts for the distribution. Similar arguments are made on the basis of adverbials and parentheticals:

(39) Koj (*e) kakvo (*e) na kogo e dal?
who what to whom has given

(40) Ko je što (*je) kome (*je) dao?
who has what to whom given
'Who gave what to whom?'

A related difference is in the order of fronted *wh*-expressions. In Bulgarian it is fixed. (39) instantiates the only permissible sequence for this sentence. In Serbo-Croatian, (40) shows one of six possible orders. Rudin points out that the restriction in fronting in Bulgarian mirrors superiority effects in English and suggests that Bulgarian *wh*-words occupy the same position at S-structure that English ones occupy at LF, namely [Spec, CP]. The first *wh* moves to Spec while the others adjoin to it, adjunction being to the right. It is therefore expected that restrictions on fronting should be correlated in the two languages even though they differ in the level at which *wh* movement takes place. The absence of superiority effects in Serbo-Croatian does not follow from its being a –MFS language (see section 2). The survey here indicates the relevance of these languages to a theory of syntactic movement.

*1.2.3 Languages without multiple-*wh-*questions*

The survey of typological variation would not be complete without noting that multiple-*wh*-questions are not universally available. The two best-known examples of languages that do not allow multiple-*wh*-questions are Irish, discussed in McCloskey (1979), and Italian, analyzed by Calabrese (1984).

McCloskey notes that (41a, b) are unacceptable in Irish and Calabrese gives (42) for Italian:

(41) a. *Cé aL rinne caidé?
who COMP did what
'Who did what?'
b. *Caidé aL thug sé do cé?
who COMP gave he to who
'What did he give to whom?'

(42) a. *Chi ha scritto che cosa?
'Who has written what?'
b. *Chi è partito quando?
'Who left when?'
c. *Quale ragazza ha dato un bacio a quale ragazzo?
'Which girl gave a kiss to which boy?'

(43) a. *MARIO ha scritto una LETTERA, (FRANCO un ARTICOLO, CARLO un LIBRO).
'Mario has written a letter.'
b. *FRANCO è partito alle CINQUE.
'Franco has left at five.'
c. *SANDRA ha dato un bacio a CARLO.
'Sandra gave a kiss to Carlo.'

According to McCloskey, multiple *wh* in Irish is impossible because Irish *wh*s are not generated in argument position. Instead they select for S' (CP), later followed by deletion of a pronoun in argument position. As he notes, however, to derive the absence of multiple-*wh*-questions, it would have to be stated that the selected S', CP be non-interrogative.

Calabrese correlates the absence of multiple-*wh*-questions in Italian with its disallowing sentences like (43), which have multiple focus and, intuitively, would form appropriate answers to (42).[12] His view is that *wh*-expressions are marked with a focus feature, which can only be assigned in the postverbal position in Italian. Thus, multiple-*wh*-questions are ruled out because such marking is necessarily restricted to one per clause.

McCloskey's and Calabrese's proposals locate the absence of the relevant forms to language specific properties (see below for Adams 1984 on this). Unfortunately, these proposals have not been pursued in subsequent literature and the theoretical implications of languages without multiple-*wh*-question remain largely unexplored. Legendre et al. 1998 discuss, for example, consequences of such languages for OT syntax. The question posed by the existence of such languages is what the optimal (hence grammatical) structure in Italian would be for the LF 'Who ate what?' They point out that the impossibility of any such structure shows that members of the candidate set are not determined on the basis of shared LFs, as in Grimshaw (1997b).

1.2.4 Optional-fronting languages

A question that might be worth addressing here is whether there are languages in which *wh*-fronting is optional. Though such languages have been reported, they do not intersect with strategies for multiple *wh*-formation in interesting ways. A familiar example of an optional-fronting language is French, but multiple-*wh*-questions in French are formed analogously to English. Furthermore, the option of having *wh*-in-situ in single-*wh*-questions is restricted to root clauses. French is therefore typically classified as a fronting language. Examples of languages considered to have true optional fronting are Bahasa Indonesian (Saddy 1991), Egyptian Arabic (Wahba 1991), and Palauan (Georgopoulos 1991b). However, the possibility of fronting in these languages is restricted to one *wh*-expression and there appear to be no superiority type effects, typical of movement to [Spec, CP]. Cheng (1997) provides evidence to argue that the apparent movement is, in fact, an instance of clefting and classifies these languages as in-situ. At any rate, no language has been reported in which there is the option of leaving all

wh-expressions in situ or moving all to [Spec, CP], that is, an optional-multiple-fronting language. We assume, therefore, that optional movement cross-linguistically is either scrambling (which can affect all *wh*-expressions) or clefting (which is restricted to a single *wh*-expression). In either case, the principles governing such movement would not be limited to *wh*-expressions but would apply to non-interrogative arguments as well.

1.2.5 Explanations for typological variation

In concluding our introduction to the multiple-*wh*-question phenomenon, let us consider how the attested variation in question formation strategies fits into the picture of universal grammar. As in other studies of typological variation, the goal is to derive differences on the basis of a few parametric choices.

The most worked out proposal has been made by Cheng (1997) and I will discuss that first. According to Cheng, all languages are required to distinguish interrogative clauses from non-interrogative ones at S-structure but they may differ with respect to how they do so. The Clausal Typing Hypothesis draws on the idea that a language may choose to mark interrogative clauses by the presence of a Q-morpheme in C^0, or by movement of a *wh*-expression to a [Spec, CP] from where C^0 can be marked +WH via Spec–Head agreement. Combined with principles of economy, this predicts that languages with Q-morphemes will be *wh*-in-situ languages since there would be no motivation for overt movement at S-structure. Languages without such morphemes would be forced to move one *wh* to [Spec, CP]. Languages like Chinese and English instantiate the two possibilities admitted by this approach. Multiple-fronting languages like Bulgarian and Serbo-Croatian, however, are not predicted by this approach since only one *wh* movement can be forced by the requirement for Clausal Typing. An auxiliary explanation is therefore called for to account for movement of the other *wh*-expressions.[13]

Cheng points to the fact that in the languages known to have multiple fronting, indefinites are formed by adding an affix to *wh*-expressions. From this she concludes that *wh*-expressions have a null interrogative determiner. Given that these languages lack Q-morphemes, one of the *wh*-expressions must move to [Spec, CP] for clausal typing. The motivation for movement of the other *wh*-elements, however, is independent of requirements of clausal typing. It is forced instead by the need for the null determiner to be licensed at S-structure, for which it must establish a local relation with the C^0_{+WH}. Adjunction to [Spec, CP] or to IP both qualify as governed positions, accounting for Rudin's distinction between +MFS and –MFS languages.

Another proposal for the existence of different strategies in question formation is presented by Adams (1984) and, following her, Rudin (1988b). This approach combines two standard views about parametric variation in *wh*-movement. One idea is that all languages require *wh* movement for interpretation but they differ in the level by which such movement must take place, an idea for which Cheng's Clausal Typing Hypothesis provides the motivation. This allows for the broad distinction between *wh*-movement and in-situ languages. The other is that

languages may or may not have a filter against multiple *wh*-words in Spec, originally formulated as the filter against Doubly Filled Comp. Though typically languages are expected to vary on this filter only at S-structure, Adams extends it further, arguing for a more general version of it: *[$_{\text{COMP/Spec, CP}}$ α COMP/Spec, CP] at level X of the grammar. By barring adjunction at LF as well as S-structure, she derives the fact that languages like Irish and Italian do not have multiple-*wh*-questions and by allowing adjunction at S-structure and LF, the fact that Bulgarian and Serbo-Croatian require multiple fronting.[14]

Rudin, adopting Adams's proposal, notes that although it works straightforwardly for +MFS languages, the status of fronting in –MFS languages requires further elaboration. She takes the fact that only one *wh* moves into Spec to be evidence that such languages are like English, and unlike Bulgarian and Romanian, in enforcing the filter at S-structure. To drive the distinction between English which leaves the other *wh*-words in situ and –MFS languages that require obligatory adjunction to IP, Rudin suggests that some languages may not allow LF movement to take place from A-positions. While this is needed to complete the account, it should be noted that this part of the proposal remains quite speculative.

In concluding this section, I would like to point out that explanations for cross-linguistic variation would have to be modified once alternative scope-assignment possibilities are admitted. For example, under Reinhart's proposal, non-multiple-*wh* languages cannot be derived by the Doubly Filled Comp Filter applying at S-structure and LF alone. Unless it is also stated that the language cannot interpret *wh*-expressions via choice functions, the possibility of *wh*-in-situ remains open. In the case of –MFS languages, Reinhart's proposal could open up an alternative explanation for obligatory IP adjunction. If such languages had the Doubly Filled Comp Filter at S-structure but not LF, it would allow movement of multiple *wh* at LF. Rudin's proposal that LF movement could only be from A'-positions, forcing partial movement at S-structure, could be motivated by positing a language specific ban against choice functions. No doubt, more work would have to be done to see whether such an approach would hold up against other considerations, such as Reinhart's theoretical objection to LF movement within a minimalist framework. And at the empirical level, it would have to be shown that regular indefinites in these languages behave differently from languages in which choice functions exist, a not too promising prospect. My goal here in making these suggestions is not to present them as serious proposals but merely to indicate how developments in the semantics of questions can impact on typological explanations.

2 Superiority effects

2.1 Amelioration under D-linking

In the previous section, I isolated two empirical properties of multiple-*wh*-questions – Superiority effects and Subjacency violations – and outlined in broad terms the possible cross-linguistic variation in the formation of multiple-*wh*-questions. I

would now like to take a closer look at these empirical properties and their theoretical import. The goal of this section is to probe the nature of Superiority effects, leaving Subjacency violations for section 3. We will begin our survey of Superiority by discussing the notion of D-linking, a condition under which such effects seem to be canceled. The impact of D-linking is shown for languages like English where one *wh*-expression is fronted, as well as for languages like Bulgarian where all such expressions move.

An important observation about Superiority is that the effects do not survive if the *wh*-expressions are changed from a monomorphemic *who*, *what*, etc. to a complex phrase of the form *which N*. These effects were noted by Katz and Postal (1964) and Bolinger (1978), but the first extensive discussion is due to Pesetsky (1987a):

(44) a. Who read what?
b. *What did who read?
c. Which book did which man read?

(45) a. Who did you persuade to read what?
b. *What did you persuade who to read?
c. Which book did you persuade which man to read?

A priori, the difference in acceptability could be due to a syntactic or a semantic difference. A possible syntactic difference might be that *which* is a specifier while *who/what* are heads. Pesetsky, however, rejects this possibility, pointing to the fact that *how many*, which would also be classified a specifier, displays superiority effects:

(46) a. I need to know how many people$_i$ t_i voted for whom.
b. *I need to know who(m)$_j$ how many people voted for t_j.

Pesetksy argues that the difference in superiority effects is due to a lexical dichotomy between *wh*-words, depending on whether they refer to a given set of entities in the context of utterance. While *which* phrases appear to bear the relevant relation to discourse inherently, monomorphemic *wh*-expressions can lend themselves to the relevant D-(discourse) reading in appropriate contexts. When they do, Superiority effects are not manifested, as shown in the following ((47a) is from Bolinger):

(47) a. I know what just about everybody was asked to do, but *what* did *who* (actually) do?
b. I know that we need to install transistor A, transistor B, and transistor C, and I know that these three holes are for transistors, but I'll be damned if I can figure out from the instructions *where* what *goes*.

The correct generalization, then, is that the Superiority condition applies to non-D-linked *wh* only or, alternatively, that D-linked *wh* are exempt from the

Superiority Condition. Pesetsky argues that the lexical distinction between two types of *wh*s correlates with a difference in methods of scope assignment. Non-D-linked *wh*s take scope via movement and are subject to the normal constraints. D-linked *wh*s get bound by unselective Q-operators (à la Choe and Nishigauchi) and are exempt from those constraints.[15] This is illustrated below:

(48) a. $[_i$ who$_i$ what$_j$ [t$_i$ read t$_j$]]
b. [Q$_i$ which book$_j$ [which man$_i$ read t$_j$]
c. **Nested Dependency Condition/Path Containment Condition:**
If two *wh*-trace dependencies overlap, one must contain the other.

In (48a) both *wh*-words move, being non-D-linked, violating (48c). In (48b), however, there is only one dependency at issue. The other *wh*-word being interpreted in situ via unselective binding. Monomorphemic *wh*-words, in contexts like (47), are interpreted similarly. Note that under this view, it is the D-linking of the *wh*-word in situ that is critical in the amelioration of Superiority effects. As pointed out to me by Chris Barker, however, (48b) is degraded if *which man* is replaced by *who*, a fact unexplained by Pesetsky's account.

Although Pesetsky's distinction has a semantic–pragmatic basis, the fact that *which* NPs are exclusively D-linked provides a diagnostic which he uses to argue for a third type of *wh*-expression. Since *the hell* in (49) is compatible with *what* but not *which* it is argued to be aggressively non D-linked:

(49) a. What the hell book did you read that in?
b. *Which the hell book did you read that in?
c. ?What the hell book did which man read?

Given his claim that only D-linked *wh* can be interpreted in situ, the fact that aggressively non D-linked *wh*-expressions exist provides a new tool for distinguishing moved vs. non-moved *wh*-expressions in languages. Sentence (49a), under this view, would be a question requiring obligatory movement. It should be noted, however, that this kind of expression does not readily occur in multiple-*wh*-questions. The question in (49c), to the extent that it is acceptable, does not lend itself to a multiple-pair answer and has the feel of an echo question. This, as far as I can see, does not follow from the account presented. Thus, some care needs to be taken in using such expressions to diagnose obligatory movement.

Pesetsky's identification of the role of D-linking in redeeming Superiority violations has been extremely influential in further developments in the theory of *wh*-scope phenomenon. It is worth noting, however, that the aspect of his account that has held up is the correlation between *which* phrases and non-canonical scope, not the claim that such expressions are interpreted in situ. A potentially important piece of evidence with regard to the status of D-linked phrases and (non)-movement comes from multiple-fronting languages. Pesetsky cites Wachowicz's (1974) discussion of Polish as corroborating the prediction made by

his theory that D-linked *wh*-expressions may be exempted from fronting. But these facts have not gone unchallenged (see Cheng 1997 for discussion).

Doubts about a non-movement analysis for D-linked *wh*-expressions surface when one considers Comorovski's (1989, 1996) discussion of multiple-fronting language. Recall Rudin's observation that +MFS languages impose a strict restriction on the order of *wh*-words (cf. 34 above) akin to the Superiority condition in English. Comorovski shows that this restriction is relaxed if the *wh*-words are D-linked. The following Romanian examples illustrate this point:

(50) a. [Pe care$_i$ cine$_j$ [t$_j$ l$_i$ a văzut t$_i$]]?
which-ACC who him has seen
'Which one was last seen by whom?'
b. *[Ce$_i$ cine$_j$ [t$_j$ a văzut t$_i$]]?
what who has seen

(51) a. [Despre care$_i$ cine$_j$ [t$_j$ ţi a vorbit t$_i$]]?
about which who to-you has told
'Who told you about which one?'
b. *[Despre ce$_i$ cine$_j$ [t$_j$ ţi a vorbit t$_i$]]?
about what who to-you has told

Comorovski also notes that in Romanian (and Bulgarian), extraction out of *wh*-islands are only acceptable under D-linking:

(52) a. [Despre care$_i$ [ştii [cine$_j$ [t$_j$ i a povestit t$_i$]]]?
about which you-know who to-him has told
'Which one do you know who told him about?'
b. *[Despre ce$_i$ [ştii [cine$_j$ [t$_j$ i a povestit t$_i$]]]?
about what you-know who to-him has told

It is clear from Comorovski's description of the facts that D-linking is a significant factor in overriding restrictions on fronting but not in making fronting itself unnecessary. This is corroborated in subsequent work on multiple fronting by Richards (1997). Of course, it should be noted that Pesetsky's claim that D-linked *wh* can be interpreted via unselective binding without movement does not commit him to a non-movement analysis. He addresses, for example, the question of why English single-*wh*-questions require fronting by appealing to a language-specific need for the Q-morpheme to be triggered by the presence of a *wh*-word in Spec. Similarly, multiple fronting of D-linked expressions could be motivated on the basis of their status as polarity items requiring a local relation with the Q-operator, as proposed by Cheng (1997). However, facts like (50–52) do strike a cautionary note against a simple correlation between D-linking and non-movement. Setting this aside, the role of D-linking as a factor in the formation and interpretation of multiple-*wh*-questions is generally accepted as having cross-linguistic validity.

2.2 Explanations for superiority

2.2.1 Within the Principles and Parameters framework

With the caveat about D-linking in place, let us turn to explanations of the basic Superiority phenomenon. The first explanation is found in Chomsky (1973), who explained it by positing the Superiority Condition. In combination with strict cyclicity, (53) derives not only the asymmetries observed in fronting but also *wh*-island effects:

(53) **Superiority Condition:**
No rule can involve X,Y in the structure . . . X . . . [$_{\alpha}$ . . . Z . . . WYZ . . .], where the rule applies ambiguously to Z and Y and Z is superior to Y.

Though the condition was essentially a description of the phenomenon in structural terms, it served to bring Superiority into theoretical center stage. Syntactic theory has since then grappled with this problem at every stage of its development. Instead of trying faithfully to summarize the many explanations that have been offered over time, I will try to highlight those analyses that have been particularly influential. Taking the Principles and Parameters model as a landmark, we can identify three distinct approaches to Superiority. As already discussed in section 1.1.2, a leading view of the phenomenon takes ECP as regulating fronting possibilities. Another proposal, discussed above (due to Pesetsky 1987a), takes the relation between two dependencies as critical to the explanation. A third approach, advocated by Aoun et al. (1987), relates superiority to Binding Theory.

The ECP-based account has already been shown to deliver the basic Superiority effect, namely, that, given a multiple-*wh*-question with one lexically governed argument and one not so governed, it is the latter that will be fronted. Here I would like to indicate some further issues that arise as a consequence. The approach predicts, for example, that a multiple-*wh*-question with two *wh*-expressions that are not lexically governed will be ungrammatical. The COMP-indexing mechanism will ensure that the overtly fronted *wh* will antecedent govern its trace but the other trace will necessarily remain ungoverned. This is shown in (54a, b):

(54) a. *How did John go where?
b. *Where did John go how?
c. Who went where?

One problem that this approach encounters is the determination of the class of *wh*-expressions that are lexically governed. In particular, the status of locative and temporal expressions, *where* and *when*, is an issue. The unacceptability of (54a) suggests that the trace of *where* could not be lexically governed, but there are other cases, such as (54c), where the explanation for acceptability turns on the trace being lexically governed. Attempts have been made to address this

question but we will not discuss them at any length here, simply alerting the reader to the fact.

An interesting problem that surfaces under this approach has to do with the effect of additional *wh*-expressions. They seem to improve the violation, even when that additional *wh* does not leave a lexically governed trace. This problem, noted in passing by Chomsky (1981), was discussed at some length by Kayne (1984a). In fact, he discussed the effect of an additional *wh* in the context of Superiority violations. (55a, b) and (56a, b) show normal constraints on fronting. The questions in (55c) and (56c) show the improvement due to the presence of an additional *wh*:

(55) a. I'd like to know who hid what there.
b. *I'd like to know what who hid there.
c. ?I'd like to know what who hid where.

(56) a. I'd like to know who hid it where.
b. *I'd like to know where who hid it.
c. ?I'd like to know where who hid what.

(57) a. Let $\beta_1 \ldots \beta_j, \beta_{j+1} \ldots \beta_n$ be a maximal set of empty categories in a tree T such that $\exists\alpha, \forall j, \beta_j$ is uniformly bound by α. Then $\{\alpha\} \cup (\cup_{1\leq j\leq n} G_{\beta-j})$ must constitute a subtree of T.
b. *[[$_\alpha$ where] [[$_1$ who] [$_2$ [hid] [it]]
c. [$_2$[$_\alpha$ where] [$_2$ [$_1$ who] [$_2$ [$_2$ hid] [$_2$ what]]

According to Kayne, what is relevant in these cases is whether the fronted *wh* and the *wh*-element(s) in situ can satisfy connectedness, as defined in (57a). The unacceptable (56b), for example, has a representation as in (57b). The *wh*-in-situ, not being canonically governed, cannot form an appropriate sub-tree with the fronted *wh*-word. The additional *wh*-word in (57c) is governed by the verb. Being governed in the canonical direction for the language, its g-projection extends upwards, connecting with the fronted *wh*-word and properly including the subject *wh*-word in-situ. This is shown in (57c).

Kayne's augmentation of the ECP-based accounts remained till very recently the primary explanation for these facts. Note that this augmentation of the theory is distinct from the one argued for by Pesetsky (1987a) in that it seeks to regulate ordinary *wh*-expressions, not a special class of D-linked expressions. Similar augmentations would be required within theories adopting the Path Containment Condition (cf. 48c).

Aoun et al. (1987) propose an account that seeks to unify explanations for standard superiority effects and their absence with D-linked *wh*. It takes as its governing principle the Generalized Binding Theory of Aoun (1986):

(58) a. An anaphor must be X-bound in its governing category.
b. A pronominal must be X-free in its governing category.
c. An R-expression must be A-free. (where X = A or A′)

According to them, the critical difference between *wh*-expressions that do and those that do not display Superiority is in their structural complexity. Arguing that QR moves only the *wh*-quantifier, not its restriction, they posit the following representations:

(59) a. *What did who buy?
b. $[[_i \text{ what}_i \text{ who}_j] [t_j \text{ AGR}_j \text{ buy } t_i]]$

(60) a. Which book did which woman buy?
b. $[[_i \text{ which book}_i \text{ which}_j] [[t_j \text{ woman}]_k \text{ AGR}_k \text{ buy } t_i]]$

Taking traces to be anaphoric elements subject to Principal A, they note an important difference between the two cases with respect to whether AGR counts as an accessible Subject for the subject trace. In (59b) it clearly does, defining the governing domain within which the anaphor-trace must be A'-bound. In (60b), however, AGR is indexed with the NP containing the anaphor trace. The trace therefore does not have a governing domain and can remain free.

The Generalized Binding Account is meant to be a purely structural account of variation in superiority effects, potentially rendering Pesetsky's empirical generalization irrelevant to movement theory. As pointed out by Comorovski (1996), is it not clear whether this is so. She notes that cases claimed to show the irrelevance of non-D-linked Superiority violations, in fact, do carry presuppositions. Though the *wh*-words in (61) may not range over a set of familiar entities of the ordinary sort, they arguably range over a set of familiar kinds. She notes that a purely structural account of the phenomenon must meet the challenge of creating contexts showing this not to be the case. Recall that (46) above, where *how many N*, though complex, is shown to display superiority effects, makes the same point:

(61) Which type of book does which type of man read?

2.2.2 Economy-based accounts

A fundamental shift in the nature of the explanation for Superiority effects occurred with the advent of the Minimalist Program (Chomsky 1993, 1995c) and Optimality Theory (Prince and Smolensky 1993). The guiding idea behind the Principles and Parameters model was that movement was always available unless such movement resulted in a structure that violated some principle of grammar. In contrast, the intuition informing Minimalism was to take movement as undesirable, unless forced by some principle. This conceptual shift is marked by the replacement of Move α by Movement as Last Resort as a central tenet of syntactic theory.

Consider the explanation for Superiority proposed in Chomsky (1993). Movement is forced only when the morphological features of an expression need to be discharged under a feature-match with a functional category, as stated in the principle of Greed. Further, Procrastinate rates covert movement less costly than

overt movement. Finally, Shortest Move requires movement to be to the closest potential landing site where Greed can be satisfied. This means that *wh*-expressions, across and within languages, can differ in whether they have strong features that would force movement or weak features that could not trigger movement. Since only one *wh*-expression is fronted in English multiple-*wh*-questions, it follows that only one *wh*-expression carries strong features. The Superiority effect, then, reduces to a question about determining why subjects, rather than objects, in the basic case, must carry strong features. Before we look at the specifics of the explanation, it may be worth noting that *wh*-expressions that do not carry strong features will still need to be interpreted, either via covert movement or via choice functions, as argued by Reinhart (1997).[16]

To return to the question of Superiority, one approach is to take Shortest Move to apply transderivationally. As elaborated in Kitahara (1994) and Oka (1995), the optimal candidate is chosen from a set of convergent derivations having the same numeration and the same LF. Under this view, (62a) and (63a) belong in the same reference set since they have identical LFs. It is obvious that Shortest Move is respected in the former but not in the latter, specially if the choice-function analysis is adopted for interpreting *wh*-in-situ. Note that this requires constraints to hold globally:

(62) a. [who$_i$ [t$_i$ saw what]]
b. [what$_j$ who$_i$ [t$_i$ saw t$_j$]]
c. [Q$_j$ who$_i$ [t$_i$ saw t$_j$]]

(63) a. *[what$_j$ did [who see t$_j$]]
b. [who$_i$ what$_j$ [t$_i$ saw t$_j$]]
c. [Q$_i$ what$_j$ [t$_i$ saw t$_j$]]

An alternative possibility, mentioned in Chomsky (1993) and developed more fully in Chomsky (1995c), is to put the burden for movement on the properties of the functional category which is the target of movement, rather than on the moved expression. Given this view, *wh*-expressions can be thought of as a morphologically unified class. We start, then, with a C^0 that needs to attract a *wh*-expression to its Spec in order to satisfy its requirements, in effect replacing the notion of Move with that of Attract. Now, there is a natural sense in which the subject can fulfil this requirement more economically than the object. The Minimal Link Condition is built into the definition of Attract in such a way as to capture this intuition. Note that this approach to Superiority does not rely on a global application of the constraints. This line of thought has been fully explored in Kitahara (1997).

Accounts of multiple questions within Optimality Theory also play on the tension between formal requirements forcing fronting, such as Op-Spec, and a general preference against movement such as Stay (Grimshaw 1997b). By ranking Op-Spec > Stay, fronting of one *wh*-expression is forced. She discusses the paradigm in (64):

(64) a. What will they put where?
b. *What will where they put?

In (64a), OP-SPEC is violated by *where* while STAY is violated by *what*. In (64b), with *where* moving to an internal specifier position, *where* violates STAY in addition to OP-SPEC. (64a) is the optimal candidate since it involves one less violation of STAY. Although Superiority effects per se are not discussed there, it should be clear how optimal candidates can be identified on the basis of ranked constraints. Some interesting correlations between Minimalist accounts and OT accounts are made in essays contained in Barbosa et al. (1998), in particular Ackema and Neeleman and Legendre et al. Ackema and Neeleman (1998), for example, derive the basic superiority effect through the interaction of three ranked constraints Q-marking (requiring a *wh* in [Spec, CP]) ≫ Stay (prohibition against movement) ≫ Q-Scope (requiring all *wh*-expressions to front). The tableau in (65) shows how the explanation works. It should be obvious how differences in ranking can result in different cross-linguistic possibilities for fronting.

(65)

	Q-Marking	Stay	Q-Scope
☞ Who has seen what		******	*
What has seen who		*******!	*
Who what has seen		*******!****	
Has who seen what	*!	***	**

There are further interesting developments within economy-driven approaches that we will discuss in section 2.3 but before doing that I would like to turn to a somewhat different view of the meaning of *wh*-expressions that has proved influential in recent literature and discuss its impact on studies of superiority.

2.2.3 *Accounts based on functional* wh

Another recent approach to Superiority effects takes its cue from the semantics of questions with quantifiers. An observation in the literature, dating back to Kiss (1993) and Comorovski (1989) is that multiple-*wh*-questions require a list answer in which every member of the subject term is paired but no such requirement is imposed on the object. Consider the following contexts given in Dayal (1996a). In (66a) the fact that there is a woman who will not get paired does not seem to affect the felicity of the question, but in (67) the fact that a man will not get paired makes the question infelicitous:

(66) a. **Speaker A:** We're organizing singles tennis games between men and women. There are three men interested in playing against women, namely Bill, Mike and John. But there are four women interested in playing against men, namely Mary, Sue, Jane and Sarah.
b. **Speaker B:** So, which man is playing against which woman?

(67) a. **Speaker A:** We're organizing singles tennis games between men and women. There are four men interested in playing against women, namely Harry, Bill, Mike and John. But there are only three women interested in playing against men, namely Mary, Sue and Jane.
b. **Speaker B:** So, which man is playing against which woman?

Though the judgments are delicate there is a clear contrast which holds up against a wide range of data. This property of multiple-*wh*-questions has been explained by Hornstein (1995), Comorovski (1996), and Dayal (1996a), working independently, in terms of Chierchia's (1993) explanation for the subject–object asymmetry in questions with quantifiers. A question with a universal quantifier in subject position allows functional answers and list answers while a question with the universal in object position allows neither:

(68) a. Which woman does every man like?
b. (Every man likes) his mother.
c. John likes Mary and Bill likes Sue.

(69) a. Which woman likes every man?
b. *His mother (likes every man).
c. *Mary likes John and Sue likes Bill.

Building on the view in Engdahl (1986) that *wh*-expressions can quantify over functions from individuals to individuals, Chierchia argues that functional *wh*-expressions leave a doubly indexed functional trace. The subscripted i-index identifying it with the *wh*-operator is the functional variable. The superscripted a-index, which can be bound by a c-commanding argument, is an individual variable. Intuitively, the a-index corresponds to the pronoun in the functional answer and may be taken as having a pronominal character. The LF and interpretation for the functional reading of (68a), under this account, is given below:

(70) a. [which woman$_i$ [every man$_j$ [t_j likes t_i^j]]]
b. $\lambda p \exists f[\forall x(\text{woman}'(f(x))) \wedge p = \forall y[\text{man}'(y) \rightarrow \text{like}'(y, f(y))]]$
$\Rightarrow$ {Every man likes his mother, Every man likes his wife, Every man likes his girlfriend}

Wh-quantification here is over variables whose possible values are functions to a set of women, such as *mother-of*, *wife-of*, etc. The functional reading of the question denotes the set of propositions, each of which states that every man likes the individual he stands in some functional relation to. One of these propositions will be the true answer in a given context. The list answer, roughly speaking, is the graph of a function, listing for each member of the domain set the individual who stands in the relevant functional relation to that individual. We will defer further details of the implementation till section 3, except to note that the universal term which provides the domain set has to take scope outside the propositional variable p.

Turning to (69), Chierchia notes that for functional binding to take place an LF like (71a), in which the quantifier c-commands the *wh* trace, would be needed. Structure (71a) is ruled out as a case of weak-crossover violation since the variable t_j is coindexed with a pronoun to its left, the a-index of the *wh*-term:[17]

(71) a. *[which woman$_i$ [every man$_j$ [t^j_i likes t$_j$]]]
b. [which woman$_i$ [t$_i$ [every man$_j$ [likes t$_j$]]]

The well-formed LF in (71b) has the quantifier adjoined to VP from which no functional binding can take place. The absence of list answers to questions with quantifiers in object position follows since list answers under this approach are derivative on functional answers. The only available answer here is therefore the individual answer.

Hornstein, Dayal, and Comorovski each point out that if multiple-*wh*-questions can encode the kind of functional dependencies that questions with quantifiers can, in a question with two *wh*-expressions, the a-index of one *wh* can be bound by the other. Taking an example like (72a), there would be two potential LFs for it, only one of which would be syntactically well-formed:[18]

(72) a. Which man saw which woman?
b. [$_{CP}$ [which woman$_j$ [$_{CP}$ which man$_i$ [$_{IP}$ t$_i$ like t^i_j]]]]
c. *[$_{CP}$ [which woman$_j$ [$_{CP}$which man$_i$ [$_{IP}$ t^i_i like t$_j$]]]]

In (72b) the subject term binds the a-index of the object term and there is no problem with this binding. In (72c) the object term binds the subject term but this involves a WCO violation since *which woman* crosses over the pronominal a-index of *which man* in order to bind it. This provides a straightforward account of why it is the subject *wh* has the 'universal force' identified by Kiss and Comorovski. Dayal (1996a) also provides evidence showing that in languages where scrambling overcomes WCO violations, it is possible to get the universal reading for the scrambled object.[19] It is against this background that Hornstein and Comorovski develop their accounts of Superiority. Hornstein presents a number of cases showing the correlation between superiority effects and WCO as support for the general approach. The explanation can be demonstrated on the basis of a basic Superiority case like (73a). Given the Minimalist framework, the fronted *wh*-word is assumed to leave a copy in base position and one of them must be deleted before interpretation:

(73) a. What$_i$ [who buy what$_i$]?
b. What$_i$ [who^i_j buy t$_i$]
c. Who$_i$ [t$_i$ buy what^i_j]

(74) a. [What [who bought what]
b. [[who bought what]
c. [who [who bought what]
d. [who [t bought what]

Hornstein assumes that *wh*-words that bind syntactic variables can be interpreted as ranging over individuals, thereby providing the domain of the function. Full copies are interpreted functionally. Translating this into the current representation, this allows for two interpretive possibilities for the structure in (73a). The possibility in (73b), where we have a function from things to individuals who bought those things is ruled out as a WCO violation. The question that remains for Hornstein is why the possibility in (73c) is ruled out. This would require the steps in (74), deletion of the moved *wh*-word (74b), movement of the in-situ *wh*-word (74c), followed by deletion of its copy (74d). But, as he notes, a structure respecting superiority would yield this result more economically since it would require only two steps (74c and 74d). Thus, (73a) is either ruled out by WCO (74b) or blocked by a more economical derivation. There are further possibilities within the minimalist assumptions for deriving this effect considered by Hornstein, which I will not go into here.

Now, consider what happens when the *wh*-expressions are D-linked. The structure in (75b) shows that deleting the copy of the fronted *wh*-element and interpreting the expression in Spec leads to the familiar WCO violation, analogous to (73b) above. The key difference here, according to Hornstein, is that D-linked *wh*s do not have to be fronted in order to be interpreted as the domain term. Thus the derivation in (76) is viable. Crucially, there is no difference in the number of steps needed to interpret the structure regardless of whether the subject or the object is fronted:

(75) a. [which book [which man review which book]]
b. *[which book$_j$ [which man^j_i review t$_j$]]

(76) a. [which book [which man review which book]]
b. [[which man$_i$ review which book^i_j]]

Comorovski starts from a different premise. She points out that a list answer to a multiple *wh* requires the members of the domain set to be given. This says, in effect, that at least one *wh*-expression must be D-linked. Two questions arise at this point. Why is there no discernible D-linking for subjects in multiple-*wh*-questions respecting Superiority? What role does D-linking play in Superiority violations? Comorovski draws on the idea in Kuno (1982) that a multiple question is a request for information about pairs, where the question provides a sorting key for arranging that information. In general, subjects tend to carry old information and are natural sorting keys.[20] Fronting of an object *wh*-word is a signal for a change in the structurally encoded criterion for sorting. In functional terms, this means that the object *wh*-word sets the domain of the function:

(77) a. Which book did which man recommend?
b. [which man$_j$ [which book$_i$ [t^i_j recommend t$_i$]
c. [Its$_i$ author] recommended each book$_i$ / Each book was recommended by its author.

It remains to be explained, then, why there is no perceived WCO effect. Comorovski notes that backward anaphora is generally possible with universals like *each N*. What *each*-universals and *which* NPs share is the fact that they both carry existential presuppositions, the intuition driving the term D-linking. Taking the presuppositional nature of a *wh*-term to be criterial in over-riding WCO, Superiority violations are claimed to be predictable on the basis of their possible functional answer.

While Hornstein and Comorovski both take the functional *wh*-approach as a key element of the explanation, they end up with very different results. For Hornstein, the subject that has been crossed over by a D-linked *wh* remains the domain term but not for Comorovski. This difference is, in principle, testable. However, it should be noted that Hornstein's conclusion about the nature of the pairings permitted in a question with two *which* Ns does not accord with the intuitions reported in (66–67) above. For him, two D-linked phrases require the members of each term to be exhaustively paired so the direction of functional dependency is not predicted to make a difference. Comorovski, however, does predict that in acceptable cases of Superiority violation, it will be the object-*wh*-word that is exhaustively paired while the subject *wh* may or may not be. In unpublished work, Dayal (1994) reported that Superiority violations do result in a requirement of exhaustivity for the object *wh* but the judgments for the subject term were unclear. Similar effects seem to obtain for scrambled versions of multiple-*wh*-questions in languages like Hindi and Japanese, which is suggestive that the same points may be at issue (Dayal 1996a). It would be fair to say, however, that the semantic consequences of Superiority violations remain an open issue in functional and other accounts of multiple-*wh*-questions.

2.3 Typological variation in Superiority effects

2.3.1 Superiority in multiple-fronting languages

Having surveyed a range of explanations for Superiorty effects in English, let us return to the issue of ordering in multiple-fronting languages. Recall that the basic generalization in Rudin was that in +MFS languages, where all movement was to [Spec, CP], there was a strict ordering among the fronted *wh*-word while in the –MFS languages the order was free. This issue is taken up in Richards (1997) who proposes an explanation within the Minimalist framework.

Richards takes Bulgarian multiple-*wh*-questions such as (34), repeated below in (78), as his starting point. As shown in (78a), the first step in the derivation involves movement of the highest *wh*-word as an instance of Attract Closest. This is analogous to the English Superiority case. The fact that the second *wh*-word, when it moves, is 'tucked in' as in (79b) rather than extending the tree with an outer specifier as in (79c), is argued to be evidence that Shortest Move is in play:

(78) a. Koj kogo vižda?
who whom sees
'Who saw whom?'
b. *Koj vižda kogo?

(79) a. [$_{Spec}$ koj$_i$ [t$_i$ vižda kogo]]
b. [$_{Spec\text{-}1}$ koj [$_{Spec\text{-}2}$ kogo$_j$ [t$_i$ vižda t$_j$]]
c. *[$_{Spec\text{-}2}$ kogo$_j$ [$_{Spec\text{-}1}$ koj$_i$ [t$_i$ vižda t$_j$]]

Bošković (1997), however, extends Rudin's paradigm by noting that although there are strict restrictions on the leftmost *wh*-word, the order of other *wh*-expressions in Bulgarian is relatively free (see also Comorovski 1996). Thus, putting the direct object before the indirect object does not lead to ungrammaticality in (80b). The order of the tucked in *wh*-expressions appears to contradict Attract Closest:

(80) a. Koj na kogo kakvo dade?
who to whom what gave
b. ?Koj kakvo na kogo dade?

Richards explains this paradigm on the basis of a Principle of Minimal Compliance which he describes using the following metaphor. In a given structure, if one expression pays the taxes imposed on movement within that structure, other such expressions are exempted from paying those taxes. In this case, the second and the third *wh*-expressions are exempted from Attract Closest since the dues are paid by the first *wh*-word. As Richards notes, multiple-fronting-languages provide strong empirical argument against the claim in Chomsky (1995c) that each overt operation must extend the tree at its root.

Given that Richards argues for 'tucking in' of *wh*-expressions, the issue of Superiority violations under D-linking becomes relevant. He posits a Topic phrase above CP and allows D-linked *wh*-expressions to optionally have matching morphological features. This makes it possible for a D-linked object to move to the left of a subject. Picking up on these issues, Pesetsky (2000) proposes further refinements in the theory. According to him, *wh*-expressions may undergo three distinct types of movement: overt phrasal movement, covert phrasal movement, and feature movement. Adopting a single output syntax, Pesetsky locates the difference between overt and covert movement in pronunciation rules which target either the head or the tail of a movement chain. Feature movement, on the other hand, is the attraction of a morphological feature from within a phrase by some category. The full phrase, because it does not undergo any movement, is necessarily pronounced in situ. Crucial evidence from ACD phenomenon is presented for this three-way distinction but for reasons of space I will not go into those arguments here, confining myself to demonstrating how typological variations in multiple-*wh*-questions are derived under this approach. There are two other pieces that play a role in the explanation. Languages can differ in having multiple- or single-Spec Complementizers; only phrasal movement can satisfy multiple-Spec requirements. In multiple interrogatives with D-linked *wh*-words, this requirement is suspended or, alternatively, D-linking is compatible with single-Spec Complementizers. Pesetsky leaves this open.

Superiority effects in non D-linked questions and their absence in D-linked questions are explained as follows:

(81) a. Who $C_{m\text{-SPEC}}$ [___ saw whom] *phrasal movement of* who *due to* $C_{m\text{-SPEC}}$
b. Who whom $C_{m\text{-SPEC}}$ [___ saw ___] *phrasal movement of* whom *due to* $C_{m\text{-SPEC}}$
c. Pronunciation in English: S V O
d. Pronunciation in Bulgarian: S O V

(82) a. $C_{1\text{-SPEC(f)}}$ [f-which woman saw which man] *feature movement of* which woman *due to* $C_{1\text{-SPEC}}$
b. Which man $C_{1\text{-SPEC(f)}}$ [f-which woman saw ___] *phrasal movement of* which man *due to* $C_{1\text{-SPEC}}$
c. Pronunciation in English: O S V
c. Pronunciation in Bulgarian: O S V

In (81) phrasal movement of both *wh*-words is forced by the multiple-Spec requirement. This is suspended in the case of D-linking (82), making it possible for the subject to undergo feature movement. As would be obvious, the explanation for the absence of Superiority effects turns on the role of D-linking in allowing multiple *wh* interrogatives with single-Spec Complementizers. As noted by Pesetsky himself, one weakness in the proposal is that the crucial connection between the semantic property of D-linking and syntactic scope mechanism remains as elusive as in earlier accounts of the phenomenon.

Pesetsky also accounts for the fact that Superiority effects disappear in the presence of extra *wh*-words even without the benefit of D-linking. The relevant steps for a representative case are as follows:

(83) a. $C_{m\text{-SPEC(f)}}$ [f-who put what where] *feature movement of* who *due to* $C_{m\text{-SPEC}}$
b. What $C_{m\text{-SPEC(f)}}$ [f-who put ___ where] *phrasal movement of* what *due to* $C_{m\text{-SPEC}}$
c. What where $C_{m\text{-SPEC(f)}}$ [f-who put ___ ___] *phrasal movement of* where *due to* $C_{m\text{-SPEC}}$
d. Pronunciation in English: What did who put where?

Crucially, there are two other *wh*-expressions that can undergo phrasal movement to satisfy the $C_{m\text{-Spec}}$ requirement, leaving the subject *wh* to undergo feature movement.

More work has been done on multiple-fronting languages, such as Grewendorf (2001), that is worth exploring, but in the interest of space I will end my discussion here and turn briefly to a different problem having to do with the cross-linguistic applications of explanations for Superiority.

2.3.2 Languages without Superiority effects

As would be obvious, the new typology of *wh*-movement opens up new ways of explaining typological variation, and in this concluding subsection I will outline how languages which do not show Superiority effects are accounted for. One such case, mentioned in section 1, is the class of languages classified –MFS by Rudin; another is German. For a –MFS language like Polish, Richards (1997) takes Rudin's general approach that they do not involve movement to Spec of CP. In Richards's terms, this means that multiple specifiers at CP level, with their

characteristic 'tucking in' effect, are not created in languages like Polish. Instead, apparent cases of multiple-*wh* fronting are essentially movement to multiple specifiers of IP. Since each such position is equidistant to C, Attract Closest is satisfied by movement of any *wh* to [Spec, CP] position.

German displays a different paradigm in that both SVO and OVS order are acceptable, with S and O as *wh*-expressions, without the benefit of D-linking. Pesetsky explains this by locating the difference between English and German in the possibility of $C_{m\text{-}SPEC}$. According to him, German lacks this possibility. Then it follows that in a multiple-*wh*-question, only one *wh*-word needs to move to fulfill the requirements of $C_{1\text{-}SPEC}$. The other *wh*-word necessarily undergoes feature movement, making a derivation analogous to (82) acceptable.

This account of the absence of Superiority effects presents an alternative to an earlier proposal by Fanselow (1991, 1997). His basic idea was that the apparent Superiority violation in German OSV is preceded by scrambling of O to pre-S position. *Wh*-movement from a scrambled structure will respect economy only if the Object is moved. Fanselow draws on the following contrast as further evidence:

(84) a. Wer glaubte, daß der Peter ihr wen vorstellte.
who-ACC believed that the Peter-NOM her-DAT whom-ACC introduced
'Who believed that Peter introduced whom to her?'
b. ?*Wen glaubt wer, daß der Peter ihr vorstellte?

In (84b) the embedded object cannot occur to the left of the matrix subject. This is because to do so would first require the object to scramble long-distance to the pre-subject position and then the *wh*-element to move to [Spec, C]. Fanselow shows that such long-distance scrambling is not available out of finite clauses, providing independent evidence for the proposed reliance of Superiority violations on scrambling possibilities. This proposal has been critiqued by Pesetsky, to which I refer the reader.

We have seen that fronting possibilities in multiple-*wh*-questions have played a critical role in the development of syntactic theory. Within the Principles and Parameters model they provided evidence for the ECP and within Minimalism and Optimality Theory they are shaping the view of economy/optimality in language. While the issues touched upon in this section raise further questions worthy of exploration, we will conclude our survey of the theoretical issues related to the Superiority phenomenon and turn to the Subjacency phenomenon in the next section.

3 Subjacency and *wh*-in-situ

3.1 The diagnostic of possible answers

3.1.1 Single- vs. multiple-pair answers

In moving from a survey of issues surrounding Superiority to a survey of issues surrounding Subjacency, we shift from direct evidence in the form of grammaticality

judgments about fronting to indirect evidence about intuitions regarding possible answers. It would, therefore, be appropriate to begin by taking a closer look at the diagnostic of possible answers. As mentioned in section 1, a standard assumption in the literature is that possible answers specify values for all and only those *wh*-expressions that take matrix scope. In the case of simple single-*wh*-questions, the answer specifies values for one expression, in the case of multiple-*wh*-questions for two or more, as the case may be. Given this assumption, the fact that questions like (15) and (17), repeated below, give values for more than one *wh*-expression is indirect evidence that the *wh*-expression inside the island is able to take matrix scope in violation of Subjacency:

(85) a. Which person knows the man who wrote which book?
b. Bill knows the man who wrote *Aspects*.

(86) a. Which student knows where Mary bought which book?
b. Bill knows where Mary bought *Aspects* and Sue knows where Mary bought *LGB*.

Dayal (2002) notes that although both allow a paired answer, the form differs. (85a) lends itself only to a single-pair answer; (86a) can readily allow a multiple-pair. (It may be possible to force a multiple-pair answer to (85a) by constructing specific contexts, but nothing particular needs to be done to get such answers for (86a).) Similar scope taking mechanisms violating Subjacency could not be involved in both constructions. Before looking at the Subjacency cases, however, we will examine the distinction between single- and multiple-pair answers in the basic cases.

Multiple-*wh*-questions have been said to have three different readings: a list reading, a REF-Q reading, and an echo-Q reading. These readings were identified by Bolinger (1978), Wachowicz (1974, 1975), and Pope (1976), under various terms. The summary here is taken from Dayal (1996a), which relies on their observations as well as on the discussion in Comorovski (1989). To see the difference between the three, consider three situations in which the multiple-*wh*-question *Who cooked what?* can occur and the answers it admits in those situations.

Let us demonstrate the list reading first. Take a context in which there are several dishes on the table and the questioner knows several people who have cooked dishes. She asks (87a) and gets the response in (87b):

(87) a. Who cooked what?
b. John cooked the meat, Bill cooked the rice, and Sue cooked the vegetables.

As Wachowicz puts it, the information the questioner is interested in is the proper pairing between two given sets. This reading crucially presupposes that there will be at least two pairs in the list. This is what we are calling the multiple-pair reading.

Now, let us turn to the echo reading of the question. An appropriate context is one where the questioner only hears part of an utterance and wishes the utterance to be repeated. In the following, subscripting is supposed to indicate a string that is phonetically unclear:

(88) a. $_{\text{John}}$ cooked $_{\text{the meat}}$
b. Whó cooked whát?
c. John cooked the meat.

Echo questions can be distinguished from ordinary ones by their rising intonation.

Finally, consider REF-Questions, which ask for the identity of a unique pair of individuals, as opposed to a list of pairs. (88b), uttered in response to (88a), would have a REF-Q reading:

(89) a. He cooked something
b. Who cooked what?
c. John cooked the meat.

REF-Questions were classified by Wachowicz as a type of echo question but Pope shows that though they are similar to echo questions they are intonationally distinct. The *wh*-expressions do not need emphatic stress and are uttered with the same fall in intonation as ordinary questions. Further, they are not requests to repeat the information already provided in the discourse, but rather for an elaboration.

That REF-Questions differ from echo questions can also be shown by cases that are clearly not triggered by previous utterances. The questions in (89a) and (89b) can be asked without a particular context and be answered with just a single pair of individuals. All that is required is that the questioner know that only a single pair can be named in the answer. Question (90a), for example, pragmatically rules out a multiple-pair answer. Similarly, if there are only two individuals, only one of them can be the first to hit in (90b):

(90) a. Who killed Robert Kennedy when?
b. OK, who hit who first?

There are two approaches that have been taken to the distinction between single- and multiple-pair answers. One is to treat it as a pragmatic effect. Under this view, questions are able to yield multiple-pair answers but they are not restricted to them. Single-pair answers are simply a sub-case of the larger possibility. The other approach is to take this distinction as arising from the semantic representation of the question and in the next subsection we will look at the various proposals that have been made to derive this distinction. The reason for taking the semantic approach to this phenomenon seriously is that there are empirical effects that cannot be handled in a pragmatic approach. We have already seen evidence from two different domains about the nature of restrictions governing

possible answers. In section 2.2.3 we saw that proponents of the functional *wh*-approach have appealed to the intuition that in a multiple-*wh*-question only one *wh*-expression, the superior one, is exhaustively listed and at the beginning of this section we saw that there are constructions where a pair answer is possible, but not a multiple-pair answer. Once we understand the semantic moves involved in deriving the two possibilities, we will re-examine the phenomenon of Subjacency violations with *wh*-in-situ.

3.1.2 Deriving single- and multiple-pair answers

Higginbotham and May (1981) were the first to attempt an account of pair-list answers by proposing a semantic operation they termed 'absorption'. The goal of this operation was to provide a transition from uniqueness effects in single-*wh*-questions like (91a) to multiple-pair answers in (91b). Although their proposal has been widely accepted in the syntactic literature, the details of the semantic operation are somewhat difficult to decipher:

(91) a. Which man came to the party?
b. Which man knows which woman?

In this section I will present the account of the switch from uniqueness to list answers proposed in Dayal (1996a), which has the advantage of being embedded in the propositional theory of questions introduced in section 1.

Dayal based her account on the paradigm below, where (92a) requires a unique individual to be named in the answer, (92b), a plurality of individuals, while (92c) is neutral in this regard:

(92) a. Which man came to the party?
b. Which men came to the party?
c. Who came to the party?

(93) a. $\lambda p\ \exists x$ [man/men(x) and p = x came to the party]
b. {a came, b came, c came};
c. {a came, b came, c came, a+b came, a+c came, b+c came, a+b+c came}
d. $Ans(Q) = \iota p\ [p \in Q \wedge {}^{\vee}p \wedge \forall p' \in Q\ [{}^{\vee}p' \rightarrow p \subseteq p']]$

Adopting the view that the domain of individuals includes atomic entities as well as their sums, she makes the existential *wh*-quantifier sensitive to number morphology. Now, in the singular case, the question denotes the set in (93b), in the plural case the set in (93c).[21] Further, she defines the Answerhood operator, as shown in (93d), to pick out the maximally informative true proposition in the set, namely the one that entails all the others. In the singular case, there can be no entailment relation between the various members of the set so the question can be answered only if a unique proposition is true. In the plural case, however, there can be more than one true proposition since their conjunction can satisfy (93d). Although the semantics allows there to be only one true proposition in the

set, say *a came*, there is assumed to be an implicature that a plurality of individuals have the property in question. *Who* is taken to be like the plural case minus the plurality implicature.

Turning to multiple-*wh*-questions, it should be obvious that (93d) – if applied to the Hamblin sets – presented in section 1, for example – will yield single-pair answers. In section 2.2.3 we discussed the functional approach to multiple-*wh*-questions advocated by Hornstein (1995), Dayal (1996a), and Comorovski (1996). As argued by Dayal (1996a), the functional approach derives the intended effects only if two conditions are added to the proposal of Chierchia (1993). One is the Answerhood operation introduced above, the other is the requirement that each proposition in the set be a full graph of the function. Let us consider this with the help of a concrete example:

(94) a. Which man$_i$ likes which woman^i_j?
b. [Which woman$_j$ [Which man$_i$ [t$_i$ likes t^i_j]]]
c. $\lambda p\ \exists f_{<e,e>}$ [Dom(f) = man & Range(f) = woman & p = $\cap$ $\lambda p' \exists x$ [p'= like(x,f(x))]]
d. {a likes c and b likes d,
a likes c and b likes c,
a likes d and b likes d,
a likes d and b likes c}

The question is analyzed as involving a functional dependency respecting WCO, as in (94a). At LF we take the *wh*-in-situ to undergo A′ movement to [Spec, CP] and the logical representation is as given in (94c). Without going into the details of the derivation, a functional dependency is posited whereby the subject term sets the domain of the function, the object term its range and the propositions relate individuals in the domain set with some functionally dependent entity in the range set. Crucially, each proposition in the denotation of the question is a conjunction of the atomic propositions obtained by varying the values of x and its dependent element f(x) in the IP denotation. If the set of men = {a,b} and the set of women = {c,d}, the question denotes the set of four propositions in (94d), where each proposition is the graph of a function relating the domain and the range sets. Although the particulars of this operation differ from that proposed by Higginbotham and May, this too can be thought of in terms of Absorption of two *wh*-operators.

The Answerhood operator in (93d), when applied to sets derived via Absorption, picks out a unique maximally true proposition from the question denotation. As would be obvious, each possible answer ensures that the domain set is exhaustively paired and that the pairings are not one–one or many–one. This is because although *a and b both like c* is acceptable as an answer to (94a), *a likes c and d* is not (see Engdahl 1986 and Dayal 1996a for further discussion of this issue). The ambiguity of multiple-*wh*-questions in allowing single pair vs. multiple-pair answers, on this account, rests on the lexical ambiguity of *wh*-expressions in being ordinary individual quantifiers, or expressions that can enter into functional dependencies.[22]

Note that there are two key factors in deriving the desired effects, each proposition in the set must represent the full graph of the function and only one proposition must be picked out as a possible answer. As shown in Dayal (1996a), Chierchia's analysis of questions with quantifiers is unable to derive appropriate answers because it allows atomic propositions in the set and takes the conjunction of any subset of the question as a possible answer. This problem is inherited by Comorovski (1996), who applies Chierchia's analysis to multiple-*wh*-question:

(95) a. $\lambda p\ \exists x\ \exists f_{<e,e>}$ [man(x) & Range(f) = woman & p = x like f(x)]
b. {a likes c, a likes d, b likes c, b likes d}

Comorovski's account, like Chierchia's and Engdahl's, yields sets of atomic propositions no different from ordinary Hamblin sets and does not impose restrictions on how many of them would enter into a possible answer. This predicts, in the case of (95), for example, that *a likes c and d* will be a possible answer, contrary to the stated goals of the analysis.

Recall that Hornstein's functional account differs from Comorovski's in not requiring covert movement of *wh*-in-situ. It is a bit hard to see what question denotations are at issue since he does not give a semantics for the structures. However, let me highlight a point that may be crucial in evaluating Hornstein's account. As we saw in (94), the relevant operation that delivers multiple-pair answers is possible only if both *wh*-expressions take scope outside C^0, where the propositional variable is introduced. That is, the LF representation of the multiple-*wh*-question must be as given in (94b). In this respect, his syntax for multiple-pair answers is no different from the syntax proposed for deriving standard Hamblin sets. Single-pair answers arise when the Answerhood operator applies to question denotations derived from *wh*-expressions interpreted as ranging over individual variables, multiple-pair answers from its application to question denotations where *wh*-expressions encode a functional dependency. For Hornstein's account to be complete, a semantics deriving the intended answers has to be given, which at this point has not been done.

3.2 Pair answers across islands

3.2.1 Single-pair answers across islands

In this section we will summarize the proposal in Dayal (2002), which is partially based on Dayal (1996a), for deriving the difference between the types of pair answer possible when the *wh*-expressions are separated by an island. The primary empirical generalization there is that multiple-pair answers are restricted to *wh*-islands that conform to a particular format dubbed *the* wh-*triangle*, with single-pair answers available in the other cases. We will begin by summarizing the account for single-pair answers across islands before considering the role of the *wh*-triangle.

It might be worth recalling that the possibility for *wh*s-in-situ to take scope outside islands has been explained in a number of ways; to mention just a few,

by taking Subjacency to be inapplicable at LF (Huang 1982a), by unselective binding of D-linked *wh*-expressions (Pesetsky 1987a), and by existential closure involving a choice function interpretation for *wh*-in-situ (Reinhart 1997). None of these proposals, however, have taken the distinction under discussion into account, so it may be worth demonstrating this explicitly. While (96b) is a perfectly acceptable answer to (96a), (96c) is at least an awkward, if not a clearly unacceptable answer to it:

(96) a. Which linguist will be offended if we invite which philosopher?
b. Professor Smith will be offended if we invite Professor Brown.
c. #/*Professor Smith will be offended if we invite Professor Brown, and Professor King will be offended if we invite Professor Matthew.

This also holds of multiple-*wh*-questions such as the following, cited commonly in the literature as showing wide scope of *wh*-in-situ:

(97) a. Which student read the book that which professor wrote?
b. Which student got a headache after she read which book?

In order to account for this fact Dayal (2002) notes that the operation for forming multiple-pair answers given in section 3.1.2 must be blocked from holding across islands. She constrains the Absorption associated with functional dependencies from holding across islands by requiring movement at any level to obey standard constraints. Since the *wh*-in-situ cannot move to matrix Spec, it cannot fix the value for the range of the function and its trace cannot be functionally bound by the matrix *wh*. The question then arises how the single-pair answer can be derived without actual movement. Here Dayal appeals to Reinhart's choice-function analysis, which is designed for this very purpose:

(98) a. [Which linguist$_i$ [t$_i$ will be offended if we invite which philosopher]]
b. $\lambda p\ \exists x\ \exists f_{<<e,t>e>}$ [linguist(x) & p = x will be offended if we invite f(philosopher)]
c. {a will be offended if we invite c, b will be offended if we invite d, a will be offended if we invite d, b will be offended if we invite c}

As shown above, at the matrix level there is existential quantification over functions that yield an arbitrarily chosen entity out of the set they are applied to. Since the LFs of such questions do not have two *wh*-operators that can undergo Absorption, we get as the denotation of the question a set of atomic propositions. The Answerhood operator, when applied to such question denotations, yields single-pair answers. The choice function approach, then, derives what could be described as a non-quantificational or referential interpretation of the *wh*-in-situ (see Saddy 1991 for a similar characterization of *wh*-in-situ).

It may be worth noting that choice functions are not blocked from applying to *wh*-in-situ in simple questions or in the *wh*-island cases to be discussed below.

The claim is that they cannot be used to derive multiple-pair answers. Since a Ref-Q reading is always possible, either choice functions or ordinary existential quantifiers can be used to derive sets of atomic propositions. The usefulness of choice functions surfaces when islands are involved by providing an alternative to covert movement. Covert movement, if allowed, would open up the way for Absorption and incorrectly yield multiple-pair answers across the board.

3.2.2 Multiple-pair answers across islands

Turning to cases in which multiple-pair answers are possible across islands, Dayal notes two properties that the structure must have. One, the embedded *wh*-word whose value is given must be in a multiple-*wh*-question. Two, this multiple-*wh*-question must be a complement of the matrix verb. These two conditions result in a *wh*-triangle construction that is met in the well-known example in (99a). Sentences like (99b) – attributed by Mahajan 1990 to David Pesetsky – with an intervening clause do not allow the relevant answers, even though the intervening clause does not introduce an island, as shown by (100). Sentence (99c) is somewhat marginal since the *wh* in the embedded clause is not fronted and English does not allow *wh*-in-situ in single-*wh*-questions. Be that as it may, it still does not allow a multiple-pair answer:

(99) a. Which student knows where Mary bought which book?
b. Which student believes (that) John knows where Mary bought which book?
c. ?Which student knows that Mary bought which book?

(100) Which book does Bill believe (that) John knows Mary bought?

Dayal (1996a) treats the multiple-pair answer as relating the matrix *wh*-word to the multiple-*wh* complement rather than to the embedded *wh*-in-situ:

(101) a. $[[\text{where Mary bought which book}]_i\ [\text{which student}_j\ [t^i_j\ \text{knows}\ t_i]]]$
b. Q = {where Mary bought A, where Mary bought B, where Mary bought C}
c. $\lambda p\ \exists f_{<<<s,t>t>,e>}\ [\text{Dom}(f) = Q\ \&\ \text{Range}(f) = \text{student}\ \&\ p = \cap\ \lambda p'\ \exists q[p' = \text{know}\ (f(q), q)]]$

Here the embedded multiple-*wh*-question is interpreted as a second order question – that is, a set of questions rather than a set of propositions. Since the matrix verb is defined for questions, not sets of questions, the complement QRs take clausal scope. Semantically, it denotes the set of questions in (101b) and the full question is interpreted as a relation between the members of this set and individual students who know the answer to them.

Given the local nature of QR, this explains why the intervening clause in (99b) effectively blocks the multiple-pair answer. The explanation for the second property, the requirement that the complement question be a multiple-*wh*-

question, shown by the contrast between (99a) and (99c), turns on the possibility of a second-order interpretation for it. Independent evidence that multiple-*wh*-questions, but not single-*wh*-questions, can denote sets of questions can be seen by examining possible answers to the following echo questions:

(102) a. Mary bought whát at the store?
b. {Mary bought a book at the store, Mary bought a pen at the store . . . }

(103) a. Where did Mary buy whát?
b. {Where did Mary buy the book? Where did Mary buy the pen? . . . }

Extrapolating from echo questions to the multiple-*wh*-questions under issue, Dayal proffers a type-theoretic account of the multiple-*wh* complement requirement for multiple-pair answers across islands. Single-*wh* complements can be interpreted in situ and do not involve semantically driven QR.

One point that should be noted is that the proposed functional dependency in (101a) appears to be in violation of WCO. Dayal suggests that this is perhaps due to the D-linking of the embedded *wh*-word, are like questions with the universal *each N* rather than those with the universal *every N* in not displaying subject–object asymmetries. We will return briefly to the role of D-linking in multiple-pair answers in section 3.3.2.

To sum up, regardless of whether the particular proposals for deriving single- vs. multiple-pair answers hold up, the general point that the diagnostic of paired answers cannot be used as a simple indicator of wide scope has to be recognized. The distinction in the types of paired answers admitted by questions with *wh*-in-situ inside Complex Noun Phrases and those inside *wh*-islands shows that a uniform account of their interpretation is difficult to maintain.

3.3 Reassessing Subjacency at LF

3.3.1 The evidence for and against Subjacency

In the previous subsections the view that *wh*-in-situ have exceptional scope properties has been subjected to close scrutiny by drawing a distinction between two types of paired answers and relating this distinction to explicit claims about the semantics of questions and answers. Let us return now to the empirical motivation behind claims about the scope of *wh*-in-situ and re-examine the data which have provided the basis for those claims from the present perspective. As we will see, while some data provide definitive evidence in favor of one position, some can be shown to be consistent also with the opposite position. The three language groups which will be relevant in this process are East Asian languages, South Asian languages, and the Slavic/Balkan languages. Though the last group does not have *wh*-in-situ they provide crucial evidence on the issue under discussion.

Chinese, Japanese, and Korean, all *wh*-in-situ languages, have been key players in the debate about subjacency at LF. The earliest claims for the absence of

subjacency at LF was based on the interpretive properties of embedded questions in Chinese (Huang 1982a). And one of the earliest challenges to this position was made by Nishigauchi (1986, 1990), Choe (1984), and Pesetsky (1987a) on the basis of Japanese and Korean data. The core facts were introduced already in section 1 but I will repeat some of them to make the discussion here self-contained.

Chinese *wh*-in-situ shows neither CNPC nor *wh*-island effects:

(104) a. Ni zui xihuan [piping shei de shu]?
you most like criticize who REL book
'For which x, you like the book that criticizes x?'
b. Ni xiang-zhidao [Lisi zeme mai-le sheme]?
you wonder Lisi how bought-ASP bought
'For what object x, you wonder how Lisi bought x?'

In contrast, Nishigauchi describes Japanese as immune to CNPC alone:

(105) a. Tanaka-kun-wa [Mary-ga doko-de dono hono-o katta]-ka
Tanaka-TOP Mary-NOM where which book-ACC bought Q
sitte-imasu ka?
know Q
'Does Tanako know where Mary bought which book?'
*'For which book x, does Tanako know where Mary bought x?'
b. Kimi-wa [dare-ga kai-ta] hono]-o yomi masi-ta ka?
you-TOP who-NOM write book-ACC read Q
'For which x, you read the book that x wrote?'

Deguchi and Kitagawa (2002) challenge the judgment for (104a), however, arguing that this reading is available under an appropriate prosodic rendering of the question. Japanese would then be like Chinese, as described by Huang.

Hindi seems to fall at the opposite end of the spectrum in displaying no wide-scope effect, at least in standard cases of relativization and complementation (Davison 1984; Gurtu 1985; Mahajan 1990; Srivastav 1991c; Dayal 1996a). With non-finite complements, Hindi patterns with Chinese and Japanese:

(106) a. jaun jaantaa hai ki meri-ne kyaa khariidaa.
John knows that Mary what bought
'John knows what Mary bought.'
'What does John know that Mary bought?' [unavailable]
b. *jaun-ne vo kitaab khariidii jo kis-ne likhii?
John that book bought that who wrote
'For which x, did John buy the book x wrote?'
c. jaun-ne kis-kii likhii kitaab khariidii?
John whose written book bought
'For which x, did John buy the book x wrote?'

Although the effects noted here are not specific to multiple-*wh*-questions – they apply more generally to the scope of *wh*-expressions in these languages – the following data are critical in evaluation of specific claims. In all these languages, multiple-pair answers are readily available in the typical Baker configuration involving a *wh*-triangle:[23]

(107) a. Dono sensei-ga [Mary-ga doko-de dono hono-o
which professor-NOM Mary-NOM where which book-ACC
katta]-ka sitte-imasu ka?
bought Q know Q
'For which professor x and book y, does x know where Mary bought y?'

b. Kaun jaantaa hai ki meri-ne kahaaN kyaa khariidaa.
who knows that Mary where what bought
'Who knows where Mary bought what?'

c. Koj znae kakvo kade e kupila Mariya.
who knows what where bought Maria
'Who knows where Mary bought what?'

In fact, Dayal (1996a) notes that this configuration is sufficient to yield multiple-pair answers, even in languages like Bulgarian where both embedded *wh*-expressions have undergone overt movement, as in (107c).

Turning now to claims about Subjacency at LF emanating from such facts, both positions have been successfully defended. One way of categorizing the analyses that have been proposed is to use assumptions about the specification of values as a guide. Among those who take specification of values as evidence of matrix scope are Watanabe (1992a), Richards (1997), and Deguchi and Kitagawa (2002) in addition, of course, to Huang. Those who take pair answers to under-determine scope are Kim (1991) and Mahajan (1990), in addition to Dayal (1996a, 2002). The challenge for the first group is to find a principled explanation for why a single *wh*-word may be blocked from taking wide scope in some languages while the addition of an extra *wh*-word makes that option available in those languages. The challenge for the second group is to find principled reasons for enforcing local scope and finding plausible ways of deriving paired answers without wide scope.

Starting with the first group, Watanabe (1992a) reconciles the Japanese facts with Huang's view that *wh*-in-situ are exempt from Subjacency by arguing that Japanese, contrary to appearances, is in fact a fronting language. The distinctive feature of Japanese is that fronting involves a phonetically invisible operator, not the full phrase. This derives the absence of any phonetic impact of movement while preserving the constraints on movement typical of fronting. In order to account for paired answers in (106), then, he appeals to the fact that overt movement is restricted to one *wh*-operator, as in many languages with standard fronting. The invisible operator associated with the embedded indirect object undergoes local fronting to satisfy the Q-morpheme in embedded Comp, leaving

the direct object to undergo full-scale LF movement in violation of Subjacency. With regard to cases like (104b) he assumes pied-piping, along the lines of Nishigauchi's proposal.

Recall from the previous section the proposal in Richards (1997) that constraints only have to be met once per cycle, encoded in the Principle of Minimal Compliance. Under this view, the contrast between (105a) and (107a) can be explained in the following way. In the case of (107a), the matrix *wh*-word moves into matrix Spec in accordance with Subjacency and by 'paying the Subjacency tax' now allows the embedded *wh*-word to move to matrix Spec in violation of Subjacency. In contrast, (105a) is a structure in which the matrix Spec does not have a *wh*-word which could pay the tax, with the effect of barring the embedded *wh*-word from moving into that position. Richards's proposal, then, differs crucially from Huang and Watanabe in maintaining the relevance of Subjacency for covert as well as overt movement. He agrees with them, however, in his assumption that when pair answers are available they are due to scope in violation of Subjacency.[24]

Although these approaches are extremely innovative in resolving the apparent paradox presented by these data, it might be worth noting that they are subject to the criticism levelled by Mahajan (1990) and Dayal (1996a) against Huang's original account that they do not explain the loss of that reading when a clause intervenes between matrix and embedded *wh*-word (cf. (99b)). This is, of course, due to the fact that pair answers are tied to wide scope for the embedded *wh*-in-situ and the intervening clauses under discussion do not introduce any barrier to movement. Further, they are also open to the criticism in Dayal (2002) that they cannot distinguish between single-pair answers that hold for questions with one matrix *wh*-word and one *wh*-word inside Complex NPs or conditionals and multiple-pair answers for questions where the embedded *wh*-word is in a *wh*-island. Finally, they do not address the possibility of multiple-pair answers to cases like (107c) where the operators are moved to embedded scope positions in overt syntax.

An alternative proposal, due to Kim (1991) and Mahajan (1990), aligns *wh*-expressions with quantifiers and treats *wh*-movement as an instance of Quantifier Raising. Taking QR to be a local operation, this in effect enforces locality in the interpretation of *wh*-in-situ and the issue of Subjacency effects becomes moot. The question, of course, arises how wide-scope effects for *wh*-in-situ inside islands are to be explained. The natural move to derive such effects is to treat the containing clause as having scope, allowing pair answers to cases like (107) while still blocking them in cases like (105) and (106). The QR approach to *wh*-in-situ is very similar to the position advocated by Dayal (1996a, 2002), discussed in sections 3.1 and 3.2, but there are differences between the two positions that may be worth bringing out here.

One problem pointed out by Dayal (1996a) is that the syntactic domain of *wh*-movement and quantifier scope, in Hindi at least, are not identical. In particular, a quantifier inside a gerund cannot take matrix scope while a *wh*-expression in the same position is forced to take scope at the matrix level. Other, more

substantive differences, have to do with semantic assumptions about *wh*-expressions. If *wh*-movement is like QR it would be to a position inside C^0. It follows, then, that the relevant semantic interpretation for *wh*-expressions would have to involve choice functions. As we saw in sections 3.1 and 3.2, it is not a straightforward matter deriving the switch from uniqueness in ordinary single-*wh*-questions to multiple-pair answers in multiple-*wh*-questions. And we also saw that the distinction between single-pair and multiple-pair answers in the more complex cases is intractable for any theory that takes a uniform approach to all *wh*-expressions. These authors do not provide explicit discussion of the semantics of QR'd *wh*-expressions, and it is possible that they do not intend the co-relation between quantifiers and *wh*-expressions to be taken literally. If so, they might consider acceptable the idea proposed in Dayal (1996, 2002) that *wh*-movement is distinct from QR in terms of the landing site, but akin to it in being a semantically driven local operation.

Before concluding, I should note that the recalcitrant problem for approaches positing locality at LF is the possibility of wide scope for embedded *wh*-questions in Chinese, exemplified in (104). However, given our refined understanding of the diagnostic of possible answers the possibility of wide scope for Chinese and Japanese *wh*-in-situ should be evaluated against further data. Some of the relevant cases would be the Chinese counterparts of the examples in (108):

(108) a. Who knows how Mary bought what?
b. Who believes that John knows where Mary bought what?

If the embedded *wh*-word can indeed move to matrix Spec, we expect questions like (108b) to allow multiple-pair answers. If they do not allow such answers, it would indicate that non-local movement is not possible even in Chinese. As far as I am aware, these cases have not been discussed in the literature but the predictions of the various approaches summarized here are clear enough. We see, then, that although positing absence of Subjacency at LF provides a simple explanation for some cases, it runs into serious problems when tested across a wider set of facts. In general, it predicts a large number of unavailable readings. As highlighted in sections 3.1 and 3.2, positing mechanisms for assigning wide scope without movement, such as choice functions and deriving pair answers from them, over-generates in the same way. The most restrictive approach consistent with the data surveyed seems to be one in which covert movement is restricted essentially to local positions, and a distinction made between questions with *wh*-expressions in Spec positions and those with *wh*-in-situ at LF. As discussed here, there are problems in this approach as well that need further exploration.

3.3.2 Specification, scope, and D-linking

As would be clear from the discussion so far, broadly speaking there are two approaches one might take in analyzing questions with *wh*-in-situ in embedded clauses. One is to take specification of values in the answer for that *wh*-word as

evidence of wide scope. In the kinds of examples we have been looking at, this has the consequence of making Subjacency potentially irrelevant at LF. The other is to deny that specification of values in the answer is an absolute indicator of scope. This allows for the preservation of Subjacency at LF, requiring of course an auxiliary explanation for the form of the possible answers.[25] Here I would like to mention some facts that bear on this issue.

Kuno and Robinson (1972) challenged Baker's account of multiple-pair answers in cases like (109a) by pointing to the fact that the version in (109b) with no *wh*-in-situ also allows such answers:

(109) a. Who knows where Mary bought what?
b. Who knows where Mary bought these books?

Since questions like (109b) could not involve LF wide scope of the embedded definite, an alternative pragmatic approach must be available for such cases. But if such an account exists, why would it not extend to the cases involving *wh*-in-situ? This challenge was never answered and the status of (109b) and its implications was simply set it aside during the eighties when the theory of LF was being elaborated. In fact, even in current literature the importance of these examples remains underappreciated.

Dayal (1996a) notes that, in fact, Kuno and Robinson's point gains further weight when the following paradigm is taken into account. The question in (110a) does not allow a multiple pair reading, while (110b) does:

(110) a. Which woman knows where Mary bought these books?
b. Which woman knows where Mary bought which book?

Changing the matrix *wh*-word to a singular, which we have seen in section 3.1.2 to impose uniqueness requirements in single-*wh*-questions, leads to loss of multiple-pair answers in questions with embedded plural definites (110a). This suggests that the list answer to (109b) derives from an individual answer like *John and Bill know where Mary bought these books*. It is just a more informative rendering of this statement, as claimed by Kuno and Robinson. However, one cannot conclude the same for questions with embedded *wh*-expressions. As (110b) shows, when the *wh* is D-linked, inherently or in a given context, the possibility of multiple-pair answers survives even with a matrix singular. This raises two questions, namely, What is the structural and semantic properties at issue in such cases? and Why should D-linking make a difference? The approaches surveyed above have all been attempts to provide an account of pair answers that is not based on pragmatics. With regard to the second question, beyond an intuitive correlation between familiarity with the set of entities at issue, however, there is no formal characterization of the semantics of D-linking. The data presented here show quite clearly that if the diagnostic of possible answers is to be used seriously, more work needs to be done on the topic.

4 Conclusion

We have seen in this survey that questions in general, and multiple-*wh*-questions in particular, have been an extremely important phenomenon in the development of linguistic theory. Typologically, they are diverse enough to raise interesting questions about the nature of Universal Grammar and the ways in which individual languages can differ. Further, they lie at the interface between syntax and semantics and provide a unique window into the principles governing the assignment of scope. A particular feature of questions is that they can be analyzed on the basis of two types of evidence, direct evidence in the form of acceptability judgments about fronting and indirect evidence in the form of possible direct answers admitted by them. In doing this survey, I have tried to highlight the relevant conclusions drawn on the basis of multiple-*wh*-questions as well as to refine our understanding of the nature of the diagnostics used in arriving at those conclusions.

NOTES

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1 Karttunen differs from Hamblin in restricting the set of propositions denoted by the question to those that are true. This difference affects the precise way in which questions are related to their answers but does not affect the general point being made here. In section 3, however, the importance of using Hamblin sets as question denotations and encoding Karttunen's truth requirement in an answerhood operator will be shown to be relevant in making more fine-grained distinctions in pair answers.
2 I ignore intensional operators since they do not affect the issues under discussion.
3 Of course, it should be emphasized that frameworks with or without movement may be combined with other theories of questions, such as Groenendijk and Stokhof (1984), where questions denote propositions rather than sets thereof. The considerations that go into the choice between Hamblin–Kartunnen and G&S do not depend on the syntactic properties of multiple-*wh*-questions. I therefore do not discuss them here.
4 Note that in all models, a further distinction between the scope of *wh*-in-situ and quantified NPs also has to be made.
5 There is a typologically distinct type of *wh*-in-situ language, exemplified by many South-Asian languages. See chapter 77 and the discussion in section 3.
6 In Japanese, it is possible to scramble the *wh*-words into sentence initial positions, but this is an option that is open to all arguments and can be shown not to involve *wh*-movement.
7 Chinese does not show a subject–object asymmetry in extraction. This is explained as a consequence of the subject position being properly governed in Chinese.
8 As shown by von Stechow (1996), the syntax proposed by Nishigauchi is not adequate and yields incorrect answers unless obligatory reconstruction of the non-*wh* material is enforced.

9 The status of sentences with *wh*-in-situ in Serbo-Croatian *Ko vidi coga?* and other –MFS languages remains open. There is general unclarity whether *wh*-in-situ is possible, whether they are possible but only under a D-linked interpretation, or ruled out altogether. It can safely be assumed that there is, at the very least, a strong tendency or preference for multiple fronting in these languages.

10 In Romanian it is also possible for multiple extraction to take place from different clauses. That is, questions with the schema $[_{CP}\ WH_i\ WH_j\ [_{IP} \ldots [_{CP} \ldots t_i \ldots [_{CP} \ldots t_j \ldots]]]]$ are considered acceptable.

11 It should be obvious how multiple adjunction to Spec would account for *wh*-island violations of the kind seen in (26a).

12 It is generally accepted that this follows from the semantics of focus and questions. See Rooth (1992) for an explicit statement of the correlation between question denotations and focus in answers.

13 Cheng argues that the presence or absence of Q morphemes can be independently established on the basis of how yes–no questions are formed in a given language. Note that optional-fronting languages, as mentioned in section 1.2.4, are argued not to involve *wh*-movement at all, and are therefore not problematic for the Clausal Typing Hypothesis.

14 Adams's filter applies to COMP, Rudin's to [Spec, CP]. The differences between the two are not of direct concern here. I should also mention that the discussion of this filter has been somewhat simplified by ignoring differences between relative pronouns and interrogative pronouns and by ignoring the possibility of the constraint applying at PF, a point that is not adequately established.

15 As a consequence of this, Pesetsky argues that Subjacency can be taken to be operative at LF as well as S-structure. Apparent violations of Subjacency would be due to a D-linked *wh*-word being bound long-distance by a Q-operator. Note, though, that Pesetsky's approach goes counter to Nishigauchi's claims regarding the scope of Japanese *wh*, an issue we return to in section 3.

16 *Wh*-expressions can also be interpreted via skolem functions, which we discuss in section 2.2.3 under the term 'functional *wh*'. The functional-*wh* analysis is neutral with respect to whether it applies to fronted *wh* or to *wh*-in-situ.

17 The a-index may be anaphoric instead of pronominal in some languages. It should be noted that Chierchia's analysis of functional/list answers is not tied to any particular account of WCO. Two proposals treating it in terms of leftness and relating it to functional answers are Williams (1994) and Jacobson (1994). The latter argues for a variable-free semantics to get the same results as Chierchia. Other references for WCO are Koopman and Sportiche (1982) and Safir (1986).

18 Note that May's (1985) account of this asymmetry does not work for multiple-*wh*-questions. For him, the (im)possibility for scope permutation turns on the landing site of the scopal expressions, rather than on their base positions. Two *wh*-words, unlike a *wh*-word and a quantifier, can form a local relation in [Spec, CP] without violating the PCC. An object *wh*-word is therefore predicted to be able to take scope over the subject and (somehow) be interpreted universally. See Dayal (1996a) for discussion.

19 See also Williams (1994) for similar ideas and related discussion.

20 See also Krifka (1999) for a similar explanation of the subject–object asymmetry in questions with quantifiers.

21 See Link (1983) and the account of comparable uniqueness and maximality effects with definite determiners. This correlation between *wh*-expressions and definites

derive from an earlier version of the theory presented in Srivastav (1991c). It has also been proposed by Rullmann (1995b).

22 See also Sharvit (1997b) and Bittner (1998) for further discussion of functional dependencies in questions.

23 Watanabe (1992a) and Richards (1997) discuss differences in acceptability judgments depending on the position of the matrix *wh*-word. The examples given here are uncontroversial.

24 For Deguchi and Kitagawa (2002), of course, there is no additional *wh*-effect. The perceived contrast between (105a) and (105b) might be due to the fact that the relevant prosody is not as easily available with yes/no questions as with *wh*-questions.

25 The correlation between specification of values and scope has played a pivotal role in the analysis of the Partial *Wh*-Movement/Scope Marking Construction surveyed in chapter 47.

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45 *N*-Words and Negative Concord

ANASTASIA GIANNAKIDOU

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1 Introduction

In this chapter we discuss the semantic and syntactic properties of a set of expressions known as *n*-words. The term is coined in Laka (1990) and is employed to refer to nominal and adverbial constituents that appear in negative-concord (NC) structures. Although the term has been quite popular, curiously, it has never been defined in the strict semantic or syntactic sense. Cross-linguistically, *n*-words form a quite heterogeneous class in terms of both their distribution and semantic properties, hence the task of assigning a clear semantic or syntactic criterion for what constitutes an *n*-word becomes rather tricky. Fortunately, there are some distributional criteria that single out *n*-words from other negation-related elements. We use these in the working definition we adopt in this chapter:

(1) ***N*-word:**
An expression α is an *n*-word iff:
   a. α can be used in structures containing sentential negation or another α-expression yielding a reading equivalent to one logical negation; and
   b. α can provide a negative fragment answer.

This definition is general enough to capture the (quite diverse) data that we will present in section 3; at the same time, it can serve as the basis for distinguishing between 'weaker' and 'stronger' *n*-words; for example, we can derive a class of stronger *n*-words by substituting the modal *can* in (1a) with *must*. *N*-words in languages that exhibit strict NC, requiring that the sentential negative marker (SN) be always present in the structure containing the *n*-word, are stronger in this sense (the relevant data will be presented in section 3). On the other hand, negative quantifiers in Germanic languages, which do not exemplify NC, do not fall under (1),[1] nor do existential polarity items (PIs) that are licensed by negation, as well as other non-veridical licensers, e.g., English *any*, or Serbian–Croatian *i*-NPIs (the terminology from Progovac 1988, 1994), since these PIs do not satisfy (1b) and cannot provide negative fragment answers. Why this is so is not pertinent to our discussion, but see Giannakidou (2000: 469, n. 6) for an explanation. Note that we refer to these items as polarity items and not 'negative' polarity items (NPIs) because, as we said, they are licensed in a (large) variety of contexts that are not negative but non-veridical (in the sense of Giannakidou 1998, 1999). The term 'NPI' will be used to only refer to PIs that are licensed by negation (or, more generally, antiveridicality). *N*-words in strict NC are in fact prototypical NPIs because they are not licensed by operators other than negation and antiveridical *without*.

NC is a phenomenon known to linguistics since Jespersen's (1917) double-attraction, Klima's (1964) neg-incorporation, and Labov's (1972) negative-attraction rule. Roughly, we talk about negative concord in situations where negation is interpreted just once although it seems to be expressed more than

once in the clause. One occurrence of negation is the sentence negation (SN), and given that *n*-words can provide negative answers in isolation, as we see in (3), we can speculate that the additional occurrence of negation is the *n*-word. Here are some examples:

(2) a. Gianni *(non) ha visto **niente**. Italian
John not have.3sg seen n-thing
'John didn't see anybody.'

b. *(No) he dit **res**. Catalan
not have.1SG said n-thing
'I didn't say anything.'

c. Balázs*(nem)látott **semmit**. Hungarian
Balázs not saw.3SG n-thing
'Balázs didn't see anything.'

d. Milan *(ne) vidi **nista**. Serbian–Croatian
Milan not see.3SG n-thing
'Milan can't see anything.'

e. Janek *(nie) pomaga **nikomu**. Polish
Janek not help n-person
'Janek doesn't help anybody.'

f. *(Dhen) ipa **TIPOTA**. Greek
not said.3SG n-thing
'I didn't say anything.'

g. John-wa **nani-mo** tabe-*(nak)-atta. Japanese
John.TOPIC n-thing eat. negation.past
'John didn't eat anything.'

(3) Q: Qui se li va apropar? Catalan
who refl him/her AUX.3SG approach
'Who approached {him/her}?'

A: **Ningú.** 'No one.'

Negative Concord is observed in many languages, among others Romance, Slavic, Greek, Hungarian, Nonstandard English, West Flemish, Afrikaans, Lithuanian, Japanese (see among others Labov 1972; Ladusaw 1992, 1994; Van der Wouden and Zwarts 1993; Bosque 1980, Laka 1990, Herburger 2001 for Spanish; Zanuttini 1991, Longobardi 1991, Acquaviva 1993, 1995a, 1997 and Tovena 1996 for Italian; Quer 1993, 1994, Vallduví 1994 for Catalan; Peres 2000, Puskás 1998, Tóth 1999, Surányi 2002 for Hungarian; Giannakidou 1997, 1998, 2000 for Greek; Haegeman 1995b, Den Besten 1986 for West Flemish and Afrikaans; Hoeksema 1997 for Middle Dutch; Progovac 1988, 1994 for Serbian–Croatian; Brown 1999 for Russian; Przepiórkowski and Kupsc 1997, 1998, Blaszczak 1999, and Richter and Sailer 1998 for Polish; Watanabe 2001 for Japanese). These are the languages we consider here, though our primary focus will be on the three large European families Greek, Romance, Slavic.

The sentences in (2) exemplify the variety known as negative concord proper: they contain sentential negative markers, which contribute logical negation ¬, and the *n*-words.[2] Uppercase letters in the Greek *n*-word in (2f) indicate that it is pronounced emphatically; henceforth we will refer to Greek *n*-words as 'emphatics'. This accent is not related to focus for reasons that have been discussed in Giannakidou (1997, 1998: 227–31; see, however, Tsimpli and Roussou 1996 for a focus-based account). Emphatic accent is a distinctive feature of NC patterns in other languages too, e.g., Hungarian (see especially Puskás 1998), and should not necessarily be collapsed with focus, as emphasized also in Szabolcsi (1981b), Vinet (1998), and Surányi (2002); see also our discussion in sections 2.3.1 and 2.3.4 on certain syntactic asymmetries between focused items and *wh*-words. (This does not mean, of course, that *n*-words cannot be focused; but indiscriminately collapsing *n*-words to focalized elements is hardly motivated, given that certain *n*-words at least exhibit the properties of topics rather than foci (cf. Giannakidou 2000 and section 2.3.4).)

As shown, the co-occurrence of the SN is obligatory; but the sentences above are interpreted uniformly as containing a logical structure with only one negation. At a general level, then, *n*-words in NC can somehow be associated with negative meaning, and the major task has been to identify what it means exactly to be able to do so. The most obvious possibility is, of course, to interpret association with negative meaning as equivalent to having inherent negative meaning. This possibility seems particularly attractive in view of the fact that *n*-words can contribute negative fragment answers; *n*-words have thus been treated as negative quantifiers, originally in Zanuttini (1991) and Haegeman and Zanuttini (1991).

In order to decide whether or not to pursue this hypothesis, we must consider one important fact: when a language actually employs a negative quantifier, NC is systematically excluded, as in languages which do not employ NC as a rule, e.g. German, Dutch, and English (West Germanic), and the Scandinavian languages. Germanic *n*-words, unlike *n*-words in NC structures, when co-occurring with a SN, yield only a double negative reading:

(4) a. Frank heeft niet **niemand** gezien. Dutch
Frank have.3sg not n-person seen
'It is not the case that Frank saw nobody.'
#Frank didn't see anybody.
b. Frank did not see nobody. English
c. Frank hat nicht niemand gesehen. German

The interpretation of these sentence is as in (5) below, which is derived by combining the meaning of a negative quantifier and negation.

(5) $\lambda P\ \forall x\ [\mathbf{person}\ (x) \rightarrow \neg\ \mathbf{P}(x)]\ (\lambda y\ \neg\ \mathbf{saw}\ (\text{Frank}, y)) =$
$\forall x\ [\mathbf{person}\ (x) \rightarrow \neg\ (\neg\ \mathbf{saw}\ (\text{Frank}, x))]$

Hence, the sentences entail that Frank did see somebody or everybody (depending on whether we exploit universal negation for negative quantifiers, as we did here, or existential negation, which is also possible; we discuss the issue later).

This reading differs clearly from the one we have without negation, illustrated below. NC structures have only this reading (e.g. 2a).

(6) a. Frank saw nobody.
b. λP ∀x [**person** (x) → ¬ **P**(x)] (λy **saw** (Frank, y)) =
∀x [**person** (x) → ¬ **saw** (Frank, x)]

Negative quantifiers in Germanic languages are thus inherently negative. Hence, when we have an additional syntactic negation coming from SN as in (5), we have a second logical negation too. The question is: are *n*-words in NC languages identical to negative quantifiers in non-NC languages? If so, why is it that we have NC in the former – with a reading not equivalent to (5) but to (6) – but not in the latter?

At this initial stage it is instructive to consider that *n*-words need not be morphologically negative either, although by employing the prefix *n-*, the term itself allows for the implication that part of the expression qualifying as an *n*-word will contain a morpheme morphologically recognizable as negative. It has often been observed in the relevant literature that this is not the case (see among others Laka 1990; Quer 1993; Déprez 1997; Giannakidou 1998, 2000; Rowlett 1998). For example, Italian *niente, nessuno*, and Serbian–Croatian *nista* do bear negative morphology but their Catalan, French, and Greek counterparts do not, or do so but not consistently. Catalan, for instance, has *ningú* 'n-person' but *res* 'n-thing', and French and Greek *n*-words lack negative morphology altogether. Negative morphology is, then, not a prerequisite for *n*-word status.

With these preliminaries, our discussion is organized as follows. In the next section the central issues of the interpretation of structures with *n*-words are presented. First I give an overview of the core puzzles, then we discuss the individual proposals. Once it is made clear what the predictions are of each individual proposal, we can proceed with the empirical complexity of NC and *n*-words in section 3. Our goal will be to test the empirical scope of NC theories and see to what extent they are applicable to certain data, and of course when they are not. In section 4 we examine the alleged negativity of *n*-words and show it to be problematic for most cases. Having reached the conclusion that *n*-words cannot be negative quantifiers, in section 5 we address the question of whether NC structures co-exist with existential polarity dependencies under negation. This question is important in trying to decide what logical structure *n*-words map onto: existential or universal negation. We will use the results of this section in order to construct a typology of *n*-words and their proper semantic characterization. We conclude in section 6 by summarizing the main findings.

2 The interpretation of negative concord and the nature of *n*-words

For a successful account of NC the proper semantic characterization of *n*-words is essential. We thus go back to the original question: should we grant negative

status to *n*-words or not? This question corresponds to the following cluster of four subinquiries:

(a) The negative 'concord' question. If *n*-words are negative, then in NC we do have more than one occurrence of negation. But why do we end up interpreting only a single negation? This situation is in sharp contrast with Germanic negative quantifiers whose inherent negativity cannot be cancelled, as we saw, and which therefore do not exhibit NC. If *n*-words in NC are indeed negative, the very phenomenon itself constitutes an anomaly and in order to explain it we must stipulate some special rule for NC languages which cancels out the extra negative meanings. We would further have to stipulate that this rule is not operative in Germanic languages since these do not exhibit NC. But why NC languages employ this rule but non-NC languages do not, does not seem to follow from something more general in the grammar of these languages and remains essentially an *ad hoc* premise.

(b) The diversity of interpretation question. If *n*-words are not negative, then what is their actual meaning and how do they end up giving negative fragment answers? It is a quite complex enterprise to try to answer the question of what the possible meanings of *n*-words are, because the set of expressions identifiable as *n*-words in various languages with NC is highly heterogeneous. Evidently, this complexity mirrors the logical complexity of general negative statements. As we see below, there are two possible logical structures that *n*-words can map onto:

(7) **Logical representations of general negative statements:**
(a) $\forall x\ [P(x) \rightarrow \neg\ Q(x)]$ (universal negation)
(b) $\neg\exists x\ [P(x) \wedge Q(x)]$ (existential negation)

The two formulae are truth conditionally equivalent; but the fact that these two options exist makes it plausible to hypothesize that some *n*-words would correspond to existential quantifiers under negation, some others to universal quantifiers, and some others perhaps to both. As we shall see, various implementations of these hypotheses have been proposed in the literature. *N*-words have been argued to be indefinites or universal quantifiers. The former alternative is explored in, among others, Ladusaw (1992, 1994); Acquaviva (1993, 1997); Giannakidou (1997); Giannakidou and Quer (1995, 1997); Piñar (1996); Déprez (1997, 2000). The latter idea that some *n*-words are universals has been put forth in Giannakidou (1998, 2000), and is further supported by literature on Hungarian (Szabolcsi 1981b; Surányi 2002 and references therein). *N*-words have also been characterized as underspecified in Van der Wouden and Zwarts (1993), being compatible with both a negative quantifier and an existential quantifier meaning. This approach, essentially, acknowledges that *n*-words may be ambiguous between negative and non-negative meanings, a position that seems unavoidable, at least for some Romance *n*-words, as we conclude later in section 4. Yet, there are empirical problems with the specific implementation in Van der Wouden and Zwarts, noted in Giannakidou (1997: 166–168), which we ignore here.

Crucially, another decisive factor is whether *n*-words may occur without the presence of the sentential negative marker, or whether the presence of the negative marker is obligatory in all contexts – the latter situation is known as 'strict' NC (Giannakidou 1998). In the non-strict varieties, and in the absence of SN, it seems reasonable to hypothesize that the negative value comes from the *n*-word itself. Interestingly, in these varieties of NC, *n*-words may give rise to double negation readings too, thereby supporting the hypothesis that they may be negative under one interpretation; but in strict NC languages double negation readings are never allowed.

(c) The locality question. A cross-linguistic feature of *n*-words and NC is that they are clause-bounded (see especially Progovac 1988, 1994; Zanuttini 1991; Déprez 1997; Giannakidou 1998, 2000). This feature inspired an analysis of *n*-words as parallel to anaphors in Progovac (1988, 1994); but, most importantly, it suggests a close similarity between NC and quantifier scope, which is also known to be clause-bounded. This characteristic is worth emphasizing because it prima facie argues against the plausibility of a non-quantificational analysis of *n*-words as indefinites.

(d) The polarity question. In the early 1990s there was a debate as to whether *n*-words are negative quantifiers or NPIs (see especially Laka 1990 versus Zanuttini 1991). This debate inspired discussions in various Romance languages, and it relied on the assumption that being an NPI means 'being existential', instead of 'being licensed by negation'. This assumption has been shown to be unfounded in more recent discussions, where NC is treated as an instance of negative polarity: *n*-words, in this view, especially those in strict NC languages, *are* NPIs since they need negation to be licensed (see especially Progovac 1988, 1994; Ladusaw 1992, 1994. Giannakidou 1997, 1998, 2000; Laka 1990 can also be seen as favoring this view). The HPSG analyses of NC (Przperkópski and Kupsc 1997, Richter and Sailer 1998) also implement directly accounts of NC in terms of polarity. We will take this position for granted in the present chapter and allow the underlying assumption that *n*-words in NC are NPIs.

The central problem is, as we said, the 'anomalous' character of NC: the fact that seemingly multiple negations are interpreted as a single negation. Ideally, we would not like NC to be an anomaly; we want to be able to derive it from other, better understood, phenomena. The same desideratum applies, at a general level, to all polarity phenomena: we do not want to posit them in the grammar as composition external filters, but we want to derive them from rules that we need independently anyway; see Giannakidou (1998, 2001) for extensive discussion; see also Tovena (1998). The reduction of NC to an indefinite or quantificational dependency should be seen as attempting to do precisely this. Another attempt, in the same spirit, is Progovac (1988, 1994), who tries to reduce the principles governing NC to the principles of Binding theory. This reduction, though at first glance appealing, does not actually afford a better understanding of NC since it reduces one mystery – NC – to another one (the Binding theory), without offering an actual semantic characterization of *n*-words. We do not address this proposal here in any detail, but we will try to integrate Progovac's

facts about Serbian–Croatian, which are in many ways significant, to the general approach we pursue in this chapter.

Given the two logical options in (7), as well the option of inherent negativity, it seems simple-minded to expect a single interpretation for NC cross-linguistically; rather, it is more reasonable to expect a family of interpretations jointly to accommodate the whole range of data. This is the stance we are taking here, in agreement with a research agenda originating in Ladusaw (1994) and further implemented in Acquaviva (1997), Giannakidou and Quer (1995, 1997), and Giannakidou (1997, 1998, 2000).

2.1 Negative absorption

Zanuttini (1991), Haegeman and Zanuttini (1991, 1996), and Haegeman (1995b) view NC as an agreement phenomenon. They proposed a quite influential account based on the assumption that *n*-words are negative quantifiers. In order to derive NC, they invoke a special rule, negative absorption, inspired by Higginbotham and May's (1981) *wh*-absorption (whose current theoretical status, let it be noted, is being reconsidered under more recent discussions of multiple *wh*-dependencies; see, e.g., Reinhart 1997). The postulation of negative absorption on a par with *wh*-absorption presumes that NC and multiple *wh*-dependencies are instances of the same phenomenon which is also highly questionable; see especially Acquaviva (1995a, 1997) and Giannakidou (1998) for discussion. At any rate, negative absorption has been proposed to allow any number of *n*-words and the SN to merge into one semantic negation (the neg-criterion; Zanuttini 1991; Haegeman and Zanuttini 1991; Haegeman 1995b; for a slightly different variant formulated in terms of 'negative void' see Postma 1995a).

(8) **Negative absorption rule:**
$[\forall x \neg]\ [\forall y \neg]\ [\forall z \neg] \rightarrow [\forall x,y,z]\ \neg$

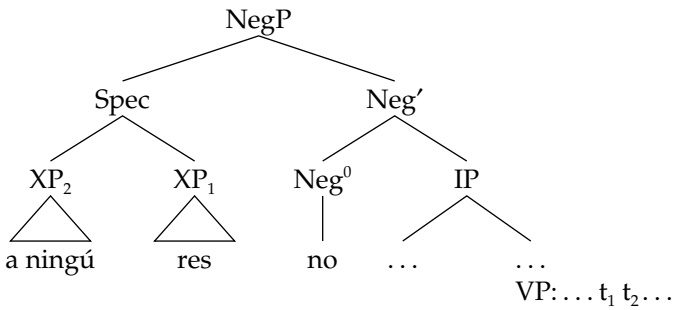
Multiple negative quantifiers amalgamate into a single negative quantifier. Syntactically, these structures contain just a single operator which can bind n-number of variables (just like in multiple *wh*-structures under *wh*-absoprtion). The neg-criterion has been restated recently in terms of feature checking in, e.g., Brown (1999), Watanabe (2001), and Progovac (2000). The idea is, for example, in Brown (1999), that *n*-words contain an uninterpretable neg feature that must be checked against the appropriate headnegation; for Watanabe, the relevant feature is a focus feature. Given that interpretability of features is still largely undefined in the current state of the theory, as well as the fact that, as we shall see later in section 5, not all *n*-word or NPI dependencies involve movement (in the sense of feature checking), I will stick here to the more classical version of the absorption approach.

Consider a sentence like the one below from Catalan with two *n*-words and SN: this sentence is assumed to contain a single negative quantifier which ranges over two variables:

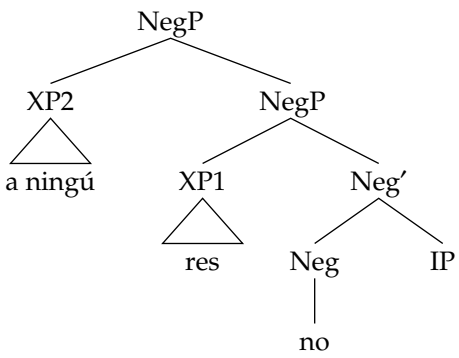
(9) a. No he dit res a ningú.
not have.1sg said n-thing to n-person
'I didn't say anything to anybody.'
b. No x, y [**thing** (x) ∧ **person** (y)] [**said** (I, x,y)]

This analysis is generalized to a number of languages. Crucial to this analysis is the assumption that *n*-words are (syntactic) negative operators, hence semantically negative items. Zanuttini (1991), Haegeman and Zanuttini (1991, 1996), and Haegeman (1995b) state that *n*-words in Romance and West Flemish are negative quantifiers. As such, *n*-words comprise a [+quantificational] and a [+negative] feature, where being [+quantificational] entails being a syntactic operator. Because *n*-words are quantifiers, their sentential scope must be syntactically derived by reaching a scope position at least by LF; being negative too, *n*-words must agree with a negative head. Both requirements are met by application of move-α, which raises *n*-words to [Spec, NegP] or adjoins them to that position either at s-structure or at LF (but see Haegeman 1995b for the stronger claim that the neg-criterion is uniformly satisfied at s-structure).[3] Once *n*-words reach [Spec, NegP] they enter a Spec–Head relation with the negative head. In this analysis, the relevant part of (9a) would look at LF as either (10) or (11) depending on whether we assume raising to [Spec, NegP] or adjunction to NegP.

(10)



(11)



The driving force for such configurations is the neg-criterion, a well-formedness condition which applies to all elements bearing the feature [+negative] and

which determines their distribution and interpretation. It requires that such expressions check their negative feature against a head endowed with it. Based on the *wh*-criterion as formulated in Cinque (1990c), Haegeman and Zanuttini state the neg-criterion in (12):

(12) **The neg-criterion:**
   a. A NEG-operator must be in Spec–Head agreement relation with an X^0 [NEG].
   b. An X^0 [NEG] must be in Spec–Head agreement relation with a NEG-operator.

Additionally, the following definitions obtain:

(13) a. NEG-operator: a negative phrase in a scope position;
   b. Scope position: left-peripheral A'-position [Spec, XP] or [YP, XP].

In fact, the neg-criterion may be regarded as a particular realization of a more general constraint, the affect-criterion (cf. Cinque 1990c; Haegeman 1992). The rule in (12) tells us nothing about the phonological realization of Neg^0, although the most plausible implementation of it would imply that the availability of NC must be linked to the realization of Neg^0 (covert or overt), as in Zanuttini (1991); see also Moritz and Valois (1994). We saw, however, in n. 2 that NC is allowed also with SN that are not heads but XPs. The negative head may be overt or covert, depending on language-specific constraints. Strict NC languages like Greek, Catalan, and Slavic (where SN is obligatory) require that Neg^0 be always overt. In languages where this does not hold, such as Italian, Spanish, and Portuguese, such a requirement is absent. Evidently, the movement involved for the satisfaction of the neg-criterion is an instance of A'-movement.

The detailed descriptions that will follow make it clear that the neg-criterion approach, posed in this generality, cannot be the correct analysis of NC. The underlying idea, which can be restated as negative quantifiers forming resumptive structures, may indeed be a useful one for a certain variety of NC negative spread, which we discuss in section 3. But there are at least three problems with the particular implementation we outlined here. First, the characterization of the general class of *n*-words as negative quantifiers will be questioned in section 4; we see there that there is very little evidence that *n*-words are negative in most variaties of NC. We can, of course, still maintain that *n*-words are quantificational without being committed to negativity. This is indeed an appealing option, and is explored in various works (Déprez 1997; Giannakidou 1998, 2000; Puskás 1998; and others).

The second problem comes from the alleged uniformity between multiple *wh*-dependencies and NC and the reduction of the latter to the former. It has been emphasized numerous times in the literature that there are significant asymmetries between *wh*-dependencies and NC (see the references mentioned earlier). The discussion will not be repeated here, but we will take it as established that NC and *wh*-dependencies are distinct. Finally, by invoking the special rule of

negative absorption, whose role appears to be particular to NC, we have not succeeded in getting rid of the anomalous character of NC. Instead, we have further established this anomalous character by reducing it to another 'special', hence also anomalous, mechanism: *wh*-absorption. Ideally, we would prefer a theory which derives the resolution of NC from a mechanism for which we have independent evidence in the grammar anyway.

2.2 N-*words as indefinites*

The indefinites approach signals the first attempt to reduce NC to an independently motivated mechanism: that of indefinite binding. The approach was initiated in Ladusaw (1992, 1994) and was further developed in Acquaviva (1993, 1997), Giannakidou and Quer (1995, 1997), Giannakidou (1997), Déprez (1997, 2000), Richter and Sailer (1998), and others. The idea is that *n*-words are open formulae with no quantificational force of their own (Kamp 1981a; Heim 1982). Like indefinites, *n*-words contribute a free variable and a predicative condition on that variable:

(14) [[uno studente]] = **student** (x)
[[nessuno studente]] = **student** (x)

N-words differ from regular indefinites in that they come with a roofing requirement (Ladusaw 1992) which must be met at the sentence level. Roofing in Ladusaw is stated as a binding requirement: *n*-words must be bound by a semantically appropriate operator. In Giannakidou and Quer (1995, 1997) and Giannakidou (1997) this requirement is generalized to non-veridical operators. Negation, of course, is not strictly speaking a variable binder since it is not a quantificational operator;[4] roofing, then, is better rephrased as a requirement that existential closure apply under negation (Giannakidou 1998). So, for the sentence we just discussed in (9a), we will have the structure in (15):

(15) $\neg\ [_{VP}\ \exists x \exists y\ (\textbf{thing}(x) \wedge \textbf{person}\ (y) \wedge \textbf{said}\ (he, x,y))]$

The *n*-word variable is existentially closed in the scope of negation, i.e., in the VP. In Giannakidou (1997) it is further noted that this is the only level for application of existential closure; *n*-words and other (negative) polarity indefinites can never be bound via text-level existential closure, as this would imply a wide-scope reading with respect to negation, with the ensuing assertion of existence, which (negative) polarity indefinites do not have. In this account, the narrow scope of polarity indefinites and their polarity requirement are collapsed into the same source.

By assuming that *n*-words denote open formulae with no inherent quantificational force, the indefinites approach seems to offer an easy solution to the problem of NC: *n*-words do not contribute negation, only the SN does. This, however, turns out to be too easy a solution. The most obvious problem is that *n*-words do

not exhibit the quantificational variability characteristic of indefinites, which are unselectively bound by quantificational (Q-) operators, acquiring thereby the Q-force of their binders. When construed with Q-adverbs, for example, *n*-words are never bound by them; instead they seem to remain existentially closed under negation in the VP domain. This is illustrated in the following example from Greek:

(16) {Sixna/Pu ke pu}, otan o Janis ine thimomenos, dhen milai me KANENAN.
'{Usually/Sometimes}, when John is upset he talks to nobody.'

(17) a. USUALLYs [$_{\text{Restr.}}$ John is upset in s] [$_{\text{Scope}}$ $\neg\exists$x (**person** (x, s) $\wedge$ **talk** (John, x,s))]
b. SOMETIMESs [$_{\text{Restr.}}$ John is upset in s] [$_{\text{Scope}}$ $\neg\exists$x (**person** (x, s) $\wedge$ **talk** (John, x,s))]

Here we have two Q-adverbs with varying Q-force, but the interpretation of *KANENAN* remains 'zero people' for each situation the Q-adverb quantifies over. Thus, the Q-adverb does not bind the *n*-word variable. If indefinite, then, in addition to the roofing requirement, *n*-words would have to have another 'special' feature: they cannot be bound by a Q-operator. But this is a striking feature, given that being bound by a Q-operator is a very basic property that indefinites generally have. PI indefinites not related to negation, such as free choice indefinites, actually do exhibit Q-variability of the standard kind (Giannakidou 2001: 701–703).

One may argue that a potential ambiguity between negative and existential interpretations is indeed a case of Q-variability. This might be, for example, a suitable analysis for Romance, as *n*-words in these languages seem to be negative under negation but existential in non-negative environments (interrogatives, conditionals, restriction of $\forall$, etc.; to be discussed in section 4). Such an analysis, however, would still have to deal with the following two problems. First, not all *n*-words exhibit this ambiguity. Greek NC *n*-words, for instance, which are only licit under negation and antiveridical operators, are never interpreted as existentials. In fact, as we will in section 4, in contexts favoring this interpretation Greek *n*-words are ungrammatical (interrogatives, conditionals, restriction of $\forall$, etc); the same holds for Slavic and Hungarian *n*-words. On the other hand, we see in section 5 that there are *n*-words which are indeed interpreted existentially, roughly equivalent to *any* under negation, but these are interpreted only existentially, hence there is no variability.

The second problem is that the derivation of the negative reading is non-compositional. If in the negative reading *n*-words involve $\forall$-force, $\forall$ must be stipulated composition-externally, because negation alone can surely not provide it. Given that $\forall\neg$ and $\neg\exists$ are truth conditionally equivalent, it makes more sense to say that there is actually no quantificational variability, and that *n*-words contribute $\exists$, which under negation, $\neg\exists$, will give the negative meaning. In a non-negative context, the existential import of $\exists$ will be preserved. This squares neatly with our previous observation that *n*-word indefinites can be bound only

by an existential quantifier under negation, and by no other Q-operator. But if this is so, then the 'indefinites' analysis is no longer about indefinites; it is about existential quantifiers, and it is this re-interpretation that we adhere to in the present chapter.

Let us finally note that an existential approach to *n*-words will have trouble handling the issue of locality arising in NC; we see in section 5 that NC cross-linguistically is generally not licensed long-distance (Zanuttini 1991; Longobardi 1991; Progovac 1994; Giannakidou 1997, 1998, 2000; Przepiórkowski and Kupsc 1997, Brown 1999, among many others). If *n*-words were indefinites/existentials, it is surprising to find such locality constraints as indefinites are generally thought to have 'unbounded' scope. In some cases even, in Polish and Russian, for instance, locality is very strict: NC is excluded from non-monoclausal domains, even if these domains are subjunctive-like or infinitival. The analysis of *n*-words as indefinites predicts that *n*-words will be licensed unboundedly as long as they remain in the scope of the licensing operator. As we shall see in section 5 this is true of existential PIs under negation, e.g., *any*, but it is clearly not true of *n*-words in NC.

2.3 N-*words and universal quantifiers*

A different line of reasoning is pursued in Giannakidou (1998, 2000). It is proposed that NC cross-linguistically must involve the two logically available possibilities: an existential and a universal construal. In a given language, the two construals may be realized by two different paradigms of *n*-words, as is the case in Greek, but in others, a single paradigm may incorporate both meanings. This picture was recently supported by work on Hungarian in Surányi (2002), where it is shown that the two paradigms of Hungarian *n*-words actually have both interpretations each. In an earlier paper by Szabolcsi (1981b), Hungarian *n*-words were uniformly analyzed as universals, which again supports the more specific argument that we need to allow for the universal quantifier option in the semantics of *n*-words cross-linguistically. Note also that certain languages, e.g., Hebrew, employ morphologically universal *n*-word *kol* 'every', e.g., *kol yeled nivdak* 'every child was examined', and *lo* (neg.) *nimce'u kol maxalot* 'no disease was found' (the data are from Mittwoch 2001: 280). The same can be said for the Japanese complex wh-*mo* which is used in NC and contains what has been analyzed as a universal marker: *mo* (see Watanabe 2001 and references therein). Obvioulsy, then, the hypothesis that there may be universal *n*-words is empirically well motivated. Significant motivation comes also from the parallelism between *n*-words and universal quantifiers in terms of their scope possibilities, which is what we consider first.

2.3.1 *Universal quantifiers and* n-*words: parallelism in scope*

In this section we examine the scope parallelisms between *n*-words and universal quantifiers that support the hypothesis that *n*-words are universal quantifiers. The locality involved in NC, clause-boundedness, will be shown to be identical

to the locality in quantificational dependencies. For simplicity, we concentrate on one language, namely, Greek.

The first observation is that *n*-words in NC are generally not licensed long-distance. This is a cross-linguistic feature of NC which we return to later (section 5.1). Greek lacks infinitives, but has three types of complement clause: *oti*, *na*, and *pu* clauses. *Oti* is the indicative nonfactive complementizer and *pu* is the indicative factive one. *Na* introduces subjunctive clauses but it is not a complementizer (Philippaki-Warburton 1994 and references therein). *Na*-domains in Greek usually behave on a par with infinitival and restructuring domains of other languages (Aissen and Perlmutter 1983), which are known to be transparent with respect to certain long-distance dependencies (for reasons immaterial here). Greek *n*-words are not accepted in indicative complements of negated matrix predicates. NC is possible only in monoclausal domains and subjuncive *na*-clauses:

(18) a. *O Pavlos dhen ipe oti idhe KANENAN.
the Paul not said.3sg that saw.3sg n-person
'Paul didn't say that he saw anybody.'
b. *Dhen lipame pu pligosa KANENAN.
not be-sorry.1sg that hurt.1sg n-person
'I don't regret that I hurt anybody.'
c. O Pavlos dhen theli na dhi KANENAN.
the Paul not want.3sg that.subj. see.3sg n-person
'Paul doesn't want to see anybody.'

This situation contrasts clearly with *wh*-dependencies which are freely allowed through *oti* complements, and partly through *pu* complements, which are weak islands (*pace* Roussou 1994; Varlokosta 1994). The details are presented in Giannakidou (1998, 2000), but the basic fact is illustrated here:

(19) a. Pjon$_1$ ipe o Pavlos oti idhe t$_1$?
who said.3sg the Paul that saw.3sg
'Who did Paul say that he saw?'
b. Pjon$_1$ xarike o Pavlos pu idhe t$_1$?
who was.glad.3sg the Paul that saw.3sg
'Who was Paul glad that he saw?'

Hence NC is clearly not a *wh*-dependency it is also not a focus dependency, as in situ focus is indeed sanctioned through *pu* and *oti* complements:

(20) a. Xarikes pu i Maria pandreftike PJON?
were.glad.2sg that the Mary married.3sg who
'You were glad that Mary married who?'
b. Akusa oti i Maria pandreftike to JANI.
heard.2sg that the Mary married.3sg John
'I heard that Mary married JOHN.'

In-situ focus in Greek is licensed also in islands, as in other languages; more detailed discussion of the asymmetries between focus and NC are found in Giannakidou (1998). What we note here is that the long-distance pattern we observe with NC cannot be reduced to that of *wh*-movement or focus. Giannakidou and Quer (1995, 1997) further show that the Greek picture describes correctly the facts in Spanish; see also Progovac (1994) for the observation that Serbian–Croatian *n*-words are licensed only in subjunctive clauses, and Zanuttini (1991) for Italian. Catalan *n*-words can be licensed in indicative clauses too, licensing existential readings; we return to the significance of this fact in section 5.1. The second thing to note is that the generalization that NC is licensed long-distance only in subjunctive complements can occasionally be violated: *n*-words may appear in the indicative complements of epistemic neg-raising verbs, e.g., in the *oti* complement of *pistevo* 'believe':

(21) Dhen pistevo oti idhes KANENAN.
not believe.1sg that saw.2sg n-person
'I don't believe you saw anybody.'

N-word licensing in the complements of epistemic neg-raising verbs is generally very weak, and subject to performativity constraints, i.e., person (the embedding predicate must be first person singular), and tense constraints (only present tense is acceptable), as is shown in Giannakidou and Quer (1995, 1997: 106–111) and Giannakidou (1997), where the availability of cases like (21) was linked to the parenthetical uses of neg-raising verbs (for a general discussion of neg-raising, see Horn 1978). If *pistevo* is modified by an adverb, neg-raising is blocked, and so is NC, because adverb modification forces the attitudinal reading. The fact was first observed by Veloudis (1982), who discusses extensively the interaction between *n*-words and neg-raising.

(22) Dhen pistevo adhikeolojita oti me apata.
not believe.1sg unreasonably that me-cheat.3sg
'I don't believe unreasonably that (s)he is cheating me.'
#I believe unreasonably that (s)he isn't cheating me.

(23) *Dhen pistevo adhikeolojita oti idhes KANENAN.
not believe.1sg unreasonably that saw.2sg n-person
'I don't believe unreasonably that you saw anybody.'

Since *adhikeolojita* in (23) is an attitude modifier, *pistevo* cannot be used parenthetically. As a result, NC is not possible; compare this sentence to (21) without the adverb.

Crucially, adverbs exhibit exactly the same blocking effect with quantifier scope. As shown in Farkas and Giannakidou (1996), *para poli* 'very much' prevents *kathe* 'every' from taking scope over *kapjos* 'some' in (24), although this is possible in (25), without the adverb; '>' reads as 'scope over':

(24) a. Kapjos kathijitis ithele para poli kathe ipopsifios s'afti ti lista
some professor wanted very much every candidate in this list
na vri dhulja.
that.subj find.3sg job
'Some professor wanted very much every candidate on this list to find a job.'
b. ∃ > ∀
c. *∀ > ∃

(25) a. Kapjos kathijitis ithele kathe ipopsifios s'afti ti lista na vri dhulja.
some professor wanted every candidate in this list subj find.3sg job
'Some professor wanted every candidate on this list to find a job.'
b. ∃ > ∀
c. ∀ > ∃

Example (25) can be true in a situation in which professors co-vary with students (e.g., if we have excellent recommendation letters for each student candidate). This indicates that *kathe ipopsifios* 'every candidate' has scope over the existential *kapjos kathijitis* 'some professor'. Sentence (25) lacks this reading: only one, very hopeful, professor is involved. Related to this is a third fact, namely, that universal quantifiers cannot scope beyond the clause they occur in, unlike indefinites, for instance, which can have scope across one or more clause boundaries, or *wh*-phrases. Universal quantifers cannot cross the tensed clause boundary (for discussion see Farkas and Giannakidou 1996; Reinhart 1997). Exceptions to this generalization were presented in Farkas and Giannakidou (1996) involving *na*-clauses, which we discuss next; the effect can be reproduced in Romance and English with restructuring or infinitival domains.

Farkas and Giannakidou observe that universal quantifiers such as *kathe* can indeed scope over an indefinite in the main clause as long as it is found in a *na*-complement. From a *pu* or *oti* complement, *kathe* cannot take wide scope:

(26) a. Kapjos kathijitis frondise kathe fititis s'afti ti lista na vri dhulja.
some professor made-sure every student in this list subj find.3sg job
'Some professor made sure that every student in this list will find a job.'
b. ∃ > ∀
c. ∀ > ∃

(27) a. Kapjos fititis lipithike pu kathe kathijitis tis sxolis apolithike.
some student was-sorry that every professor of.the dept. got-fired.3sg
'Some student regrets that every professor in the department got fired.'
b. ∃ > ∀
c. *∀ > ∃

(28) a. Kapjos fititis ipe oti kathe kathijitis tis sxolis apolithike.
some student said.3sg that every professor of.the dept. got-fired.3sg
a. 'Some student said that every professor in the department got fired.'
b. $\exists > \forall$
c. $*\forall > \exists$

The *na*-sentence in (26) has a reading in which professors co-vary with students (as in the scenario mentioned above where there are different recommendation letters for each candidate); the sentences in (27) and (28) lack this reading, as indicated. Farkas and Giannakidou propose certain semantic constraints to account for what allows for wide scope, which is not of immediate relevance here. What matters is that we may safely assume that the following holds:

(29) **Clause-boundedness of universal quantifiers**
The scope of $\forall$ is clause-bounded, except when $\forall$ occurs in an infinitival (or restructuring) domain.

But this is exactly the constraint we observed with NC in (18): NC is clause-bounded and possibly long-distance only across *na*-complements; hence NC is clause-bounded in the way the scope of universal quantifiers is. The type of locality involved in NC, then, strongly implicates a quantificational dependency. Note that this conclusion is not necessarily an argument for Quantifier Raising (QR), although it is implemented as application of QR in Giannakidou (1998, 2000). The generalization can be cast also in a system where quantifiers do not move; for an attempt to implement this idea as an instance of non-movement AGREE (Chomsky 2001b); see Giannakidou and Merchant (2002).

2.3.2 *Negative concord as a universal scoping above negation*

Greek *n*-words are universal quantifiers, which are additionally polarity sensitive – since they need negation to be licensed. In the framework of polarity we are assuming, NPI-universals come with a sensitivity requirement which makes them different from non-sensitive universals: unlike these, which can combine with both positive and negative predicates, NPI-universals can only combine with negative (i.e. antiveridical) predicates. Just like in other polarity dependencies discussed in Giannakidou (1998), this distinctive feature must be encoded in the grammar as a type difference between non-sensitive universals and their NPI-counterparts.[5]

As NPIs, NPI-universals require the presence of negation but they must move in a scope position above negation. This movement is motivated (a) by their sensitivity requirement to combine with an antiveridical predicate, and (b) by the need to yield the correct interpretation for NC as $\forall\neg$, which is the only reading NC structures have.[6]

Consider now the following core sentences, and their respective interpretations. Since Greek is a VSO language, the orders are natural and quite common.

Overt movement of emphatics is also allowed (and must be analyzed as topicalization, as we will see later in section 2.3.4).

(30) Dhen irthe KANENAS.
not came.3sg n-person
'Nobody came.'

(31) Dhen ipe o Pavlos TIPOTA.
not said.3sg the Paul n-thing
'Paul said nothing.'

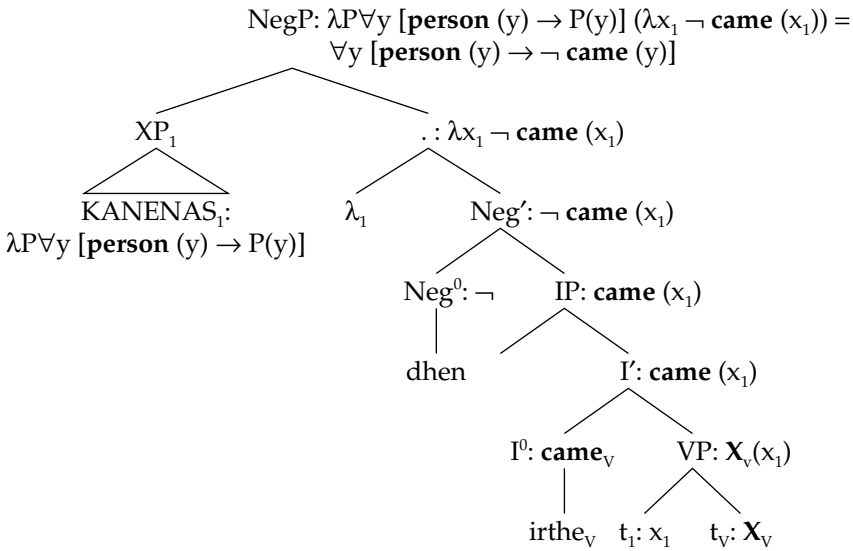
(32) $\forall x$ [**person** (x) $\rightarrow \neg$ **came** (x)]

(33) $\forall x$ [**thing** (x) $\rightarrow \neg$ **said** (Paul, x)]

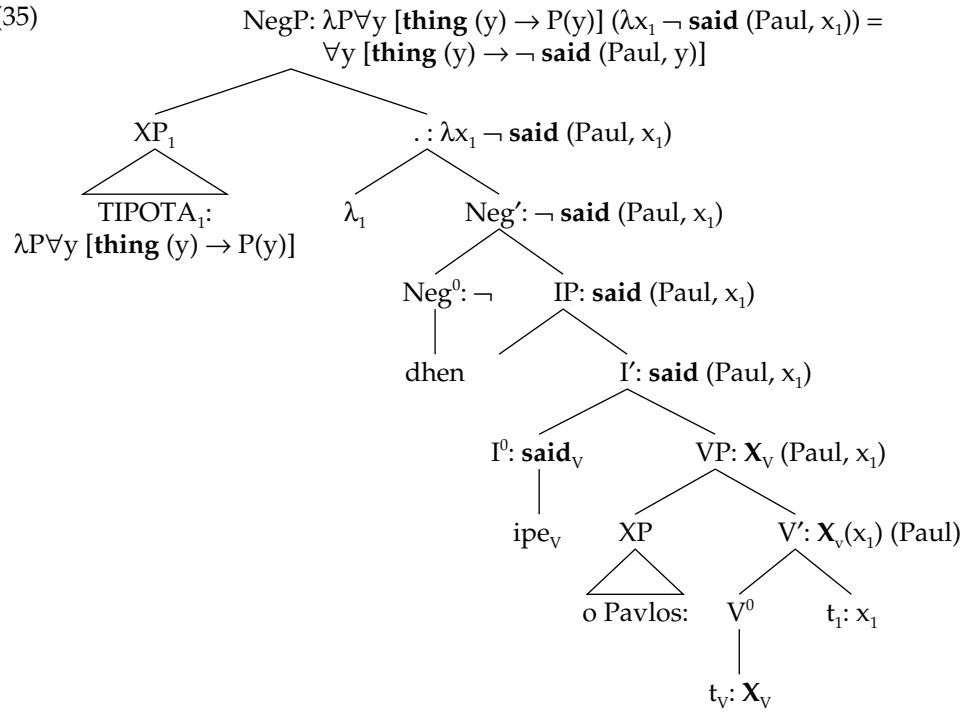
The *n*-word is interpreted above negation, resulting in a universal negative statement. Since we are dealing with quantifiers, the obvious way to derive this reading is to assume that KANENAN and TIPOTA undergo QR and scope above negation. Note that non-sensitive universal quantifiers like *kathe* 'every' cannot scope over negation from a VP-internal position. This fact has been noted for a number of languages (see Beghelli and Stowell 1997 for discussion; Giannakidou 2000: 499–501, for an explanation of the contrast by invoking the Elsewhere principle of Kiparksy 1973).

Given that negation precedes the emphatics in the linear order, we must assume that the universal-over-negation reading is achieved by QR at LF. The proposed LFs are given in (34) and (35); for the '.'convention see Heim and Kratzer (1998); some irrelevant intermediate steps are suppressed.

(34)



(35)



In such configurations, KANENAS and TIPOTA undergo QR past *dhen* and land in [Spec, NegP], though an orthodox implementation of QR as adjunction (May 1985), in this case to NegP (or just IP, if one wishes to analyze *dhen* as a clitic), is equally conceivable. In either case, emphatics are interpreted outside the scope of negation, arriving at the desired logical representations. Nothing specific to NC such as absorption needs to be stipulated. Multiple occurrences of emphatics require successive adjunctions to NegP (or multiple specifiers as in Chomsky 1995c; nothing crucial seems to rely on this choice).

The analysis presented here has one thing in common with the neg-criterion approach: it proposes movement of the *n*-word to [Spec, NegP]. Yet, unlike the neg-criterion, this analysis does not *rely* on the existence of NegP, and can be cast, as mentioned above, also in terms of adjunction to IP, if one does not want to postulate NegP, for example, or in order to account for NC with *without*, where there is no overt negation. In the context of NegP, the motivation of the movement to [Spec, NegP] in this analysis differs substantially from that in the proposals insipired by the neg-criterion. In these approaches, the *n*-word moves in order to undergo absorption (or check its negative feature). In the account presented here, *n*-word movement to [Spec, NegP] is motivated by the correct interpretation of NC. Additionally, this analysis seems to work independently of the syntactic status of the NM (whether it is the head or the specifier of NegP). Hence, unlike accounts based on the neg-criterion, this proposal captures

correctly the fact that NC arises with both X^0 and XP SNs (cf. section 1), without further adjustments.

2.3.3 Commitment of existence

The analysis of *n*-words as universal quantifiers predicts that universal *n*-words will give rise to an existential inference, just like universal quantifiers usually do. The issue is discussed extensively in Horn (1997), where it is shown that universal statements are not like regular conditionals which can be true also in case the antecedent is false. Rather, we tend to interpret universal quantifiers with non-empty restrictions: for example, we tend to evaluate *Every student left* as true only in a context where there are students; a continuation like *but there are no students* is highly disfavored (though not impossible, especially if instead of an episodic past tense we have a modal verb; see Giannakidou 1999: 401–404 for discussion). With some universals, the existence condition is a presupposition, e.g., with *both* and *each*. We need not address at present the issue of what exactly the nature of these existence inferences with universals is; we will just refer to them as existential commitments, following Horn. The presuppositional nature of existence with universals becomes visible with negation:

(36) a. #I Cleo dhen idhe kathe monokero.
the Cleo not saw.3sg every unicorn
#Cleo did not see every unicorn.
b. ¬[∀x **unicorn** (x) → **saw** (Cleo,x)]

The sentence is odd, in Greek as well as in English. The source of oddity is that we presume that the restriction of the universal is non-empty, that is, that there are unicorns in the actual world, and this is a bizarre thing to assume.

Unlike universals, existential quantifiers do not express existential commitment under negation. The sentence in (37a) is fine and can be continued with something like 'because unicorns don't exist':

(37) a. I Cleo dhen idhe enan monokero.
the Cleo not saw.3sg a unicorn
'Cleo did not see a unicorn.'
b. ¬∃x [**unicorn** (x) ∧ **saw** (Cleo,x)]

In the light of this contrast, the hypothesis that some *n*-words are universal predicts that those *n*-words will resemble other universal in presupposing, or being associated to, existence. Consider the sentences below, with an extensional and intensional verb:

(38) a. #I Cleo dhen idhe KANENAN monokero.
the Cleo not saw.3sg n- unicorn
'Cleo saw no unicorns.'
b. ∀x [**unicorn** (x) → ¬ **saw** (Cleo,x)]

(39) a. #I Cleo dhen psaxni.3sg KANENAN monokero.
the Cleo not seek.3sg n- unicorn
'Cleo seeks no unicorns.'
b. $\forall x$ [**unicorn** (x) $\rightarrow \neg$ **seek** (Cleo,x)]

These sentences are as odd as (36), and for exactly the same reason: we are forced to commit ourselves to existence of unicorns, which is of course an odd thing to do. Hence the sentences above support the assumption that emphatic *n*-words are universals and not existentials. (Note that the scope with respect to negation does not really matter, as existence commitment with regular universals survive despite the fact that the universal is interpreted under the scope of negation and not above it, as is the case with *n*-words.)

Existential PIs (called 'non-emphatics'; to be discussed more extensively in section 5), and bare NPs do not give rise to existential commitment, as expected. The following sentences are fine since we are not forced to question the speaker's grasp of the actual world:

(40) a. #I Cleo dhen {idhe/psaxni} KANENAN monokero.
the Cleo not saw.3sg/seek.3sg n- unicorn
'Cleo didn't see any unicorns.'
'Cleo isn't looking for any unicorns.'
b. #I Cleo dhen {idhe/psaxni} monokerus.
the Cleo not saw.3sg/seek.3sg unicorns
'Cleo didn't see unicorns.'
'Cleo isn't looking for unicorns.'

The contrast between emphatics and non-emphatics/bare plurals we observe is in accordance with the position defended in Giannakidou (1997, 1998) that non-emphatics are interpreted as existentials inside the scope of the licensing operator. Bare NPs too are known to take narrow scope with respect to other operators (see Carlson 1977a).

Finally, consider construals of emphatics with modal verbs like (41):

(41) Dhen epitrepete na apolisun KAMIA nosokoma.
not is.allowed.3sg subj fire.3pl n- nurse
'They are allowed to fire no nurse.'

In construals with negative quantifiers and intensional verbs, sentences like the English translation of (41) and especially their Dutch (*geen*) and German (*kein*) counterparts – are known to give rise to the three readings below (see Jacobs 1980; von Stechow 1993; Rullmann 1995a; De Swart 1996):

(42) a. For each nurse *x*, one is not allowed to fire *x*. (wide scope)
b. What one is allowed to do is not fire any nurses. (narrow scope)
c. One is not allowed to fire any nurses. (split)

The three readings are truth-conditionally distinct. The reading in (42b) is rather marginal without the appropriate context. On the wide-scope reading, we talk about a particular set of nurses and one is not allowed to fire those nurses. On the so-called split reading, on the other hand, we do not talk about a particular set of nurses. Sentences with this reading are true if firings are about some nurse or other. The availability of the split reading has been taken to argue in favor of a decompositional analysis of negative quantifiers as $\neg\exists$, as in this reading the modal operator is interpreted in between negation and the existential quantifier (but see our discussion in section 5.2.4 regarding the contrast between German and Dutch, on one hand, and English, on the other).

Crucially, the Greek sentence in (41) has only one reading: the wide-scope one. The other two readings, where negation and the intensional operator take wide scope over the quantifier, are excluded. This is precisely what the analysis of universal *n*-word predicts. (As expected, bare plural and non-emphatic construals are only interpreted narrow scope, or with the split reading.)

2.3.4 Existence, familiarity, and topicalization

In agreement with the existence commitment, universal *n*-words exhibit the property of familiarity. The notion is the one from Heim's file-change semantics (Heim 1982): a quantifier is familiar if it carries an index which is already present in the files representing the previous discourse. Familiar quantifiers are thus presuppositional, i.e., they pick up discourse referents whose existence is previously established. Definite NPs prototypically denote familiar quantifiers, but universal quantifiers have also been taken to refer to familiar discourse referents, only in their case the discourse referent is a set rather than an individual (Kamp and Reyle 1993; Szabolcsi 1997c). From a universal *n*-word, then, we expect familiarity; and this fact makes universal *n*-words prime candidates for topics, which can also undergo syntactic topicalization. These expectations are indeed borne out, as shown in Giannakidou (1998, 2000). In this section we briefly summarize the core facts, also because they make very clear predications cross-linguistically.

Consider the standard case in (43) and its assigned semantic structure.

(43) a. Dhen aghorasa KANENA vivlio.
not bought.1sg n- book
'I bought no book.' (= I didn't buy any books)

b. $\forall x$ [**book** (x) $\rightarrow \neg$ **bought** (I, x)]

Negative sentences with emphatic *n*-words have constrained distribution: they cannot be uttered just out of the blue. Those with existential/indefinite PIs, however, though truth-conditionally equivalent, can be used more freely and pose no requirement on the initial context, as we realize when we think of the respective sentence with *any*. The following two examples illustrate what it means to pose restrictions on the initial context.

Context 1.
Background: A: You were shopping all day. Did you buy anything? Clothes? Books? Records?

B: a. #A, oxi. Dhen aghorasa KANENA vivlio.
Oh, no. not bought.1sg n- book
Oh, no. I bought no book.

b. A, oxi. Dhen aghorasa kanena vivlio.
Oh, no. not bought.1sg n- book
'Oh, no. I didn't buy any book(s).'

In the background of this context, no reference to a particular set of books is established; the mentioning of books happens in a non-declarative sentence, hence no set of books is introduced in the set of files representing the common ground. In such a situation, the use of the emphatic *n*-word is totally inappropriate. Only the use an existential paradigm is felicitous – the non-emphatic *kanena vivlio*, equivalent to *any* under negation (to be discussed shortly in section 5). The contrast supports the assumption that universal *n*-words denote familiar objects, unlike indefinite *n*-words which are standardly analyzed as novel (Heim 1982).

Context 2.
Background: A: I remember you told me about those books that you saw at the *Griekse Eiland*. You wanted to buy them, right? What happened? Did you buy them after all?

B: a. A, oxi. Piga ke ta idha, ala dhen aghorasa (telika) KANENA vivlio.
'Oh, no. I went and looked at them but I bought no book after all.'

b. A, oxi. Piga ke ta idha, ala dhen aghorasa (telika) kanena vivlio.
'Oh, no. I went and looked at them, but I didn't buy any book after all.'

Unlike in Context 1, in Context 2, reference to a set of books has been established in the background. This renders the utterance with the emphatic felicitous. As expected, the statement with the existential *n*-word is fine too.

Denoting familiar entities, universal *n*-words can actually undergo topicalization. Definite NPs are what we would consider prototypical topics, since they are the prototypically familiar NPs; indefinites and weak NPs (in the sense of Milsark 1974), on the other hand, cannot be used as topics because they carry novel indices, i.e., they introduce objects in the discourse rather than presupposing them. Indefinites can be used as topics only if novelty is suspended, as happens when indefinites are interpreted as partitives.

Since universal quantifers denote familiar discourse entities they can easily be used as topics, and even undergo syntactic topicalization across languages (for discussion and references see Giannakidou 2000; Cinque 1990c; Rizzi 1997). We witness this in the clitic left-dislocation (CLLD) examples below, where the universal object quantifiers appear in a left peripheral topic position, and they are linked to clitics in the base position:

(44) Kathe dhema to paredhosa ston paralipti tu. Greek
every parcel it delivered.1sg in-the recepient his
'As for every parcel, I delivered it to its recipient.'

(45) Tutti i tuoi libri li ho rimesso al posto. Italian
all your books them have.1sg put.back in place
'As for your books, I put them back to their place.'

In the above cases, the quantifier phrase is rich in descriptive content: it is either a modifier/determiner or additional modifers are used; bare quantifiers cannot be topicalized (Giannakidou 1997, 1998; Anagnostopoulou 1997):

(46) *Kathena ton idha.
everybody him saw.1sg

The requirement for rich descriptive content is not a mystery; rich descriptive content helps us indentify the discourse referent. This seems to be necessary for universal quantifiers, because otherwise, the universal quantifier picks up a set too large for a proper discourse referent. Crucially, emphatic *n*-words can also be left dislocated and co-indexed with clitics:

(47) [KANENAN fititi]$_1$ dhen (ton$_1$) idha na erxete stin ora tu.
n- student not him saw.1sg subj. come.3sg in time his
'I saw no student arriving on time.'

(48) [KANENA apo ta vivlia]$_1$ dhen (to$_1$) aghorasa telika.
n- of the books not it bought.1sg finally
'I bought none of the books after all.'

The presence of the clitic is not obligatory but in itself, the fact that emphatic *n*-word preposing allows clitics argues for a topic analysis, against an assimilation of such structures to focus preposing which, strictly speaking, requires a gap in the base position (Tsimpli 1995). The appearance of the clitic is again sensitive to the richness of the descriptive content of the preposed emphatic or the sentence predicate. As we see in (49), bare emphatics are incompatible with clitics:

(49) *KANENAN$_1$ dhen ton$_1$ idha.
n-person not him saw.1sg
'Nobody I saw.'

A parallel is observed in the preposing of Italian *n*-words. As noted in Rizzi (1997), bare *nessuno* cannot be coindexed with a clitic, but if we enrich its descriptive content and combine it with a relatively 'heavy' predicate, clitics become fine:

(50) *Nessuno l 'ho visto.
n-person him have.1sg seen

(51) Nessuno {di loro/in questo dipartimento} l 'ho visto parlare
n- student of them/in this department him have seen talk
con Maria.
with Mary
'I saw {none of them/no-one in the department} talking to Mary.'

The above contrasts are consonant with the idea that *n*-words can be used as topics. We will not pursue the matter in more detail here; see Giannakidou (1998, 2000) for additional diagnostics supporting this conclusion.

2.3.5 Summary

The theory implemented in Giannakidou (1998, 2000) proposes a 'pluralistic' view of NC, where *n*-words can be either universal or existential, or ambiguous between the two readings. A number of novel diagnostics are offered for universality, which we summarize here in points (a), (b), and (c). In section 5, we augment this list with the diagnostics in (d–f).

(52) **Diagnostics for universal *n*-words:**
A universal *n*-word has the following properties:
a. It is licensed only by local negation; long-distance licensing may be allowed only through an infinitival or subjunctive clause.
b. It expresses existential commitment, i.e., we tend to interpret it with a non-empty restriction.
c. It can be used as topic in topicalization structures. It these cases it may be coindexed with a clitic pronoun (or a pronoun performing the respective function, if a language does not employ clitic pronouns).
d. It can be modified by modifiers corresponding to *almost/absolutely*.
e. It cannot bind donkey pronouns.
f. It cannot be used as predicate nominal.

In section 5 we will further review a number of tests for the existential import of *n*-words. The predictions for other languages are, then, clear, and we should be able to use the proposed diagnostics in order to trace the relevant Q-force of a given *n*-word paradigm. Notably, the theory does not predict that all *n*-words will exhibit the features of the Greek ones – on the contrary, because we acknowledge that negative statements can also exhibit an underlying existential structure, we expect languages to realize this option too. In such languages, however, *n*-words will behave differently with respect to the diagnostics above. We see, for example, that Slavic *n*-words, exhibit a mixed behaviour in satisfying criteria (a), (d), and (e), and partly (b), but at the same time, they violate (f) and can occur as predicate nominals, or they do not always give rise to existence commitments. (The topicalization test still needs to be checked.) Surányi (2002) further notes

that Hungarian *n*-words can be presuppositional and non-presuppositional, depending on the syntactic position in which they are found, a finding also supporting the pluralistic view on NC that we presented here.

Having familiarized ourselves with the theoretical options for *n*-words and NC, we can now illustrate the empirical picture. We will see that for the correct interpretation of *n*-words we need two basic options: *n*-words can be either universal quantifiers or existential ones. In certain positions they can also receive a negative meaning, primarily in the preverbal position or in negative spread; but this happens only with a subset of *n*-words, mainly in Romance languages.

3 Two basic varieties of negative concord and the distribution of *n*-words

A central division in the description of NC is that between strict NC and non-strict NC (Giannakidou 1998). In this section we illustrate the distinction which we will use as a guide, for the taxonomy of *n*-words in section 3.2.

3.1 Strict and non-strict varieties of negative concord

Strict NC varieties always require the presence of SN; in (2) we saw examples of this variety. It does not matter whether the *n*-word is a subject, object, or adjunct, or whether it is preverbal or postverbal. In strict NC varieties, the presence of SN is obligatory. We illustrate this below with examples from Serbian–Croatian and Greek:

(53) a. Milan *(ne) vidi nista. Serbian–Croatian
Milan not see.3sg n-thing
'Milan cannot see anything.'
(Progovac 1994: 40, 41)

b. Milan nikada *(ne) vozi.
Milan n-when not drive.3sg
'Milan never drives.'

(54) a. O Petros *(dhen) idhe TIPOTA. Greek
the Peter not saw.3sg n-thing
'Peter didn't see anything.'

b. O Petros POTE *(dhen) odhiji.
the Peter n-when not drive.3sg
'Peter never drives.'

Besides Greek and Serbian–Croatian, all other Slavic languages, as well as Hungarian, Romanian, and Japanese exhibit the property of strict NC. Even in structures with multiple *n*-words is the presence of SN obligatory, as we see in the examples below (from Giannakidou 2000; Przepiórkowski and Kupsc 1998; Puskás 1998; Watanabe 2001, respectively):

(55) KANENAS *(dhen) ipe TIPOTA. Greek
n-person not said.3sg n-thing
'Nobody said anything.'

(56) Nikt *(nie) uderzył nigogo. Polish
n-person not hit.3sg n-person
'Nobody hit anybody.'

(57) Balázs *(nem) beszélt senkivel semmiröl. Hungarian
Balázs not spoke.3sg n-person n-thing
'Balázs didn't talk about anything with anybody.'

(58) Dare-mo nani-mo iwa-*(nak)-atta. Japanese
n-person n-thing say.neg.past
'Nobody said anything.'

Hence Greek, Hungarian, Japanese, and Slavic languages form a natural class in terms of strict NC, and require the SN even when more than one *n*-word occurs in a sentence. Strict NC structures never receive double negation readings, as emphasized in the studies just mentioned.

The situation in Romance is quite different. The presence of SN is not obligatory and two *n*-words may co-occur in the absence of it, as in the sentences below. This variety of NC is known as negative spread (Den Besten 1986).

(59) a. Nessuno ha letto niente. Italian
n-person have.3sg read n-thing
'Nobody read anything.'
b. Nadie dijo nada. Spanish
n-person said.3sg n-thing
'Nobody said anything.'
c. Ningú va dir res. Catalan
n-person aux.3sg say n-thing
'Nobody said anything.'
d. Ninguem viu nada. Portuguese
n-person saw.3sg n-thing
'Nobody saw anything.'

Crucially, if we insert SN in languages above we get a double-negation reading; but Romanian and Catalan seem to be an exception to this. Catalan in particular allows optionally for SN with a NC (single negation) reading:

(60) Cap estudiant (no) va dir res.
n- student not aux.3sg say n-thing
'No student said anything.'

There are more subtle details to be addressed here. The most important one to note is that although negative spread is fine with bare *n*-words, i.e., *n*-words as independent NP constituents, it seems to be disallowed when *n*-words are used as modifiers or determiners. The fact has been noted in Acquaviva (1997) for Italian (and attributed to Manzotti and Rigamonti 1991), but it has not been discussed much in the relevant literature.

(61) ??Nessuno studente ha letto nessun libro.
n- student has read n- n-thing
(Acquaviva 1997: 69)

The sentence above is reported impossible on the intended NC reading. Similarly, structures with two *n*-words functioning both as determiners are excluded in Spanish and Catalan (Josep Quer, p.c.). Compare the two sets of sentences below:

(62) a. Ningún estudiante dijo nada Spanish
b. Cap estudiant (no) va dir res Catalan
n- student (not) said n-thing
'No student said anything.'

(63) a. ??Ningún estudiante contestó ninguna pregunta. Spanish
n- student answered n- question
b. ??Cap estudiant va contestar cap pregunta. Catalan
n- student answered n- question

According to the native speaker's intuition, the unacceptable judgment in Spanish is due to the fact that it points to a double negative reading which is, however, not possible. In Catalan, on the other hand, if we add SN *non* the result is a NC reading 'No student answered any question' and not the double-negative reading 'it is not the case that no students answered any questions'. This is so because addition of SN in Catalan does not yield double negation, as we just saw (60). In the Romance languages family, the only language that does not seem to exhibit a contrast regarding the determiner or QP status of the *n*-word is Portuguese, according to Peres (2000), where equivalents of (61) are reported to be fine.

We surely want to link these facts to other distinctive feature of Romance NC regarding the position of *n*-words (preverbal or postverbal) that we tackle immediately below. Most importantly, if the relevant *n*-words were inherently negative, we would not expect to see the contrasts presented here; double-negative and NC readings should be freely allowed (depending on whether we apply the rule of negative absorption or not), contrary to fact. On the other hand, the different judgments we get between bare *n*-words and determiner *n*-words could be made to follow if we assumed that bare *n*-words are negative quantifiers, but determiner words are indefinites: the non-co-occurrence of two determiner *n*-words

would then follow as a non-licensing, since there is no negation. Two bare *n*-words, on the other hand, would form a branching negative quantifier structure yielding one negative reading. In fact, the re-interpretation of negative absorption as branching quantification seems to be a desirable move for explaining the pattern of negative spread (as suggested in Giannakidou 1997: 151; see De Swart and Sag 2002 for an implementation of this idea as resumptive quantification in French).

Going back to the comparison between strict and non-strict NC varieties, we should note again that Greek, Hungarian, and the Slavic languages do not exhibit negative spread and require SN regardless of the number of *n*-words. In the example below (from Giannakidou 2000) we see that the number of *n*-words that can occur in a sentence is unlimited, and the presence of SN is still obligatory:

(64) KANENAS *(dhen) ipe POTE TIPOTA se KANENAN Greek
n-person not said.3sg n-ever n-thing to n-person
'Nobody ever said anything to anybody.'

Given this clear empirical contrast between Romance languages and strict NC languages regarding the obligatoriness of the SN, it seems reasonable to expect that the semantic properties of *n*-words in these two core varieties will not be the same. The existence of negative spread, as well as the fact that double negation readings arise with bare *n*-words and negation indicates that these particular *n*-words may indeed contribute negation, as we just suggested; but in strict NC varieties *n*-words obviously do not convey logical negation, since they always need SN, and license only NC readings.[7]

Not all Romance languages, however, allow negative spread; recall example (60) from Catalan, which allows the SN with more than one *n*-words. Romanian forms an even stronger exception: it *requires* strict NC, and does not allow negative spread at all (data from Bernini and Ramat 1996: 176, 186)

(65) a. Nimeni *(nu) vine.
n-person not come.3sg
'No one is coming.'
b. Nimeni *(nu) vazu nimic.
n-person not saw.3sg n-thing
'No one saw anything.'

Obviously, then, the semantic content of *n*-words in Romance is not uniform. Instead we seem to have a scale which includes on the one end Romanian, which is strict NC, and on the other end Spanish, Italian, and Portuguese, which allow for negative spread. Catalan is in between the two ends. This situation clearly suggests that the semantic content of Romance *n*-words vis-à-vis negativity must be different in each variety.

Before closing this section it is worth reminding that, as noted in n. 1, negative spread patterns are marginally found in languages that typically do not exemplify NC, e.g. Dutch and German. These cases, however, are restricted to certain contexts, and exhibit special emphatic intonation which marks their exceptional use.

(66) Hier hilft KEINER KEINEM German
here help.3sg n-person n-person
'No one helps anyone here.'

Negative quantifiers can, then, occasionally form branching structures, independent of NC. It seems that almost none of the NC languages that have been thoroughly studied in the literature makes exclusive use of negative spread. French may be an exception to this generalization, as we shall see in section 3.3.

3.2 The position of n*-words: preverbal vs. postverbal*

A distinctive feature of non-strict NC varieties of Romance is that the presence of the SN may be disallowed even in structures with one *n*-word. This happens when the *n*-word is preverbal, as we see in the examples below from Spanish and Italian (Zanuttini 1991). Generally, then, while preverbal *n*-words exclude SN, postverbal ones require it. This fact is further illustrated below with data from Spanish:

(67) a. Mario *(non) ha visto nessuno. Italian
Mario not has seen n-person
'Mario didn't see anybody.'
b. Nessuno (*non) ha visto Mario.
n-person not has seen Mario
'Nobody saw Mario.'

(68) a. Pedro *(no) ha visto a nadie. Spanish
Pedro not has seen n-person
'Peter didn't see anybody.'
b. Nadie (*no) ha visto a Pedro.
n-person not has seen Pedro
'Nobody saw Peter.'

The b-sentences with preverbal *n*-words have the expected single negation NC reading only if SN is absent. The reading is illustrated below for the Spanish sentence; the universal negation is employed for uniformity, but as we said, the existential version is equivalent:

(69) $\forall x$ [**person** (x) $\rightarrow \neg$ **saw** (x, Pedro)]

If we do insert SN, we get the double negation reading:

(70) a. Nadie no ha visto a Pedro.
n-person not has seen Pedro
'Nobody saw Pedro.'
b. ¬ (∀x [**person** (x) → ¬ **saw** (x, Pedro)])

The asterisk in (67b) and (68b) is intended to show the absence of this double negation reading. Putting the facts together, we have to conclude that in preverbal position the *n*-word itself seems to contribute a negation, so that the addition of SN amounts to the addition of one more negation in the logical structure. The obvious question is: if the NC rule cancels out multiple negations in postverbal positions, why does it not apply in the case of preverbal ones? If *n*-words are negative we should expect double-negative readings to arise indiscriminately with preverbal and postverbal positions.

The best we can come up with is to stipulate an additional syntactic condition that negation must be expressed at the topmost level of the sentence, and that this can be done either by SN itself, or by an *n*-word (which is essentially the proposal in Zanuttini 1991). Once the *n*-word is inserted, the condition is satisfied, and the insertion of SN would add another logical negation; the condition would not affect the postverbal postion, obviously. Crucially, the condition would affect not only a preverbal subject, but also a topicalized preverbal *n*-word. Note also that the condition concerns exclusively the combination of a preverbal *n*-word and SN: we do not have double-negative readings with a preverbal and a postverbal *n*-word in negative spread. Apparently, this is so because with two bare *n*-words a different operation applies the formation of negative branching hence the negation-topmost condition does not apply. At any rate, to the extent we need the negation-topmost condition, and we do seem to need it, we accept that the *n*-words that the condition applies to convey, in certain positions, logical negation.

In strict NC languages such as Greek and Slavic we do not observe preverbal versus postverbal contrast; the SN is obligatory regardless of the position of the *n*-word (see Progovac 1994 and Giannakidou 1998, 2000 and works cited there).[8]

(71) a. Mario *(ne) vidi ni(t)koga.
Mario not see.3sg n-person
'Mario cannot see anyone.' (Progovac 1994: 37)
b. Ni(t)ko *(ne) vidi Mario.
n-person not see.3sg Mario
'Nobody can see Mario.' (Progovac 1994: 37)

(72) a. O Petros *(dhen) idhe KANENAN. Greek
the Peter not saw.3sg n-person
'Peter did not see anyone.'

b. KANENAS *(dhen) idhe ton Petros.
n-person not saw.3sg Peter
'Nobody saw Peter.'

Crucially, both patterns are attested in Catalan, as a preverbal *n*-word optionally allows the NM whereas a postverbal one requires it (see Quer 1993). Compare the sentence below with the ones above from Spanish and Italian:

(73) a. Ningú (no) ha vist en Pere. Catalan
n-person not has seen Peter
'Nobody saw Peter.'
b. En Pere no ha vist ningú.
Peter not has seen n-person
'Peter didn't see anybody.'

Sentence (73a) has the NC reading in (69) and not the double-negative one in (70); compare to Hungarian in n. 9. This fact correlates with the restricted negative spread observed in Catalan that we noted previously in 3.2. The correlation is supported further by Romanian, which does not tolerate negative spread and behaves just like strict NC varieties in requiring the presence of SN even with preverbal *n*-words, as we saw in (65). So, again, we are forced to conclude that it is impossible to invoke a uniform characterization for *n*-words in Romance, certainly not in terms of negativity. The implication of this is that we cannot invoke a uniform rule for NC in this language family either.

3.3 A typology of n*-words*

Having illustrated the basic patterns of negative concord, we summarize the results in this section in a typology of *n*-words. Before we present the final classification, however, there is a language that deserves special mention, and which we have not discussed so far: French.

French can be seen as a language with exclusive use of negative spread. The reason for this is that, although the French *n*-words *personne*, *rien*, etc. co-occur with the negative marker *ne*, this marker arguably does not convey logical negation:

(74) a. *Marie n'a vu Paul.
Intended meaning: 'Mary didn't see Paul.'
b. Marie n'a pas vu Paul.
'Mary didn't see Paul.'

Logical negation is expressed by *pas*; this explains the quite overwhelming tendency in colloquial French to drop *ne* altogether. Crucially, *pas* and *n*-words cannot co-occur, but two (or more) *n*-words with *ne* are fine:

(75) * Marie n' a pas rien dit.
'Mary didn't say anything.'

(76) Personne n'a rien dit.
'Nobody said anything.'

We can conclude, then, that patterns with French *n*-words and *ne* are patterns of negative spread, which squares with the observation that *ne* can also be dropped. French appears to be unique in that it employs only negative spread and strictly excludes NC proper.

French *n*-words have been treated in the literature as negative quantifiers (Corblin 1996, Larrivée 1995, among others), as quantificational elements with the force of *zero* N (Déprez 1997), as indefinites (Corblin and Tovena 2001) and non-negatives (Rowlett 1998), and as ambiguous (De Swart and Sag 2002). Note that sentences with multiple French *n*-words are systematically ambiguous between a NC and a double-negation reading (see a recent posting in the *Linguist* list 10.1799 by Misako Kitamoto with statistics on this ambiguity based on a sample of 26 speakers), which support the hypothesis that French *n*-words must be both negative and non-negative. Since we have proposed that negative spread can be analyzed as involving a branching quantifier structure, it seems plausible to say that, at least in negative spread, French *n*-words are indeed negative quantifiers. But French *n*-words can also be used in non-negative sentences, e.g., interrogatives, with existential meaning (as we shall see in section 4), hence we must also allow for a existential interpretation. In section 5, however, we see that French *n*-words do not receive non-quantificational interpretations, e.g., they cannot be used as predicate nominals, with negation. This fact is clearly problematic for the indefinite-only analysis, as this analysis predicts French *n*-words to be fine predicate nominals.

We are now in position to provide a typology of *n*-words in Romance, Slavic, Greek, and Hungarian based on the distinction between strict and non-strict NC and the empirical characteristics emanating from this distinction (see Table 45.1). We have a continuum with strict NC on the one end (rows 1–6) and negative-spread-only on the other, identified with French in row 11, which systematically licenses double-negative readings. In between we have Catalan, closer to the strict NC end, and Italian, Spanish, and Portuguese, closer to the French end. Keep in mind that the proper set of comparison here is the set of Germanic negative quantifiers which do not allow NC, and therefore answer 'no' to the three possibilities indicated in the table. French is almost identical to the Germanic situation, save for those cases where multiple occurrences of *n*-words do not allow for double-negative readings. We will compare this table to the semantic tests in section 5.3; the most important test is, as we will see, the ability to occur in non-negative contexts with non-negative readings. We will see that almost all *n*-words in the non-strict varieties (6–11) can do this; the only exception seems to be Portuguese.

Table 45.1 The distribution of *n*-words in Negative Concord

Language	PreV *n*-word+SN	PostV *n*-word+SN	Negative Spread
1. Greek	Yes	Yes	No
2. Hungarian	Yes	Yes	No
3. Polish	Yes	Yes	No
4. Russian	Yes	Yes	No
5. Serbian–Croatian	Yes	Yes	No
6. Romanian	Yes	Yes	No
7. Catalan	Yes	Yes	Yes
8. Italian	No	Yes	Yes
9. Spanish	No	Yes	Yes
10. Portuguese	No	Yes	Yes
11. French	No	No	Yes

Obviously, *n*-words in strict NC cannot be characterized as negative in any sensible way (although they can still provide negative fragment answers; we turn to this immediately). For these languages, then, an approach along the lines of negative absorption must be prima facie excluded.

4 The issue of negativity

Let us consider now in more detail the negativity of Romance *n*-words. Recall first that unambiguously negative quantifiers appear only in languages without NC, e.g., German, Dutch, and English (West Germanic). As we mentioned earlier, the standard diagnostics are two. First, negative quantifiers contribute negative meaning in the absence of SN. Second, when they co-occur, or when they co-occur with a SN, only double negative readings arise. Both facts are illustrated below.

(77) a. Heeft Frank **niemand** gezien? Dutch
have.3sg Frank nobody seen
'Is it true that Frank saw nobody?'
b. Frank heeft niet **niemand** gezien.
Frank have.3sg not nobody seen
'It is not the case that Frank didn't see anybody.'
Frank didn't see anybody.
c. Niemand zei niets. Iedereen had iets te vertellen.
nobody said nothing everybody had something to say
'It is not the case that nobody said anything. Everybody had something to say.'

In the above sentences *niemand* and its English counterpart are interpreted as negative quantifiers. The same can be said for *niets* 'nothing'. I give here the

version with ∀ without implying that this is the only option; negative quantifier construals can also admit ¬∃ readings (if this is how we chose to interpret *n*-words as predicate nominals, for example; the issue becomes relevant in 5.2).

(78) a. [[niemand]] = λP ∀x [**person** (x) → ¬ **P** (x)]
b. [[nobody]] = λP ∀x [**person** (x) → ¬ **P** (x)]
c. [[niets]] = λP ∀x [**thing** (x) → ¬ **P** (x)]

So negative quantifiers in West Germanic are inherently negative *n*-words. Crucially, languages with such *n*-words do not exhibit NC. Sentences like (77b, c) are unambiguously double negatives. The question now becomes: are Romance *n*-words, in the non-strict varieties of NC (including Catalan) identical to their counterparts in non-NC languages?

4.1 Negative meaning and ellipsis

The most popular alleged piece of evidence for the negativity of *n*-words comes from the fact that *n*-words can occur in fragment answers with negative readings (see Zanuttini 1991 for the original observation for Italian). This fact holds for strict as well as non-strict varieties, so we will address it in general terms here:

(79) Q: Who arrived?
a. Nessuno. Italian
'Nobody.'
b. KANENAS. Greek
'Nobody.'

I assume the following definition of what counts as a fragment answer:

(80) **Fragment answer:**
An answer α to a *wh*-question Q is a fragment answer iff:
a. α corresponds in form to the *wh*-XP constituent in Q; and
b. α is interpreted as a proposition.

It follows from (a) and (b) jointly that a fragment answer is an elliptical structure, since α is a non-sentential constituent which nevertheless receives the interpretation of a sentence. Hence, in the fragment answer above, *Nessuno* and *KANENAS* identify *who* arrived, and, although what appears as an answer in each case is just an NP, the fragment answer they each form is actually interpreted as a proposition meaning *Nobody arrived*. What has not been sufficiently appreciated in the literature is that the fact that *n*-words are interpreted negatively in the absence of overt negation does not prove that they are negative. Rather, negation here arises from the fact that we have ellipsis. If we were to spell out the full structure, the presence of negation would be indispensable, as indicated below; strike-through indicates elided material:[9]

(81) A: KANENAS [*(~~dhen) irthe~~].
n-person not arrived.3sg
Nobody [arrived].

There are two similar cases which might indicate that *n*-words contribute negative meaning in elliptical contexts: (a) coordinations (disjunctions, and possibly also conjunctions), and (b) some apparently equative structures which are interpreted like comparatives, invoking alternatives. We give here Greek examples (from Giannakidou 2000) but similar facts have been documented for Romance (Zanuttini 1991) and Slavic (Przepiórkowski and Kupsc 1998):

(82) Thelo na pandrefto ton Petro i KANENAN (alo).
want.1sg subj marry.1sg the Peter or n-person (else)
'I want to marry Peter or nobody (else).'

(83) O Petros ine toso psilos oso KANENAS (alos) stin taksi tu.
Peter is as tall as n-person (else) in-the class his
'Nobody else in Peter's class is as tall as Peter is.'
(Implicating that Peter is taller than anybody else in his class. Not that Peter is as tall as everybody else in his class.)

(84) i [*~~(dhen) thelo na pandrefto~~ KANENAN.
or not want .1sg subj marry.1sg n-person
. . . or I don't want to marry anybody.

(85) oso [*~~(dhen) ine~~] KANENAs alos stin taksi tu.
as not is n-person else in-the class his
'Peter is as tall as nobody else in his class.'

In these cases, the addition of *alo* 'else', which seems necessary for most speakers, signals that we are considering alternatives. Reduced co-ordinations have been argued to be an instance of clausal ellipsis by numerous authors (see Johnson 1996; the same holds for clausal comparatives, for a recent discussion see Lechner 2001).

Further evidence that we are dealing with clausal ellipsis is provided by the fact that in the coordination example (86) the preposition *me* 'with' cannot be omitted; this is in agreement with other cases of moved remnants under ellipsis, such as in gapping and sluicing, since Greek does not allow preposition stranding (see Merchant 2001 for the correlation between preposition stranding and the (un)availability of prepositions under ellipsis). On the other hand, DPs can be coordinated in general, as in (87):

(86) Thelo na miliso me ton Petro {i/ke} *(me) KANENAN (alo).
want.1sg subj talk.1sg with the Peter {or/and} with n-person (else)
'I want to talk to Peter {or/and} nobody (else).'

(87) Milisa me ton Petro ke ti Maria.
talked.1sg with the Peter and the Mary
'I talked to Peter and Mary.'

Likewise, prepositions cannot be omitted in negative answers:

(88) Q: Me pjon milises?
with whom talked.2sg
'Who did you talk to?'
A: *(Me) KANENAN.
'(To) nobody.'

Again, we see that a language which does not allow preposition stranding, Greek, does not allow omission of the preposition in a negative fragment answer; but in English, a language allowing preposition stranding, the preposition can be omitted with no cost. Hence we have to say that the negative meaning in elliptical fragments arises not as an inherent contribution of the *n*-word, but rather as the result of their being associated with negation at the level at which ellipsis is resolved. Watanabe (2001) questions the ellipsis argument by raising the problem of the antecedent. If the elliptical LF contains negation in a fragment answer, where does this negation come from? The problem is that the antecedent is actually positive; and this goes against the assumption that the ellipsis structure and that of its antecedent must be syntactically isomorphic. Syntactic isomorphism, however, is a highly controversial assumption, as shown recently in Merchant (2001), and one that Giannakidou (2000) does not share. Merchant illustrates numerous problems with the arguments for syntactic isomorphism; the problems with LF-identity were also well known in the purely semantic approaches to ellipsis, and they were even noted in more syntactic approaches like Fiengo and May (1994), where 'vehicle change' was introduced to explain away some of them.

Merchant (2001) proposes an alternative based on (a particular implementation of) semantic isomorphism: the antecedent proposition must semantically license the elliptical one. Licensing is, roughly, a relation between inferences. The elliptical proposition will be licensed only if it can be inferred by the proposition that serves as its antecedent. Following Karttunen (1977), where questions denote the set of their true answers, a negative-fragment answer is indeed licensed semantically by its antecedent in Merchant's terms. A negative answer is part of the denotation of a question, and thus a possible inference from it. A question like *Who arrived?* denotes the Q-set we see below. This set contains a negative proposition as a possible answer:

(89) Domain: {Frank, Bill}
Q: {Frank arrived, Bill arrived, Nobody arrived}

So we do have an appropriate antecedent for a negative fragment answer; but it is found in the *denotation* of the question, and need not be part of its syntax. That

it is the semantics that we need becomes evident in the fact that a plain declarative sentence, like the one below, does not serve as an appropriate antecedent for this kind of ellipsis:

(90) A: O Janis irthe.
'John arrived.'
B: #Oxi, KANENAS.
'No, nobody did.'

The denotation of an extensional declarative sentence is just a single proposition; if it happens to be positive, as in (90), it cannot license semantically an ellipsis which needs a negative antecedent.

It thus seems safe to conclude that the negative meaning in ellipsis fragments is not evidence for an inherent negative meaning of *n*-words. It is a little more complicated to trace the negative antecedent in the coordination and the comparative examples which also license the negative ellipsis; but note that these structures involve alternatives (worlds and degrees), and this may provide the basis for a successful search.

Most importantly, items which indeed have inherent negative meaning, like *udhis* 'nobody' and *udhen* 'nothing', are *not* construed with negation. *Udhis*, *udhen* are remnants from ancient Greek with very limited use in the modern language. They are negative quantifiers, and, as we see below, cannot co-occur with negation.

(91) Udhen neoteron (*dhen) exomen.
nothing new not have.1pl
'We don't have any new developments.'

Sentences such as (91) belong to a formal register, but when appropriate, they do not allow negation. The absence of NC in ancient Greek is parallel to the absence of NC in English, German, and Dutch, and due, apparently, to the fact that a negative quantifier paradigm is employed in these languages.[10] It appears, therefore, that the ellipsis facts question directly the assumption that *n*-words are negative quantifiers. True, this conclusion seems safer to make for strict NC varieties, where the SN is obligatory in every case. But what about non-strict varieties of *n*-words?

4.2 Non-negative readings of n*-words*

The decisive fact here is that most Romance *n*-words can be used in non-negative contexts without contributing negation. These contexts are typical polarity structures, e.g. interrogative sentences, conditionals, superlatives, and restrictions of universal quantifiers. The fact has been noted numerous times in the literature, and is illustrated below with examples from Catalan, Spanish, and Italian (Quer 1993; Laka 1990; and Acquaviva 1997, respectively):

(92) a. Li diràs res? Catalan
him/her tell.fut.2sg n-thing
'Will you tell him/her anything?'
b. Si aneu enlloc digueu- m'ho.
if go.2sg n-place tell.imp.2pl me
'If you go anywhere, let me know.'
c. Tothom qui vulgui res que m'ho digui.
everybody who want.3sg n-thing that me tell.3sg
'Everyone who wants something, should let me know.'

(93) a. Perdimos la esperanza de encontrar ninguna salida. Spanish
lost.1pl the hope to find n- exit
'We lost hope of finding some way out.'
b. Todo aquel que tenga nada que dicir . . .
all who that have n-thing that say
'Everyone who has anything to say. . . .'

(94) a. È venuto nessuno? Italian
is.3sg come n-person
'Has anyone come?'
b. È l'idea più stupida che abbia mai avuto nessuno.
is.3sg the idea more stupid that have.subj.3sg n-ever had n-person
'It's the dumbest idea anybody has ever had.'

In the above sentences, *n*-words are unable to contribute negation by themselves. Instead, they are interpreted merely as existential quantifiers, as evidenced by the translations. The comparison with the Germanic (77a), which is a negative question, is quite telling. We have to conclude, therefore, that these Romance *n*-words, unlike the Germanic ones, are not negative quantifiers. Note that this conclusion holds even for the most relaxed variety of French, which allows both a negative and an existential reading:

(95) Est-ce que tu a vu personne?
'Did you see anybody?'
'Is it true that you saw nobody?'

Hence, Romance *n*-words are at best ambiguous between a negative and a non-negative, existential meaning.

In contrast to the rest of Romance, Romanian and Portuguese *n*-words cannot appear in non-negative structures at all. This implies that these *n*-words apparently cannot contribute negative meaning themselves; though this does not seem to be a correct assumption for Portuguese, which, unlike Romanian, allows negative spread and *n*-words in preverbal position without negation. (We compare the two languages again in the concluding section.) Additionally, Romanian and Portuguese *n*-words seem unable to contribute existential meaning; in this they

are in sharp contrast with the rest of Romance languages, which allow existential readings with their *n*-words to varying degrees. For this purpose an unambiguously existential item is employed:

(96) a. Telefonou {*ninguém/alguém}? Portuguese
(Intended meaning: Did you call anybody?)
b. Se vem {*ninguém/alguém} estamos perdidos.
'If anybody comes, we are lost.'

(97) a. A telefonat {*nimeni/cineva}? Romanian
(Intended meaning: Did you call anybody?)
b. Dac vine {*nimeni/cineva} sîntem pierdui.
'If anybody comes we are lost.'

(There seems to be no difference between European and Brazilian Portuguese in this respect.) That these *n*-words are unable to contribute an existential quantifier also casts serious doubt on the hypothesis that they are indefinites (see e.g. Peres 2000 for Portuguese). If they were, we would expect an existential reading in non-negative contexts. *N*-words in strict NC languages exhibit exactly the same pattern: they are not licit in non-negative contexts. The point is illustrated here with interrogatives:

(98) a. Da li Milan voli nitkoga? Serbian
that Q-prt Milan love.3sg n-person
b. *Nikto zvonil? Russian
n-person called.3sg
c. *Olvassot Maria semmit? Hungarian
read.3sg Maria n-thing
d. *Idhes KANENAN? Greek
saw.2sg n-person

Greek, Hungarian, and Slavic *n*-words are ungrammatical without negation. This implies that they are unable to contribute negation on their own, as West Germanic *n*-words do, despite the fact that their morphological make-up seems to have a negative component. As previously, a plausible conclusion must be that *n*-words in strict NC are unable to contribute an existential quantifier independently of negation either. An additional conclusion for *n*-words in strict NC varieties is that they are negative PIs (NPIs), and not just PIs, as those *n*-words occurring in non-negative contexts arguably are. This claim must obviously be extended to Portuguese, excluding thereby the *n*-word from a non-negative context as a licensing failure.

The picture we draw here regarding negativity clearly supports the position that we have been arguing for all along, namely, that *n*-words do not form a semantically uniform class across languages. It also seems hard to pin down a class of *n*-words that is just negative – Portuguese may be such a case, as we

suggest later in the conclusions. Generally, when in non-negative contexts *n*-words are either interpreted existentially (Italian, Spanish, Catalan), or they cannot be interpreted at all and are thus ruled out (Romanian, and strict NC). At best, we can find only *n*-words that are ambiguous between negative and non-negative readings (French). Given that *n*-words may indeed have existential readings, we need to check, finally, what the characteristics of existential readings are, and what their impact is on the analysis of *n*-words. This is the direction we take next.

5 The possibility of having an existential polarity item under negation

Consider a language like English which employs a negative quantifier and *any* under negation:

(99) a. **Existential negation:**
I didn't buy any book(s).
b. $\neg\exists$x [**book** (x) $\wedge$ **bought** (I, x)]

(100) a. **Universal negation:**
I bought no book.
b. $\forall$x [**book** (x) $\rightarrow$ $\neg$**bought** (I, x)]

The two sentences are, of course, truth-conditionally equivalent (though there are pragmatic differences; recall our discussion in section 2.3). But crucially, the negative sentence with a PI like *any* unquestionably involves an existential under negation.[11] Standard English does not exhibit NC. But imagine that we have a language which is like English in employing an existential item like *any* under negation, but unlike English, it also has NC. In this language NC must be identified with universal negation, and the *n*-words used must correspond to a universal quantifier. In Giannakidou (1998, 2000) it is argued that Greek is such a language. On the other hand, imagine a language that has NC, but unlike Greek and English, does not exhibit a separate existential dependency under negation. If we can show that *n*-words in that language are not negative, then they must be ambiguous between the universal and existential readings we have identified here. In Giannakidou (2000) it is suggested that (a number of) Slavic *n*-words must belong to this type; we illustrate the relevant diagnostics in section 3.2. Recall from section 2.2. that we do not want to treat this as an indefinite ambiguity as there is no evidence for quantificational variability and the universal meaning cannot be introduced in this context without violating compositionality. Rather, as genuinely ambiguous, we would expect the Slavic *n*-words in question jointly to exhibit the properties of universal *n*-words that we have discussed so far, and those of existential items that we will present here.

Whether we call existential items '*n*-words' or just PIs seems a harmless terminological choice; the characterization 'PI' nevertheless reflects more accurately

the fact that these items are not strictly negative PIs and are licensed routinely in non-negative polarity environments – some existential PIs in more environments than others, *any* being very broad in this respect. *N*-words which receive existential interpretation are also licensed in non-negative environments with precisely this interpretation, as we saw in section 4.1.

The syntax of existential dependencies under negation and NC differ in one important respect, namely, locality. This basic difference manifests itself in three ways, which I illustrate in section 5.1. There are also clear semantic differences between existential PIs and *n*-words under negation, to be presented in section 5.2. The discussion will provide us with a number of diagnostics that will enable clear comparisons between languages, which we summarize in section 5.3.

5.1 Negative concord vs. existential dependencies: locality

In this section we illustrate that, unlike NC, existential dependencies under negation are not clause-bounded. The argument can be made very clearly for Greek, so I follow here closely the discussion in Giannakidou (2000). Greek has the paradigm of emphatic *n*-words that we have already been discussing; apart from that, Greek employs a homophonous non-emphatic paradigm, illustrated in (101); the English gloss here is intended to capture the semantic affinity to the existential import of *any* (but non-emphatics do not have free-choice readings):

(101) kanenas 'anyone, anybody'
tipota 'anything'
pote 'ever'
puthena 'anywhere'

Giannakidou (1998, 2000) considers emphatic accent not as focus, but as a morphological feature that distinguishes emphatics from non-emphatics.[12] That non-emphatics are interpreted existentially becomes evident when we consider their interpretation in non-negative contexts. Non-emphatics occur freely in these contexts, as the equivalents of *any*; emphatics, on the other hand, never occur in non-negative contexts:

(102) **Question:**
Pijes {pote/*POTE} sto Parisi?
went.2sg n-ever in-the Paris
'Have you ever (=sometime) been to Paris?'

(103) **Intensional verb:**
An dhis tin Elsa {puthena/*PUTHENA} na tis milisis.
if see.2sg the Elsa n-where subj her talk.2sg
'If you see Elsa anywhere (=some place), talk to her.'

(104) **Modal verb:**
I Maria bori na milisi me{kanenan/*KANENAN}.
the Mary may.3sg subj talk.3sg with n-person
'Mary may talk to anybody (=somebody).'

(105) **Imperative:**
Pare {kanena/*KANENA} milo.
take.imp.2sg n- apple
'Take any (=some) apple.'

The inability of emphatic *n*-words to occur in non-negative structures shows that they are NPIs, and not just affective polarity items (APIs), as non-emphatics have been characterized in Giannakidou (2000). APIs are interpreted existentially. Romance *n*-words take over (some of) these API-uses that Greek emphatic *n*-words cannot perform, as we saw, and when they do, Romance *n*-words are also interpreted existentially.

The licensing of emphatic *n*-words, as we saw in section 2.3, is local in the sense of clause-boundedness, but the licensing of non-emphatics is unbounded (as first observed in Giannakidou and Quer 1995, 1997). Syntactically, therefore, non-emphatic APIs behave on a par with *any* and their licensing is quite unconstrained. To appreciate the empirical extent of the freedom of licensing of existential PIs, we present here three representative differences with NC *n*-words.

5.1.1 N-*words in islands*

Non-emphatics are licensed in syntactic islands. The examples below illustrate this with a relative clause and an adjunct, but more examples are given in Giannakidou (1998). Quer (1993, 1994) reports a similar observation about Catalan *n*-words, an example of which is given in (108), from Quer (1993: 30):

(106) Dhen prodhosa mistika [pu eksethesan {kanenan/*KANENAN}].
not betrayed.1sg secrets that exposed.3pl n-person
'I didn't reveal secrets that exposed anybody.'

(107) Dhen milisa [epidhi ithela na prosvalo {kanenan/*KANENAN}].
not talked.1sg because wanted.1sg subj offend n-person
'I didn't talk because I wanted to offend anybody (but because I had to).'
SCOPE: NOT [Because . . . anybody]; # [Because . . . anybody] NOT talked

(108) a. No vindra perque vulgui fer res amb ningu.
not fut.come.1sg because want.1sg do n-thing with n-person
'I will not come because I want to do anything with anybody.'
b. No dire secrets que puguin ofendre ningu.
not fut.tell.1sg secrets that can.pl offend.3pl n-person
'I wouldn't reveal secrets that could offend anybody.'

In this respect, non-emphatics and Catalan *n*-words are like *any*, which is also fine in islands as we see in the glosses; emphatic *n*-words, on the other hand, contrast clearly with these and are ungrammatical. The fact that they occur in islands makes it hard to argue that non-emphatics and *any* are licensed by movement; rather, it seems more reasonable to say that they are licensed in situ as in Giannakidou and Quer (1995, 1997) and Giannakidou (1997, 1998). The interpretation of non-emphatics and Catalan *n*-words is identical to *any*, it is existential, as indicated in the translations. The relevant reading is always with *any* and the *n*-words under negation, in agreement with Linebarger (1980, 1987), as indicated in (107). If *any* and the *n*-words are outside the scope of negation they are illicit, a fact noted in Quer (1993). We see this in the sentence below:

(109) *Dhen milisa, epidhi ithela na prosvalo kanenan ke epidhi mu ixan apogorepsi na miliso.
*'I didn't talk; because I wanted to offend anybody and because they forbade me to talk in the first place.'
SCOPE: [*because* clauses] NOT talked

In this sentence, the *because*-clause is not in the direct scope of negation, as required for these cases (by Linebarger's *Immediate Scope Constraint*). The problem, of course, is that in this scoping the *because*-clauses are not negated at all, hence the licensing requirement that PIs be in the scope of its licenser is not met, and the PI becomes ungrammatical. Again, it is important to note that to the extent that *n*-word licensing is possible in islands, the *n*-words that successfully occur there are existentials. Negative quantifiers are of course also allowed, as in *I did not talk because I wanted to offend nobody*, but then they contribute negative meaning. Catalan *n*-words and Greek non-emphatics do not have this interpretation, and seem to behave just like existentials. Greek emphatics, on the other hand, are unacceptable in islands because they would have to move out of the island in order to scope above negation. It is important to note that *n*-words in other strict NC varieties exhibit clearly the pattern of Greek emphatic *n*-words, and not that of non-emphatics or Catalan *n*-words.

5.1.2 N-*words in embedded clauses*

The basic fact, which correlates with the observations we just made regarding *n*-words in islands, is that only items with existential meaning can be licensed long-distance. In this, non-emphatic APIs are again parallel to *any*. We have already seen in section 2.3 the locality constraints imposed on emphatics and the parallelism with quantifier scope. We provide here the relevant contrastive data.

Emphatic items are not accepted in indicative complements of negated matrix verbs. NC is possible only in monoclausal domains and *na*-clauses. Non-emphatics, on the other hand, and existential/indefinite dependencies with *any* are fine:

(110) I Ariadhni dhen ipe oti idhe {tipota/*TIPOTA}.
the Ariadne not said.3sg that saw.3sg n-thing
'Ariadne didn't say that she saw anything.'

(111) I Ariadhni dhen theli na dhi {kanenan/*KANENAN}.
the Ariadne not want.3sg subj. see.3sg n-person
'Ariadne doesn't want to see anybody.'

The embedding may not be limited to just one complement clause, as illustrated in the sentence below (from Giannakidou 1998); the translation indicates that the same holds for *any*:

(112) Dhen ipa oti pistevo oti itheles na me katigorisis
not said.1sg that believe.1sg that wanted.2sg subj me accuse.2sg
se kanenan.
to n-person
'I didn't say that I thought that you wanted to badmouth me to anybody.'

Emphatics are, of course, unacceptable in such cases. The ban on long distance licensing generalizes to a significant number of *n*-words in Romance, and strict NC varieties, as illustrated below.

(113) a. Milan ne tvrdi [da Marija poznaje Serbian–Croatian
Milan not claim.3sg that Mary know.3sg
{*ni(t)koga/i(t)koga}].
n-person
'Milan does not claim that Mary knows anybody.'
b. Ne zelim [da vidim {*ni(t)koga/i(t)koga}].
not wish.3sg that see.1sg n-person
'I do not wish to see anybody.' (Progovac 1994: 41)

We see in these sentences that so-called *i-NPI*s (the terminology is from Progovac 1994) in Serbian–Croatian are just like non-emphatics in generally being licensed long distance. *Ni-NPI*s, on the other hand, are just like emphatics and are licensed only locally. Serbian–Croatian and Greek appear to be identical in this respect: they have two *n*-word paradigms under negation, of which only one can be licensed long distance; and it happens to be existential. This direct mapping, however, breaks down when we consider clausemate negation. In contrast to Greek, the existential paradigm *i(t)koga* is not licensed with local negation (Progovac 1994: 42):

(114) *Marija ne poznaje i(t)koga.
'Mary doesn't know anybody.'

This fact generalizes over a number of languages in Slavic, and also Hungarian (see the data in Haspelmath 1997 and the works mentioned there on the individual languages). The impossibility of the existential dependency under clausemate negation clearly suggests that *n*-words must do this job. The anti-locality effect of existentials in these languages was assimilated to the anti-locality we find in pronouns in Progovac (1994); but in the context we assume here it can be seen as

a case of blocking, the existential PI is blocked by clausemate negation because the *n*-word is used to express this meaning. It seem unavoidable, then, to conclude that Slavic *n*-words do have existential meanings, a position to be supported later on by the fact that they can be used as predicate nominals and that they do not always allow presuppositional readings with negation.

5.1.3 Preceding negation

Finally, another typical characteristic of an existential dependency is that the PIs involved in it cannot directly precede negation, as indicated in (115b); non-existential *n*-words, on the other hand, can.

(115) a. KANENAN dhen idha.
n-person not saw.1sg
'I saw nobody.'
b. *Kanenan dhen idha.
*anybody I didn't see.1sg

N-word preposing is always optional. Again, we observe the parallel with non-emphatics and *any* here. The usual assumption for these items is that they must be licensed in the c-command domain of their licenser in order to be grammatical, and that c-command must hold at s-structure (though extensive arguments have also been presented recently that c-command must hold at LF; (see Uribe-Etxebarria 1994 and Giannakidou 1998; see also Hoeksema 2001 for noting the insufficiency of the s-structure conditions). We need not delve into further details. What matters is that, unlike Greek non-emphatics, *n*-words in the other languages we are considering, including of course also emphatics, can freely precede negation, hence they are in sharp contrast with existential/indefinite PIs.

To conclude this section, we saw that unlike universal *n*-word licensing, existential licensing under negation is unbounded, proceeds through islands, and is not subject to s-structure c-command. Hungarian, Slavic, and many Romance languages lacking the existential paradigm under negation obliterate the distinction overtly attested in Greek.[13] This explains, for instance, why some of these *n*-words occur in islands (recall the Catalan *n*-words), or why they receive existential interpretations in the absence of negation (recall the data in section 4).

In the next section we review some additional diagnostics which will help us further decide whether an *n*-word could be existential or not.

5.2 Existential polarity items and the semantics of n*-words*

In this section we review some central arguments in support of the observation that the semantic import of PIs like *any* and non-emphatics is existential. We contrast the semantics of the two paradigms to that of universals on the basis of a number of diagnostics.

5.2.1 Almost/absolutely *modification*

∀-quantifiers, but not indefinites or existentials (∃), can be modified by *almost/absolutely* (see Dahl 1970 and Horn 1972 for the original observation). We see below that only emphatics admit *almost/absolutely* modification.

(116) a. *Electra was willing to accept {absolutely/almost} something.
b. Electra was willing to accept {absolutely/almost} everything.

(117) a. Dhen idha sxedhon {KANENAN/*kanenan}.
not saw.1sg almost n-person
'I saw almost nobody.'
b. Dhen idha (apolitos) {KANENAN/*kanenan} (apolitos).
not saw.1sg absolutely n-person absolutely
'I saw absolutely nobody.'

N-words in the various Romance languages also admit *almost/absolutely* under negation. But, as shown in Quer (1993, 1994), *almost/absolutely* modification fails in non-negative contexts, where the *n*-words are interpreted existentially (recall the data in section 4.2). This contrast supports the view we are pursuing that Romance *n*-words in the non-strict varieties are ambiguous between existential and possibly negative readings (given that they allow negative spread and can be interpreted negatively in the preverbal postion), and are illustrated below:

(118) a. Non ho visto quasi nessuno. Italian
not have seen almost n-person
'I saw almost nobody.'
b. *Ha visto quasi nessuno?
'Did he see almost anybody?'

(119) a. Non he dit absolutament res. Catalan
not has said absolutely n-thing
'He said absolutely nothing.' (Quer 1993: 64)
b. *Li diras absolutament res?
will you tell him/her absolutely n-thing
c. *Si aneu absolutament enlloc digeu-m'ho.
if go.2pl absolutely n-where tell.IMP.it
'If you go absolutely nowhere, tell me.'

More examples are given in Quer (1993, 1994) further supporting the contrast between existential and non-existential interpretations and the possibility or not to admit *almost/absolutely* as modifiers. It has been a popular strategy in recent years to question the results of the *almost* test (e.g., Horn and Lee 1995; Déprez 1997), but see Giannakidou (2000: 472–474) for discussion of why the potential counter-arguments do not threaten the generalizations we observe here.

5.2.2 Ke-*modification*

The second difference concerns *ke*-modification. *Ke* 'and' is a modifier of existential quantifiers, and emphatics are incompatible with it. This expression is comparable to Dutch *ook maar* and German *auch nur*, which have a similar meaning. In (120) we see that *ke* and its ilk are incompatible with universals:

(120) a. Dhen ipe ke{kati/*katheti} spudheo.
not said.3sg and something/everything important
'He didn't say something important.'
b. Dhen ipe ke{tipota/*TIPOTA} spudheo.
not said.3sg and n-thing important
'He didn't say anything important.'
c. Wil jij {ook maar iemand/*iedereen} zien?
want you to particle someone/everyone see
'Do you want to see anybody?'

Emphatics, then, behave on a par with universal quantifiers as far as *ke*-modification is concerned. Non-emphatics, on the other hand, are well-behaved existentials. The test can be checked with the other languages under consideration (see Surányi 2002 for application to Hungarian).

5.2.3 Donkey anaphora

Like universal quantifiers and quantificational elements in general, universal *n*-words do not license donkey anaphora, a point extensively discussed in Giannakidou (1997, 1998):

(121) I fitites pu exun {kati$_1$/tipota$_1$} na pun, as to$_1$ pun tora.
the students that have.3pl something/n-thing subj. say let it say.3pl now
'The students that have {something$_1$/anything$_1$} to say should say it$_1$ now.'

(122) *I fitites pu dhen exun TIPOTA$_1$ na pun, as (min) to$_1$ pun tora.
'*The students that have nothing$_1$ to say, let them (not) say it$_1$ now.'

(123) I fitites pu aghorasan kathe vivlio$_1$, na to$_1$ ferun mazi tus.
the students that bought.3pl every book subj. it bring.3pl with them
'*The students that bought every book$_1$ should bring it$_1$ with them.'

In these examples we see that non-emphatics behave dynamically in that they can establish anaphoric links from a relative clause just like existential quantifiers. *Any* behaves no different in this respect. Emphatics and universal quantifiers, on the other hand, are static: they cannot bind variables outside their scope, as we see in (122) and (123), respectively. Richter and Sailer (1998) note that Polish *n*-words behave on a par with emphatics with respect to donkey anaphora, a fact suggesting that they receive universal interpretation. But they

express reservations for the validity of the test by saying that negation creates islands for anaphora anyway (see also Surányi 2002); for instance:

(124) *The students that didn't buy {any/some} book should show it now.

In this declarative sentence, negation binds off the variables contributed by *any book* and *some book* and anaphora is blocked, since there are no discourse referents to be picked by the pronoun in the main clause. However, there are declaratives which actually allow anaphora even through negation; an example is given below, attributed to Barbara Partee:

(125) This place doesn't have a bathroom, or it has it in a strange place.

Hence it is not entirely true that anaphora is blocked under negation. Even more frequently, existentials can bind pronouns under negation in directive sentences, as the examples below illustrate with non-emphatics; *any* appears to have a limited ability to do the same:

(126) a. Don't check any book$_1$ out from that (Satanic) library; reading it$_1$ might warp your mind.
b. Min aghorasis kanena vivlio$_1$; bori na apodixti *pro*$_1$ epikindino.
not buy.2sg n- book may subj. prove.3sg *pro* dangerous
'Don't buy any book$_1$; it$_1$ might prove dangerous.'

In the negated imperative-like (126a), anaphora is enabled across negation and *might* between *any book* and *it*, and the same can be said for (126b) (though in this sentence the bound reading may be not the most salient reading in English). Imagine the context of a dictatorial regime, where some books are forbidden by the government, and whoever buys them runs the risk of going to jail. In this context, (126b) can be felicitously uttered, meaning either 'buying books will prove dangerous', or 'the books that you buy may be dangerous'. The second reading is the one indicated in the indexing in (126b). Emphatics, crucially, do not allow this reading; universal quantifiers do not allow it either:

(127) Min aghorasis KANENA vivlio$_1$; bori na apodixti *pro*$_{*1}$ epikindino.
not buy.2sg n- book may subj. prove.3sg *pro* dangerous
'Buy no books; it might be dangerous (if you buy).'

(128) Min aghorasis kathe vivlio$_1$; bori na apodixti *pro*$_{*1}$ epikindino.
not buy.2sg every book may subj. prove.3sg dangerous
'Don't buy every book; it might be dangerous (if you buy them all).'

Example (127) has only the reading where buying books can prove dangerous, and likewise (128) can only mean 'buying all the books will be dangerous'. Hence directive negative sentences are indeed static for universal quantifiers and

emphatics, but still dynamic for non-emphatics and *any*. Why anaphoric links with negation are more easily established in directive sentences is a more general issue that needs to be addressed in the context of donkey anaphora, but it is not of direct relevance here.

Though the discussion above has certainly not exhausted the subtleties and variation arising with donkey anaphora, the clear contrasts we witnessed in this subsection allow us to pair emphatics with universal quantifiers, and non-emphatics with existential quantifiers. Most significantly, *n*-words in other strict NC languages, e.g., Hungarian, Polish, Serbian, and possibly other Slavic languages, and Romanian behave on a par with emphatics (Richter and Sailer 1998; Blaszczak 1999). Below we give examples supporting this point from Hungarian and Romanian.

(129) *A diakok akiknek van (sem) *semmi* (sem) mondanivalojuk most kene mondjak. Hungarian
*The students that don't have *n-thing* to say should say it now.

(130) *Studentii care nu au*nimic* de spus ar trebui s-o spuna acum. Romanian
*The students that not have *n-thing* to say should say it now.

Obviously, in these languages too, *n*-words are quantificational, hence they cannot bind pronouns outside their syntactic scope.

In some non-strict NC Romance languages, on the other hand, *n*-words behave like existentials/indefinites, can be licensed in conditionals even without negation, and can bind donkey pronouns. We illustrate below with Catalan; but Portuguese, as we see, is different:

(131) a. Si truca ningú, digues-li que no hi sóc. Catalan
if calls n-person tell him that not LOC am
'If anyone calls, tell him I'm not in.'

b. *Todo aluno que trouxe nenhum livro Portuguese
every student who bought n- book
mostrou-o para mim.
showed it to me

Italian, Spanish, etc. should be just like Catalan, since these languages too allow for existential interpretations of their *n*-words. We note again that Portuguese *n*-words form the exception which, as we saw in section 5.1, do not receive existential interpretations at all, are not licensed in non-negative contexts, thus also not in the restriction of a universal quantifier.

5.2.4 Use in predicate nominals

Existential PIs can occasionally be used as predicate nominals under negation, but non-existential *n*-words cannot. The contrast is visible again in Greek: on a par with universals and unlike non-emphatics and regular existentials, emphatics

cannot be used as predicate nominals, as shown in the examples in (132); this fact was first observed by Quer (1993) and Giannakidou and Quer (1995):

(132) Dhen ine {kanenas/*KANENAS} jatros.
not be.3sg n- doctor
'He is no doctor.'

(133) Frank is {a/*every} student.

Partee (1987) discusses restrictions on the availability of type-shifting to predicative (type <*e*,*t*>) interpretations. She argues that type-lowering from <<*e*,*t*>,*t*> to <*e*,*t*> is not allowed for universals: they must always be assigned the generalized quantifier type (<<*e*,*t*>,*t*>) – the reasons why this is so are immaterial here. The unacceptability of emphatics in predicate-nominal positions indicates that emphatics cannot be lowered to the predicative type. Non-emphatics, on the other hand, make perfectly good predicate nominals.

Admittedly, sentence (132a) differs from the corresponding one with the bare NP in (134), which is the unmarked option:

(134) Dhen ine jatros.
not be.3sg doctor
'He is not a doctor.'

The difference in Greek between the two options is exactly parallel to the one we observe with the corresponding sentences in English: the *no doctor* version is marked, and has a pejorative flavor in it. In the case of *He is no doctor* the person in question can still be a doctor, but just not a good one. *He is not a doctor,* on the other hand, states that the person in question does not have the property of being a doctor, and it is true only in this situation.

What is the situation with other *n*-words? The cross-linguistic picture seems split. On the one hand, we have *n*-words that can be used as predicate nominals; on the other, we have *n*-words that follow the Greek pattern and cannot be used for this function. French, Italian, Hungarian (see Surányi 2002), and Romanian illustrate the latter, thus confirming the quantificational pattern:

(135) a. *Non è nessun dottore. Italian
not be.3sg n- doctor
b. *Il n' est aucun docteur. French
he not be.3sg n-doctor
c. *Maria nu e nici un doctor. Romanian
Maria not be.3sg n- a doctor

(136) *Mari se orvos. Hungarian
Mari no doctor.

Hence the Greek, Hungarian, and Romanian varieties of strict NC form a natural class in this respect. The Slavic variety, however, gives a different picture. Polish, Russian, and Serbian *n*-words can indeed be used as predicate nominals (Richter and Sailer 1998; Blaszczak 1999).

(137) a. On nie jest zadnym lekarzem. Polish
he not be.3sg n- doctor
'He is no doctor.'
b. Nikakoj on ne vrach. Russian
n- he not doctor
c. Jovan nije nikakav doctor. Serbian
John not n- doctor

So there is a clear division with strict NC regarding the option of *n*-word predicate nominals, and the use of *n*-words is always a marked option, accompanied by a pejorative meaning. Catalan is in-between: in most cases it excludes *n*-words from predicate-nominal positions, but occasionally it allows them to appear there, if they are construed with abstract nouns and convey the evaluative meaning we have observed:

(138) a. No és cap geni. Catalan
not is n- genius
'He's no genius.'
b. No és cap meravella.
not is n- marvel
'He's no marvel.'
c. No és (*cap) metge.
not is n- doctor

Apparently in Catalan the noun 'doctor' is not amenable to a pejorative interpretation, thus the ungrammaticality of (138c). At any rate, the pattern confirms the observation that if a language allows for existential readings of *n*-words, as Catalan does systematically, then it will allow them to occur in predicate nominal positions.

In the same spirit, the Russian, Polish, and Serbian data seem to suggest that *n*-words in these languages are amenable to existential interpretations, at least in these cases. This conclusion would be consistent with the observation that we made earlier vis-à-vis the fact that these languages do not employ another existential PI-paradigm under negation. The question then is: if Slavic *n*-words can be existential, why does not their existential import surface in other contexts, e.g., with interrogatives and other non-negative contexts, as in the case of Catalan *n*-words? The only way to handle this question is to postulate, as we did earlier, that *n*-words in Slavic are NPIs and therefore licensed only by negation; we can content ourselves with such an answer at this stage although, surely, as with every polarity phenomenon, we would like to know what the deeper lexical semantic source of this fact is.

Going back to Romance *n*-words that do not tolerate predicate-nominal uses and comparing these to Catalan, an interesting correlation emerges. The Romance languages that disallow predicate nominal *n*-words are more limited than Catalan in licensing their *n*-words in non-negative contexts with existential readings; Catalan seems to be the most liberal case given the documented facts (Quer 1993, 1994). Since Portuguese does not license existential meanings with *n*-words, as we saw, we would expect it to block predicate nominal uses altogether; but this is not what we get:

(139) O Pedro não é nenhum médico.
the Peter not is n- doctor
'Peter is no doctor.'

If Portuguese *n*-words are negative, as we have accepted in section 4.2, these data suggest that *nenhum medico* is just like the English *no doctor*. Note that Portuguese also exhibits the unmarked pattern of negation and a (bare) infinitive that is generally available in the languages we are discussing, including English. Crucially, the very fact that negative quantifiers are used in this marked pattern as predicate nominals casts doubt on the general applicability of this test. We will discuss some more data below, and continue assuming that the possibility of a predicate nominal use may indicate existential meaning, but we should keep in mind that the predicate nominal test may actually not be one of the most reliable diagnostics.

A question arises regarding Italian and French (and also Spanish), which do seem to allow existential uses, albeit more restricted than Catalan. Why can the existential reading not arise under negation? An answer that suggests itself is the following. If we assume, as we do in this chapter, that French, Italian, and Spanish *n*-words are ambiguous between negative and existential quantifiers, and if the negative quantifier meaning is the meaning that appears with preverbal *n*-words, then, under negation postverbally these Romance *n*-words would be existentials, hence they could type-shift to a predicative type. We must assume, quite tentatively, that what blocks this shift is the fact that the unmarked option with an indefinite exists in these languages. (In Greek, presumably, the shift is not blocked because there are two series of *n*-words.)

Now, if Romance *n*-words in postverbal position are not negative quantifiers, we can explain why they are bad without negation, unlike Germanic *n*-words:

(140) a. *Gianni è nessun dottore. Italian
John is n- doctor
b. *O Pedro é nenhum medico. Portuguese
the Peter is n- doctor

(141) a. Hij is geen arts. Dutch
b. He is no doctor English
c. Er ist kein Artzt. German

In addition, Romance *n*-words are polarity sensitive: they need negation to be licensed in the postverbal position. Hence sentences like (140) are ruled out as licensing failures.

In German and Dutch, finally, negative quantifiers are the only means to express the [neg+indefinite] meaning, whereas in English there is the less evaluative option of *He is not a doctor*; hence the non-equivalence of *no doctor* to *not a doctor* that we noted. Crucially, the use of inherently negative *n*-words as predicate nominals may be an argument in favor of a decompositional analysis of negative quantifiers as $\neg\exists$ (as has actually been proposed for German and Dutch *n*-words in Jacobs 1980, von Stechow 1993, and Rullmann 1995a), only for languages that do not have the option of an indefinite and negation. Dutch/German and English/Portuguese contrast clearly in this respect, as we have seen.

5.3 Summary

Let us conclude the discussion in this section by summarizing the characteristics of existential PIs under negation that we have observed. We give the full list below, incorporating some of the contrasting observations with universal quantifiers we noted in section 2.3.

(142) **Diagnostics for existential *n*-words:**
An existential *n*-word has the following properties:
a. It is licensed freely long distance in complement clauses.
b. It can be licensed in syntactic islands, e.g., relative clauses and adjunct clauses.
c. It cannot be modified by modifiers corresponding to *almost/absolutely.*
d. It can bind donkey pronouns.
e. It can be used as a predicate nominal.
f. It need not express existential commitment, i.e., we can interpret it with an empty restriction.

These properties contrast clearly with those of universal *n*-words that we repeat here:

(143) **Diagnostics for universal *n*-words:**
A universal *n*-word has the following properties:
a. It is licensed only by local negation; long distance licensing may be allowed only through an infinitival or subjunctive clause.
b. It expresses existential commitment, i.e., we tend to interpret it with a non-empty restriction.
c. It can be used as topic in topicalization structures. In these cases it may be coindexed with a clitic pronoun (or a pronoun performing the respective function, if a language does not employ clitic pronouns).
d. It can be modified by modifiers corresponding to *almost/absolutely.*
e. It cannot bind donkey pronouns.
f. It cannot be used as predicate nominal.

Finally, we note here the properties of negative *n*-words, in order to have the full set of comparison:

(144) **Diagnostics for negative *n*-words:**
A negative *n*-word has the following properties:
a. It receives negative meaning and excludes sentential negation in the preverbal position.
b. It receives negative meaning and excludes sentential negation when it co-occurs with another *n*-word (negative spread). The first *n*-word is usually in the preverbal position (though not always, recall French).
c. It is licensed only by local negation; long distance licensing may be allowed only through an infinitival or subjunctive clause.
d. It can be used as topic in topicalization structures. It these cases it may be coindexed with a clitic pronoun (or a pronoun performing the respective function, if a language does not employ clitic pronouns).
e. It can be modified by modifiers corresponding to *almost/absolutely*.
f. It cannot bind donkey pronouns.
g. It usually cannot be used as predicate nominal.

(We need to qualify (g) with *usually*, if we want to include Portuguese *n*-words, which admit predicate nominal uses, in the class of negatives; recall also what we just noted, namely, that the predicate nominal use is not a totally reliable diagnostic.) We see that negative *n*-words have a number of properties in common with universal *n*-words, for example (c) through (g), a fact suggesting that it may be more accurate to treat a negative quantifier as having the underlying logical structure of a universal statement. Most Romance *n*-words exhibit jointly the characteristics of existential and negative *n*-words. *N*-words in strict NC varieties, on the other hand, are either only universals (Greek emphatics), or only existentials (Greek non-emphatics), or they exhibit the properties of both (Slavic *n*-words). The crucial fact will be the number of *n*-words a language allows under negation: Greek allows two and therefore splits the two readings, but Slavic languages only have one, and therefore collapse the logical distinction between a universal and an existential quantifier under negation.

6 Conclusion

Negative concord (NC) is not a uniform but a quite diverse phenomenon across languages. The primary goals of this chapter were to illustrate the empirical richeness of NC, and familiarize the reader with the various analyses that have been proposed to handle the diversity. Given the interaction between logical negation and quantifiers, we have the following five options as possible interpretative strategies for *n*-words: (a) *n*-words can be negative; (b) *n*-words can be existential; (c) *n*-words can be universal quantifiers; (d) *n*-words can be ambiguous negative and existential quantifiers; and (e) *n*-words can be ambiguous

between universal and existential quantifiers. Apart from the fact that negation with quantifiers involves two logical structures, ambiguity is expected because many languages do not employ a distinct PI with existential meaning under negation; hence *n*-words inevitably take over some of the existential functions. Crucially, option (b), that *n*-words are unambiguously existential quantifiers, was not supported by the data discussed here.

We did find convincing evidence, however, that Greek NC instantiates the universal option: *n*-words in NC are NPI-universals which must scope over negation in order to be properly interpreted. This conclusion was supported by various diagnostics: the observed locality in NC; donkey anaphora; exclusion from predicative use; scope parallelisms between NC and universal quantifiers; the availability of existence inferences under negation with both NC *n*-words and universal quantifiers ('presuppositionality'); and the possibility of topicalization. The distinctive feature of Greek NC is that Greek also employs an existential PI under negation; the *n*-word, then, is unambiguously universal.

Interestingly, the wealth of facts reviewed here questioned the viability of the negative absorption approach in its pristine form, which posits that all *n*-words are negative quantifiers. It became clear that there is no evidence that *n*-words as a general class are unambiguously negative. The only actual piece of evidence indicating inherent negativity is the fact that some *n*-words can occur preverbally without negation; in this case it is clearly the *n*-word that contributes negation. But *n*-words which do that, with the exception of Portuguese, are also admitted in non-negative polarity contexts, e.g., interrogatives, conditionals, restrictions of universals, and in these contexts they contribute not a negative but an existential quantifier. In view of this we cannot but conclude that these *n*-words are at best ambiguous between negative quantifier and existential readings – a conclusion supported also by the semantic tests we applied in section 5.2. This, then, will be our conclusion for Italian, Spanish, French, and Catalan, where, in contrast with Greek, no existential PI-paradigm other than the *n*-word is used; hence the ambiguity is not unexpected. Crucially, the ambiguity correlates with the position of *n*-words: the negative-quantifier meaning arises in the preverbal position with negation; in the postverbal position and in non-negative polarity contexts these Romance *n*-words are existential quantifiers.

Portuguese and Romanian, on the other hand, are different. We saw in section 5 that *n*-words in these two languages are not licensed in non-negative contexts. However, Romanian is a strict NC language, Portuguese is strictly non-strict; it freely allows negative spread. If negative spread indicates negative branching, we have to conclude that Portuguese *n*-words are indeed negative quantifiers; this is, then, a unique case in the sample of languages we have examined. Additionally, we must postulate that in contrast with Germanic negative quantifiers, Portuguese *n*-words (a) can form branching structures thus giving NC reading with one another, and (b) are NPIs, hence they must be licensed, and cannot occur in a non-negative context. Romanian *n*-words, on the other hand, seem to exhibit the characteristics of universal quantifiers that we discussed illustrating with Greek.

N-words in Slavic languages cannot be negative, as we saw in section 5. Given that Slavic languages employ only one paradigm of *n*-words under negation, this means that their *n*-words must be ambiguous between existential and universal meanings. This conclusion is supported by the fact that they scored well on both sides with respect to the number of diagnostics we considered. For example, Slavic *n*-words are possible predicate nominals, but exclude donkey anaphora; they allow pressuppositional readings but they are not forced to have them. Certainly, there are more subtle variations between the individual languages, but it seems relatively safe to assume that the variations will fluctuate within the two options posited here.

Hungarian *n*-words were argued to be universal quantifiers (Szabolcsi 1981b and subsequent works cited in Surányi 2002). They behave just like the Greek *n*-words; but Hungarian does not employ an existential PI under local negation, which opens up the possibility that Hungarian *n*-words perform this function too. However, their impossibility as predicate nominals and the fact that they do not allow donkey anaphora suggest clearly that they follow the universal pattern. According to Surányi (2002), Hungarian *n*-words allow both presuppositional and non-presuppositional readings with negation; if this judgment is correct, then an existential meaning would also have to be an, albeit marginal, option with these *n*-words.

In this chapter we focused on a limited number of languages and tried to show the intricacies involved in the interpretation of their *n*-words. The sample has been, of course, too small, considering the many languages that are out there exhibiting some or other form of NC. Though at present we cannot undertake the task of uncovering new varieties of NC, we must be confident that the analyses and diagnostics presented in this paper will prove helpful in the description and understanding of *n*-words in these languages too. The expected meanings and meaning shifts should be drawn from the quite exhaustive repertory we have established in this study.

NOTES

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1 Although there is a clear divide between languages that employ NC as a standard structure and languages that do not, we should note that even languages that do not

have NC may allow it occasionally, e.g., Dutch (Giannakidou 1998: 185, Van der Wouden 1997: 245), and German (Giannakidou 1998: 185); e.g., *Je hebt NOOIT GEEN tijd voor mij* 'You never have time for me', from Dutch. These cases are admittedly quite marginal, and have a clear emphatic intonation. With this precaution, statements like 'a language has NC' should be taken to mean 'a language employs NC as a standard structure'. On this point, see also Acquaviva (1993).

2 A parenthetical note on the status of SN: SN in NC may be 'light', as in the examples in (2) or 'heavy'. Light SNs are usually argued to be heads (see Pollock 1989, and especially Zanuttini 1991, 1997). Romance, Slavic, Greek, and Non-standard English exemplify NC proper with a light SN. Heavy SNs, on the other hand, are, according to most accounts, XPs analyzed as specifiers of NegP (Pollock 1989; Bayer 1990b; Zanuttini 1991, 1997; see also Merchant 2000). Quebecois French, Bavarian, and Afrikaans exhibit NC with a heavy NM, as we see below (see Vinet 1998, Bayer 1990b, and Den Besten 1986):

(i) a. J' ai pas vu personne. Quebecois
I have.1sg not seen n-person
'I haven't seen anybody.'

b. Ich bin froh, daß ich keine Rede nicht halden brauch. Bavarian
I be.1sg glad that I no talk not hold must.1sg
'I'm glad I don't have to give a talk.'

c. Hulle het nooit gesing nie. Afrikaans
they have n-ever sung not
'They have never sung.'

Mixed cases are also possible. West Flemish forms one such case where light and heavy NMs combine with *n*-words (for details see Haegeman 1995b).

3 In Haegeman (1995b) [Spec, NegP] is assumed to be always filled at s-structure, either by a contentive element (an *n*-word) or by a phonologically null expletive neg-operator. In this context, in West Germanic languages (West Flemish, Dutch, German, Afrikaans) and in Hungarian, the neg-criterion is met via overt movement of *n*-words. In Romance (French, Spanish, Italian, Portuguese) and in English, operator-chains are invoked (in the spirit of Brody 1995b) to ensure satisfaction of the neg-criterion.

4 See Giannakidou and Quer (1995, 1997) and Giannakidou (1997) for an analysis of negation as a binary Q-operator with restriction and scope, extending a proposal made in Ladusaw (1994) that negation can be thetic (non-quantificational) or categorical (quantificational). However, the analysis of negation as a binary operator seems hard to motivate, because negation does not behave like one. With a Q-binder for instance, a variable appearing in the restriction is still affected by the Q-operator: it acquires its Q-force:

(i) a. Typhoons usually arise in THIS part of the Pacific.
b. USUALLYx [**typhoons** (x)] [**arise in this part of the Pacific** (x)]

The sentence is interpreted as 'as for typhoons, they usually arise in this part of the Pacific' (and focus actually indicates which material goes to the nuclear scope; more discussion in Krifka et al. 1995). The material in the restriction is still in the semantic scope of the Q-adverb and aquires the respective Q-force. With negation, however,

there is no way to make the distinction between restriction and nuclear scope: if material is allegedly in the restriction of negation, it is no longer affected by it and is interpreted positively, as if it is outside the scope of negation. Thus there seems to be no real motivation to impose a tripartite structure for negation.

5 Taking the opposite track, Progovac (2000) tries to reduce quantifiers in general to negative polarity items, by arguing that all quantifiers, positive or negative, have a polarity feature (positive or negative) which is responsible for their raising. The proposal should be seen as a welcome attempt to give quantifiers morphological features, which would drive their movement in a minimalist analysis, and it clearly shares with the quantificational approach to NC the main idea of reducing the two phenomena, NC and quantification, to one.

6 This has an important consequence for the definition of the syntactic domain of PI-licensing. It entails that, despite what we might be inclined to believe, this domain does not always correspond to the c-command domain of the licenser. Though in many cases licensing maps indeed onto a be-in-the-scope-of condition, this mapping is not a conceptual necessity. The type of syntax involved in licensing (or anti-licensing) will be almost exclusively determined by the semantic content of PIs. In the case of NPI-∀, the quantificational semantics and the licensing requirement that NPI-∀ combine with an antiveridical predicate leave no other option but the escape-the-scope-of-condition (for more discussion see Giannakidou 2000).

7 Despite the fact that they are not negative, *n*-words in strict NC varieties could still be argued to have a 'negative' feature, as is argued in Brown (1999) and Progovac (2000) for Russian and Serbian. The assumption here is that this feature is uninterpretable on the *n*-word itself, so the *n*-word must check it and eliminate it against negation. Even in these terms, however, *n*-words would be different from negative quantifiers, as these would have to carry an interpretable negative feature (Brown 1999).

8 Hungarian is an interesting case: it has two series of *n*-words, what Surányi (2002) calls a bare *n*-word, and a second complex one which contains a bare *n*-word and the morphological SN *sem*. With a bare *n*-word we have the standard strict NC pattern; but with the *sem*-word, addition of SN *sem* gives ungrammaticality. It is important to note the difference with Romance, where addition of SN does not give ungrammaticality, but yields a double-negation reading. For more details, including a syntactic explanation of why the double-negation reading is excluded, see Surányi (2002) and references therein.

9 As regards fragment answers in particular, consider that bare NP remnants of minimizers can also be used, as *leksi* 'word' in (i):

(i) Q: What happened? Did he say anything all night?
A: LEKSI! 'Not a word!'
word

It would be quite far-fetched to invoke inherent negative meaning for *leksi* 'word' here. Rather, the ability of *leksi* to serve as a felicitous fragment answer with negative meaning arises as a result of the fact that the minimizer is always construed with negation.

10 Notice that double-negative readings are not licensed with *udhen*. This probably has to do with the fact that these structures are not productive and belong to a very limited register. At any rate, it is worth pointing out the contrast with negative

quantifiers in Germanic languages, and the similarity with Hungarian, mentioned earlier in n. 8.

11 We need to emphasize this point because *any* allows the so-called free-choice readings too, which may give the impression of universal quantification. For extensive discussion of why free-choice *any* is not a universal quantifier, see Horn (2000) and Giannakidou (2001). Most importantly, however, even if we took *any* to be a universal, in the case of negation we would still have to exclude the scoping of $\forall\neg$, as the sequence **Anybody did not come* is ungrammatical. Therefore, even if we adopt a universal analysis of free choice, under negation we are forced to assume that *any* can only be an existential (see Linebarger 1980 for more details on this).

12 For extensive discussion see Giannakidou (2000). Here, we just note that the accent-as-morphology option is not a 'peculiarity' specific to *n*-words, but it is observed elsewhere in the grammar of Greek, for instance, to distinguish between 'few' *-LIJI-* and 'a few' *-liji-*, and 'too' *-POLI-* and 'very' *-poli-*. Using suprasegmental features to perform morphological distinctions is a common strategy across languages, for instance, stress is systematically employed (e.g., *pérmit* versus *permít* for the noun versus verb distinction in English), and tone, as in certain African languages.

13 Note that we are considering here the possibility of a (negative) polarity existential PI, i.e., a PI that will be licensed by negation (and possibly other non-veridical elements) and which will be interpreted inside negation. The languages we are considering employ occassionally indefinite paradigms other than *n*-words, e.g., free-choice items (whose semantics is considerably more complex than that of the simple existential quantifier under negation), or positive polarity existentials equivalent to *some*. The use of such existentials is not relevant because these are positive polarity items and tend to escape the scope of negation, hence the existential under negation structure would not be correct for them. Greek employs yet another indefinite for this purpose, *kapjos*. For a comparison between *n*-words and *kapjos*, see Giannakidou (2000: 480–482).

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46 Object Shift

STEN VIKNER

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1 Introduction

The definition of 'object shift' to be used here is a narrow one, covering only the kind of object shift typically found in the Scandinavian languages, following the

original use of the term in Holmberg (1986: 165). Sometimes object shift has been taken to include also at least some instances of scrambling as found in the Continental West Germanic languages (Afrikaans, Dutch, Frisian, German, and Yiddish); see among others Vanden Wijngaerd (1989), Neeleman (1994b: 408), and Bobaljik (1995: 85). For a thorough discussion of scrambling, please refer to chapter 43.

Scrambling (as in the German examples (1b, c) below) and object shift (as in Icelandic (2b, c) and Danish (3c)) have in common that both move a DP leftward, from a position inside VP to a position outside VP but inside the same clause:

(1) Scrambling (German)

a.	Peter	hat_v		ohne	Zweifel	nie	$[_{VP}$	Bücher	gelesen]	t_v.
	Peter	has		without	doubt	never		books	read	
b.	Peter	las_v	die Bücher$_i$	ohne	Zweifel	nie	$[_{VP}$	t_i	t_v	].
	Peter	read	the books	without	doubt	never				
c.	Peter	las_v	sie_i	ohne	Zweifel	nie	$[_{VP}$	t_i	t_v	].
	Peter	read	them	without	doubt	never				

(2) Object shift (Icelandic)

a.	Pétur	$hefur_v$	eflaust	aldrei	t_v	$[_{VP}$	lesið	bækur].	
	Peter	has	doubtlessly	never			read	books	
b.	Pétur	las_v	bækurnar$_i$	eflaust	aldrei	$[_{VP}$	t_v	t_i	].
	Peter	read	books-the	doubtlessly	never				
c.	Pétur	las_v	þær$_i$	eflaust	aldrei	$[_{VP}$	t_v	t_i	].
	Peter	read	them	doubtlessly	never				

(3) Object shift (Danish)

a.	Peter	har_v	uden	tvivl	aldrig	t_v	$[_{VP}$	læst	bøger].	
	Peter	has	without	doubt	never			read	books	
b.	*Peter	$læste_v$	bøgerne$_i$	uden	tvivl	aldrig	$[_{VP}$	t_v	t_i	].
	Peter	read	books-the	without	doubt	never				
c.	Peter	$læste_v$	dem$_i$	uden	tvivl	aldrig	$[_{VP}$	t_v	t_i	].
	Peter	read	them	without	doubt	never				

All the above examples are verb second (V2), i.e., the finite verb has been moved from the position marked t_v to its present position as the second constituent of the main clause. In addition, in all examples the base position of the object is inside the VP, i.e., to the right of the adverbials *no doubt* and *never*, cf. (1a), (2a), and (3a). When scrambling (1b, c) or object shift ((2b, c) and (3c)) takes place, the object moves to a position to the left of these adverbials. From these examples, which focus on the similarities between object shift and scrambling, it might appear that there are no differences. This is not so; there are many differences between the two types of movement, as object shift is much more restricted than scrambling. Only object shift requires verb movement, and only object shift is restricted to DPs (though see (82b) and (84b) below). In section 2 I will review in detail a number of restrictions that apply to object shift but not to scrambling.

There is also a difference between Icelandic object shift and object shift as found in the other Scandinavian languages, namely, the difference between (2b) and (3b). Either both full DPs and pronouns (Icelandic) or only pronouns (the other Scandinavian languages) may undergo object shift. This will be discussed further in section 3.4.

After the various empirical characteristics of object shift have been discussed and compared to those of scrambling, the discussion will turn to an analysis of the movement and its motivation (case in section 3, equidistance in section 4, and interpretational considerations in sections 5 and 6).

2 Differences between object shift and scrambling

2.1 When does object shift apply?

2.1.1 Verb movement required (Holmberg's generalization)

Object shift is blocked if the main verb which selects the object does not move out of its base position in V°. Because the Scandinavian languages (like all other Germanic languages except English) are V2, one context in which the main verb moves out of V° is a main clause where the main verb is also the finite verb; see (4) and (5).

(4) Icelandic: full DPs

a. Af hverju las_v Pétur aldrei [$_{VP}$ t_v þessa bók]?
why read Peter never this book

b. Af hverju las_v Pétur þessa $bók_i$ aldrei [$_{VP}$ t_v t_i]?
why read Peter this book never

(5) Icelandic: pronouns

a. *Af hverju las_v Pétur aldrei [$_{VP}$ t_v hana]?
why read Peter never it

b. Af hverju las_v Pétur $hana_i$ aldrei [$_{VP}$ t_v t_i]?
why read Peter it never

(6) Danish: full DPs (impossible)

a. Hvorfor $læste_v$ Peter aldrig [$_{VP}$ t_v den her bog]?
why read Peter never this book

b. *Hvorfor $læste_v$ Peter den her bog_i aldrig [$_{VP}$ t_v t_i]?
why read Peter this book never

(7) Danish: pronouns

a. *Hvorfor $læste_v$ Peter aldrig [$_{VP}$ t_v den]?
why read Peter never it

b. Hvorfor $læste_v$ Peter den_i aldrig [$_{VP}$ t_v t_i]?
why read Peter it never

This observation, that the object may move only if verb movement has taken place, goes back at least to Holmberg (1986: 165) and has been known as Holmberg's generalization, at least since Collins and Thráinsson (1993: 135). Furthermore, (5a) and (7a) illustrate the obligatory nature of pronominal-object shift (see also sections 3.4 and 5.1): If a(n unstressed) pronoun can undergo object shift, it must. This is definitely true for Icelandic and Danish, but as shown by Josefsson (2003: 200–202), e.g., object shift of pronouns in Swedish is optional rather than obligatory.

In those main clauses where the finite verb is an auxiliary verb, the main verb, *read*, occurs in a non-finite form and does not leave the VP. Consequently object shift may not take place:

(8) Icelandic

a.	Af hverju	hefur$_v$	Pétur			aldrei	t$_v$	[$_{VP}$ lesið	þessa	bók]?
	why	has	Peter			never		read	this	book
b.	*Af hverju	hefur$_v$	Pétur	þessa	bók$_i$	aldrei	t$_v$	[$_{VP}$ lesið	t$_i$	]?
	why	has	Peter	this	book	never		read		

(9) Icelandic

a.	Af hverju	hefur$_v$	Pétur		aldrei	t$_v$	[$_{VP}$ lesið	hana]?
	why	has	Peter		never		read	it
b.	*Af hverju	hefur$_v$	Pétur	hana$_i$	aldrei	t$_v$	[$_{VP}$ lesið	t$_i$]?
	why	has	Peter	it	never		read	

(10) Danish

a.	Hvorfor	har$_v$	Peter			aldrig	t$_v$	[$_{VP}$ læst	den	her	bog]?
	why	has	Peter			never		read	this		book
b.	*Hvorfor	har$_v$	Peter	den	her bog$_i$	aldrig	t$_v$	[$_{VP}$ læst	t$_i$		]?
	why	has	Peter	this	book	never		read			

(11) Danish

a.	Hvorfor	har$_v$	Peter		aldrig	t$_v$	[$_{VP}$ læst	den]?
	why	has	Peter		never		read	it
b.	*Hvorfor	har$_v$	Peter	den$_i$	aldrig	t$_v$	[$_{VP}$ læst	t$_i$]?
	why	has	Peter	it	never		read	

In embedded clauses the Scandinavian languages differ. In Icelandic the finite verb moves to I°, whereas in the other languages it seems to stay in V°; see, e.g., Holmberg and Platzack (1995: 76–77); Vikner (1995: 139, 1997b); Rohrbacher (1999: 56–80). Consequently, object shift is found in embedded clauses only in Icelandic (and only if the main verb moves out of VP, i.e., only if the main verb is finite), (12b) and (13b), and not in the other Scandinavian languages (15b):[1]

(12) Icelandic

a.	Ég spurði	af hverju	Pétur	læsi$_v$		aldrei	[$_{VP}$ t$_v$	þessa	bók].
	I asked	why	Peter	read		never		this	book

b. Ég spurði af hverju Pétur læsi$_v$ þessa bók$_i$ aldrei [$_{VP}$ t$_v$ t$_i$].
I asked why Peter read this book never

(13) Icelandic
a. *Ég spurði af hverju Pétur læsi$_v$ aldrei [$_{VP}$ t$_v$ hana].
I asked why Peter read never it
b. Ég spurði af hverju Pétur læsi$_v$ hana$_i$ aldrei [$_{VP}$ t$_v$ t$_i$].
I asked why Peter read it never

(14) Danish
a. Jeg spurgte hvorfor Peter aldrig [$_{VP}$ læste den her bog].
I asked why Peter never read this book
b. *Jeg spurgte hvorfor Peter den her bog$_i$ aldrig [$_{VP}$ læste t$_i$].
I asked why Peter this book never read

(15) Danish
a. Jeg spurgte hvorfor Peter aldrig [$_{VP}$ læste den].
I asked why Peter never read it
b. *Jeg spurgte hvorfor Peter den$_i$ aldrig [$_{VP}$ læste t$_i$].
I asked why Peter it never read

Scrambling, on the other hand, does not require the verb to be moved as it may take place regardless of whether the main verb has left its VP (16a) or not (16b):

(16) German
a. Warum liest$_v$ Peter dieses Buch$_i$ oft [$_{VP}$ t$_i$ t$_v$] ?
why reads Peter this book often
b. Warum hat$_v$ Peter dieses Buch$_i$ oft [$_{VP}$ t$_i$ gelesen] t$_v$?
why has Peter this book often read

The fact that (16b) is grammatical thus shows that scrambling does not fall under Holmberg's generalization, at least not as formulated here ('the object may only move if verb movement has taken place'), assuming that neither German nor, e.g., Dutch have finite-verb movement in embedded clauses (see chapter 43 of this volume and also, e.g., Vikner 2005). If the generalization is formulated as in Déprez (1994: 111), 'Object movement never crosses a thematic verb', scrambling does not go against the generalization, since the object does not scramble across the verb as it is base-generated in a position left of the verb (assuming that the base order of German is SOV). There are still many types of object movement that do not fall under the generalization, however, e.g., object cliticization in Romance (see section 3.4 and chapters 13 and 14 in this volume), or another case of Germanic object movement, namely, scrambling in Yiddish. Yiddish is normally taken to be an SVO language, which means that when scrambling takes place in a sentence where the main verb is not finite, the object moves across the main verb:[2]

(17) Yiddish
a. Far vos hot$_v$ Moyshe nit t$_v$ [$_{VP}$ geleyent dos dozike bukh]?
why has Moses not read this book
b. Far vos hot$_v$ Moyshe dos dozike bukh$_i$ nit t$_v$ [$_{VP}$ geleyent t$_i$]?
why has Moses this book not read

In section 3 and the following sections below, various suggestions as to why object shift (but not scrambling) requires the verb to have left its VP will be discussed.

2.1.2 Prepositions, particles, and indirect objects block object shift

Object shift is blocked if it has to cross a c-commanding preposition:

(18) Icelandic
a. Af hverju las$_v$ Pétur aldrei t$_v$ [$_{PP}$ í þessari bók]?
why read Peter never in this book
b. *Af hverju las$_v$ Pétur þessari bók$_i$ aldrei t$_v$ [$_{PP}$ í t$_i$]?
why read Peter this book never in

(19) Icelandic
a. Af hverju las$_v$ Pétur aldrei t$_v$ [$_{PP}$ í henni]?
why read Peter never in it
b. *Af hverju las$_v$ Pétur henni$_i$ aldrei t$_v$ [$_{PP}$ í t$_i$]?
why read Peter it never in

(20) Danish
a. Hvorfor læste$_v$ Peter aldrig t$_v$ [$_{PP}$ i den her bog]?
why read Peter never in this book
b. *Hvorfor læste$_v$ Peter den her bog$_i$ aldrig t$_v$ [$_{PP}$ i t$_i$]?
why read Peter this book never in

(21) Danish
a. Hvorfor læste$_v$ Peter aldrig t$_v$ [$_{PP}$ i den]?
why read Peter never in it
b. *Hvorfor læste$_v$ Peter den$_i$ aldrig t$_v$ [$_{PP}$ i t$_i$]?
why read Peter it never in

Object shift is also blocked if it has to cross a c-commanding verb particle, like *out* in *Peter threw out the old carpet*. For independent reasons (see, e.g., Taraldsen 1984; Åfarli 1985; Vikner 1987: 266; Johnson 1991; Collins and Thráinsson 1993: 163), the particle always c-commands its complement in Swedish, (22), whereas this never happens in Danish, (24). In Icelandic, (27), and also in Norwegian, the situation is parallel to the one in English in that the particle may either precede

(and c-command) a full DP complement or follow it, but a pronominal complement must precede the particle. It is therefore only in Swedish that we can observe how a particle blocks object shift, (23c):

(22) Swedish
a. Peter har$_v$ inte t$_v$ kastat bort mattan.
Peter has not thrown away carpet-the
b. *Peter har$_v$ inte t$_v$ kastat mattan$_i$ bort t$_i$.
Peter has not thrown carpet-the away

(23) Swedish
a. Peter kastade$_v$ inte t$_v$ bort den.
Peter threw not away it
b. *Peter kastade$_v$ inte t$_v$ den$_i$ bort t$_i$.
Peter threw not it away
c. *Peter kastade$_v$ den$_i$ inte t$_v$ bort t$_i$.
Peter threw it not away

In Danish, the particle has to follow its complement whether or not object shift has taken place, (24), and therefore the particle does not have any blocking effect (25c). In fact, the pronoun may not follow the particle, (25a), and has to undergo object shift, (25b, c). If the complement of the particle is a full DP, it still precedes the particle, (26a, b), but it cannot undergo object shift, (26c):

(24) Danish
a. *Peter har$_v$ ikke t$_v$ smidt ud tæppet.
Peter has not thrown away carpet-the
b. Peter har$_v$ ikke t$_v$ smidt tæppet$_i$ ud t$_i$.
Peter has not thrown carpet-the away

(25) Danish
a. *Peter smed$_v$ ikke t$_v$ ud det.
Peter threw not away it
b. *Peter smed$_v$ ikke t$_v$ det$_i$ ud t$_i$.
Peter threw not it away
c. Peter smed$_v$ det$_i$ ikke t$_v$ ud t$_i$.
Peter threw it not away

(26) Danish
a. *Peter smed$_v$ ikke t$_v$ ud tæppet.
Peter threw not away carpet-the
b. Peter smed$_v$ ikke t$_v$ tæppet$_i$ ud t$_i$.
Peter threw not carpet-the away
c. *Peter smed$_v$ tæppet$_i$ ikke t$_v$ ud t$_i$.
Peter threw carpet-the not away

In Icelandic, the particle may or may not precede its complement whether or not object shift has taken place, (27), and therefore the particle does not have any blocking effect, (28c) and (29c). Though a full DP may occur in any of the three positions, (28), a pronoun may not follow the particle, nor may it fail to undergo object shift (29a, b):

(27) Icelandic
a. Pétur hefur$_v$ ekki t$_v$ hent út mottunni.
Peter has not thrown away carpet-the
b. Pétur hefur$_v$ ekki t$_v$ hent mottunni$_i$ út t$_i$.
Peter has not thrown carpet-the away

(28) Icelandic
a. Pétur henti$_v$ ekki t$_v$ út mottunni.
Peter threw not away carpet-the
b. Pétur henti$_v$ ekki t$_v$ mottunni$_i$ út t$_i$.
Peter threw not carpet-the away
c. Pétur henti$_v$ mottunni$_i$ ekki t$_v$ út t$_i$.
Peter threw carpet-the not away

(29) Icelandic
a. *Pétur henti$_v$ ekki t$_v$ út henni.
Peter threw not away it
b. *Pétur henti$_v$ ekki t$_v$ henni$_i$ út t$_i$.
Peter threw not it away
c. Pétur henti$_v$ henni$_i$ ekki t$_v$ út t$_i$.
Peter threw it not away

In Norwegian, the situation is the same as in Icelandic as far as the particle is concerned (the particle may or may not precede its complement independently of whether object shift has taken place), but the object-shift situation is not the same in the two languages as only pronouns undergo object shift in Norwegian. Norwegian versions of the Icelandic (27), (28), and (29) would therefore basically have the same judgments as in Icelandic, with at least one major exception, namely, that (28c) would be ungrammatical in Norwegian because full DPs cannot undergo object shift (though see Nilsen 1997).

The fact that prepositions and (Swedish) particles block object shift might be related to the blocking of object shift by verbs inside VP. The generalization (first formulated in Holmberg 1986: 176, 199) could be that object shift is impossible if the object is governed (or assigned case) by an overt governor (or case-assigner) as opposed to object shift of objects which are governed (or assigned case) by the trace of a governor/case-assigner. The crucial difference would thus be that when object shift is blocked by a non-finite verb, a finite main verb in embedded clauses (except in Icelandic), a preposition, or a particle (only in Swedish), the governor/case-assigner is not a trace, but when object shift is not blocked, the

governor/case-assigner is a trace (e.g., when the main verb has undergone V2 in main clauses, or in Icelandic when the main verb has moved to I° in embedded clauses). For further discussion of this, see sections 3.1 and 5.2.

The next set of data to be considered is not covered by this generalization. Object shift of a direct object is blocked by an indirect object, (30b) and (31b), even though object shift of both objects, (30c) and (31c), or object shift of the indirect object alone, (30d) and (31d), are not blocked:[3]

(30) Icelandic

a.	Ég	lána$_v$			ekki	t$_v$	Maríu	bækurnar.
	I	lend			not		Maria.DAT	books-the.ACC
b.	*Ég	lána$_v$		bækurnar$_i$	ekki	t$_v$	Maríu	t$_i$.
	I	lend		books-the.ACC	not		Maria.DAT	
c.	Ég	lána$_v$	Maríu$_j$	bækurnar$_i$	ekki	t$_v$	t$_j$	t$_i$.
	I	lend	Maria.DAT	books-the.ACC	not			
d.	Ég	lána$_v$	Maríu$_j$		ekki	t$_v$	t$_j$	bækurnar.
	I	lend	Maria.DAT		not			books-the.ACC

(Collins and Thráinsson 1993: 149, 154, 143, 154)

(31) Danish

a.	Jeg	låner$_v$			ikke	t$_v$	Maria	bøgerne.
	I	lend			not		Maria	books-the
b.	*Jeg	låner$_v$		dem$_i$	ikke	t$_v$	Maria	t$_i$.
	I	lend		them	not		Maria	
c.	Jeg	låner$_v$	hende$_j$	dem$_i$	ikke	t$_v$	t$_j$	t$_i$.
	I	lend	her	them	not			
d.	Jeg	låner$_v$	hende$_j$		ikke	t$_v$	t$_j$	bøgerne.
	I	lend	her		not			books-the

The reason why the generalization is formulated in terms of the direct object being unable to undergo object shift across the indirect object, rather than the accusative object being unable to undergo object shift across the dative object, is that, as shown by Thráinsson (2001: 153), e.g., the generalization also holds for examples where both the direct and the indirect object are dative (for more Icelandic data with unexpected morphological cases, see (62), (63), and (64)):[4]

(32) Icelandic

	Mannræninginn	skilaði$_v$ . . .					
	Kidnapper-the.NOM	returned					
a.	. . .			aldrei	t$_v$	foreldrunum	börnunum.
				never		parents-the.DAT	children-the.DAT
b.	*. . .		börnunum$_i$	aldrei	t$_v$	foreldrunum	t$_i$.
			children-the.DAT	never		parents-the.DAT	

c. . . . foreldrunum$_j$ börnunum$_i$ aldrei t_v t_j t_i.
parents- children- never
the.DAT the.DAT

d. . . . foreldrunum$_j$ aldrei t_v t_j börnunum.
parents- never children-
the.DAT the.DAT

'The kidnapper never returned the children to the parents.'
(Thráinsson 2001: 153, his (14))

As mentioned earlier, and as discussed in section 3.1, Holmberg (1986: 176) suggests that object shift is possible only if the object is governed (or assigned case) by a trace of a governor/case-assigner. The reason is taken to be that traces (of case-assigners) do not necessarily (but only optionally) assign case. As for the double-object data in (30–32), Holmberg (1986: 206) proposes an account for them in terms of case visibility of an empty preposition which assigns case to the indirect object: If the empty preposition assigns case to the indirect object, it does so only because it is embedded under the verb, and then the verb trace must assign case to the direct object, and none of the objects may undergo object shift; see (30a, b), (31a, b), and (32a, b). If the empty preposition does not assign case to the indirect object, then the verb trace does not have to assign case to the direct object. This allows two situations, either one in which the verb trace does not assign case either, and then both objects undergo object shift; see (30c), (31c), and (32c), or one in which the verb trace does assign case, and then the indirect object undergoes object shift on its own, which is shown in (30d), (31d), and (32d). One problem here is that this empty preposition is taken to move along with the indirect object under object shift, something which overt prepositions never do, see section 2.3.

In Vikner (1989: 142), the blocking effect of an indirect object in situ, (30b), (31b), and (32b), is taken to be a relativized minimality effect, assuming that the indirect object is an A-position and object shift is A-movement. Collins and Thráinsson (1993: 158) suggest an explanation within the Minimalist framework. The features of the head (AgrIO°) attracting the indirect object must be at least as strong as the features attracting the direct object (AgrO°), which means that if AgrO° has strong features (as is necessary to make the direct object move), AgrIO° must have strong features too, which will force the indirect object to move as well. Finally, Müller (2001: 288–294) suggests an account for this effect (which he refers to as an order preservation effect, cf. shape preservation in Williams 2003) by means of an optimality-theory constraint called PARALLEL MOVEMENT, which is violated every time a c-command relationship between any two arguments is not the same at all levels (i.e., before and after the various movements).

2.2 *Parasitic gaps*

A number of differences between object shift and scrambling have often been taken to illustrate that object shift is A-movement and scrambling is A-bar-movement,

e.g., in Holmberg (1986: 175) and Vikner (1989: 142, 1994b: 490). More recently, the assumption that object shift is A-movement has been questioned by, e.g., Holmberg and Platzack (1995: 147) and Holmberg (1999).

Following the analysis of Chomsky (1982: 40) and (1986a: 56), a parasitic gap may occur only in a construction where A-bar-movement has taken place. Consider the following *wh*-movement constructions in German and Danish, where parasitic gaps are possible ('t' is the trace, 'e' is the parasitic gap):

(33) German
Welches Buch$_i$ haben alle [ohne e$_i$ zu lesen] t$_i$
which book have all without to read
ins Regal gestellt?
into-the bookcase put
'Which book did everyone put on the shelf without reading first?'
(Müller 1995: 172)

(34) Danish
Hvad for en bog$_i$ stillede alle t$_i$ hen på reolen
which book put all onto bookcase-the
[uden at læse e$_i$ først]?
without to read first
'Which book did everyone put on the shelf without reading first?'

The fact that parasitic gaps may occur in scrambling constructions like (35), but not if scrambling does not take place as in (36), is often considered an indication that scrambling is an instantiation of A-bar-movement (cf., among others, Bennis and Hoekstra 1984: 65; Felix 1985: 190; Müller 1995: 172; chapter 43 in this volume):

(35) German
. . . , daß alle dieses Buch$_i$ [ohne e$_i$ zu lesen] t$_i$
that all this book without to read
ins Regal gestellt haben.
into-the bookcase put have
(Müller 1995: 173, his (74a))

(36) German
*. . . , daß alle [ohne e$_i$ zu lesen] dieses Buch$_i$
that all without to read this book
ins Regal gestellt haben.
into-the bookcase put have
'. . . that everyone put this book on the shelf without reading (it) first'
(Müller 1995: 173, his (86))

Object shift, on the other hand, does not trigger parasitic gaps, indicating that it is not an A-bar-movement (as first noted by Holmberg 1986: 225):

(37) Danish
*Alle stillede$_v$ den$_i$ straks t_v t_i hen på reolen
All put it at once onto bookcase-the
[uden at læse e_i først]
without to read first

The absence of object shift does not improve (37), see (38), whereas both (37) and (38) are well-formed without the bracketed clause introduced by *without*:

(38) Danish
*. . . at alle straks stillede den hen på reolen
that all at once put it onto bookcase-the
[uden at læse e_i først]
without to read first

2.3 *Which elements may undergo object shift?*

From the standard instantiations of A-movement (passive, raising) and A-bar-movement (*wh*-movement), we know that A-movement is movement into, but A-bar-movement out of, a case-marked position. This distinction forms the basis for some of the arguments in favor of object shift being A-movement and scrambling being A-bar-movement.

Assuming that PPs may not receive case – e.g., they are at best marginal in the subject position of tensed sentences (for English, see, e.g., Quirk et al. 1985: 736 and Stowell 1981: 268) – it is possible to account for why PPs may undergo scrambling (39b), (40b), but not object shift (41b), (42b); (43b), (44b). Object shift is movement into a case-marked position, but scrambling is not:

(39) German
a. Ich habe nicht für das Buch bezahlt.
I have not for the book paid
b. Ich habe für das Buch$_i$ nicht t_i bezahlt.
I have for the book not paid

(40) German
a. Ich habe nicht dafür bezahlt.
I have not there-for paid
b. Ich habe dafür$_i$ nicht t_i bezahlt.
I have there-for not paid

(41) Icelandic
a. Ég borgaði$_v$ ekki t_v fyrir bókina.
I paid not for book-the
b. *Ég borgaði$_v$ fyrir bókina$_i$ ekki t_v t_i.
I paid for book-the not

(42) Icelandic
a. Ég borgaði$_v$ ekki t$_v$ fyrir hana.
I paid not for it
b. *Ég borgaði$_v$ fyrir hana$_i$ ekki t$_v$ t$_i$.
I paid for it not

(43) Danish
a. Jeg betalte$_v$ ikke t$_v$ for bogen.
I paid not for book-the
b. *Jeg betalte$_v$ for bogen$_i$ ikke t$_v$ t$_i$.
I paid for book-the not

(44) Danish
a. Jeg betalte$_v$ ikke t$_v$ for den.
I paid not for it
b. *Jeg betalte$_v$ for den$_i$ ikke t$_v$ t$_i$.
I paid for it not

((39–40) and (43–44) are from Vikner 1994b: 492, his (11–14))

There are many other types of constituent which fit into the same picture in so far as they are not normally taken to be assigned case and they may not undergo object shift. One such type of constituent is the predicative adjectival, as shown in (45–47), others are, e.g., VPs. However, unlike the situation with PPs, there is no difference between scrambling and object shift here, e.g., predicative adjectivals undergo neither scrambling (45b), nor object shift (46b), (47b):

(45) German
a. Peter ist nie krank.
Peter is never ill
b. *Peter ist krank$_i$ nie t$_i$.
Peter is ill never

(46) Icelandic
a. Pétur er aldrei veikur.
Peter is never ill
b. *Pétur er veikur$_i$ aldrei t$_i$.
Peter is ill never

(47) Danish
a. Peter er aldrig syg.
Peter is never ill
b. *Peter er syg$_i$ aldrig t$_i$.
Peter is ill never

2.4 What is the landing site of object shift?

2.4.1 Object shift is clausebound

At the outset, we said that object shift was a leftward movement of a DP from a position inside VP to a position outside VP but inside the same clause. The following examples illustrate that, as opposed to scrambling in Russian, e.g., object shift may not move a DP out of a clause (49a):[5]

(48) Russian
Vy posylku$_i$ videli [kak zapakovali t$_i$].
you parcel saw how (they) wrapped
'You saw how they wrapped the parcel.' (Müller 1995: 128, his (71b))

(49) Icelandic

a.	*Ég	veit	bókina$_i$	[af hverju	þau	seldu		ekki t$_i$	].
	I	know	book-the	why	they	sold		not	
b.	Ég	veit		[af hverju	þau	seldu	bókina$_i$	ekki t$_i$	].
	I	know		why	they	sold	book-the	not	
c.	Ég	veit		[af hverju	þau	seldu		ekki bókina	].
	I	know		why	they	sold		not book-the	

'I know why they did not sell the book.'

As was illustrated in section 2.1.1, object shift moves a DP to a position which follows the subject and which in main clauses also follows the finite verb (in Icelandic it follows the finite verb also in embedded clauses). The position targeted by object shift furthermore precedes the negation and any (medial) sentential adverbial, both of which again precede all non-finite verbs (in Danish, Faroese, Norwegian, and Swedish embedded clauses, the negation and sentential adverbials also precede the finite verb).

2.4.2 Is object shift movement to an adjoined position?

In the earliest treatment of object shift, Holmberg (1986: 218, 170), the shifted object is taken to be adjoined to VP in Icelandic and to I-bar in Mainland Scandinavian (i.e., Danish, Norwegian, and Swedish). Holmberg (1986: 170, 93) is forced to assume adjunction to I-bar in Mainland Scandinavian because of his assumption that the finite verb in embedded clauses occurs in I° in all of the Scandinavian languages. Following Pollock's (1989) suggestions that finite French verbs move to I° whereas finite English verbs remain in V°, Holmberg and Platzack (1988), among others, suggested that the same difference obtains between Icelandic and Mainland Scandinavian. One of the advantages of this view was that the landing site of object shift in Icelandic could now be taken to be the same as the landing site of object shift in Mainland Scandinavian, a view followed by almost all subsequent analyses (cf. also section 2.1.1). Consequently

Vikner (1989, 1994b) takes object shift to be adjunction to (the highest) VP in all of the Scandinavian languages (as opposed to scrambling in, e.g., German, which is taken also to allow adjunction to IP). Holmberg and Platzack (1995: 142, 20) follow a very similar approach in that they take object shift to be adjunction to ActiveP, a functional projection immediately above (the highest) VP.

2.4.3 Is object shift movement to a specifier position?

Whereas most early analyses of object shift thus assume that the shifted object occurs in an adjoined position, almost all later analyses take the shifted object to occur in a specifier position, namely, the specifier position of some functional projection immediately above VP. Two of the earliest suggestions along these lines are Déprez (1989: 226) and Johnson (1991), who consider object shift movement to [AgrOP, Spec] (Johnson 1991 first refers to the landing site of object shift as μP-Spec, 1991: 606–608, but later identifies [μP, Spec] with [AgrOP, Spec], 1991: 628). This analysis is also found in, e.g., Chomsky (1993: 12–16), Bobaljik (1995: 80) and Collins and Thráinsson (1996).

As Holmberg (1999a: 6–7, 14–15) points out, the exact position of [AgrOP, Spec] with respect to, e.g., auxiliary verbs is crucial. Compare Déprez's (1989: 113) analysis in (50a) with Bobaljik's (1995: 83) in (50b):

(50) a. . . . $[_{\text{AgrOP}}$ spec AgrO° $[_{\text{V(aux)P}}$ spec V°(aux) $[_{\text{V(main)P}}$ spec V°(main)]]]
b. . . . $[_{\text{V(aux)P}}$ spec V°(aux) $[_{\text{AgrOP}}$ spec AgrO° $[_{\text{V(main)P}}$ spec V°(main)]]]

Déprez (1989: 113) situates AgrOP above all VPs in the same clause, whereas Bobaljik (1995: 83) explicitly situates AgrOP immediately above the VP of the main verb and below the VP of the auxiliary (or the VPs of the auxiliaries). Given that a shifted object always precedes negation and (medial) sentential adverbs, these two analyses then make different predictions as to whether the auxiliary V° follows or precedes negation and (medial) sentential adverbs. The fact that all non-finite auxiliaries in Scandinavian as well as all finite auxiliaries in Mainland Scandinavian embedded clauses follow rather than precede the negation and (medial) sentential adverbs is only compatible with an analysis such as (50a), where the potential landing site of object shift precedes all VPs.

In a reaction to this criticism, Bobaljik (2002: 225) explicitly assumes both that negation (and presumably also sentential adverbials) always adjoin to the highest VP of the clause and that object shift is to the specifier position of an AgrOP, which is right above the VP of the verb that selects the shifting object. In other words, only when the highest VP is also the VP of the main verb (i.e., the verb that selects the shifting object), does the [AgrOP, Spec] position targeted by object shift precede the negation (and sentential adverbials). This makes the prediction that if it should be possible to have object shift in a clause where the finite verb and the object-selecting main verb are not the same verb (something which is normally excluded, cf. (8b), (9b), and (11b) above), the shifted object (which is in [AgrOP, Spec] right above the VP of the main verb) should follow, not precede, the negation (which is adjoined to the VP of the finite auxiliary verb). As Bobaljik

(2002: 235) himself notes ("it might leave as problematic the respective order of the pronoun and negation"), this is precisely the wrong prediction for the central example of Holmberg (1999: 7), here given as (51c). The (shifted) object has to precede the negation, even though the sentence contains both a finite auxiliary and a non-finite main verb (which has been topicalized) (Example (51c) is a Danish version of Holmberg's Swedish 1999: 7, (11a)):[6]

(51) Danish

a. *Kysset$_x$ har$_v$ jeg ikke [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ hende]], . . .
Kissed has I not her

b. *Kysset$_x$ har$_v$ jeg ikke [$_{VP}$ t$_v$ hende$_i$ [$_{VP}$ t$_x$ t$_i$]], . . .
Kissed has I not her

c. Kysset$_x$ har$_v$ jeg hende$_i$ ikke [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ t$_i$]], . . .
Kissed has I her not
. . . bare holdt hende i hånden.
only held her in hand-the
'Kissed her, I haven't, only held her hand.'

It would thus seem that Holmberg's (1999: 6–7, 14–15) criticism of at least some [AgrOP, Spec] analyses is still highly relevant.

Even though Johnson (1991) and Chomsky (1993: 12–16), e.g., do not explicitly say where an auxiliary VP would be placed in the structure, the above criticism applies to these analyses as well because both require that all main verbs (even non-finite ones) move to AgrO°; for Johnson (1991) because non-finite main verbs, too, exhibit the positional effects he accounts for by assuming V°-to-AgrO° movement, and for Chomsky (1993: 12–16) because all main verbs must move to AgrO° to make it possible for the object in all types of clauses to undergo overt or covert object shift to [AgrOP, Spec] to have its object case checked (see also section 4 below on 'equidistance'). The point is that the main verb could not possibly move to AgrO° if an auxiliary V° would intervene between AgrO° and the main V°. On the other hand, as outlined above, the auxiliary V° must intervene between AgrO° and the main V° to produce the correct predictions for (51b, c).

Similar to the [AgrOP, Spec] analyses are the analyses of object shift as movement to (or through) [TenseP, Spec], as in Bobaljik and Jonas (1996) or Bošković (2004), or as movement to the specifier position of an IP-internal TopicP, as in Jayaseelan (2001: 71) or Josefsson (2001). However, as long as the position targeted by object shift is a position above even the highest VP of the clause, these analyses are not subject to Holmberg's (1999: 6–7, 14–15) criticism discussed above. Nilsen (1997) and Cinque (1999: 115), who assume the existence of a large number of functional projections inside IP but above VP, suggest that object shift may end in the specifier position of most if not all of these functional projections. These analyses are not subject to the criticisms voiced above as they assume that auxiliary verbs may be inserted in a large number of different functional heads, depending on the meaning of the auxiliary.

In some recent discussions of object shift, the landing site of object shift is left open, e.g., in Holmberg (1999). Similarly, whereas Chomsky (1995c: 360) suggests that object shift is movement to the outer of two specifier positions of *v*P, Chomsky (2001b: 33) makes it clear that although object shift moves through this position, it does not end there (in Chomsky 2001b: 33, two different movements, namely, Object Shift and Disl, correspond to what is normally called object shift, as also pointed out by Svenonius 2001).

2.4.4 Landing site between two adverbials

One of the reasons given by Holmberg and Platzack (1995: 152) for analyzing object shift as movement to an adjoined position rather than movement to [AgrOP, Spec] are the adjacency effects discussed by Vikner (1994b: 493–497). Here the data will first be discussed from the point of view of the adjunction analysis, and only afterwards will the specifier analysis be considered.

According to Stowell (1981: 113), case-assignment under government requires the case assigner and the case assignee to be adjacent. If object shift is movement to a case-assigned position, its landing site would have to be adjacent to a case assigner. If this case assigner is I° (or rather the verb or verb trace inside I°), the landing site of object shift would have to be adjacent to the verb or verb trace in I°. Although adjacency to a trace (including adjacency to a verb trace in I°) is impossible to see, the fact that I° itself is adjacent to the subject in [IP, Spec] (assuming that adverbials or other elements cannot adjoin to intermediate projections like I-bar) means that when I° only contains a trace, adjacency to I° results in surface adjacency to the subject in [IP, Spec]. In other words, under these assumptions an account can be made for why object-shifted objects (and also floating quantifiers referring to object-shifted objects) may not occur separated from the subject in [IP, Spec] or from the verb in I° by an adverbial (as Holmberg and Platzack 1995: 182 note, this argumentation may be seen as support of the assumption that Mainland Scandinavian has an I°-position, even though it is never overtly filled by a verb). In scrambling, on the other hand, nothing prevents the scrambled element (or a floated quantifier referring to a scrambled element) from occurring between two adverbials.

In (52c), (53c), (54c), and (55c), the scrambled or object-shifted object has been adjoined to the left of two adverbials; in (52b), (53b),[7] (54b), and (55b), the object has been adjoined between two adverbials (which prevents it from being adjacent to [IP, Spec] or I°); and in (52a), (53a), (54a), and (55a), no movement has taken place at all:

(52) German

	Gestern	hat$_v$	Peter	. . .							
	yesterday	has	Peter								
a.	. . .		ohne	Zweifel			nicht	das	Buch	gelesen	t$_v$.
			without	doubt			not	the	book	read	
b.	. . .		ohne	Zweifel	das	Buch$_i$	nicht	t$_i$		gelesen	t$_v$.
			without	doubt	the	book	not			read	

c. ... das Buch$_i$ ohne Zweifel nicht t_i gelesen t_v.
the book without doubt not read
'Yesterday Peter undoubtedly did not read this book'

(53) Icelandic
a. Í gær las$_v$ Pétur eflaust ekki t_v bókina.
yesterday read Peter doubtlessly not book-the
b. *Í gær las$_v$ Pétur eflaust bókina$_i$ ekki t_v t_i.
yesterday read Peter doubtlessly book-the not
c. Í gær las$_v$ Pétur bókina$_i$ eflaust ekki t_v t_i.
yesterday read Peter book-the doubtlessly not
'Yesterday Peter undoubtedly did not read this book'
(Examples (52) and (53) are from Vikner 1994: 493–494, his (15–16))

Neither scrambling nor object shift (of a full DP) is obligatory, cf. (52a) and (53a), though see section 5 on focus. The crucial difference is that whereas a scrambled object may land anywhere, (52b, c), an object-shifted object may only land in a position adjacent to I°, (53b, c). (Jónsson 1996: 66 finds an example of the same type as (53b) to be only marginal rather than completely ungrammatical.)

In the other Scandinavian languages, object shift may seem to be obligatory, but this is because, as mentioned above, only pronominal objects undergo object shift, and pronominal-object shift is obligatory (see section 3.4 below, and recall that Josefsson 2003: 200–202 shows object shift of pronouns in Swedish to be optional rather than obligatory). That this is a difference between pronouns and full DP objects is illustrated by pronominal data from Icelandic, compare (55) to (53):

(54) Danish
a. *I går læste$_v$ Peter uden tvivl ikke t_v den
yesterday read Peter without doubt not it
b. *I går læste$_v$ Peter uden tvivl den$_i$ ikke t_v t_i
yesterday read Peter without doubt it not
c. I går læste$_v$ Peter den$_i$ uden tvivl ikke t_v t_i
yesterday read Peter it without doubt not
'Yesterday Peter undoubtedly did not read it'

(55) Icelandic
a. *Í gær las$_v$ Pétur eflaust ekki t_v hana
yesterday read Peter doubtlessly not it
b. *Í gær las$_v$ Pétur eflaust hana$_i$ ekki t_v t_i
yesterday read Peter doubtlessly it not
c. Í gær las$_v$ Pétur hana$_i$ eflaust ekki t_v t_i
yesterday read Peter it doubtlessly not
'Yesterday Peter undoubtedly did not read it'
(Examples (54) and (55) are from Vikner (1994b: 493–494, his (17–18))

The only two possible object positions in sentences where object shift is allowed are thus the base position of the object and a position preceding all (medial) sentential adverbs and negation. In other words, the object has to be adjacent either to V° or to I°, as expected if it receives case from either V° (if object shift does not apply) or I° (when object shift has applied).

Let us now turn to similar evidence involving so-called floating quantifiers. According to Sportiche (1988), a floated quantifier (see chapter 71) may occur only in positions in which the quantified NP may occur, or through which the quantified NP may have moved. Giusti (1990) applies this analysis to scrambling and object shift, arguing that both these movements are included in those that may leave floating quantifiers behind.

As shown by the following examples, the possible positions of floated quantifiers are the same as the possible positions of the object; that is to say that any position is possible in scrambling (56), but only the position preceding the adverbials and the base position are possible in object shift (57):

(56) German

a. Peter wird die$_i$ Bücher$_i$ ohne Zweifel nie alle$_i$ t$_i$ lesen.
Peter will the books without doubt never all read

b. Peter wird die$_i$ Bücher$_i$ ohne Zweifel alle$_i$ nie t$_i$ lesen.
Peter will the books without doubt all never read

c. Peter wird die$_i$ Bücher$_i$ alle$_i$ ohne Zweifel nie t$_i$ lesen.
Peter will the books all without doubt never read
'Peter will undoubtedly never read all the books'

(57) Icelandic

a. Pétur las$_v$ bækurnar$_i$ eflaust ekki allar$_i$ t$_v$ t$_i$.
Peter read books-the doubtlessly not all

b. *Pétur las$_v$ bækurnar$_i$ eflaust allar$_i$ ekki t$_v$ t$_i$.
Peter read books-the doubtlessly all not

c. Pétur las$_v$ allar bækurnar$_i$ eflaust ekki t$_v$ t$_i$.
Peter read all books-the doubtlessly not
'Peter undoubtedly never read all the books'

(Examples (56) and (57) are from Vikner (1994b: 496, his (20), (21))

Admittedly, the ungrammaticality of (57b) is not directly explained by the adjacency requirement discussed above, as case is assigned to the NP *bækurnar* or *allar bækurnar*, which is adjacent to I° in all three cases in (57). One possible account for (57b) would be that it shows that the object cannot have moved through a position beween the adverbials on its way to its surface position, maybe because such a position would not be an A-position (making the movement an instance of 'improper movement', cf., e.g., Chomsky 1981: 195, 199), or because there would be no need for object shift to go via this position.

Summing up so far, if object shift is movement to an adjoined position, the data in (52–57) may be explained by assuming case may be assigned to an adjoined position, provided adjacency is respected.

If, on the other hand, object shift is movement to [AgrOP, Spec], then the requirements that the shifted object precede both negation and sentential adverbials must stem from [AgrOP, Spec] preceding the position of negation and medial sentential adverbials. This again would have to mean either (a) that scrambling (in Continental West Germanic) and object shift (in Scandinavian) have different landing sites (i.e., they cannot both be movement to [AgrOP, Spec]) or (b) that negation and the sentential adverbials have different positions in the two types of language. To be more precise, if object shift and scrambling target the same position (as assumed, e.g., by Bobaljik 2002: 230–233), negation and sentential adverbials in Continental West Germanic must be possible both to the left and to the right of this target [AgrOP, Spec], whereas negation and sentential adverbials in Scandinavian have to be restricted to the right of the target [AgrOP, Spec].

Notice finally that adjacency as discussed here is very different from what Bobaljik (2002: 210–221) calls adjacency, e.g., in that two elements may be adjacent in Bobaljik's sense even though an adverbial occurs between them.

2.5 Summary: object shift vs. scrambling

Throughout section 2, the properties of object shift in Scandinavian have been compared to the less restricted characteristics of scrambling in languages like Dutch and German (see (58)). Two additional differences between the Scandinavian languages were shown to follow from independent variation. First, only in Icelandic is object shift possible in embedded clauses, because only in Icelandic do all finite verbs move to I°, see examples (12) and (13b). Second, only in Swedish is object shift actually blocked by a particle, because only in Swedish does the object never precede the particle, see examples (22) and (23).

(58)

Section	Property	Object shift in Scandinavian	Scrambling in, e.g., German and Dutch
2.1.1	May take place independently of verb movement out of VP	No	Yes
2.1.2	May cross a preposition	No	Yes
	May cross a particle	No	Yes
	May cross an indirect object	No	Yes
2.2	Allows a parasitic gap	No	Yes
2.3	Moves (pronominal) DPs	Yes	Yes
	Moves PPs	No	Yes
	Moves predicative APs	No	No
2.4.1	May cross a clause boundary	No	No (Russian: yes)
2.4.4	May land between adverbials	No	Yes

One difference between the Scandinavian languages which does not follow from independent variation is that only in Icelandic do full DPs undergo object shift, see examples (4) and (5). In the other Scandinavian languages only pronominal DPs undergo object shift, see examples (6) and (7). This is further discussed in section 3.4.

Sections 2.4.2 and 2.4.3 discussed which kind of position is targeted by object shift (and scrambling), and showed that although there is no general agreement in the literature, there is a growing trend to assume the landing site to be a specifier position rather than an adjoined position.

3 Case as the key to object shift

3.1 Traces of case assigners are optional case assigners

As mentioned in section 2.1.2, Holmberg (1986: 176) was the first to suggest an analysis of object shift where case assignment by a trace is optional, as also assumed in Vikner (1994b: 500) and Holmberg and Platzack (1995: 166). This means that in structures where we would expect a DP to be assigned case by a V°, such case assignment is only obligatory if V° contains a verb. If V° does not contain a verb but only its trace, this V° assigns case optionally. In other words, if a verb has moved out of VP, it is possible for its object not to be assigned case by the verb trace, and therefore to move into a different position and be assigned case there. If an object is assigned case not by the trace of a verb, but by the verb itself (i.e., if the verb has not left VP), this case assignment is not optional but obligatory, and therefore the object is not free to move into a different position and be assigned case there. How is the shifted object assigned case, then, if not by V°? In Holmberg (1986: 208, 217), the shifted objects are not assigned case at all: because shifted objects (in Swedish only pronouns, in Icelandic all DPs) have morphological case, they do not need to be assigned case syntactically. One problem for this hypothesis is that, as illustrated in the next section, full DP objects have morphological case in Faroese, and yet they may not undergo object shift.

3.2 The role of morphological case

Morphological case is realized on all DPs only in two of the Scandinavian languages – Faroese and Icelandic.

(59)

the book	Icelandic	Faroese	Danish	Swedish	Norwegian
Nominative	bókin	bókin	bogen	boken	boka/boken
Accusative	bókina	bókina	bogen	boken	boka/boken
Dative	bókinni	bókini	bogen	boken	boka/boken

(Vikner 1994b: 502)

From the point of view of case morphology, Faroese thus patterns with Icelandic against the other Scandinavian languages, whereas as far as object shift is concerned, Faroese is more like the other Scandinavian languages, see (6) and (7), than like Icelandic, see (4) and (5):

(60) Faroese

a. Jógvan keypti$_v$ ikki [$_{VP}$ t$_v$ bókina].
Jógvan bought not book-the.ACC

b. *Jógvan keypti$_v$ bókina$_i$ ikki [$_{VP}$ t$_v$ t$_i$].
Jógvan bought book-the.ACC not

(Barnes 1992: 28)

(61) Faroese

a. *Jógvan keypti$_v$ ikki [$_{VP}$ t$_v$ hana].
Jógvan bought not it.ACC

b. Jógvan keypti$_v$ hana$_i$ ikki [$_{VP}$ t$_v$ t$_i$].
Jógvan bought it.ACC not

(Vikner 1994b: 502)

According to Sundquist (2002), a similar situation obtained in Middle Norwegian, in that morphological case was also found outside the pronominal system, and yet object shift was restricted to pronouns. In early modern English, too, we find only pronominal-object shift and not object shift of full DPs (Roberts 1995: 274–276). From the point of view of case this is less surprising, as early modern English did not have morphological case outside the pronominal system. Object shift in early modern English is of course remarkable in the fact that it shows that object shift may also be found in a non-Scandinavian language, indeed in a non-V2 language. Another potential problem related to morphological case is that in Icelandic the direct object does not always have accusative case, but may have one of the other three cases: The object is genitive in (62), dative in (63), and even nominative in (64) (where the subject is dative; see Sigurðsson 1989: 198–241; Taraldsen 1995):

(62) Icelandic

Í gær leitaði$_v$ Pétur …
yesterday looked-for Peter.NOM

a. … sennilega ekki t$_v$ þessarar bókar.
probably not this book.GEN

b. *… sennilega þessarar bókar$_i$ ekki t$_v$ t$_i$.
probably this book.GEN not

c. … þessarar bókar$_i$ sennilega ekki t$_v$ t$_i$.
this book.GEN probably not

'Yesterday Peter probably did not look for this book.'

(Vikner 1994b: 512)

(63) Icelandic
Í gær lýsti$_v$ Pétur …
yesterday described Peter.NOM
a. … sennilega ekki t_v þessari bók.
probably not this book.DAT
b. *… sennilega þessari bók$_i$ ekki t_v t_i.
probably this book.DAT not
c. … þessari bók$_i$ sennilega ekki t_v t_i.
this book.DAT probably not
'Yesterday Peter probably did not describe this book.'
(Vikner 1994b: 512)

(64) Icelandic
Í dag þykir$_v$ þér …
today thinks.3.SG you.SG.DAT
a. ?… sennilega ekki t_v þessi bók …
probably not this book.NOM
b. *… sennilega þessi bók$_i$ ekki t_v t_i …
probably this book.NOM not
c. … þessi bók$_i$ sennilega ekki t_v t_i …
this book.NOM probably not
… skemmtileg.
amusing.NOM
'Today you probably do not find this book amusing.'

The standard view on oblique case is that it is inherent or lexical case, which is assigned together with the thematic role (see Marantz 1984: 81 or Andrews 1990 and references there). To analyze these facts in a way compatible both with this standard view and with the analysis that object shift is movement to a case-assigned position, inherent case (i.e., case which is assigned at D-structure) would have to be licensed at S-structure, and this licensing would have to take place under conditions identical to the ones under which structural case assignment takes place.

3.3 Case assignment from I°

Holmberg's (1986: 208, 217) suggestion that shifted objects are not assigned case at all as they do not need case assignment because they have morphological case thus predicts that objects may shift if and only if they have morphological case. The ungrammaticality of full DP object shift in Faroese, (60b), was a direct counter-example to this analysis.

In Vikner (1994b: 500) and in Holmberg and Platzack (1995: 152), the shifted object is assigned case from I°. Vikner further suggests that a non-nominative case cannot be assigned by an X° which is already assigning nominative, e.g., C° in V2-languages and I° in non-V2-languages. Thus, object shift never occurs into a position preceding the verb, where C° is busy assigning nominative case

(though see note 8 on long object shift in Swedish), and object shift never occurs at all in non-V2 languages, where I° is busy assigning nominative case, although object shift in early modern English, mentioned in the previous section, is a problem for this claim because early modern English is not a V2-language. The fact that early modern English is a VO-language and that it does not allow object shift of full DPs also excludes scrambling as a possible analysis.

The formulation of Holmberg's generalization in section 2.1.1 referred to the (obligatory) movement of the selecting verb, rather than to the (obligatory) movement of the case-assigning verb. The possibility of object shift in two particular contexts, perception verbs, and causative verbs, however, indicate that case-assignment is the relevant notion rather than selection, which again lends further, if rather indirect, support to the idea that case assignment is the key to object shift. For reasons of exposition, this will only be illustrated with perception verbs. A perception verb like *see* may either select a DP or an embedded clause as its object, and if it selects an embedded clause, this may either be finite or non-finite. When *see* selects a non-finite embedded clause, as in (65–70), the subject of the embedded clause is not selected by *see* but by the verb (or the VP) of the embedded clause, *beat*. There is nevertheless a particular relation between *see* and the embedded subject, as *see* is taken to assign case to the embedded subject, so this subject is accusative in spite of its being a subject, as witnessed by its form, which is *þá* 'them.MASC' rather than *þeir* 'they.MASC' in Icelandic (66b), and *dem* 'them' rather than *de* 'they' in Danish (68b).

(65) Icelandic
a. Pétur $sá_v$ áreiðanlega $[_{VP}\ t_v\ [_{IP}$ FH vinna Hauka]].
Pétur saw presumably FH beat Haukar
b. Pétur $sá_v$ FH_i áreiðanlega $[_{VP}\ t_v\ [_{IP}\ t_i$ vinna Hauka]].
Pétur saw FH presumably beat Haukar

(66) Icelandic
a. *Pétur $sá_v$ áreiðanlega $[_{VP}\ t_v\ [_{IP}$ þá vinna Hauka]].
Pétur saw presumably them beat Haukar
b. Pétur $sá_v$ $þá_i$ áreiðanlega $[_{VP}\ t_v\ [_{IP}\ t_i$ vinna Hauka]].
Pétur saw them presumably beat Haukar

(67) Danish
a. Peter $så_v$ formentlig $[_{VP}\ t_v\ [_{IP}$ AGF slå FC København]].
Peter saw presumably AGF beat FC Copenhagen
b. *Peter $så_v$ AGF_i formentlig $[_{VP}\ t_v\ [_{IP}\ t_i$ slå FC København]].
Peter saw AGF presumably beat FC Copenhagen

(68) Danish
a. *Peter $så_v$ formentlig $[_{VP}\ t_v\ [_{IP}$ dem slå FC København]].
Peter saw presumably them beat FC Copenhagen
b. Peter $så_v$ dem_i formentlig $[_{VP}\ t_v\ [_{IP}\ t_i$ slå FC København]].
Peter saw them presumably beat FC Copenhagen

In spite of the relation between *see* and the embedded subject, *FH/þá/AGF/dem*, being one of case-assignment and not one of selection, the verb movement of *see* allows the embedded subject to undergo object shift in the usual fashion, i.e., obligatorily if it is a pronoun (66) and (68), optionally if it is an Icelandic full DP (65), and not at all if it is a Danish full DP (67).

That (65–68) are cases of object shift, i.e., that the embedded subject is moving around an adverbial of the main clause in (65b), (66b), and (68b), is supported by the fact that the adverbial in question, *presumably*, is a speaker-oriented adverbial which only occurs as a sentential adverbial in main clauses; it is ill-formed to the right of the main clause participle, *seen*:

(69) Icelandic
- a. Pétur hefur$_v$ áreiðanlega [$_{VP}$ t$_v$ [$_{VP}$ séð [$_{IP}$ FH vinna Hauka]]].
  Pétur has presumably seen FH beat Haukar
- b. *Pétur hefur séð áreiðanlega FH vinna Hauka.
  Pétur has seen presumably FH beat Haukar
- c. *Pétur hefur séð FH áreiðanlega vinna Hauka.
  Pétur has seen FH presumably beat Haukar

(70) Danish
- a. Peter har$_v$ formentlig [$_{VP}$ t$_v$ [$_{VP}$ set [$_{IP}$ AGF slå FC København]]].
  Peter has presumably seen AGF beat FC Copenhagen
- b. *Peter har set formentlig AGF slå FC København.
  Peter has seen presumably AGF beat FC Copenhagen
- c. *Peter har set AGF formentlig slå FC København.
  Peter has seen AGF presumably beat FC Copenhagen

Summarizing sections 3.1, 3.2, and 3.3, it was shown how assuming case assignment by a verb trace to be optional was an attempt to account for Holmberg's generalization. Object shift is possible only if the case-assigning verb leaves VP because only then is the case-assigned DP assigned case by a trace, which again means that only then is it possible for this DP not to be assigned case and therefore to move into a case position higher up in the clause.

3.4 Pronominal-object shift as cliticization

If case were crucial for object shift in the manner described in the previous section, we might expect that one of two situations would obtain in a given language: either all objects may undergo object shift (provided all other conditions on object shift were fulfilled), or no objects may undergo object shift at all. There would be no reason to expect pronouns (i.e., pronominal DPs) to behave any differently from full DPs, given that all DPs are alike in requiring case. However, the two types of object do behave differently with respect to object shift cross-linguistically.

In Icelandic, both pronominal objects and full DP objects may undergo object shift, see (4) and (5) above, whereas in the other Scandinavian languages (Danish, Faroese, Norwegian, and Swedish), only pronominal objects may undergo object shift, full DP objects may not, see (6), (7), (60), and (61).

Before discussing potential accounts of this difference, I shall give some further examples. 'Strong' pronouns (i.e., pronouns which are stressed, modified, or coordinated, cf. Holmberg 1986: 209) differ from pronominals which are not stressed, modified, or coordinated. As seen in (5) and (7) above, normally, pronouns obligatorily undergo object shift (though only optionally in Swedish, as mentioned in connection with (7)). Strong pronouns, however, behave like full DPs in this respect, i.e., they may optionally undergo object shift in Icelandic, see (4), and they may not undergo object shift in Danish, see (6).

The strong pronouns in (71) and (73) are stressed versions of the unstressed pronouns in (5) and (7), i.e., Icelandic *hana* and Danish *den* 'it'. The strong pronouns in (72) and (74) are Icelandic *þessa hérna* and Danish *den her*, 'this here'. The result would have been the same with expressions such as Icelandic *þessa með rauðu kápuna* or Danish *den med det røde omslag* 'the one with the red cover'.

(71) Icelandic: strong pronouns may undergo object shift

a. Af hverju las_v Pétur aldrei [$_{VP}$ t_v HANA]?
why read Peter never it

b. Af hverju las_v Pétur $HANA_i$ aldrei [$_{VP}$ t_v t_i]?
why read Peter it never

(72) Icelandic: full DPs may undergo object shift

a. Af hverju las_v Pétur aldrei [$_{VP}$ t_v þessa hérna]?
why read Peter never this here

b. Af hverju las_v Pétur þessa hérna$_i$ aldrei [$_{VP}$ t_v t_i]?
why read Peter this here never

(73) Danish: strong pronouns do not undergo object shift

a. Hvorfor $læste_v$ Peter aldrig [$_{VP}$ t_v DEN]?
why read Peter never it

b. *Hvorfor $læste_v$ Peter DEN_i aldrig [$_{VP}$ t_v t_i]?
why read Peter it never

(74) Danish: full DPs do not undergo object shift

a. Hvorfor $læste_v$ Peter aldrig [$_{VP}$ t_v den her]?
why read Peter never this here

b. *Hvorfor $læste_v$ Peter den her$_i$ aldrig [$_{VP}$ t_v t_i]?
why read Peter this here never

Let us now turn to some proposed accounts of the difference between pronominal-object shift and full DP object shift. A number of analyses take pronominal-object shift to be X°-movement along the lines of, e.g., cliticization in the Romance

languages (Holmberg 1991a: 167; Josefsson 1992, 1993; Déprez 1994: 122; Bobaljik and Jonas 1996: 207; Diesing 1996: 77, 1997: 415). The main advantage of such an approach is that the question of whether or not a language has object shift can now be turned into the question of whether or not a language has full DP object shift, and this can then plausibly be tied to whether or not I° (or T°) has strong features. I° (or T°) can be argued to have strong features in Icelandic (as reflected in the presence of V°-to-I° movement), but weak features in the other Scandinavian languages (which lack V°-to-I° movement). The main drawback, to be further discussed below, is that although it may become easier to account for whether or not a language has object shift of full DPs, it becomes much more difficult to account for whether or not a language has pronominal-object shift, as the differences between pronominal-object shift in Scandinavian and cliticization in Romance become unexpected (e.g., why do the former but not the latter observe Holmberg's generalization?).

As pointed out in Vikner (1994b: 504–506) and Holmberg and Platzack (1995: 154–156), assuming pronominal-object shift to be X°-movement is problematic for at least two reasons. One is that the object-shifted pronoun behaves differently from a Romance clitic pronoun, in that object-shifted pronouns do not occur in C° together with the finite verb, whereas Romance clitic pronouns do. If the object-shifted pronoun has incorporated into the verb, it should not only move along with the verb when the verb moves from V° to I° (which it arguably does; shifted objects occur adjacent to I°, see section 2.4.4), but it should also move along with the verb when the verb moves from I° to C°. The latter is quite clearly not the case, (75a):

(75) Danish

a. *Hvorfor [$_{C°}$ læste- den$_v$] Peter [$_{I°}$ t$_v$] aldrig [$_{VP}$ t$_v$ t$_i$]?
why read it Peter never

b. Hvorfor [$_{C°}$ læste$_v$] Peter [$_{I°}$ t$_v$- den$_i$] aldrig [$_{VP}$ t$_v$ t$_i$]?
why read Peter it never
'Why did Peter never read it?'

Not only would (75a) incorrectly be expected to be grammatical, but (75b) would also, again incorrectly, be expected to be ungrammatical. Although it should not be possible for the pronoun to be left behind in I° when the verb moves on to C° (see Kayne 1991: 649, who says a trace cannot be "a proper subpart of a X° constituent," referring to Baker 1988a: 73), this is exactly how (75b) would have to be analyzed if pronominal-object shift were X°-movement: the trace of the verb which has moved to C° is a proper subpart of I°.

It is of course possible to revise the analyses of Kayne (1991: 649) and Baker (1988a: 73), and to allow some form of excorporation, as in Roberts (1991a: 214–216). However, it is far from clear that this could be done in such a way as to rule out (75a) and rule in (75b) without doing the same to the Romance data. In French, for instance, ruling out (76a) and allowing (76b) would be problematic, as the French judgments are the exact mirror image of the Scandinavian ones; compare (76) and (75):[8]

(76) French

a. Où [$_{C°}$ l$_i$' avait$_v$]- il [$_{I°}$ t$_v$] [$_{VP}$ t$_v$ [$_{VP}$ acheté t$_i$]]?
where it- had he bought

b. *Où [$_{C°}$ avait$_v$]- il [$_{I°}$ le$_i$ t$_v$] [$_{VP}$ t$_v$ [$_{VP}$ acheté t$_i$]]?
where had he it bought
'Where had he bought it?'

Josefsson (1993: 21–22) says about the above difference that Scandinavian has weak pronouns, i.e., what she calls independent heads, whereas Romance has clitics, i.e., dependent heads. The crucial difference is that only independent heads are able to excorporate. However, the ability to excorporate is exactly the property that we are trying to account for, and so we arrive at a restatement of the problem above; if pronominal-object shift is X°-movement along the lines of cliticization in Romance, why do the two not behave alike? The other problem with the assumption that pronominal-object shift is X°-movement is connected with the fact that Scandinavian pronouns (if they should turn out to be clitics) would be clitics on the right side of their incorporating heads, as opposed to Romance clitics, which are on the left; see (76a).

If the Scandinavian pronoun were to incorporate into the verb already in the V°-position, we would expect a situation (e.g., right before verb movement to C°) in which finite tense endings would follow the compound head consisting of the verb and the incorporated pronominal object, which clearly is not the case; cf. (3c) with (77).

(77) Danish

* . . . [$_{I°}$ [$_{T°}$ [$_{V°}$ [$_{V°}$ læs-] dem] -te]] . . .
read- them PAST

(I am assuming here, along with Roberts 2001: 122, that Baker's 1988a: 13–15 mirror principle is relevant for the sequence of morphemes in complex words, even in a framework where such elements are checked in the relevant functional heads rather than base-generated there, as originally assumed by Baker 1988a.)

If on the other hand the Scandinavian pronoun were to incorporate into the verb at some point higher than V° (e.g., in T° or in I°), then it would have to be able to move at least one step as an XP since it would have to be able to move out of VP without incorporating into V°. If this were possible, however, then we would no longer have an account for Holmberg's generalization, i.e., for why it is necessary for the verb to move out of VP even for pronominal-object shift to be possible. There would in effect be no difference in this respect between an incorporation analysis of Scandinavian object shift and cliticization in Romance, where the object clearly does not incorporate into V°; the object is not incorporated into the main verb *acheté* 'bought' in (76a).

It would thus seem that there are good reasons not to take pronominal-object shift to be X°-movement along the lines of cliticization in Romance. But then, what is it? And if pronominal-object shift is no different from object shift of full DPs, we have no account of why four out of five Scandinavian languages have

the former but not the latter. Recent accounts (including the ones to be discussed in the rest of this chapter) have very little to add to this discussion; although Holmberg (1999: 22) and Chomsky (2001b: 33) both assume that pronominal-object shift is XP-movement as well, they do not attempt to account for why pronominal-object shift is also found in at least four languages that do not have object shift of full DPs.

4 Equidistance as the key to object shift

The so-called equidistance account (Chomsky 1993: 15–19) is an alternative to Holmberg's generalization. The idea is that the reason why object shift is possible only if the main verb leaves VP is that this verb movement is necessary to allow the object to move across [VP, Spec], which is where the subject is base-generated.

Chomsky (1993: 15–19) thus solves two problems at the same time. One problem is to find a reason for Holmberg's generalization, the other, to explain how object shift (as A-movement) may move across the base position of the subject in [VP, Spec] (which is an A-position), in violation of relativized minimality and/or the shortest movement condition. In other words, how can the object move from its base position, as in (78a) across [VP, Spec] into a higher specifier position, here [AgrOP, Spec], as in (78b)?

(78) a. $[_{VP}$ Subject V° Object]
b. $[_{AgrOP}$ Object AgrO° $[_{VP}$ Subject V° t_{obj}]]

Chomsky's (1993: 18) suggestion is that if and only if the verb moves from V° to AgrO° do [VP, Spec] and [AgrOP, Spec] count as belonging to the same minimal domain. If [VP, Spec] and [AgrOP, Spec] belong to the same minimal domain, they are equidistant from the object position, which means that from the point of view of the shortest movement condition, the object is free to move into either [VP, Spec] or [AgrOP, Spec]. In other words, the object is free to move into [AgrOP, Spec] even though this means moving across the base position of the subject in [VP, Spec], as in the derivational step from (79b) to (79c), as long as the verb has just moved from V° to AgrO°, as in the step from (79a) to (79b):

(79) a. $[_{VP}$ Subject $[_{V°}$ Verb] Object]
b. $[_{AgrOP}$ $[_{AgrO°}$ Verb] $[_{VP}$ Subject $[_{V°}$ t_{verb}] Object]]
c. $[_{AgrOP}$ Object $[_{AgrO°}$ Verb] $[_{VP}$ Subject $[_{V°}$ t_{verb}] t_{obj}]]

If the verb would not move, [VP, Spec] and [AgrOP, Spec] would not belong to the same minimal domain and they would therefore not be equidistant, and so the object could not leave its base position (at least not by means of A-movement).

According to Bobaljik and Jonas (1996: 202), this scenario repeats itself when the subject moves out of its base position on its way to [AgrSP, Spec] (roughly equivalent

to [IP, Spec]). The question is now how the subject may move across the object (or object trace) in [AgrOP, Spec] (which is an A-position). If we assume with Bobaljik and Jonas (1996: 198) that AgrOP is the complement of T°, then if the verb moves from Agr° to T°, as in the step from (80c) to (80d), then [AgrOP, Spec] and [TP, Spec] count as equidistant, and the subject may move across the object (or object trace) in [AgrOP, Spec], as in the step from (80d) to (80e):

(80) a. $[_{VP}$ Subject $[_{V°}$ Verb] Object]
b. $[_{AgrOP}$ $[_{AgrO°}$ Verb] $[_{VP}$ Subject $[_{V°}$ t_{verb}] Object]]
c. $[_{AgrOP}$ Object $[_{AgrO°}$ Verb] $[_{VP}$ Subject $[_{V°}$ t_{verb}] t_{obj}]]
d. $[_{TP}$ $[_{T°}$ Verb] $[_{AgrOP}$ Object $[_{AgrO°}$ t_{verb}] $[_{VP}$ Subject $[_{V°}$ t_{verb}] t_{obj}]]]
e. $[_{TP}$ Subject $[_{T°}$ Verb] $[_{AgrOP}$ Object $[_{AgrO°}$ t_{verb}] $[_{VP}$ t_{subj} $[_{V°}$ t_{verb}] t_{obj}]]]

Chomsky (1995c: 349–355) eliminates Agr categories altogether and introduces the concept of multiple specifiers, so that in effect what was described earlier as [VP, Spec] and [AgrOP, Spec] are now considered to be two different specifiers of the same VP (or of the same V°). Chomsky (1995c: 356–357) then goes on to revise the conditions on equidistance so that two specifiers of the same head are equidistant. This in turn means that equidistance no longer requires the verb to move from one head to the next higher one, and therefore the account of Holmberg's generalization is lost, as noted by Chomsky (1995c: 358) himself. The first step of object shift can now be a movement into the outer specifier of VP, and object shift is therefore able to cross the base position of the subject, which is the inner specifier of the same verb. As Chomsky (1995c: 358) said, Holmberg's generalization would have to be a property of the verb, so that it can have more than one specifier only if it is a trace. And Chomsky continues, "There is no obvious reason why this should be so."

5 Focus and interpretation as the key to object shift

The two accounts discussed so far, the one linked to optional case assignment by a trace and the equidistance account, have at least three features in common:

(i) They assume that full DP object shift is optional and they therefore have nothing to say about which full DPs undergo object shift and which ones do not.
(ii) They also both assume that pronominal-object shift is obligatory.
(iii) Finally, they both predict that non-DPs cannot possibly undergo object shift.

In section 5.1 we shall see that the first two assumptions do not hold, and in this section we will see that the prediction that only DPs undergo object shift is not quite borne out either.

When the adverb *there* is unstressed and defocused, it may undergo object shift in Icelandic, (82), and it must do so in Danish, (84) (as observed in Josefsson 1994: 117; Haider et al. 1995: 20; Thráinsson 2001: 197, n.7):

(81) Icelandic
a. Býr$_v$ Pétur ekki lengur t$_v$ í Kaupmannahöfn?
lives Peter not longer in Copenhagen.DAT
b. *Býr$_v$ Pétur í Kaupmannahöfn$_i$ ekki lengur t$_v$ t$_i$?
lives Peter in Copenhagen.DAT not longer

(82) Icelandic
a. Býr$_v$ Pétur ekki lengur t$_v$ þar?
lives Peter not longer there
b. Býr$_v$ Pétur þar$_i$ ekki lengur t$_v$ t$_i$?
lives Peter there not longer

(83) Danish
a. Bor$_v$ Peter ikke længere t$_v$ i København?
lives Peter not longer in Copenhagen
b. *Bor$_v$ Peter i København$_i$ ikke længere t$_v$ t$_i$?
lives Peter in Copenhagen not longer

(84) Danish
a. ??Bor$_v$ Peter ikke længere t$_v$ der?
lives Peter not longer there
b. Bor$_v$ Peter der$_i$ ikke længere t$_v$ t$_i$?
lives Peter there not longer

These data might seem to support the view discussed in section 3.4, that pronominal-object shift is cliticization – cliticization in Romance also affects clitic adverbials, e.g. French *y* 'there'. However, like any other kind of object shift, object shift of Icelandic *þar* and of Danish *der* 'there' underlie Holmberg's generalization, as opposed to cliticization of their Romance counterparts:

(85) French
a. Pierre n' y a jamais vécu.
Pierre not there has never lived
Danish
b. *Peter har der aldrig boet.
Peter has there never lived
c. Peter har aldrig boet der.
Peter has never lived there

As in section 3.4, the conclusion therefore remains that pronominal-object shift is not a kind of cliticization but a kind of object shift. The fact that non-DPs undergo object shift as well suggests that the key property is not case or equidistance, but something entirely different. In the next sections we shall see that the key property may be focus and interpretation.

5.1 The interpretation of object shift

From what has been said so far about full DP object shift in Icelandic, it might seem as if it is completely optional. This is not the case, however. As observed in Diesing and Jelinek (1995: 150) and in Diesing (1996: 79, 1997: 418), the interpretation of an object-shifted object in Icelandic differs from that of a non-object-shifted one, and this difference parallels the difference in interpretation between scrambled and non-scrambled objects in e.g. German and Yiddish (cf. Diesing 1992b: 129). Consider first a German example:

(86) German

a. . . . weil ich selten die kleinste Katze streichle
because I rarely the smallest cat pet

b. . . . weil ich die kleinste Katze$_i$ selten t_i streichle
because I the smallest cat rarely pet

(from Diesing and Jelinek 1995: 130, their (9a), Diesing 1996: 73, her (17), and Diesing 1997: 379, her (14a))

Diesing and Jelinek (1995) and Diesing (1996, 1997) observe that the interpretation of (86a) is that whichever group of cats I meet, I rarely pet the one which is the smallest in that particular group. The interpretation of (86b) is that there is a cat which is smaller than all others, and that cat I rarely pet. In other words, the relative scope of *rarely* and *the smallest cat* correspond to their surface order, the one furthest left has wider scope. This is also the case in Icelandic:

(87) Icelandic

a. Hann les sjaldan lengstu bókina.
he read rarely longest book-the

b. Hann les lengstu bókina$_i$ sjaldan t_i.
he read longest book-the rarely

(from Diesing 1996: 79, her (32), and Diesing 1997: 418, her (82))

According to Diesing (1996, 1997), the interpretation of (87a) is that whichever group of books he is put in front of, he rarely reads the one which is the longest in that particular group. The interpretation of (87b) is that there is a book which is longer than all others, and that book, he rarely reads. Thus also here, the relative scope of *rarely* and *the longest book* correspond to their surface order, the one furthest left has wider scope. Diesing's claim is that these interpretation differences can be derived from the Mapping Hypothesis of Diesing (1992: 10, 1997: 373); see also Diesing and Jelinek (1995: 124), i.e., the differences follow from whether the object is inside the VP and thereby part of the 'nuclear scope (the domain of existential closure)' or outside VP but inside IP and thereby part of the 'Restriction (of an operator)'. The difference in interpretation between (87a) and (87b) makes it clear that full DP object shift is not optional but that, depending on which interpretation is the target, object shift is either obligatory or impossible.[9]

Diesing and Diesing and Jelinek also point out that claiming pronominal-object shift to be obligatory is at best a gross oversimplification. The point is that there are pronouns which do not undergo object shift, namely, indefinite pronouns. They do not have wide scope, and therefore remain in their base position (both in languages with object shift, here Icelandic and Danish, and in languages with scrambling, here German):

(88) Icelandic
a. Ég á ekki regnhlíf, áttu ekki eina?
I have not umbrella have-you not one
b. *Ég á ekki regnhlíf, áttu $eina_i$ ekki t_i?
I have not umbrella have-you one not

(89) Danish
a. Jeg har ikke nogen paraply, har du ikke en?
I have not any umbrella have you not one
b. *Jeg har ikke nogen paraply, har du en_i ikke t_i?
I have not any umbrella have you one not

(90) German
a. Ich habe immer einen Regenschirm, warum hast Du nie einen?
I have always an umbrella why have you never one
b. *Ich habe immer einen Regenschirm, warum hast Du $einen_i$ nie t_i?
I have always an umbrella why have you one never
(from Vikner 1997a: 11–12, his (34–36), based on Diesing 1996: 76, her (24–25))

Actually, it can also be claimed that it is possible for definite pronouns not to undergo object shift. We have already discussed (71) and (73), where it was shown that stressed definite pronouns do not have to undergo object shift (and in languages where full DPs cannot undergo object shift, stressed definite pronouns cannot do it either). It is possible to reinterpret this kind of data to show that the interpretation depends on whether or not object shift takes place, and then the obligatory stress on definite pronouns that have not undergone object shift is a consequence of them being focused. The following is a further example from Danish:

(91) Danish
En Dag saa hun Niccolo i Gaden ... Men han saa ikke hende
one day saw she Niccolo in street-the but he saw not her
(from *Ekko* by Karen Blixen, with the original orthography, cited in Togeby 2003: 169)

As pointed out by Togeby (2003: 169), (91) requires that both the subject *han* 'he' and the object *hende* 'her' are stressed. In other words, (91) corresponds to English ... *but HE did not see HER*, where the focus is on *he* and *she* having switched roles,

from 'seer' to 'seen' and vice versa. It would not have been ungrammatical for Karen Blixen to have written . . . *Men han saa hende ikke*, but this would not have the interpretation with focus on the role switching, it would simply correspond to English . . . *but he did not see her*, where the focus is on the entire VP.

This section has shown that depending on interpretation and focus, object shift of full DPs and object shift of pronouns may or may not take place.

5.2 Objects marked [−Focus] must be licensed by categories marked [+Focus]

Here we review the analysis proposed in Holmberg (1999a), and although focus and interpretation (which were dealt with in the previous section) are central to Holmberg's (1999) analysis, this will only come in at the end of the discussion.

Holmberg (1999: 6) points out that Chomsky's (1993: 15–19) equidistance account (as presented in section 4 above) only accounts for those cases of Holmberg's generalization where the main verb leaves VP by moving into the next higher head position (i.e., the head which is the sister of the VP in question). The reason is that only by means of such a head movement do [VP, Spec] and [AgrOP, Spec] count as equidistant. If the verb were to leave VP in a different fashion, the equidistance account would predict object shift to be impossible, as [VP, Spec] and [AgrOP, Spec] would not be part of the same minimal domain and therefore not count as equidistant. Holmberg (1999) argues that this prediction is not borne out, and the example that shows this is the one already discussed earlier as (51c), repeated here as (92c) (see (ic) in n. 6 for an Icelandic version). The non-finite main verb *kysset* 'kissed' has left its VP by means not of head movement but of topicalization, and yet object shift is well-formed:

(92) Danish

a. *Kysset$_x$ har$_v$ jeg ikke [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ hende]], . . .
kissed has I not her

b. *Kysset$_x$ har$_v$ jeg ikke [$_{VP}$ t$_v$ hende$_i$ [$_{VP}$ t$_x$ t$_i$]], . . .
kissed has I not her

c. Kysset$_x$ har$_v$ jeg hende$_i$ ikke [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ t$_i$]], . . .
kissed has I her not
. . . bare holdt hende i hånden.
only held her in hand-the
'Kissed her, I haven't, only held her hand.'

Holmberg (1999) then goes on to discuss other data where an element blocks object shift only if this element is not a trace. One such element is the particle in Swedish. Object shift is not possible across an unmoved particle, (93b) (see also (23c) above), but it is possible across the trace of a particle even in Swedish, (93d):

(93) Swedish

	Ja ja,	jag	ska	mata	din	katt,	men . . .	
	all right,	I	shall	feed	your	cat,	but	
a.	. . .	jag_k	$släpper_v$	t_k		inte	t_v	in den.
		I	let			not		in it
b.	*. . .	jag_k	$släpper_v$	t_k	den_i	inte	t_v	in t_i.
		I	let		it	not		in
c.	. . .	IN_j	$släpper_v$	jag		inte	t_v	t_j den.
		in	let	I		not		it
d.	. . .	IN_j	$släpper_v$	jag	den_i	inte	t_v	t_j t_i.
		in	let	I	it	not		

'All right, I'll feed your cat, but I won't let it in.'

(Example (93d) is from Holmberg's 1999: 17, his (44b))

The assumption made in section 3.1, that traces of case assigners are optional case assigners, partially accounts both for object shift being possible across the trace of a particle in Swedish even though overt particles block object shift and for object shift being possible across the trace of a non-finite main verb even though overt non-finite main verbs block object shift. The account is only partial in so far as what is predicted is that case does not have to be assigned to the base position of the object, because the (potential) case assigner is a trace, but what is not accounted for is how the shifted objects are assigned case, as the case assigners have not moved through I°, for instance. As for the equidistance account discussed in section 4, it is also unclear whether it could account either for object shift being possible across the trace of a particle in Swedish or for object shift being possible across the trace of a non-finite main verb.

Another element that blocks object shift only if it is not a trace is the indirect object. Compare (30–32) above, which show that indirect objects block object shift of the direct object ((30b), (31b), (32b)) unless the two objects undergo object shift together, ((30c), (31c), (32c)). Holmberg (1999: 17) gives two Swedish examples where the indirect object has undergone A-bar-movement to [CP, Spec]: *Vem_j gav_v du den_i inte t_v t_j t_i?*, 'Who gave you it not?', i.e., 'Who did you not give it?'; and *$Henne_j$ $visar_v$ jag den_i helst inte t_v t_j t_i*, 'Her show I it rather not', i.e., 'To her, I would rather not show it'. However, because in both of these examples, both the indirect and the direct object are pronouns, the possiblity cannot be excluded that the two objects could have undergone object shift together, and the indirect object, *hvem* 'who'/*henne* 'her', could then have undergone A-bar-movement to [CP, Spec] after the object shift had taken place. This does not mean, though, that Holmberg does not have a point; it merely means that the two examples cited above do not support this point in an optimal way. Better examples are (94b) and (95b), because the indirect object that has undergone *wh*-movement to [CP, Spec], *Maria*/*Maríu*, is a full DP which at least in Danish presumably could not have undergone object shift first, cf. (6) above:

(94) Danish
a. Maria$_j$ fortalte$_v$ du forhåbentlig ikke t$_v$ t$_j$ noget.
Maria told you hopefully not anything
'I hope you did not tell MARIA anything.'
b. Maria$_j$ fortalte$_v$ du det$_i$ forhåbentlig ikke t$_v$ t$_j$ t$_i$.
Maria told you it hopefully not
'I hope you did not tell MARIA.'

(95) Icelandic
a. Maríu$_j$ sagðir$_v$-ðu vonandi ekki t$_v$ t$_j$ leyndarmálið.
Maria.DAT told-you hopefully not secret-the
b. Maríu$_j$ sagðir$_v$-ðu leyndarmálið$_i$ vonandi ekki t$_v$ t$_j$ t$_i$.
Maria.DAT told-you secret-the hopefully not
'I hope you did not tell MARIA the secret.'

It is clear that the pronominal direct object could not have moved across the full DP indirect object, *Maria*/*Maríu*, if the latter had not undergone *wh*-movement, (96b)/(97b):

(96) Danish
a. ??Du fortalte$_v$ forhåbentlig ikke t$_v$ Maria det.
you told hopefully not Maria it
b. *Du fortalte$_v$ det$_i$ forhåbentlig ikke t$_v$ Maria t$_i$.
you told it hopefully not Maria
c. *Du fortalte$_v$ Maria$_j$ det$_i$ forhåbentlig ikke t$_v$ t$_j$ t$_i$.
you told Maria it hopefully not
d. *Du fortalte$_v$ Maria$_j$ forhåbentlig ikke t$_v$ t$_j$ det.
you told Maria hopefully not it

(97) Icelandic
a. Þú sagðir$_v$ vonandi ekki t$_v$ Maríu leyndarmálið.
you told hopefully not Maria.DAT secret-the
b. *Þú sagðir$_v$ leyndarmálið$_i$ vonandi ekki t$_v$ Maríu t$_i$.
you told secret-the hopefully not Maria.DAT
c. Þú sagðir$_v$ Maríu$_j$ leyndarmálið$_i$ vonandi ekki t$_v$ t$_j$ t$_i$.
you told Maria.DAT secret-the hopefully not
d. Þú sagðir$_v$ Maríu$_j$ vonandi ekki t$_v$ t$_j$ leyndarmálið.
you told Maria.DAT hopefully not secret-the
'I hope you did not tell Maria the secret.'

The same picture appears when A-movement of the indirect object occurs, e.g., when the finite main verb is passivized in Icelandic. In (98), the indirect object *þér* 'you.DAT' has moved out of VP, and the direct object *þvílíkt tækifæri* 'such a chance' can therefore undergo object shift, (98b):

(98) Icelandic
a. Þér$_j$ gafst$_v$ oft t$_v$ t$_j$ þvílíkt tækifæri.
you.DAT was-given often such chance
b. Þér$_j$ gafst$_v$ þvílíkt tækifæri$_i$ oft t$_v$ t$_j$ t$_i$.
you.DAT was-given such chance often
'You were often given such a chance.'

In (99), the indirect object *Maríu* 'Maria.DAT' has not moved out of VP, and therefore the direct object *þvílíkt tækifæri* 'such a chance' cannot undergo object shift, (99b):

(99) Icelandic
a. Pétur gaf$_v$ oft t$_v$ Maríu þvílíkt tækifæri.
Peter gave often Maria.DAT such chance
b. *Pétur gaf$_v$ þvílíkt tækifæri$_i$ oft t$_v$ Maríu t$_i$.
Peter gave such chance often Maria.DAT
'Peter often gave Mary such a chance.'

That object shift of a direct object is possible across the trace of an indirect object but not across an overt indirect object is not expected under any of the approaches discussed so far. Insofar as any of the above approaches would predict an (overt) indirect object to block object shift, the same would be expected of the trace of an indirect object.

In order to account both for the data captured by the accounts discussed earlier and for the additional data discussed here, Holmberg (1999: 25–28) suggests that shifted objects are all marked [–Focus] and that they must be licensed by being c-commanded by a category (an X° or an XP) with the feature [+Focus]. For more discussion of the shifted objects not being in focus, see section 5.1 above, which showed that objects which are focused do not undergo object shift. The reason why objects never object shift across (overt) verbs, prepositions, and (Swedish) particles is that these are inherently marked [+Focus], and therefore they can license objects marked [–Focus], and there would be no reason and thus no justification for object shift to go any further.

Adverbials, on the other hand, are not marked [+Focus], and they can therefore not license objects marked [–Focus]. Furthermore, if an element not marked [+Focus] intervenes between the licensing [+Focus] element and the [–Focus] element that must be licensed, this licensing is blocked. These two assumptions, that an adverbial cannot itself license a [–Focus] object and that an adverbial blocks such licensing if it intervenes between a licensing category and a [–Focus] object, therefore force shifted objects to precede adverbials.[10]

6 Conclusion: a few recent accounts

Needless to say, there have been a number of other discussions and analyses of object shift in the literature than the ones that have been mentioned here. In this

final section, three recent accounts will be briefly mentioned to the almost certainly unjust exclusion of several others.

In his article about 'phases', Chomsky (2001b: 34) suggests that the crucial difference concerning Holmberg's generalization is whether or not the DP in question is properly inside the VP of the main verb, i.e., whether or not the DP is the leftmost overt element in the VP. If the DP is not the leftmost overt element in the VP, it may have either the interpretation *Int* or *Int'* (see, e.g., example (ic) in note 9, where object shift could not possibly have taken place). (*Int'* roughly corresponds to Holmberg's (1999) [+Focus], i.e., the interpretation assigned to a DP which remains in situ in an object shift context, cf. the discussion of (87a) above, whereas *Int* corresponds to Holmberg's (1999) [–Focus], i.e., the interpretation assigned to a DP which has undergone object shift; cf. the discussion of (87b) above.)

If the DP **is** the leftmost overt element in the VP, however, it may only have the interpretation *Int'* (Chomsky 2001b: 34). If a [–Focus] DP finds itself with *Int'*, an interpretation incompatible with its form, the sentence is deviant if the DP stays where it is, but a way out of the problem is for it to move to [v*P, Spec], where it will obtain the right interpretation *Int*, due to to v*'s EPP feature (the result of this is a structure with object shift, see (87b) above and (ib) in n. 9). On the other hand, if a [+Focus] object finds itself with *Int'*, there is no problem, as this is not incompatible with its form. It might move to, [v*P, Spec], but then it will be deviant, as here it will get the wrong interpretation *Int*, due to to v*'s EPP feature (the result of this is a structure without object shift even though there could have been object shift, e.g., (87a) above or (ia) in note 9). In other words, Chomsky's (2001b) phases account rests on distinguishing whether something is the leftmost overt element in VP or not.

Svenonius (2001) suggests a different account of Holmberg's generalization, also based on Chomsky's (2001b) phases. If a VP contains an overt verb, it is sent off to Spell Out and discourse-related movements (which include object shift and scrambling) are impossible. If, on the other hand, the verb has left the VP, then the VP is not sent off to Spell Out on its own, but has to wait until it can be sent to Spell Out as part of a larger XP. In this case, discourse-related movements are allowed within this XP, and so object shift is possible.

Bobaljik (2002) suggests a rather different account (already discussed in sections 2.4.3 and 2.4.4) which is based on his particular concept of adjacency, where two elements may be adjacent even though elements in adjoined positions occur between them (Bobaljik 2002: 210–221). When the main verb is finite, I° has to be adjacent to the main verb, and this blocks object shift in those cases where a shifted object would intervene between the two (Bobaljik 2002: 221–224), e.g., in those embedded clauses where the finite verb occurs in V° (i.e., in Danish, Faroese, Norwegian, and Swedish). When the main verb is a participle, it is Pple° that has to be adjacent to the main verb (Bobaljik 2002: 225), and this blocks object shift in those cases where the overt shifted object would intervene between Pple° and the main verb. One problem with this is that the landing position of object shift in a clause where the main verb is a particple would have to be lower

than Pple°, and because Pple° is below the V° of any auxiliary verb, which again is lower than negation or a sentential adverbial, the prediction would be that if object shift should be possible in a structure where the main verb is a participle, object shift would target a position lower than negation or a sentential adverbial. That this is not so, is shown in (51c)/(92c) and their discussion.

NOTES

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1 In Icelandic control infinitives (see Thráinsson 1986: 247; Holmberg 1986: 155–158; Sigurðsson 1989: 49–56; Johnson and Vikner 1994; Jónsson 1996: 159–166), the infinitival verb embedded under the control verb must leave VP as it must precede negation, (ia, b). Given that the verb must leave its VP, it is not surprising that object shift is possible, (ic):

(i) Icelandic

a.	*María	lofaði$_v$	[$_{IP}$	að			ekki	lesa	bókina	].
	María	promised		to			not	read	book-the	
b.	María	lofaði$_v$	[$_{IP}$	að	lesa$_v$		ekki	t$_v$	bókina	].
	María	promised		to	read		not		book-the	
c.	María	lofaði$_v$	[$_{IP}$	að	lesa$_v$	bókina$_i$	ekki	t$_v$	t$_i$	].
	María	promised		to	read	book-the	not			

'María promised not to read the book.' (Jónsson 1996: 164)

2 Den Besten and Moed-van Walraven (1986: 113), Diesing (1997: 388), and Sadock (1998) take Yiddish to be a VO language with remnants of OV, whereas Santorini (1993) classifies it as mixed OV/VO and Hall (1979), Geilfuss (1991), Haider and Rosengren (1998: 78–81), and Vikner (2001b) assume the basic order in modern Yiddish to be OV.

3 The form of an object in the Danish examples varies depending on whether or not the object in question has undergone object shift, given that only pronouns can undergo object shift and that they have to undergo it.

4 An example with the same word order as (32b) is acceptable, but with the opposite interpretation, namely, that the kidnapper never returned the parents to the children. In other words, it would have the structure of (32d) and (30d).

5 The reason why the example of non-clausebound scrambling is from Russian is that German (and Dutch) scrambling actually is clausebound, and therefore completely parallel to the object shift data in (49):

(i) German

a.	*Ich	weiß	dieses	Buch$_i$	[warum	sie			nicht	t$_i$	verkaufen].
	I	know	this	book	why	they			not		sell
b.	Ich	weiß			[warum	sie	dieses	Buch$_i$	nicht	t$_i$	verkaufen].
	I	know			why	they	this	book	not		sell

c. Ich weiß [warum sie nicht dieses Buch verkaufen].
I know why they not this book sell
'I know why they do not sell this book.'

6 Many speakers of (at least) Danish and Icelandic do not find (51c)/(ic) completely acceptable, but it would seem that there is general agreement that (51c)/(ic) is considerably less unacceptable than (51a, b)/(ia, b):

(i) Icelandic
a. *Kysst$_x$ hef$_v$ ég ekki [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ hana]], . . .
kissed has I not her
b. *Kysst$_x$ hef$_v$ ég ekki [$_{VP}$ t$_v$ hana$_i$ [$_{VP}$ t$_x$ t$_i$]], . . .
kissed has I not her
c. ?Kysst$_x$ hef$_v$ ég hana$_i$ ekki [$_{VP}$ t$_v$ [$_{VP}$ t$_x$ t$_i$]], . . .
kissed has I her not
. . . bara haldið í höndina á henni.
only held in hand-the on her
'Kissed her, I haven't, only held her hand.'

7 It must be admitted that some Icelandic speakers find (53b) acceptable. Notice though that Thráinsson (2001: 162) gives the following judgment of a completely parallel example:

(i) Icelandic
*Jón las$_v$ eflaust bókina$_i$ aldrei t$_v$ t$_i$.
John read doubtlessly book-the never

It should perhaps be added that there seems to be general agreement among Icelandic speakers as to the unacceptability of the pronominal version of this kind of example in (55b).

8 To complicate matters even further, pronominal-object shift in Swedish is different both from pronominal-object shift in the other Scandinavian languages, (75), and from Romance clitic pronouns, (76), in that both options are possible. The shifted pronoun may occur either left of the subject, (ia) or right of the subject, (ib):

(i) Swedish
a. Därför ger$_v$ mig$_i$ [$_{IP}$ Tutanchamons hemska förbannelse ingen
therefore gives me Tutanchamon's terrible curse no
ro$_j$ [$_{VP}$ t$_v$ t$_i$ t$_j$]].
rest
b. Därför ger$_v$ [$_{IP}$ Tutanchamons hemska förbannelse mig$_i$ ingen
therefore gives Tutanchamon's terrible curse me no
ro$_j$ [$_{VP}$ t$_v$ t$_i$ t$_j$]].
rest

(Example (ia) is from Josefsson 1992: 65)

Example (ia) is commonly referred to as long object shift, and compared to normal or 'short' object shift, as in (ib), long object shift is subject to some additional and rather elusive restrictions. According to Holmberg (1984: 3), only weak reflexive

pronouns or weak first or second person pronouns undergo long object shift; whereas Josefsson (1992: 68) shows that all those pronouns that have different nominative and accusative forms undergo long object shift. Josefsson (1992: 65–67) also discusses certain thematic restrictions on long object shift. Finally, Thráinsson (2001: 154) points out that long object shift was also found in Danish and Norwegian in the nineteenth century.

9 If object shift is blocked (e.g., by the main verb being a participle), both the reading that is associated only with a shifted object in an object-shift construction and the reading associated only with a non-shifted object in an object shift construction are possible:

(i) Icelandic
   a. Í prófunum svarar hann sjaldan [$_{DP}$ erfiðustu spurningunni].
      in exams-the answers he rarely most-difficult question-the
   b. Í prófunum svarar hann [$_{DP}$ erfiðustu spurningunni] sjaldan.
      in exams-the answers he most-difficult question-the rarely
   c. Í prófunum hefur hann sjaldan svarað [$_{DP}$ erfiðustu spurningunni].
      in exams-the has he rarely answered most-difficult question-the
      (Vikner 2001a: 325–326)

The difference between (ia) and (ib) parallels the difference between (87a) and (87b) in the main text. The interpretation of (ia) is that regardless of which exam he is taking, he rarely answers whichever question happens to be the most difficult one in that particular exam. The interpretation of (ib) on the other hand, is that there is one particular question which is more difficult than all others (e.g., 'list all the irregular verbs in Icelandic') and which appears in most or all exams, and when he encounters this question, he rarely answers it.

In her minimalist analysis of (87a) and (87b) (and, by extension, of (ia) and (ib)), Diesing (1996: 70, 1997: 375–376) assumes the existence of a 'scoping constraint', which says that DPs should move to the position in the surface order that corresponds to their scope, and which therefore forces object shift in (87b) and (ib) and prevents object shift in (87a) and (ia). Diesing takes these examples, (87a, b) and (ia, b), to show that the scoping constraint must be a 'condition on convergence', to explain why the scoping constraint overrides 'procrastinate', an 'economy condition', which says do not move unless absolutely necessary.

Vikner (2001a: 334) argues that while these assumptions give the correct predictions concerning (87a, b) and (ia, b), they make an incorrect prediction concerning (ic). The point is that in the reading of (ic) that corresponds to (ib), the scoping constraint is overridden, *the most difficult question* has scope over *rarely* and yet does not precede it. In other words, (ic) shows that Holmberg's generalization overrides the scoping constraint, and (ib) shows that the scoping constraint overrides procrastinate. The problem is that within minimalism, for the scoping constraint to override procrastinate, it would (as Diesing 1997: 422 says) have to be a condition on convergence, but that in turn would mean that it could not itself be overriden by anything; on the contrary, a violation of a condition on convergence must lead to a crash and this would incorrectly predict (ic) to be unambiguous. On the other hand, as Vikner (2001a) shows, an analysis within optimality theory would not run into this problem. In OT it would be perfectly possible to have a particular constraint both override one constraint and itself be overridden by another.

Thráinsson (2001: 193) points to a basic problem common to the accounts of Diesing (1996, 1997), Vikner (2001a), and Chomsky (2001b). In structures where a DP is not prevented from object shift by Holmberg's generalization but nevertheless does not undergo object shift, e.g., (87a) and (ia), these accounts assume the DP to have only one interpretation, namely, the narrow scope/unfocused/weak reading. Although speakers agree that this reading is possible and preferred, it is not quite clear that the other one, the wide scope/focused/strong reading (i.e., the one that is the only reading in (87b) and (ib)), is completely excluded for all speakers; cf. De Hoop (1992: 137–139).

10 As pointed out by Holmberg (1999: 15) and Josefsson (2001: 92, 2003: 204), this account would incorrectly predict long object shift (i.e., object shift to a position left of the subject) to be impossible. See (ia) in n. 8 for a grammatical example of long object shift.

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47 Partial *Wh*-Movement

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1 Introduction: organization of the chapter

The term 'partial movement' (PM) can be understood in at least two ways. If interpreted literally it refers to all constructions in which – by whatever criterion – a phrase 'ought' to have moved to a position P, but has in fact only been displaced to a structurally lower position. However, the generative discussion of PM often focuses on a special subcase of (apparent) scope marking for *wh*-phrases, which may or may not turn out to be a subcase of partial movement in the sense just introduced. This chapter tries to do justice to both interpretations of PM. However, most of the discussion is concerned with the scope-marking construction.

The chapter begins with a definition of PM, and then develops a simple typology. The next section exclusively focuses on the *wh*-scope-marking construction *was denkst du wer kommt* 'what do you think who comes', whereas section 3 deals with other instances of PM in the more literal sense. Apparent PM effects in child language (see, e.g., McDaniel et al. 1995; van Kampen 1997) are beyond the scope of the present chapter. In order to facilitate the interpretation of the example sentences, phrases that have undergone PM (or appear to have done so) will appear in boldface throughout this chapter. Fully moved phrases appear in italics. *Wh*-phrases in situ will be underlined.

1.1 Definitions

Partial movement (PM) contrasts with the complete execution of a movement operation. This distinction arises in the context of the idea that certain grammatical principles require the displacement of phrases from their original position to a different structural slot. This may be necessary for picking up or checking Case, for fulfilling requirements such as the Extended Projection Principle (every clause must have a subject), for reasons linked to scope, etc. Thus, in a language of the English type, a *wh*-phrase must appear in the specifier position (Spec) of the largest CP (clause) it takes scope over semantically (unless it appears in a multiple question). The *wh*-phrase has to move to its LF-scope position.

(1) a. *John believes that Mary saw who?
b. *Who* does John believe that Mary saw t?

Movement is *complete* – as in (1b) – if the phrase reaches a position in which it meets the relevant requirements (*who* has moved to its scope position); movement is *partial* whenever the phrase has been displaced but its final landing site is below the relevant position. PM is thus illustrated by Bahasa Indonesian (2b), a construction in which the *wh*-phrase *siapa* 'who' has left its base position (in contrast to (2a)), but has not moved into the matrix clause which it takes scope over (Saddy 1991, 1992).

(2) a. Bill tahu Tom men-cintai siapa.
Bill knows Tom loves who
b. Bill tahu **siapa** yang Tom cintai.
Bill knows who FOC Tom loves
c. *Siapa* yang Bill tahu Tom cintai.
who FOC Bill knows Tom loves

Of course, not every movement that places, e.g., a *wh*-phrase closer to the position corresponding to its scope is partial *wh*-movement. Thus, *wh*-phrases can be scrambled to a certain extent in German (cf. (3a–b)). *Wen* is closer to its LF-scope position in (3a) than it is in (3b) (as (3d) shows), but this movement is carried out because of whatever is responsible for scrambling – it is not related to scope taking.

(3) a. Ich weiss nicht *wann* wen wer t gesehen hat.
I know not when who-acc who-nom seen has
b. Ich weiß nicht, *wann* wer wen gesehen hat.
c. [$_{CP}$ *wann* [$_{IP}$ wer [$_{VP}$ wen gesehen hat]]]
d. [$_{CP}$ *wann* [$_{IP}$ wen [$_{IP}$ wer [$_{VP}$ t gesehen hat]]]]
'I do not know who saw whom when.'

It is thus more accurate to say that movement of Σ from A to B is an instance of partial f-movement if:

(a) B is a typical landing site for f-movement;
(b) B is the highest such position Σ reaches (in overt syntax);
(c) the requirements responsible for f-movement cannot be met by Σ in B, but would be met in C, such that
(d) C is higher than B; and
(e) B does not participate in any other type of chain-merger, at least not in overt syntax.

Condition (a) distinguishes partial *wh*-movement from, e.g., *wh*-phrase-scrambling. Condition (b) distinguishes partial *wh*-movement from intermediate steps of cyclic *wh*-movement. Condition (c) excludes complete *wh*-movement. Condition (d) is added in order to distinguish partial *wh*-movement from constructions such as German (4) discussed by Reis and Rosengren (1992), in which *wh*-phrases are moved beyond their LF-scope position, but in which they nevertheless appear in

a typical landing site for *wh*-phrases, namely, the Spec of the matrix CP. Condition (e) serves to exclude parasitic gap constructions such as (5): according to some approaches (e.g., Chomsky 1986a), parasitic gaps arise by the *wh*-movement of an empty operator to the Spec of, e.g., the adjunct clause. The two chains (of the empty operator and of the real *wh*-phrase) are, however, merged later.

(4) Wen sag mal dass sie t liebt.
who say once that she loves
'Tell me who she loves.'

(5) *Which books* did you file t? [OP without reading t]

1.2 A simple typology of partial movement

Although the movement of phrases and words may serve a multitude of purposes and ends, the generative discussion of PM has focused on constituent question formation. This appears to reflect a generalization about natural languages: there are very few or no undisputable cases of partial topicalization, scrambling, relative clause formation, raising, incorporation, etc. (see section 1.2.5). The following typological remarks thus concentrate on partial movement in question formation.

1.2.1 Simple partial movement

The construction exemplified in Bahasa Indonesian (2b) represents the simplest type of PM: the structure involves the partial displacement of the *wh*-phrase only. This construction will be called simple partial movement (SPM). SPM-structures are grammatical in other Malay languages (cf. Cole and Hermon 1998b), in Kikuyu (Clements 1984), Buli (Ferreira and Ko 2000), Slave (as illustrated in (6b), see Rice 1989; Basilico 1998) and other Athabascan languages (Western Apache, Potter 1997; Babine-Witsuwit'en, Denham 2000), and in Ancash Quechua (Cole 1982b).[1]

(6) a. Raymond [Jane judeni ri yili] kodhisho? Slave
Raymond Jane where FOC 3-be 3-know
b. Raymond [**judeni** Ri Jane yili] kodhishi?
'Where does Raymond know that Jane is?'

Other languages exemplify SPM in a restricted way only. Thus, in Iraqi Arabic (Wahba 1991), SPM is restricted to infinitive complements (7).

(7) a. Mona raadat tijbir Su'ad tisa'ad meno? Iraqi Arabic
Mona wanted to force Su'ad to help who?
b. Mona raadat tijbir Su'ad **meno** tisa'ad?
c. Mona raadat **meno** tijbir Su'ad tisa'ad?
d. *Meno* Mona raadat tijbir Su'ad tisa'ad?

Some dialects of German and Romani (see McDaniel 1989) allow SPM in complex multiple questions only: when a *wh*-phrase (from the matrix clause) occupies its scope position, another *wh*-phrase from a lower clause can or must move to the highest still vacant specifier position, as illustrated in (8b) for some versions of German (co-existing there with standard German (8a)), and (8c) for Romani.

(8) a. *Wer* glaubt dass sie wen liebt?
who thinks that she whom loves
b. *Wer* glaubt **wen** sie liebt?
who thinks whom she loves
'Who thinks that she loves whom?'
c. *Ko* vakerja **kaj** o Demiri khelja?
who said where the Demir danced
'Who said that Demir danced where?'

SPM always co-exists with full *wh*-movement and with the *wh*-in-situ strategy. We may defend generalization S1 as follows: a language that allows SPM also allows full movement to the scope position and the in situ strategy in some contexts (Russian may be an exception, though)[2] – not necessarily the one in which a SPM shows up. For the contexts in which SPM is possible, we can also defend S2 by stating that the *wh*-phrase might have also stayed in situ. The validity of S2 is supported, e.g., by the array of facts of Iraqi Arabic, where (wide scope) *wh*-elements in situ are restricted to non-finite complement clauses, just as SPM is. Of course, the reverse of S1 does not hold: there are languages like Duala in which *wh*-phrases may either stay in situ or undergo complete movement, but in which SPM is not acceptable (Epée 1976; Biloa 1993; Sabel 1996a, 2000). Likewise, the reverse of S2 does not hold: there are contexts in which *wh*-phrases are tolerated in situ but in which SPM is ungrammatical (see, e.g., Cole and Hermon 1998b).

Generalization S1:
If a language tolerates SPM, it also tolerates *wh*-elements in situ and allows full *wh*-movement.

Generalization S2:
If a construction is grammatical with SPM, it can also be constructed with a *wh*-phrase in situ.

1.2.2 Partial movement with a scope-marking particle

In Albanian (Turano 1995), the scope of *wh*-phrases is marked by a particle and the *wh*-phrase may undergo PM, as illustrated by (9):

(9) a. A mendon se Maria thotë se **çfarë** ka sjellë burri? Albanian
Q think that Mary says that what brought her husband
b. A mendon se **çfarë** thotë Maria se ka sjellë burri?
'What do you think that Maria says that her husband brought?'

This construction can be called particle-marked partial movement (PPM). PPM also exists in Iraqi Arabic if the element *sh*-appearing in front of the verb in (10) and (11) is to be analysed as a *wh*-particle. The particle is optional if *wh*-in situ is grammatical as well (as in (11)), and obligatory otherwise (as in (10)).

(10) a. Sh-tsawwarit Mona Ali raah weyn? Iraqi Arabic
Q-thought Mona Ali went where
b. Sh-tsawwarit Mona **weyn** Ali raah
'Where did Mona think that Ali went?'

(11) a. (Sh)-raadat Mona Ali ygaabal meno?
Q-wanted Mona Ali meet whom
b. (Sh)-raadat Mona **meno** Ali ygaabal?
'Who did Mona want Ali to meet?'

PPM also seems to belong to the strategies of question formation in Passamaquoddy (see chapter 4 of Bruening 2001). SPM and PPM may co-exist within a single language (Iraqi Arabic), and so can PPM and the what-construction (Passamaquoddy). The difference between SPM and PPM corresponds to the one between *wh*-in-situ-languages in which the scope of a *wh*-phrase needs to be marked by a particle (as in Japanese) and languages in which this is not mandatory (e.g., Chinese).

1.2.3 *Partial movement with scope marking by the most unmarked* wh*-word*

In a considerable number of languages, the scope marker in PM is formally identical with the most unmarked simple *wh*-phrase, as in German (12a). It is not fully accurate, though, to call *was* and its counterparts in other languages scope-markers, because they can (and, in some dialects, must) appear in all Specs of CP between the 'real' *wh*-phrase and its LF-scope position, as (12b) illustrates. Of course, in (12b) the lower *was* does not mark the scope of *wen*. Let us call this construction type the WHAT-construction (WC), and *was* (and similar items) the what-phrase (WP), because the other terms (*wh*-scope marking construction, *wh*-expletive, etc.) are not theory-neutral. WPs will appear in capitals in all subsequent examples.

(12) a. WAS glaubst du **wen** Irina t liebt?
what believe you who-Acc Irina loves
'Who do you believe that Irina loves?'
b. WAS glaubst du WAS er sagt **wen** Irina liebt?
What believe you what he says who Irina loves
'Who do you believe that he says that Irina loves?'

The WC can also be found in Frisian (Hiemstra 1986), Serbian–Croatian,[3] Czech,[4] Romani (13a); McDaniel 1989), Hungarian (13b); Marácz 1989; Horvath

1997), Finnish, Warlpiri (Dayal 1994; Legate 2002, forthcoming), and older versions of Mohawk (Baker 1996). It is absent in Dutch and English. In the WC languages just mentioned, the WC always involves the partial movement of the real *wh*-phrase.

(13) a. So misline **savo filmi** o Demiri dikhla? Romani
what you-think which film Demir saw
'Which film do you think Demir saw?'
b. MIT mondtak hogy **kit** hívott rel Mari? Hungarian
what they said that who-Acc called up Mary
'Who did they say that Mary had called up?'

A WC can furthermore be found in Hindi (14a; Srivastav 1991c; Mahajan 1990), in Bangla (14b; Bayer 1996), in Kashmiri (Wali and Koul 1997), and in Marathi. The type of WC found in the Indian languages does not necessarily involve PM of a *wh*-phrase, since these languages tolerate *wh*-in-situ (see (15)). However, PM of the *wh*-phrase is possible or necessary if, e.g., the WP *kyaa* 'what' and the real *wh*-phrase would be separated by a finite-clause boundary without movement, as in (16).

(14) a. Siitaa-ne KYAA socaa ki ravii-ne kis-ko dekhaa? Hindi
Sita-Erg what thought that Ravi-Erg who saw
'Who did Sita think that Ravi saw?'
b. Tumi KI bhebe-cho Ke baaRi kore-che
you what think who house built?
'Who do you think built the house?'

(15) Jaun kyaa soctaa hai?
John what think-PR

(16) a. Raam-ne KYAA socaa ki ravi-ne KYAA kahaa ki
Raam-Erg what thinks that Ravi-Erg what said that
kOn sa aadmii aayaa thaa
which man came
b. Raam-ne KYAA socaa ki **kOn sa aadmii** ravii ne kahaa ki aayaa thaa?

In Iraqi Arabic, WC is possibly exemplified in constructions involving *sh-(eno)* 'what' – *sheno* is used before subjects and *sh-* before verbs, so maybe WC and PPM fall together in this language. See below for more discussion of the status of *sheno*. In those contexts where there is a choice between movement and the in situ-strategy in Iraqi Arabic, WC can be used with both, a fact that supports the view that the availability of WC is independent of PM.

Russian, Polish, and perhaps also Warlpiri differ from the other languages with a WC insofar as they seem to use the equivalent of *how* as their WP. However, at least (17b) may require a different analysis. For the vast majority of Polish

speakers, the construction cannot be used for embedded questions (see (18), Adam Przepiórkowski, p.c.), and it is confined to a very small set of verbs like *think.* One may therefore wonder whether (17b) really illustrates a productive example of a WC.

(17) a. Как vy dumaete **kogo** ona ljubit? Russian
how you think who she loves
'Who do you think she loves?'
b. Jak myslisz **kto** wczoraj do nas przyszedł? Polish
how think-2sg who yesterday to us came
'Who do you think visited us yesterday?'

(18) *Zastanawiam się, **jak** sadzisz, kto przyszedł. Polish
I wonder how you think who came

The use of the WC is also highly restricted in Russian, as Stepanov (2001) points out – it is again possible with a handful of matrix verbs only. However, Stepanov argues that these restrictions may be derived from the Case-less nature of *kak*. Interestingly, according to Legate (2002), the WC is rarely used in Warlpiri as well. These observations suggest that the particular choice of the WP may be important for the grammaticality of a WC. In Passamaquoddy, the WC is also formed with a *wh*-phrase meaning 'what' (*keqsey*), but according to Bruening (2001) the default *wh*-phrase would be *tan*.

In PPM and WC, the scope of the partially-*wh*-moved phrase is marked by the particle and (the highest occurence of) the WP, respectively. In other words, in PPM/WC languages explicit scope marking is a necessary condition for the well-formedness of PM.

1.2.4 Clausal pied-piping involving partial movement

A fourth type of partial movement in question formation can be found in Basque (Ortiz de Urbina 1990: 20) and – in a very restricted way in certain varieties of German: it involves clausal pied-piping (CPP). The *wh*-phrase moves to the specifier position of the complement clause (the partial-movement part). Then, the whole complement CP rather than the *wh*-phrase moves to LF-scope position of the *wh*-phrase; see (19) for Basque and (20) for German.[5]

(19) **Nor** etorriko d-ela Bihar esan diozu Mireni? Basque
who come Aux-that tomorrow said Aux to Mary
'Who did you say to Mary t will come tomorrow?'
'that who will come tomorrow have you said to Mary?'

(20) **Wen** einzuladen würde dir Spass machen? German
who to invite would you fun make
'Who would it be fun for you to invite?'

Aniko Liptak (p.c.) points out that Hungarian allows partial movement of a *wh*-phrase in a (free) relative clause if the whole relative clause moves into the matrix Focus Phrase, as in (21). The structure is grammatical only if the *wh*-phrase moves the relative-clause internal focus position.

(21) ?Aki hány pontot ér el megy át a vizsgán? Hungarian
who how many points scores-PV goes through the exam
'Who are such that they pass the exam, who score how many points?'

A *wh*-element internal to a relative clause is also licensed in case it moves to the relative-internal FocP, and the head of the relative is a *wh*-phrase and moves to the matrix [Spec, FocP], as in (22). The head of the relative can be any *wh*-phrase, bare or complex: who, which student, etc.

(22) Ki megy át a vizsgán, aki hány pontot ér el? Hungarian
who goes through the exam who how many points scores
'Who are such that they pass the exam, who score how many points?'

There are, thus, some constructions that might be analyzed as CPP, but whether that is the optimal analysis has not yet been established.

1.2.5 Partial movement in constructions other than questions?

In the light of the fact that partial movement seems to be quite a widespread phenomenon in the context of constituent question formation, it is remarkable that there are only few convincing cases of PM in other domains of grammar. *Wh*-movement in question formation belongs to a family of operator movement dependencies, and one would expect to find close analogues of PM in these contexts. Likewise, A-movement might be carried out only partially.

Romani relative clauses such as (23a) (see McDaniel 1989) involve the partial movement of the relative pronoun. It is not easy to decide whether the element *so* that appears at the edge of the relative clause really is a WP-like element (so that (23a) would be a relative clause instance of WC) or whether it simply is the Romani complementizer (in which case (23a) would be an instance of SPM). Certain dialects of German seem to possess the same construction, but their analysis is unclear in exactly the same respect: the element marking the 'scope' of the relative pronoun could be a WP-element or the simple complementizer *wo/was* showing up in relative clauses in many dialects. So there may be instances of PM with relative clauses, but they are few, and there is no reason to assume they do not belong to the SPM type.

(23) a. Ake o ćhavo so mislinav **kas** i Arífa dikhla. Romani
here the boy what/that I think whom Arifa saw
'Here is the boy who I think Arifa saw.'
b. Ake o ćhavo *kas* mislinav so i Arífa dikhla.
here the boy whom I think that/what Arifa saw

Many southern German dialects allow constructions like (24) and (25): a clause has been moved to topic (focus) position, and within that clause a noun phrase occupies the topic position that may be considered the matrix topic or matrix focus. In this sense, the construction exemplifies CPP with topicalization. Note that most southern German dialects forbid clause-internal topicalization in an embedded clause unless that clause itself occupies the matrix topic position – a clear indication that CPP is involved. Little is known about these constructions, so I refrain from going into details.

(24) **Den Fritz** dass du kennst ist schön.
the-Acc Fritz that you know is nice
'It is nice that you know FRITZ.'

(25) **Den Fritz** wenn du triffst musst du vorsichtig sein.
the-Acc Fritz when you meet must you careful be
'You must be careful when you meet Fritz.'

English topicalization in embedded contexts such as in (26) may be taken to involve partial movement as well. One argument in favor of this position is the observation that topicalization is impossible within islands, as (26b) shows (see Ross 1986). This is reminiscent of what holds for partial *wh*-movement in Malay languages (see below), and is easily accounted for if the topicalized phrases move up into the matrix clause at LF, and cannot cross barriers in this process.

(26) a. He said that **revenooers**, he does not like.
b. *That **revenooers** he does not like is obvious.

In languages which have overt focus movement, structures reminiscent of SPM can be found more often than not. The following examples from Passamaquoddy (Bruening 2001) illustrate this point. A focus phrase can stay in situ (as it does in (27)), or it can be moved to the position corresponding to its scope (28), but intermediate landing sites as in (29) are grammatical as well, as Bruening shows.

(27) Tehpu kesiciy-uk-il wisukiluwohehtw-ac-il Maliw-ol. Passamaquoddy
only I know he-made-angry Mary-Obv

(28) Tehpu *Maliw-ol* kesiciy-uk-il wisukiluwohehtw-ac-il.
only Mary-Obv I know he-made.angry
'I only know that he made MARY mad.'

(29) Tehpu kkat kesiciy-ahq-il **Weyn-ol** kisapem-ac-il.
only Neg she-knows Wayne-Obv she-can-rely-ony
'She only doesn't know about WAYNE whether she can rely on him.'

Let us finally turn to A-movement and ask if any constructions involve partial movement here. Raising-to-subject constructions as in (30a) alternate with

expletive constructions in which *there* appears in what would be the target position of movement. Interestingly, 'partial' movement of the nominative noun phrase is impossible in these constructions, i.e., it cannot move to the subject position of the embedded infinitive in such cases, as (30c) illustrates. This fact has been the subject of much theorizing in recent years, in particular in the minimalist program (see Chomsky 1995c).

(30) a. A unicorn seems ___ to be ___ in my garden.
b. There seems ___ to be a unicorn in my garden.
c. *There seems a unicorn to be ___ in my garden.

Perhaps A-movement dependencies are not always incompatible with partial movement, however. Thus, passive formation alternates with *there* insertion, too, but now, what would be the subject in an ordinary passive does not appear in its root position (31b), but is rather fronted within the verb phrase (31c). Likewise, Exceptional Case Marking constructions such as (32) might be reconstructed as involving partial movement. Suppose the accusative case of *a unicorn* is checked in the specifier position of an Agreement-Object head (or a similar entity) in the matrix clause, and suppose it is true (in spite of the arguments brought forward by Postal 1974) that *a unicorn* has not moved to this position in overt syntax, but rather appears in the subject position of the infinitival clause. Then *a unicorn* has moved there without reaching its target A-position – a constellation that fulfills the criteria for PM. These observations possibly reflect topics of future research on partial movement but the data have rarely (if ever) been analyzed in this light.

(31) a. A moose was shot ___.
b. *There was shot a moose.
c. There was a moose shot.

(32) I expect **a unicorn** to be ___ in my garden.

The next subsection discusses some theoretical issues. Section 2 concentrates on the WHAT-construction, because it certainly constitutes the subtype of PM that has received most attention in the past. Section 3 discusses the other types of PM.

1.3 Theoretical issues

If there is partial movement in the strict sense of the term, the construction poses a problem for certain theories of grammar. The problem with PM is reminiscent of the one that arises with cyclic movement. According to Chomsky (1995c) and other work in the minimalist framework, a phrase Σ can move to a position P, the specifier of the head H, only if it is attracted to that position by H. H attracts Σ only if H possesses an (uninterpretable) feature that must be checked by Σ in a specifier–head configuration.

For *wh*-movement, it comes close to a standard assumption that the *wh*-phrase and the Comp head of the CP which the *wh*-phrase takes scope over agree with respect to a [*wh*]-feature. In Chomsky (1995c), this feature attracts the *wh*-phrase, but it seems present in Comp only if Comp is the head of a question. In the partial-movement constructions introduced above, the *wh*-phrase ends up overtly in the specifier position of a CP that is NOT a question. Therefore the Comp head of that CP should not possess the attracting *wh*-feature. Thus, it is unclear what has triggered the partial movement of the *wh*-phrase. This (obvious) problem has been noted several times (Simpson 1995; Fanselow and Mahajan 1996; Müller and Sternefeld 1996; among many others) and a number of different solutions have been proposed. For example, the attracting feature is a categorial one that may be present independent of question semantics (see Fanselow and Mahajan 1996); the local domain for feature checking is less restricted, so a partially moved phrase may check the feature of the attracting phrase although it has not reached its specifier position (Simpson 1995, 2000); the economy condition on movement as attraction must be relaxed (Müller 1998); the attracting feature is a focus feature that is checked in the position the phrase reaches (Sabel 2000). According to Müller (1997), there is a principle that forces *wh*-phrases into specifier positions of CPs irrespective of the featural composition of Comp. While such approaches concede that the problem is a real one, and try to solve it by changing certain assumptions in movement theory, other models explain partial movement away, at least for certain instances. Thus, Fanselow and Ćavar (2000) argue that movement targets the scope position in SPM, but that the chain created by movement is not spelled out in the highest position of the chain. The approach proposed by Dayal (1994, 1996a, b, 2000) for the WC also implies that the *wh*-phrase targets its final scope position in the WC. The evaluation of these approaches depends, of course, on the array of empirical facts that need to be accounted for. We will return to the issue briefly at the end of the two following sections.

2 The WHAT-construction

This section offers a closer look at the WHAT-construction (WC) illustrated in (12). The first subsection summarizes the major competing analyses that have been proposed for the WC: the scope-marker analysis, the feature-movement analysis, and the two indirect-dependency approaches: the argumental and the *wh*-expletive version. Section 2.2 introduces a number of empirical generalizations concerning the WC. Section 2.3. attempts an evaluation of the theoretical approaches.

2.1 Competing analyses

This section is confined to a discussion of the WC, the major focus of this chapter. Most of the literature on PM restricts itself to an analysis of WC, with a certain emphasis on German, Hungarian, and Hindi. Two families of analyses for the

WC have been proposed. In what Dayal (1994) calls the direct-dependency approach to WC, the WP *was* 'what' in (12) (repeated here) is analyzed as a 'kind of scope marker' for *wen* which has undergone PM in the sense defined above: it has left its base position, but has not moved the whole way up to its LF scope position. The direct-dependency approach goes back to Van Riemsdijk (1983b) – the theory developed by McDaniel (1989) has been a very influential version of it. Direct-dependency approaches assume that the WP and the 'real' *wh*-phrase are linked to the same chain. Therefore, the featural movement theory of Hiemstra (1986) is a direct-dependency approach as well.

(12) Was glaubst du **wen** Irina t liebt?
what believe you who-Acc Irina loves
'Who do you believe that Irina loves?'

The alternative model, called indirect-dependency approach by Dayal (1994), assumes that the WP is a *wh*-phrase for propositional complements. It is linked to the *wh*-clause, in which the *wh*-phrase has undergone standard *wh*-movement to an A-bar-position that may even, in a sense to be clarified below, correspond to its (semantic/syntactic) scope. For the indirect-dependency approach, WC thus does *not* necessarily exemplify PM in a literal sense. There are two major versions of indirect-dependency approach, the one developed by Dayal (1994, 1996a, 2000), according to which the WP is argumental, and the version proposed independently by Horvath (1997), Mahajan (1996, 2000), and Fanselow and Mahajan (1996, 2000), according to which the *wh*-phrase is an expletive.

2.1.1 The scope-marking analysis

According to a standard view (Chomsky 1981), long-distance dependencies of *wh*-phrases arise in a cyclic way. On the way to their LF-scope position, *wh*-phrases pass through all intervening [Spec, CP] positions, as in (33).

(33) [*What* do you think [t_1 that she said [t_2 that Bill saw t_3]]].

In (33), the *wh*-phrase and its traces form the A-bar-chain <what, t_1, t_2, t_3>, which links the thematic position of *what* (= t_3) to the LF scope position. In a direct-dependency approach, the WC differs minimally from long distance movement. In German (34a), the A-bar-chain <wer, t_1, t_2> linking the LF scope position to the thematic position is formed by movement, whereas in (34b), only the first link of the A-bar chain arises in this way – the second link is created by the insertion of an expletive-like element, the scope marking WP *was*: <was, wer, t_2> is a chain that serves, essentially, the same function as the one created in (34a).

(34) a. *Wer* denkst du t_1 dass t_2 kommt?
who think you that comes
b. was denkst du **wer** (dass) t_2 kommt?
what think you who that comes
'Who do you think will come?'

McDaniel (1989) develops an elaborate concept of *wh*-chains, of which expletive-like elements (scope markers), *wh*-phrases, and traces of movement may be part, if they appear in that order. She also notes (1989: 581) the resemblance of *wh*-chains with A-chains. Just as the insertion of expletive *there* is an alternative to overt A-movement (see (30), (31)), the insertion of WPs can be seen as an alternative to overt A-bar-movement. At least until a few years ago, this scope-marking analysis represented the standard view for German (cf., e.g., von Stechow and Sternefeld 1988; Müller 1997; Beck and Berman 2000). In its basic version, it confines itself to stating that an A-bar-chain <was, wer, t_2> is formed in (34b) at S-structure, and keeps this chain at all further levels.

In an extension that takes over ingredients of some generative analyses for expletives in A-positions like *there*, the direct-dependency approach assumes that the *wh*-expletives that have been inserted at S-structure have to be replaced at the level of Logical Form, and that they are replaced by the 'real' *wh*-phrase moving upwards to its scope position at LF. Consequently, the LFs of a PM-construction become indistinguishable from the LFs of long distance movement constructions (cf. Müller 1997).

2.1.2 The feature-movement analysis

A very interesting version of the direct-dependency approach (anticipating some of the theoretical assumptions about movement made in Chomsky 1995c) has been proposed by Hiemstra (1986) in her analysis of Frisian. Recently, it has been revived by Cheng (2000).

Hiemstra's view can be summarized as follows. *Wh*-movement is always the movement of a *wh*-feature. Languages differ as to what needs to be pied-piped when the *wh*-feature moves. In long-distance *wh*-movement constructions, the whole feature matrix of the *wh*-phrase is moved, including the phonetic matrix. This gives rise to (34a). Alternatively, languages may allow that nothing undergoes pied-piping – then only the *wh*-feature is moved. If this option is chosen, the *wh*-feature has to be spelled out at the landing site. It will be realized phonetically as the most unmarked *wh*-expression of the language: *was* in German, *wat* in Frisian, *mit* in Hungarian, *kyaa* in Hindi, etc. This gives rise to (34b). In addition, there is an intermediate case of featural pied-piping in which person–number features (i.e., the set of formal features to which [+wh] belongs) of the *wh*-phrase are also moved: the feature complexes transported upwards like [wh, 3rd sg., acc] will then be spelled out as the corresponding *wh*-words. This gives rise to the Copy Construction CC, which can be found in Frisian (see 35a–b), German (35c–d), and a few other languages (see also Fanselow and Ćavar 2000 for a discussion).

(35) a. *Wêr* tinkst **wêr**'t se wennet? Frisian
b. WAT tinkst **wêr**'t se wennet?
where/what think-you where-Comp she lives
c. *Wo* denkst du **wo** sie wohnt German
d. WAS denkst du **wo** sie wohnt
where/what think you where she lives
'Where do you think, she lives?'

To the extent that WC and CC are related in this or a similar way, Hiemstra's approach is the most elegant one: it is hard to see how the full *wh*-phrases appearing in CC can be considered to be scope markers or expletives.

2.1.3 The indirect-dependency approaches: argumental WHAT

While the direct-dependency approach has been the standard view for German for quite some time, research on the Hindi WC has favored a very different theory, namely, the indirect-dependency approach. This analysis was proposed first by Davison (1984), and was later taken up by Mahajan (1990), Srivastav (1991c), Dayal (1994, 1996a, 1996b, 2000). See Bruening (2001), Klepp (2002), Legate (2002), and Stepanov (2001) for indirect-dependency models for Passamaquoddy, German, Warlpiri, and Russian, respectively.

In the indirect-dependency approach, the element that is a scope marker for the direct dependency account is simply the standard *wh*-word for clausal complements. Thus, (36b) is analyzed as a version of (36a): *was* is a constituent-question phrase for CPs both in (36a) and in (36b). The relation between the WP and the CP containing the 'real' *wh*-word is then assumed to be one between a sentential expletive/pronoun and its clausal associate, as we find it in (37).

(36) a. *Was* denkst du?
what think you
'What do you think?'
b. WAS denkst du **wer** gekommen ist?
what think you who come is
Who do you think has come

(37) Ich habe es bedauert dass Hans Maria eingeladen hat
I have it regretted that Hans Maria invited has
'I regretted that Hans invited Mary.'

(38) What do you think? Who came?

In other words, the WC is a monosentential counterpart of (38), a construction with which it shares a number of properties; see Dayal (1996a, 1996b, 2000) and section 2.3.1. One argument in favor of this approach is that it offers an explanation for the fact that the WP of WC is always homophonous with a word that can be used to ask for propositions. In most languages with a WC, the WP is the counterpart of English *what*, the most unmarked *wh*-item *and* the *wh*-item used for asking for propositions. However, as mentioned above, if Bruening (2001) is correct, the WP of Passamaquoddy is not the most unmarked *wh*-item, but it is still the element asking for propositions. Likewise, the use of 'how' in the Russian or Polish WC seems to be related to the fact that Russian and Polish 'how' is a possible (though apparently not a preferred) question word asking for propositions. The connection between the WP and the *wh*-phrase asking for propositions also comes out clearly in Warlpiri, which has two questions words meaning 'what', one restricted to objects and one restricted to propositions

(translated, however, as 'how' by Legate 2002). In the WC, Warlpiri uses the latter (see Dayal 1994):

(39) a. *Nyia* ka nga-rni?
what is-he eating
b. *Nyarrpa-rlu* o-ngku yimi-ngarru-rnu?
what did-he tell-you?
c. NYARRPA-RLU o-ngku yimi-ngarru-rnu **kuja-pala** kurdu
what did-he tell-you? where children
nyarrpara-kurra ya-nu?
went
'Where did he tell you that the two children went?'

The choice of the WP is a natural consequence of the indirect-dependency approach, whereas it can be understood diachronically only in direct dependency theories.

In the indirect-dependency approaches, there is no syntactic relation between the WP and the *wh*-phrase in the lower clause. Rather, the WP enters a relation with the clause that (immediately) dominates this *wh*-phrase. The synonymy of WC-questions and questions formed by long movement thus needs to be accounted for in a different way. For Dayal (1994), the WP is a standard argumental *wh*-phrase. She suggests that the *wh*-CP in (36b) restricts the domain of propositions which *was* quantifies over in the following way. Let us assume, in the spirit of Hamblin (1973), that a question semantically represents the set of answers to it. Sentence (36a) can therefore be represented as λp (∃q, q a proposition & p = ^think (you, q)), or, if we assume (as Dayal does) that quantification is always restricted in natural languages, as λp (∃q (T(q) & p = ^think (you, q)), where T is a variable for an overt or covert restrictor of the matrix *wh*-element *was*. Note that the meaning of the complement clause in (36b) is λp (∃x (p = ^has-come (x))), by an appropriate interpretation for the *was*-CP pair, this can be made the restrictor T in the interpretation of the matrix question. We then get λp (∃q ∃x (q = ^has-come (x) & p = ^(think (you, q))) as an interpretation for (36b), and this is also a representation for the meaning of *who do you think came*, as required. The synonymy of the WC-question and those formed by long movement is thus a consequence of the interpretive rule for the *was/es*-CP pair in Dayal's system, it is not a matter of shared LFs. See Staudacher (2000) for a version of Dayal's account presupposing the Groenendijk–Stokhof type of question semantics.

2.1.4 The indirect-dependency approaches: expletive WHAT

The approach proposed by Mahajan (1990, 1996), taken up in Fanselow and Mahajan (1996, 2000), and also advanced by Horvath (1997), assumes indirect-dependency, too, but differs in its treatment of the role play by the WP. As in the argumental approach, the WP is related to a question complement, but the WP is an expletive in the theory proposed by Mahajan. In the latter respect, it resembles the scope-marking approach.

Mahajan (1990, 1996) does not postulate explicit semantic rules for LF-interpretation. Rather, he assumes that the expletive WP (the *+wh*-version of sentential expletives) needs to be replaced by its associate (the *wh*-clause) at LF. Thus, the LF of (36b) will be something like (40a) – which is an instance of clausal pied-piping as we find it in Basque. Since Mahajan (1996) argues that specifiers of XP can take scope over whatever XP c-commands at LF (see also Hornstein 1995), the LFs (40a) and (40b) (for a standard question formed by movement) are not identical, but yield identical semantic values. Mahajan's approach thus presupposes that there is pied-piping at LF. Note that specifiers of DPs appear to share scopal properties of their mother categories in (41), too.

(40) a. [$_{CP}$ Wer gekommen ist] denkst du?
who come is think you
b. Wer denkst du dass t gekommen ist?
who think you that come is
'Who do you think has come?'

(41) [Whose mother] did you see t?

2.2 *Some generalizations concerning the WHAT-construction*

2.2.1 *'Anti-locality'*

The WC differs from standard scope marking in a way that has been termed anti-locality: the WP cannot appear in the clause in which the real *wh*-phrase originates, compare German (42) and Hindi (43) with Japanese (44) (where *ka* marks the scope of the *wh*-phrases). The Iraqi-Arabic *sh-/sheno* construction classified above as a PPM shares this property, a fact that suggests it may belong to the class of WC.

(42) *Was kommt wer? German
WHAT comes who
'Who is coming?'

(43) *Tum-ne kis-ko vah kitaab kyaa dii Hindi
you-Erg who-Dat that book WHAT gave
'Who did you give that book'

(44) John-ga dare-o butta ka sirinai Japanese
John-Nom who-Acc what Q know-not
'Who did you give that book'

Generalization W1:
The WP and the *wh*-phrase (indirectly) linked to it must not be in the same clause.

Anti-locality is a straightforward consequence of the two accounts that postulate an indirect-dependency – if the WP is an expletive or argumental *wh*-CP linked to a proposition, there is simply no structural slot for it in (42) and (43). The validity of W1 is not an inevitable consequence of the two direct-dependency approaches, but there are ways to describe it. Essentially, one might account for W1 by assuming that *wh*-phrases are forced into a specifier position of CP by some constraint (Müller 1997), or by assuming that the formation of a WC is a dispreferred option (as compared to movement), which can be chosen only if movement would have to cross some kind of island: scope marking is available for long, but never for short, movement.

For German or Hungarian, i.e., for languages that have a WC and allow overt *wh*-movement, a natural idea is to split the *wh*-criterion of May (1985) and Rizzi (1990b) into two separate principles; a requirement R1 that requires that a [+wh]-Comp (or a Q head with a D-feature, or a Focus head in Hungarian) must have a [+wh]-specifier (which forces *wh*-movement or WP-insertion), and a requirement R2 that implies that *wh*-phrases must appear in the specifier position of some Comp or Focus phrase if possible (a position that need not necessarily correspond to their scope) (see Müller 1997 for such a view). R2 is violated in (42), which renders the sentence ungrammatical. R2 is also violated in grammatical multiple questions such as (45). In the Optimality-Theory account developed by Müller (1997) this difference in grammaticality between W1-violations and multiple questions is due to the fact that R2 violations cannot be avoided in multiple questions (only one *wh*-phrase can go to [Spec, CP] in overt syntax), while they can be avoided by choosing the simpler question *wer kommt* 'who comes' in the case of (42). In more complex examples such as (34b), the real *wh*-phrase fulfills R2 by moving to the lower [Spec, CP] position, whereas R1 is satisfied by *was* for the higher Comp; thus, a WC arises. In other words, (34) motivates the split of the *wh*-criterion along the lines suggested by Müller (1997).

(45) *Wen* liebt wer?
who-Acc loves who-Nom
"Who loves whom?"

Brandner (1996, 2000) accounts for W1 in a different way. Note that most *wh*-expressions allow both a *wh*- and an indefinite interpretation in German, as in many other languages (see Cheng 1997). According to Brandner, the interpretation of *wen* as a *wh*-phrase (as in (45)) or as an indefinite (as in (42a)) depends on its position. If it is in situ, the indefinite interpretation is mandatory, which, on the other hand, is absent as soon as the phrase occupies [Spec, CP]. However, a *wh*-interpretation for a *wh*-phrase in situ is licensed whenever there is a further *wh*-phrase in [Spec, CP], so that (46b) is indeed ambiguous. Brandner (1996) then proposes that the ungrammaticality of (42) is a consequence of the fact that the 'scope-marker' *was* does not license the *wh*-interpretation of *wen*, so that *wen* must be interpreted as an indefinite. The expletive scope marker is then without an associate.

(46) a. Sie wird wen heiraten.
she will someone marry
'She will marry someone.'
b. *Wer* wird wen heiraten?
who will whom/someone marry
'Who will marry whom?'
'Who will marry anybody?'

The direct dependency accounts of W1 just sketched cannot be transferred easily to the Indian type of WC, as exemplified in Hindi. Here, *wh*-phrases simply do not have to appear in [Spec, CP] and *wh*-in-situ is possible. Nevertheless W1 is respected, which thus cannot be derived in the way proposed by Müller or Brandner. Note that the scope of a *wh*-phrase that is not part of a WC is restricted to the closest finite CP it sits in in Hindi (Mahajan 1990; see also Srivastav 1991c; Dayal 1996a); the same characterizes *wh*-in-situ in Iraqi Arabic (Wahba 1991) and Bangla (Bayer 1996). With the exception of Iraqi Arabic infinitives (where a WP can optionally be inserted without consequences for scope), the insertion of the WP therefore serves a function in these languages, too; the WP extends the scope of *wh*-phrases left in a finite CP.

In a direct-dependency approach, it may therefore be profitable to describe the grammar of the WP in terms of economy considerations: a WP may be inserted only if this contributes to establishing the scope of a *wh*-phrase. Given that a *wh*-phrase in situ automatically takes scope over the finite CP immediately dominating it in Hindi, the insertion of a WP into the same clause would not have any scope-taking function, and should therefore be avoided. If this is valid, we understand not only why W1 holds in Hindi and Bangla, we also understand why (nearly) all languages employing an unlimited *wh*-in-situ strategy (like Chinese) do not tolerate WC – but Latin may be an exception (Staudacher 2000).[6]

Generalization W2:
A WP can be inserted only if it has a semantic effect, that is, a scope extension.

Generalization W2 is a property that is implemented easily if the WP has expletive properties. W2, or rather what it tries to explain, namely, the near absence of WCs in languages with an unlimited *wh*-in-situ-strategy, is not very easy to account for in models in which the WP is a full argument.

2.2.2 The WP in Spec

Generalization W3 seems to be straightfoward, but closer inspection reveals that it is not. For *wh*-in-situ-languages, W3 allows WP such as Hindi *kyaa* or Marathi *kai* (47) (Pryia Bondre-Beil, p.c.) to remain in an object position. In contrast to this, Iraqi Arabic *sh*(*eno*) must appear in clause-initial position (Wahba 1991), although Iraqi Arabic is a *wh*-in-situ language. Iraqi Arabic *sh*(*eno*) thus does not show the behavior of a WC.

Generalization W3:
If *wh*-phrases cannot stay in situ in simple questions, then a WP appears in the scope position.

(47) Sita-la KAI watle (ki) Ravi-ni konala pahile? Marathi
Sita-Erg what thought that Ravi who seen-has
'Who did Sita believe that Ravi saw?'

For languages with obligatory overt *wh*-movement like German, Frisian, and Hungarian, W3 requires that the WP appears in [Spec, CP] or [Spec, FP]. *Wh*-movement is obligatory if the specifier position of a [+*wh*] CP cannot be left unfilled. If there is no second *wh*-phrase in the clause in which the WP sits, then W3 is a trivial consequence of the grammatical property that requires that [Spec, CP] be filled. W3 goes beyond a restatement of the overt nature of *wh*-movement in one context, however, namely, multiple questions. Whereas certain dialects of German exclude constructions in which a WP combines with a further *wh*-element in the matrix clause, such constructions are possible in Hindi (48) and other dialects of German (49). The insertion of *kyaa* into a multiple question that relates items of two different (tensed) clauses is obligatory in Hindi – recall that the scope of a *wh*-phrase is restricted to the minimal tensed CP it is dominated by unless *kyaa* is used. Not much else needs to be said about (48a). For many speakers of German, however, there is a strong contrast between (49a) and (49b) that W3 captures: if two *wh*-elements compete for [Spec, CP], it is the WP that must appear in that slot.

(48) a. Kis-ne KYAA socaa ki siitaa-ne kis-ko dekhaa? Hindi
who WHAT thinks that Sita who saw
b. Kis-ne socaa ki siitaa-ne kis-ko dekhaa?
who thinks that Sita who saw
'Who thinks that Sita saw who?'

(49) a. WAS glaubt wer **wen** sie einladen wird.
what thinks who whom she invite will
b. #*Wer* glaubt WAS **wen** sie einladen wird
'Who believes that she will invite who?'

Unlike W1, W3 seems to favor the direct dependency account, that is to say, if the WP *was* is a scope marker, it is hard to see how it could ever appear in an object position, as in (49b). This reasoning is too simple, however. First, this solution leaves it open as to why this scope marker need not appear in [Spec, C] in Hindi. Second, WPs are also licensed below the ultimate scope position, as (50b) shows. They can appear in lower [Spec, CP] positions as long as their scope is extended by a WP in a higher [Spec, CP] position, as in (50b). The ungrammaticality of (50a) suggests that argumental *wh*-phrases cannot, however, extend the

scope of a WP (note that this sentence is acceptable with an irrelevant interpretation, see Fanselow and Mahajan 1996, 2000). The WP must always appear in a [Spec, C] position, yet its scope can be extended – but by further WPs only. McDaniel's (1989) approach captures this most straighforwardly since for her the WP enters a chain formation process with the real *wh*-phrase. There is a well-formedness constraint on chains that requires that a sequence of WPs (if present) must constitute the uppermost part of the chain. Müller's (1997) explanation of the contrast in (50) relates to the fact that full *wh*-phrases like *wer* in (50) can mark the scope of other *wh*-phrases only if the latter are in situ in most varieties of German – this a condition that cannot be possibly met in a WC. Yet, some German dialects allow scope marking by full *wh*-phrases for *wh*-phrases in [Spec, C], and so does Romani (see (8b, c)).

(50) a. #*Wer* glaubt WAS sie meint **wen** Fritz liebt
who believes what she means who Fritz loves
b. WAS glaubt wer WAS sie meint **wen** Fritz liebt
what believes who WHAT she means who Fritz loves
'Who believes that she thinks that Fritz loves who'?

Indirect-dependency approaches, on the other hand, claim that WPs are CP-*wh*-phrases, so (49b) should be no worse than (51), clearly an incorrect prediction. There are, nevertheless, ways to capture W3. According to Fanselow and Mahajan (1996, 2000), the clause hosting the 'real' *wh*-phrase must replace the expletive WP at LF. In the position it has thus reached in (52), *wh* can take scope over CP*, because the two authors claim that the specifier of X c-commands whatever X does. If that is combined with the assumption that the expletive WP cannot move at LF in languages with overt movement, (49b) and (50a) are ruled out because the real *wh*-phrase fails to be able to take its proper scope at LF.

(51) *Wer* glaubt was.
who believes what

(52) $[_{CP*}\,[_{CP}\,wh\text{-}\ldots\,][A]]$

Thus, all approaches considered so far must make sure by one mechanism or the other that the scope of a WP either corresponds to its surface position, or can be extended by further WPs only. Such a stipulation suffices to account for W3 in Dayal's version of the indirect-dependency account, too. W3 therefore does not contribute a lot that might help to decide between the various approaches; rather, it suggests that all current theories have a certain defect since they do not predict W3 in a strict sense. We should add that according to Klepp (2001) some speakers of German accept (49b) as grammatical. It seems hard to maintain a direct-dependency approach of the type proposed by McDaniel (1989) for these speakers.

2.2.3 WP sequences

The WC does not share all properties of standard expletive constructions. Thus, one only finds *one* expletive per chain in the *there* case (53b), but more than one WP is licensed in *wh*-chains in German (53a), Hungarian, and Hindi. Such a repetition of the WP is impossible in Iraqi Arabic and any other language or dialect in which WC is restricted to matrix questions. With respect to W4, the WC resembles *it* expletives, however (see (54)).

(53) a. WAS denkst du WAS sie meint WAS Fritz sagte **wen** Julia liebt?
what think you what she means what Fritz said who Juliet loves
'Who do you think she believes Fritz said Juliet loves?'
b. *There seems there to appear there to be a man in the room.

(54) It was believed that it is likely that it seems that he will win.

Generalization W4:
The WP may appear in any clause separating the real *wh*-phrase and its LF scope position.

Generalization W4 captures a property that distinguishes WPs from standard scope markers, as mentioned above. It is not necessarily an argument against direct-dependency approaches, because the restriction of the number of expletives in A-chains to one is itself a property that calls for an explanation that seems to involve special assumptions concerning the featural composition of *there*. Indirect-dependency approaches have no problem whatsover in accounting for (53a), because these theories assume that the WP is a *wh*-CP (expletive), i.e., the *wh*-counterpart of *it*, so that the parallel we observe between (53a) and (54) is one we should expect.

There is a further difference between standard expletive constructions and WCs; economy effects favoring Merge over Move are absent in the latter. A standard expletive such as *there* must always be inserted immediately above the root position of its associate; it is then the expletive which moves up to the highest A-position in the chain. An A-chain involving expletives thus has the form <there, t, . . . , t, NP>, i.e., the lowest chain position must be filled by the full argument NP. The associate must not move to a higher position before the expletive is inserted (see, e.g., Chomsky 1995c for possible explanations), as (55) illustrates.

(55) There seems t to appear t to be a man in the garden.
*There seems t to appear a man to be t in the garden.
*There seems a man to appear t to be t in the garden.

In WC, on the other hand, the real *wh*-phrase may undergo (partial) *wh*-movement before the (expletive) WP *was* is inserted (56) – the real *wh*-phrase can move to any of the intermediate [Spec, CP] positions prior to the insertion of *was* above

the highest surface position of the *wh*-phrase. The same holds for Hungarian and Iraqi Arabic.

(56) *Wen* denkst du dass sie glaubt dass Fritz meint dass sie liebt?
who think you that she believes that Fritz means that she loves
Was denkst du **wen** sie glaubt dass Fritz meint dass sie liebt?
Was denkst du was sie glaubt **wen** Fritz meint dass sie liebt?
Was denkst du was sie glaubt was Fritz meint **wen** sie liebt?
'Who do you think that she believes that Fritz means that she loves?'

The Hindi *kyaa* construction shares this property in the following sense. If a *wh*-phrase originating in a lower clause is to take wide scope over a higher clause, the *wh*-phrase may either be scrambled into the higher clause (Mahajan 1990; Srivastav 1991c), or the scope marker *kyaa* is used. The two options can be combined, as (57) illustrates: [partial *wh*-scrambling]. Thus, W5 seems to hold in general.

(57) Raam-ne kyaa socaa ki ravi-ne kyaa kahaa ki kOn sa aadmii
Raam-erg what thinks that Ravi-erg what said that which man
aayaa thaa?
came
Raam-ne kyaa socaa **ki kOn sa aadmii** ravi-ne kahaa ki aayaa thaa?

Generalization W5:
The *wh*-phrase may move any number of clauses up before a WP appears in the structure.

Again, the grammar of WPs is different from the one of A-expletives of the *there* type. Indirect-dependency approaches have a straightforward explanation for W5: for a WC to be grammatical, the clausal associate of the WP must be a *wh*-question, and what W5 shows is that the internal make-up of the question-associate does not matter. But W5 can be captured in direct dependency accounts with equal ease. Following Müller (1997), for instance, one can assume that *wh*-movement and *wh*-expletive insertion have similar 'costs' in the languages that allow WC, so that they may be combined quite freely.

2.2.4 (Im-)Mobility

At least for some (but definitively not for all) speakers of German, the WP *was* cannot be moved itself as in (58a), in contrast to what holds for *there*. Similarly, Hindi *kyaa* must be present in any intermediate clause between the real *wh*-phrase and the clause the real *wh*-phrase takes scope over, it cannot undergo (*wh*-)scrambling itself (58b).

(58) a. #Was denkst du t dass sie meint wen Fritz liebt?
what think you that she means who Fritz loves
'Who do you think she believes Fritz loves?'

b. *Raam-ne KYAA socaa ki ravii-ne kahaa ki Hindi
Raam-Erg what thought that Ravi-Erg said that
kOn sa aadmii aayaa thaa?
which man came
'Which man did Ram think that Ravi said ___ came?'

The ungrammaticality of (58a) for some speakers of German and of its counterparts in the other languages may be related to the expletive nature of the WP, which is that expletives do not undergo A-bar-movement in general, as (59) illustrates.

(59) a. Ich glaube dass es regnet.
I believe that it rains
b. *Es glaube ich dass t regnet.
it believe I that rains
c. Ich glaube dass Maria es schon weiss dass sie schwanger ist.
I believe that Mary it already knows that she pregnant is
d. *Es glaube ich dass Maria schon weiss dass sie schwanger ist.
'I believe that Mary already knows it that she is pregnant.'

Whether what we observe in (59) is responsible for (58) as well is not immediately obvious, however. If A-bar movement leaves a semantic variable as a trace, (59b, d) are ungrammatical on obvious grounds, and (58) would be semantically ill-formed for the same reason if the WP is an expletive. The problem would then be to account for the fact that a considerable number of speakers find (58a) grammatical while (59b, d) seem to be rejected uniformly. Those approaches (e.g., Müller 1997; Fanselow and Mahajan 1996, 2000) that replace an expletive WP with the *wh*-phrase or the *wh*-clause at some late point in the derivation can also make locality conditions on this replacement operation and/or the formation of expletive association pairs responsible for what we observe in (58).

Recall that partial movement of the *wh*-phrase is optional in Iraqi Arabic in constructions involving *sh-* and *sheno*. Thus, the *wh*-phrase may be separated by any number of (infinitive) CPs from *sh-*/*sheno*. In that sense, the *sheno* construction violates the constraint discussed in this section – but only if it is an instance of WC. Given that *sh-*(*eno*) violates other constraints on the WC as well, it is presumably more profitable to take *sheno* to be a true *wh*-scope marker in the sense of PPM.

2.2.5 The nature of the associate: a ban on yes/no questions

The Hindi WC strongly contrasts with the German and Hungarian one in allowing the associate of the WP to be a simple yes/no question (60b). This property is not shared by the otherwise identical *kai* construction in Marathi ((60c, d); Bondre-Beil, p.c.), and also not by Kashmiri.

(60) a. *Was denkst du ob er kommt?
what think you if he comes
b. Tum kyaa socte ho ki kyaa vo aayegaa? Hindi
you what think be that if he will-come
do you think that he will come?
c. *Sita-laa kai watle ki Ravi yenar ka? Marathi
Sita what thinks if Ravi comes yes–no
d. *Sita-laa kai watle Ravi yenar ki nahi?
Sita what thinks Ravi come or not
'Does Sita think that Ravi comes?'

Polish (61a), Russian, Warlpiri (61b) and Passamaquoddy (61c) seem to pattern with Hindi in this respect. Therefore, it seems we cannot say much more than [W6]

(61) a. Jak mysłisz, czy Piotrek przyszedł? Polish
how think-2sg whether Piotrek came
'What do you think? Has Paul come?'
b. Nyarrpa-ngku jangala-rlu yimi-ngarru-rnu yankirri-japa Warlpiri
how-2sg Jangala-Erg speech-tell-Pst emu-Q
japanangka-rlu pantu-rnu?
Japanangka-Erg spear-Pst
'What did Jangala tell you, was it an emu that Japanangka speared?'
c. Keq itom Tihtiyas '-kisi-peskh-a-l Passamaquoddy
what say.3 T. 3-Perf-shoot-Dir-Obv
cuspes-ol kosona tan?
porpoise-Obv or WH
'What did Tihtiyas say, did she shoot the porpoise or not?'

Generalization W6:
In some languages, a WC is possible only in the context of constituent questions.

Notice, however, that we already saw that the WC is rarely used in Warlpiri, and recall that the status of the *how*-CP construction in Polish and Russian is fairly unclear. Similarly, Bruening (2001) observes that the use of (61c) is very restricted, and requires the tag *kosona al tan* 'or what?' For this reason, he considers it doubtful that (61c) is a true scope-marking construction. Instead it seems to be a sequence of questions or an appositive. At present, it is therefore difficult to determine whether one of the two options offered by W6 is less marked than the other.

Direct-dependency accounts have not encountered serious difficulties in their attempts to account for those languages (German, Hungarian) in which the WP seems incompatible with a yes/no question. After all, the WP is claimed to be a scope marker in the chain of a *wh*-phrase. If no such chain is created, a WP cannot be inserted. One (minor) point left open by such accounts is why there is

no comparable scope-marking for yes/no questions. This is surprising in the light of the fact that yes/no operators are in fact able to take scope out of the clause they appear in, as Chinese (62) taken from Huang (1982b) illustrates.

(62) Ni renwei ta xi- bu- xihuan ni?
you think he li- not li-kes you
'Do you think he likes you, or not?'

Indeed, it seems to be a language-particular property whether the scope-marker combines with *wh*-phrases in the strict sense only or not, because the well-formedness of Hindi (60b) would otherwise imply that proponents of the direct-dependency account must assume that the German and Hindi WC have radically different analyses – an assumption that Müller (1997) and Stechow and Sternefeld (1988) indeed make, but which faces the problem that Hindi *kyaa* and Marathi *kai* apparently differ with respect to (60) only. Consequently, if (60) matters so much, Hindi and Marathi WC would require completely different analyses.

As Mahajan (1996, 2000) points out, the marker for yes/no questions in Hindi is *kyaa* itself (but the same is true of Kashmiri *k'a:* cf. also Wali and Koul 1997), so that yes/no questions possibly involve an X^{max}-operator in [Spec, CP] in Hindi. In this sense, W6 could be reformulated as W6* in a much stronger form. Whether this is convincing depends on what analysis one can give to Kashmiri *k'a* and how data such as (61) should be analyzed.

Generalization W6*:
WC is possible only with questions that involve a +*wh*-specifier.

An indirect-dependency account of the type proposed in Mahajan (1996), Fanselow and Mahajan (1996, 2000), and Horvath (1997) can exclude (60a) easily. Recall that these theories assume that the WP is a sentential expletive which is replaced by its CP associate at LF. The equivalence of the WC and a corresponding long-movement construction is guaranteed by the assumption that an XP in the specifier position of Σ may take scope over whatever Σ c-commands at LF. A *wh*-phrase filling the specifier position of a CP which is itself the specifier of the matrix clause can therefore take scope over this matrix clause. If a *wh*-element is not the specifier in a CP, its scope will not be extended. The parameterization with respect to W6 can then be expressed in terms of the specifier status of the Q-morpheme in yes/no questions (as Mahajan 1996 suggests), or by allowing scope extension for specifiers and heads in certain languages.

In Dayal's version of the indirect-dependency account it is less obvious what could be responsible for the ungrammaticality of (60a, c, d). After all, the semantic function of restricting the domain of quantification of the WP-quantifier (which is central to her theory) could be fulfilled by a yes/no question as well. Thus, one option is again the assumption that while Dayal's theory is correct for Hindi, it does not cover the German WC, which needs a fairly different analysis

then, and again one needs to be aware of the fact that this forces one to assume different analyses for Hindi and Marathi, too. Pointing to the (alleged) existence of dialects of German for which (60a) or versions of it are claimed to be fine (see Brandner 1996, Staudacher 2000, and Fanselow and Mahajan 2000 for an assessment) is just half the story, because the need to account for the more restrictive dialects does not disappear because of this. Note that yes/no questions have a distribution different from the one of complement questions. There are a number of verbs which accept only the latter as complements, as (63) illustrates. Thus, there is a semantic difference between yes/no and constituent questions after all. Whether or not the relevant factor could be used to account for W6 or W6* has not been thoroughly considered in the literature so far.

(63) Ich kann mir vorstellen
I can me imagine
a. *wen* du getroffen hast.
who you met have
b. **ob* du sie getroffen hast.
if you her met have
'I can imagine who you have met/if you have met her.'

2.2.6 Infinitives

In a WC, the real *wh*-phrase must occupy [Spec, CP] if the language does not allow simple in situ *wh*-questions (see (64–65)). The CP related to the WP must be a legal constituent question (but see below). Generalization W7 captures the fact that WC does not arise with infinitives in German, as (66) illustrates, because there are no *wh*-infinitives, and it also captures the the fact that (67a) is, in contrast, possible in Iraqi Arabic because (67b) is also fine – if, to stress the point again, the construction is correctly analyzed as a WC. See section 2.3.2. for an exception to W7.

(64) a. *Was denkst du dass Maria wen liebt?
what think you that Mary who loves
'Who do you think that Mary loves?'
b. Siitaa-ne kyaa socaa ki ravii-ne kis-ko dekhaa? Iraqi Arabic
Sita-Erg WHAT thought that Ravi-Erg who saw
'Who did Sita think that Ravi saw?'

(65) a. Sh-tsawwarit Mona [Ali raah weyn]? Iraqi Arabic
wh-thought Mona Ali went where?
b. Sh-tsawwarit Mona weyn Ali raah?
'Where did Mona think that Ali went?'

Generalization W7:
The CP related to a WP must be a syntactically legal indirect question.

(66) a. *Was glaubst du **wen** eingeladen zu haben?
what think you who invited to have
'Who do you believe yourself to have invited?'
b. *Wen* glaubst du eingeladen zu haben?
who think you invited to have
c. *Ich frage mich *wen* einladen zu müssen
I ask me who invite to must
'I wonder who to invite.'

(67) a. Sh-raadat Mona Ali ygaabal meno? Iraqi Arabic
wh-wanted Mona Ali to-meet whom
'Who did Mona want Ali to meet?'
b. Mona nasat *sheno* tishtiri
'Mona forgot what to buy.'

Generalization W7 is a straightforward consequence of indirect-dependency approaches and may seem to find rather easy explanations in the direct-dependency accounts, too. It is not clear, however, whether W7 is the crucial factor for the ban on infinitives in WC: Hungarian allows *wh*-infinitives (Horvath 1997; exx. (34–35)), yet no WC can be formed with infinitival complements, as (68b) shows. Thus, with the possible exception of Iraqi Arabic (67a) that would not be exceptional at all if it is not an instance of a WC, W8 seems to hold as well, without being reducible to W7, as Hungarian shows.

(68) a. *Kivel* akarsz beszélni? Hungarian
who-with you-want-IO to talk
b. *Mit akarz **kivel** beszélni?
what you-want who-with to talk
'Who do you want to talk to?'
c. Nem tudok *mit* mondani.
not I know what to say
'I do not know what to say.'

Generalization W8:
WC do not show up with infinitival complements.

There is no account of the WC which implies W8 without further assumptions. Direct-dependency accounts might take recourse to the idea that infinitives have a CP specifier position in very restricted circumstances only (as in (63)), so that one of the key preconditions for the availability of a WC in the movement languages – namely, that the real *wh*-phrase appears in [Spec, CP] – cannot be met. For the *wh*-in-situ languages, it seems to hold that infinitives do not delimit the scope of a *wh*-phrase they contain, so that the insertion of a WP would be superfluous for, say, the scope-taking of a *wh*-phrase in a Hindi infinitive – recall we have already seen that *kyaa* insertion must have a semantic effect. Alternatively,

one might say that infinitives have a [Spec, CP] position which is not 'type-compatible' with the [Spec, CP] position of a finite clause, so that they could not form part of the same chain. See also section 2.2 for a further attempt of an explanation.

Indirect-dependency approaches with a syntactic component (Mahajan, Horvath) might restrict the replacement of the *wh*-expletive by its clausal associate to finite CPs. There is a straightforward explanation for Generalization W8 in Dayal's system for Hindi. As discussed in Dayal (1996b), Hindi does not allow indirect-question readings for infinitivals. The analogue of *You know what to do* can only be an indirect question. This account cannot be carried over to Hungarian because of (68c) – but one might take recourse to syntactic constraints on 'associate formation' in this approach, too.

2.2.7 The complement status of the associate clause: extraction and binding

Horvath (1997) has observed that the CP hosting the real *wh*-phrase in a WC (the clausal associate of the WP) is transparent for extractions in Hungarian (69). The same holds for those dialects of German which tolerate topicalization out of *wh*-islands (70). Similar constructions are ungrammatical in Hindi.[7]

(69) Itt van az a színésznő [akinek nem emlékszem hogy Hungarian
here is that the actress who-Dat not I recall that
MIT kért János hogy **kit** mutassunk be.
what asked John that who we-introduce Sub
'Here is the actress for whom I do not remember who John asked that we should introduce to her.'

(70) Den Josef weiss ich nicht WAS sie meint **wie** wir überzeugen könnten.
the Joseph know I not what she means how we convince could
'As for Josef, I do not know how she believes that we can convince him.'

Examples (69–70) not only show that the *wh*-island condition is not respected in the pertinent languages, they also suggest that the clause c headed by the real *wh*-phrase is a complement rather than an adjunct – would it be different, c should be opaque for movement, given that most theories of barriers and islands for movement imply that adjuncts cannot be extracted from. Direct-dependency accounts immediately predict this behavior – the *wh*-island condition (Ross 1986) is the only constraining factor that could be relevant.

The indirect-dependency approaches face greater problems – if the WP is a clausal expletive and the *wh*-clause its associate, it is by no means necessary that the latter occupies a complement position. If the WP is placed into the specifier position of some object agreement phrase (or the specifier position of some verbal projection), as Mahajan (1996) and Horvath (1997) assume, then the complement position of VP can still host the clause linked to the WP. One needs to keep in mind, however, that object clauses linked to a non-*wh* CP-expletive are islands for

movement, as has been observed by Bennis (1986) and others. Therefore, indirect-dependency approaches must subscribe to the view that *wh-* and non-*wh*-expletives have different effects on the transparency of their associates for movement.

(71) Den Fritz glaube ich (*es) nicht dass sie liebt.
the-Acc Fritz believe I it not that she loves
'I do not believe that she loves Fritz.'

Horvath (1997) takes the grammaticality of (69) to be one out of three major arguments against Dayal's view of the WC. If the WP is the real argument (as Dayal claims), and the *wh*-introduced clause a structural adjunct, the latter should not be transparent for extraction. Horvath's argument is convincing, but only to the extent that transparency for movement must be defined in structural terms. The associate is semantically linked to the WP so that it may have argument status in the syntax quite independent of its position, as argued originally by Herburger (1994). Note also that clauses that appear in 'extraposed' positions are structural adjuncts (they are adjoined to VP or IP), without being necessarily opaque for movement; see German (72). If the complement clause is base-generated in a preverbal position, and if its postverbal surface position comes about by adjunction to, say, the right periphery of VP or CP, then *wh*-extraction of *wen* seems to have left a structural adjunct that is a thematic complement.

(72) Wen hast du gedacht dass Irina liebt.
who have you thought that Irina loves

Fanselow and Mahajan (1996) and Horvath (1997) claim that (73–75) constitute arguments for a complement status of the CP-associate of the WP: a pronoun sitting in the clause introduced by the *wh*-question can be bound by a quantifier in the matrix clause.

(73) Kein Student$_i$ weiss WAS die Professorin sagte **wann** er$_i$ die Prüfung
no student knows what the professor said when he the test
machen muss.
make must
'No student knows when the professor had said that he needs to take the exam.'

(74) WAS glaubt jeder Student$_i$ **wann** er$_i$ geprüft wird.
what believes each student when he tested is

(75) Mit nem hisz senki hogy milyen tőrténeteket Hungarian
what not believe no one that what stories
terjeszt róla a felesége?
spreads about-him the wife-his
'What stories doesn't anyone believe that his wife spreads about him?'

2.2.8 The status of the CP-associate: Case and subjecthood

On the whole, Generalization W9 appears to be fulfilled, as (76) illustrates for Hindi and for German. For Hindi, this may be related to the fact that *kyaa* must normally appear in an immediately preverbal position (as (77) shows). It competes with the sentential expletive *yah* for the same position, as Dayal and Mahajan observe.

Generalization W9:
WC is incompatible with the presence of a sentential expletive in an object position.

(76) a. *Siitaa-ne yah KYAA socaa ki ravii-ne kis-ko dekhaa? Hindi
Sita it what thought that Ravi who saw
b. *WAS glaubte Sita es **wen** Ravi sah?
what believed Sita it who Ravi saw
'Who did Sita think that Ravi saw?'

(77) Siitaa-ne KYAA (*abhii) socaa ki ravii-ne kis-ko dekhaa?
Sita what just now thought that Ravi who saw
'Who did Sita think that Ravi saw?'

Generalization W9 is generally predicted by indirect-dependency accounts, since they assume that the WP is generated/merged in the object position, or a specifier position linked to object agreement, which cannot be filled twice. In a direct-dependency account, W9 must be analyzed as a reflection of the greater island sensitity of chain formation in a WC as compared to standard *wh*-movement (see, e.g., Müller (1997)) – after all, clausal associates of sentential expletives are islands for movement (recall ex. (71)), see Bennis (1986). Thus, (76) might be ungrammatical because no A-bar-chain can be built up that leaves the embedded clause, which is an island. This strong island sensitivity is a clear characteristic of German WC, but the situation is less clear in Hindi and Hungarian, so that recourse to island sensitivity may be justified for German, but perhaps not in general.

It has been claimed that the WC is restricted to object clauses in German (see, e.g., McDaniel 1989, where the same claim is made concerning Romani), i.e., that it is incompatible with clauses in (derived) subject positions, which would be surprising because neither Hindi (Mahajan 1996) nor Hungarian (see Horvath 1997 and (78)) share this property. Note that (78) also indicates that the formation of WC is less restrictive than overt movement in Hungarian.

(78) a. MI zavarta Marit hogy **kinek** telefonáltál? Hungarian
what-Nom disturbed Mary-Acc that who-Dat you-phoned
b. ?**Kinek* zavarta Marit hogy telefonáltál?
who-Dat disturbed Mary-acc that you-phoned
'With whom did it disturb Mary that you have telephoned?'

The claim that German disallows a WC for (derived) subject clauses (that is widespread in the literature) is based on examples such as (79), which confound derived subjecthood and factivity, another factor restricting the WC in German, but not in other languages. When one tests non-factive subject clauses as in (80) (see Fanselow and Mahajan 2000), the results are grammatical.

(79) *Was ärgert es dich **wen** sie liebt?
what annoys it you who she loves
'Who does it annoy you that she loves?'

(80) Es ist egal was in der Zeitung steht **wen** sie liebt.
it is equal what in the newspaper stands who she love
'It does not matter who the newspapers say she loves.'

Thus, we can conclude that the WC is possible – in principle – with both object and (derived) subject clauses in Hindi and German (the CP would therefore always originate in object position). Hungarian is even less restricted, as Horvath (1997) observes: the WC is possible with adverbial clauses, although these are (just like subject clauses) barriers for syntactic movement:

(81) a. Miert vagy dühös mert **kivel** találkoztál? Hungarian
why you-are angry because who-with you had met
b. **Kivel* vagy dühös mert találkoztál?
who-with you-are angry because you had met
'Lit.: 'With whom are you angry because you had met.'

In an indirect-dependency account, a simple explanation suggests itself for the restrictions on German and Hindi WCs in constrast to Hungarian: it is related to the Case born by the WP. In Hindi, CPs show up in positions only that would bear absolutive (= structural) case. In German, CPs may show up in positions only that would be assigned nominative (= structural) or accusative (= structural) Case (if filled by an NP), as Fanselow and Felix (1987) have argued, but they cannot appear in positions that receive non-structural, lexical Case. These generalizations can be derived from the Case Resistance Principle of Stowell (1981): CPs must not be assigned Case. If the assignment of structural Case is always optional, CPs may replace NPs in the corresponding positions. If the assignment of non-structural Case is mandatory, the Case Resistance Principle prevents CPs from appearing there.

Suppose that sentential expletives are like any other sentential category in being restricted to potentially Case-free positions. Then we can understand why Hindi and German WC are confined to structural Case positions. Stepanov (2001: 178) explains the restricted nature of the Russian WC in these terms as well: *jak* 'how' simply has to be Case-less. On the other hand, if a sentential pro-form happens to be compatible with lexical Case, the WC should not be restricted to structural Case positions. Consider (82) in this respect. German *was* is normally

replaced by *wo* (lit. 'where') in the complement position of PPs. The literature on German tends to consider WCs ungrammatical when the WP would be a complement in a PP, independent of whether *wo* is extracted from PP (82a) or piedpipes the preposition (82b) (e.g., Fanselow and Mahajan 2000), but Klepp (2001) points out that some speakers accept such examples. The pertinent variation among speakers of German can easily be described in terms of lexical properties of the WP (can it receive oblique Case?).

(82) a. #Wo hast du nicht mit gerechnet wem Irina schrieb?
where have you not with reckoned who Irina wrote
b. #Womit hast du nicht gerechnet wem Irina schrieb?
'Who have you not taken it into consideration that Irina wrote to?'

For Hungarian, one would assume that CP pro-forms may in general show up in all Case positions – there are no relevant restrictions on the Case the CP receives. If the restrictions on WC we focus on here are due to Case constraints, the greater degree of freedom for WC in Hungarian becomes understandable. Notice in particular that, as (83) corroborates, the Case expressed by the WP in Hungarian is identical with the Case that would be assigned to the corresponding propositional argument. This Case pattern falls out nicely in the indirect-dependency account, as Horvath (1997) stresses, because the WP is linked to the propositional complement rather than to the *wh*-phrase of this complement in these approaches.

(83) Mire számítasz hogy **melyik fiúval** fog Mari beszélni? Hungarian
what-All you count that which boy-with will Mary speak
'With which boy do you rely on it that Mary will speak?'

For direct-dependency accounts, Hungarian data such as (81) are problematic to a certain extent. That WC formation is possible for subject and object clauses in German and Hindi is unspectacular since subject clauses are transparent for movement in these languages, too, so that one should expect other kinds of chain formation like scope marking in a WC to behave similarly. Quite in line with that, both WCs and overt long movement are impossible for adjunct clauses in German and Hindi. Arguably, then, the core island restrictions on WC formation (= scope marking) and long movement are identical. For Hungarian, however, one would have to assume that chain formation by scope marking is more liberal than chain formation by movement (see also next section). However, it is by no means obvious why the 'scope marker' does not bear the case of the *wh*-phrase it is claimed to mark the scope of in Hungarian – but rather the case of the CP that dominates that *wh*-phrases. Technical solutions are certainly possible, but the data is expected in a strict sense in the indirect-dependency theory only.

2.2.9 Negative-island effects

In Hindi (84a), German (84b), Passamaquoddy (Brüning 2001), and other languages, the WP cannot appear in a negative clause or when there is a negative

quantifier in the clause. It is not likely, however, that this behavior characterizes a general property of WCs, because the WC is compatible with negation in Hungarian, as (84c) shows, and apparently marginally so in Croatian (D. Ćavar, p.c.). Example (84d) illustrates again that the WC is more flexible than movement in Hungarian, which does show the negative-island effect.

(84) a. *Koi bhii nahĩĩ KYAA soctaa hɛ ki kOn aayegaa? Hindi
no-one what thinks be-Pres that who will-come
'Who does nobody believe will come?'
b. *WAS glaubt keiner **wen** sie liebt?
what believes nobody who she loves
'Who does nobody believe that she loves?'
c. MIT nem ismert be János hogy **hányszor** Hungarian
what not admitted-Indef János that how
hamisította az aláírásodat?
forged the signature
d. **Hányszor* nem ismerte be János hogy hamisította Hungarian
how not admitted János that forged
az aláírásodat?
the signature
'In what manner did Janos not admit that she forged the signature?'

German shows comparable negative intervention effects in many contexts, as Beck (1996b) and Pesetsky (2000) observe. Thus, a negation must not c-command a *wh*-phrase in situ (85), it must not intervene in a split construction (86), and it must not show up in the so-called copy construction (87) of German (see Fanselow and Ćavar 2000 for a detailed analysis).

(85) a. Wer hat wen nicht geliebt?
who has whom not loved
b. **Wer* hat nicht wen geliebt?
'Who has not loved whom?'

(86) a. Was hat er denn für Bücher nicht gelesen?
what has he then for books not read
b. **Was* hat er denn nicht für Bücher gelesen?
'What kind of book has he not read?'

(87) a. *Wen* denkst du **wen** sie liebt?
who think you who she loves
b. *Wen* denkst du dass sie liebt?
who think you that she loves
'Who do you think that she loves?'
c. **Wen* denkst du nicht **wen** sie liebt?
who think you not who she loves

d. *Wen* denkst du nicht dass sie liebt?
who think you not that she loves
'Who don't you think that she loves?'

Example (85) suggests that a negative element cannot intervene between a *wh*-phrase and its scope position in German – for direct-dependency approaches, this assumption suffices to rule out (84b), and the same logic may also be applied in the Mahajan–Horvath–Fanselow approach. Sentence (86) shows that negation cannot intervene between a quantificational element and it restrictor either – this is sufficient for ruling out (84b) in the Dayal-approach. Thus, the negation data (and related facts involving universal quantifiers) are expected in all theories of the WC. Therefore, the data cannot be used to argue for a quasi-parenthetical status of the WC (Reis 1996), nor to establish that there is a deep link between the WC and, e.g., the copy construction (Höhle 1996; Fanselow and Mahajan 1996, 2000). It may be added, however, that structures that are closer to (84a, b) than (84c) are unacceptable in Hungarian as well, as (88) illustrates. 'Negative-island violations' are fine in Hungarian only with verbs that presuppose a pre-existing set of propositions (such as *admit*, *reveal*, *deny*, *notice*, *permit*) – they are ungrammatical with other matrix verbs (such as *think*, *say*, *feel*). The real difference between, on one hand, German and Hindi, and on the other hand, Hungarian, thus lies in the fact that structures such as (84a, b) fail to improve when the former group of matrix verbs is used. What we observe in (88) is a pragmatically caused negative island effect in the sense of Kuno and Takami (1997); see Horvath (1997) for a detailed analysis,

(88) *Mit nem gondolsz hogy **kivel** beszélt Mari? Hungarian
what not you-think that who-with spoke Mary
'With whom didn't you think that Mary spoke?'

2.2.10 Verb-class effects

In German, factive verbs do not allow WC (89). The same holds for Kashmiri (Wali and Koul 1997: 19).

(89) ?*Was bedauerte Fritz **wen** sie liebt?
what regretted Fritz who she loves
'Who did Fritz regret that she loves?'

While direct-dependency approaches explain this restriction in terms of the island status of the complements of factive verbs, indirect-dependency theories have no simple explanation for the ungrammaticality of (89) – not too bad a property, perhaps, since neither Hindi nor Hungarian (90) share the restrictiveness of German and Kashmiri. Sentence (91b) illustrates again that Hungarian overt adjunct movement is in line with the expectation that factive islands affect extraction, so that the grammaticality of (90) is a problem for at least those versions

of the direct-dependency approach that assume that chain formation in WC follows the laws of adjunct extraction.

(90) MIT felejtett el Mari hogy **kivel** beszélt már? Hungarian
what forgot Mary that with whom she-spoke already
'With whom did Mary forget that she had already spoken?'

(91) a. MIT sajnálsz hogy **hogy** viszelkedtek a gyerekek? Hungarian
what you regret that how they-behaved the children
b. **Hogy* sajnálod hogy viszelkedtek a gyerekek?
what you regret that they-behaved the children
'In what manner do you regret that the children behaved?'

Likewise, it has already been observed by McDaniel (1989) that certain volitional predicates in German are incompatible with the WC. This property is shared by the copy construction, but not by long movement. This further restriction is, however, apparently not obeyed in Hindi or in Hungarian. Likewise, Romani 'tense dependent' clauses enter WCs.

(92) a. *Wen* möchtest du dass sie liebt?
who want you that she loves
b. **Wen* möchtest du **wen** sie liebt?
c. *WAS möchtest du **wen** sie liebt?
'Who do you want that she loves?'
d. *Wen* hoffst du dass sie liebt?
e. **Wen* hoffst du **wen** sie liebt?
f. *WAS hoffst du **wen** sie liebt?
'Who do you hope that she loves?'

Fanselow and Mahajan (1996, 2000) propose an account for this data in which the additional island effects are related to the fact that the copy construction and the WC lack an overt complementizer in the complement clause, in contrast to long movement constellations. McDaniel (1989) suggests that the complements of volitional predicates are semantically close to infinitivals, so that the ban on (92c, f) can be related to the poorly understood generalization W8 which excludes WCs with infinitival complements. It is hard to see, however, why the copy construction should obey the anti-infinitive restriction. One might also suspect that volitional predicates involve or are (hidden) modal operators after all, so that what we see in (92) is simply an intervention effect of the sort discussed in section 2.2.9. This seems tenable as long as the question of whether volitional predicates trigger intervention effects is subject to parameterization.

Reis (1996) observes that one further construction, so-called extractions from verb-second complements (see, e.g., Grewendorf 1988) turns out to to share the constraints discussed above with WC and CC. In Fanselow and Mahajan's (1996,

2000) view, (93) just illustrates the importance of having an overt complementizer for not being subject to various additional constraints. This is not convincing, however, because the set of predicates that tolerate extractions from verb-second complements is more or less identical with the set of predicates that tolerates verb-second complements – and furthermore, Vikner (1995) observes that the set of predicates that tolerates verb-second complements in German is roughly identical to the set of predicates that takes verb-second complements introduced by a complementizer in the Scandinavian languages.[8] Therefore, the absence of the complementizer in the relevant complements is a spurious side-effect in German. The intervention approach is able to account for the facts in (93) in an indirect fashion: if it is true that the grammaticality of verb-second complements is linked to the availability of a matrix-like assertive component located in the complement clause (say, in terms of the feature determination of tense and mood), and if this component must be linked to the matrix clause Comp, then negative, volitional, and factive predicates may trigger intervention effects. Now for the relation between the two Comp/Infl nodes.

(93) a. *Wen* glaubt sie liebt er?
who believes she loves he
'Who does she believe that he loves?'

b. **Wen* glaubt keiner liebt er? negative islands
who believes nobody loves he
'Who does nobody believe that he loves?'

c. **Wen* bedauert sie liebt er? factive islands
who regrets she loves he
'Who does she regret that he loves?'

d. **Wen* wünscht sie liebt er? volitional islands
who wishes she loves he
'Who does she wish that he loves?'

Such an account would not be accepted by Reis (1996). She brings yet another array of facts into the discussion of WC and points out that certain types of parentheticals behave like the WC. The particular constraints on German WC – namely, negative islands and factive and volitional verbs – are respected by parentheticals of the types illustrated in (94) as well.

(94) a. *Wen* liebt sie, was glaubst du?
who loves she, what think you?

a'. *Wen* -was glaubst du- liebt sie?
'What do you think – who does she love?'

b. **Wen* liebt sie, was glaubst du nicht?
who loves she, what think you not

b'. **Wen* -was glaubst du nicht- liebt sie?
'What don't you think – who does she love?'

c. **Wen* liebt sie, was bedauerst du?
who loves she, what regret you?
c'. **Wen* -was bedauerst du- liebt sie?
'What do you think – who does she love?'
d. **Wen* liebt sie, was wünsct du?
who loves she, what wish you?
d'. **Wen* -was bedauerst du- liebt sie?
'What do you think – who does she love?'

For Reis (1996), this apparent correlation between WC, parentheticals, and verb-second complements can be explained only if we attribute a parenthetical status to both the WC and (extractions from) verb-second complements. This solution is faced with the same problem as the Fanselow and Mahajan account: It has hard to see what a parenthetical analysis could be of, e.g., Danish verb-second clauses introduced by an overt complementizer; see (95).

(95) Watson påstod at disse penge havde Moriarty stjålet. Danish
Watson claimed that this money had Moriarty stolen
'Watson claimed that Moriarty had stolen this money.'

2.2.11 Agreement

Passamaquoddy, as described in chapter 4 of Bruening (2001), allows interesting insights into the syntax of WC. Overt movement (focus movement, relative clauses, *wh*-questions) triggers participle agreement on the verb. Long-distance questions can trigger participle agreement all along the path of movement; the same holds for long-distance relativization and long-distance focalization, see (96) (= Bruening's (72a)), in which the agreement markers appear in boldface.

(96) Wen-ihi piluwitaham-oc-**ihi** Piyel Passamaquoddy
who-ObvP suspect-2Conj-PartObvP Piyel
kisi-komutonom-ac-**ihi**?
Perf-rob-3Conj-PartObvP
'Who all do you suspect that Piyel robbed?'

Focus-movement constructions and internally headed relative clauses show that covert A-bar movement can trigger participle agreement on all verbs along the movement path as well. This is illustrated in (27), repeated here as (97).

(97) Tehpu kesiciy-uk-**il** wisukiluwohehtw-ac-**il** Maliw-ol. Passamaquoddy
only I know he-made-angry Mary-Obv

In the WC, however, it is absolutely impossible for agreement to appear above the position of the contentful *wh*-phrase, as a comparison of the data in (98) reveals (= Bruening's (119)).

(98) a. Keqsey cel elitahasi-t wen-**il** Passamaquoddy
what even IC.think-3Conj who-Obv
nemiy-ac-**il**?
IC.see-3Conj-PartObv
b. *Keqsey cel elitahasi-c-**il** wen-**il** nemiy-ac-**il**?
what even IC.think-3Conj-PartObv who-Obv IC.see-3Conj-PartObv
'Who did he think he saw?'

Bruening concludes that the WC in Passamaquoddy cannot involve covert movement of the contentful *wh*-phrase – if it did, (98b) should be grammatical. The facts of Passamaquoddy suggest that the direct-dependency account is not correct for at least some languages with a WC.

2.3 Conclusions

All theoretical approaches introduced here make reference only to concepts that are independently motivated – there are clear cases of scope marking for *wh*-phrases, there are sentential expletive-associate pairs, there are clear cases of a specifier taking wider scope than its immediate c-command domain, etc. A decision among the rivaling theories of the WC, therefore cannot be taken on purely theoretical grounds.

2.3.1 A historical dimension?

The picture that emerges from the above discussion is not necessarily a clear-cut one. One or the other generalization may favor a particular type of analysis (the direct-dependency approach fares better, e.g., with respect to W3 and W6 and with immobility facts; the indirect-dependency approach fares better with W1, W9, the Hungarian Case facts, and in particular with agreement in Passamaquoddy), but with the few exceptions discussed earlier, all theories are technically capable of capturing the relevant data. If one wants to assess the evidence, then, a number of decisions have to be made, the first one concerning the plausibility of finding a syntactic analysis that is applicable to all instances of the WC. The opposing view, endorsed by Dayal (1996a, 1996b) and Reis (1996), would be that there is a spectrum of different analyses for constructions that are superficially similar but represent different stages in a historical development from a bi-clausal entity such as (99) to a scope-marking construction as in Japanese (100). These options might be ordered as indicated in Table 47.1. There seems to be a sharp difference between A and B in Table 47.1, and also between D and E, because we saw that Iraqi Arabic *sh/sheno* is exceptional in at least two respects; the WP is not really homophononous with 'what' or 'how', and the construction fails to observe a number of generalizations (W2, W3, W4, W7) that otherwise hold for the WC. It thus seems fair to conclude that the status as a WC may be more part of the history than of the current analysis of Iraqi Arabic *sh/sheno*.

Table 47.1 Types of scope-marking construction

A	Biclausal: no syntactic integration	Two CPs	English
B	'Parenthetical': some syntactic integration	WP is an argument; clausal associate is a 'modifier'	Hindi (Dayal 1994)
C	Clausal expletive-associate pair: full syntactic integration	WP is a CP-expletive; clausal associate is a complement	Hungarian (Horvath 1997)
D	Scope-marking construction: WP part of chain formation	WP is an NP-expletive	German (Müller 1997)
E	Scope-marking construction, but phonological residue of chains	WP is a scope-marking particle	Iraqi Arabic (Ouhalla 1996)
F	Scope marking	No WP left	Japanese

(99) What do you think: will she invite him?

(100) John-ga dare-o butta ka sirinai Japanese
John-Nom who-Acc what Q know-not
'Who did you give that book?'

If this assessment is correct, one has to establish whether there is compelling evidence to allow for different analyses for the WC in Hindi (and other Indian languages), Hungarian, and German (and other Germanic languages). The key differences in descriptive terms have been identified above: the WC is not restricted to constituent questions in Hindi, and there is a rich system of overt case variation of the WP in Hungarian. According to the discussion above, however, these differences are not sufficient to motivate radical syntactic differences among the three language types in question.

2.3.2 Clear arguments?

There seems to be some consensus that the Hindi WC should be analysed in terms of an indirect-dependency approach since it may seem unlikely that a scope marker for *wh*-elements appears in a preverbal position rather than in [Spec, CP]. Furthermore, as we have seen earlier, *kyaa* and the sentential expletive are incompatible with each other (see section 2.2.8), presumably because they compete for the same position, a strictly preverbal one. Note, however, that it is not uncommon that *wh*-scope markers appear on the verb. Furthermore, the *wh*-phrase can be moved into the clause it takes scope over in Hindi, as (101) shows. This "*wh*-scrambling" operation (Mahajan 1990) may indeed place the *wh*-phrase into the specifier position of a functional projection (a Focus phrase, e.g.?) – a picture that may be blurred in Hindi by extensive further options for the scrambling of other XPs – and a view that would make Hindi resemble Hungarian in

the relevant respects quite strongly. Thus, claims that the Hindi WC *could not possibly* be analyzed as a scope-marking construction are not compelling.

(101) Raam-ne **kyaa** socaa ki ravi-ne **kyaa** kahaa ki Hindi
Raam-erg WHAT thinks that Ravi-Erg WHAT said that
kOn sa aadmii aayaa thaa?
which man came
Raam-ne kyaa socaa ki kOn sa aadmii ravi-ne kahaa ki aayaa thaa?
Raam-ne kOn sa aadmii socaa ki ravi-ne kahaa ki aayaa thaa?

The situation in Hungarian may be different in this respect – Hungarian data may be the clearest one favoring a particular approach to WC. On the one hand, the Case data discussed in section 2.2.8 strongly argue in favor of indirect-dependency approaches. On the other hand, the data discussed in 2.2.7 show that the CP hosting the real *wh*-phrase is a complement. According to Horvath (1997) this implies that the WP must be an expletive. As we saw above, this conclusion presupposes a purely structural notion of argument/complement status.

Horvath (1997) brings forward two further arguments that she believes are incompatible with Dayal's version of the indirect-dependency theory. She points points out that (102a), but not (102b), can be answered by 'nothing' or 'nothing of interest', a contrast that she claims is not easy to account for if the function of the *was* in the two examples is essentially the same, as Dayal (1996a, 1996b) claims. Whether felicity conditions for question–answer pairs decide between syntactic analysis is not fully clear, though. However, as Dayal (2000) points out, questions such as *which student came?* also cannot be answered by *nobody*. The felicity of answers to questions depends on the presuppostions linked to specific forms of question, and the contrast in (102) might be captured in these terms.

(102) a. *Was* glaubt Maria?
b. Was glaubt Maria **wie** wir das Problem lösen können?
what believes Mary how we the problem solve can

The argument involving (103) may be stronger. In a Hungarian WC, the *wh*-phrase moved upwards may be included in a yes/no question:

(103) Mit kérdeztek hogy **kivel** találkozutam-e? Hungarian
what asked-they that who-with I-met-Q-Prt
'With whom did they ask whether I had met?'

According to Horvath (1997), such structures are difficult to capture in Dayal-style accounts. Recall that according to Dayal (1996a, 1996b), *mit* would simply be a *wh*-quantifier 'what' that is restricted by the meaning of its associate, which itself must be a semantically legitimate question. It may be unclear what semantic object a combination of a yes/no question and a constituent question is – such

entities do not exist outside WC. However, a sketch of how such data (and possible Hindi counterparts) might be handled even if *mit* is an argumental *wh*-phrase can be found in Dayal (2000: 188).

It seems fair to conclude, then, that a number of empirical facts from different languages favor an indirect-dependency account for the WC. The version of the indirect-dependency approach proposed by Dayal (1994, 1996a, 1996b, 2000) has the conceptual advantage that the real *wh*-phrase moves up to its scope position (in the narrow sense) in the syntax, so that the WC does not involve partial *wh*-movement from a grammatical point of view. Consequently, the theoretical problems discussed in 1.3. simply would not arise.

2.3.3 A possible compromise?

It might be added that the difference between direct dependency approaches and indirect ones of the sort proposed by Horvath, Mahajan, and Fanselow turns out to be smaller than it may seem at first glance. There is some evidence suggesting that long *wh*-movement has to pass through a specifier position linked to the VP:

(i) in Palauan (Georgopoulos 1991b; Watanabe 1996) and many other languages, the verb agrees with a *wh*-phrase that has passed the verb on its way to the scope position (e.g., with respect to number, gender, or definitiveness)
(ii) in Quechua (Lefebvre and Muysken 1982) and many other languages, a *wh*-phrase from a lower clause may pick up a Case assigned by the matrix verb.
(iii) in Dutch[9] and some varieties of German (Fanselow and Ćavar 2000), phonetic material of a *wh*-phrase having undergone long movement may be stranded[10] in the context of *wh*-movement in the preverbal position of the matrix clause.

In Chomsky (1986a) it was argued that the *wh*-phrase adjoins to VP on its way up, an idea that has been revived in Chomsky (2000), the difference being that the *wh*-phrase now moves to a specifier position of vP/AgrO. Consider now the constellation in (104), in which a *wh*-phrase taking scope over CP* has been moved to the specifier position of a lower CP. As the next step, the *wh*-phrase might be moved to [Spec, AgrO], i.e., to the position Δ, or an expletive E might be inserted into Δ. In the latter case, this expletive E should agree with the object of the verb – i.e., it should have a clausal status, bear the case of the clausal complement, etc., but it should also be able to agree with the specifier of CP with respect to the *wh*-feature – because (unlike the specifier's case) this is a feature of the CP*s specifier the verb could subcategorize for (see Chomsky 1986a). Such a line of reasoning might bring the two approaches to WC fairly close to each other, but that point has not been investigated thoroughly so far (see Fanselow and Mahajan 2000 for some discussion).

(104) $[_{CP^*} \ldots [_{AgrO\text{-}Phrase}\ \Delta\ [AgrO\ [[_{VP}\ V\ [_{CP}$ *wh*-phrase COMP']]]] . . .]

3 Other kinds of partial movement

3.1 Simple partial movement

In contrast to the considerable amount of work concerned with the WC, few studies only have dealt with simple partial movement as exemplified again in (105) for Bahasa Indonesia (Saddy 1991). A *wh*-phrase may either stay in situ, or move up to some position which is not higher than its LF scope (105a–c). Similar constructions are well-formed in Singaporean Malay (Cole and Hermon 1998b), Kikuyu (Sabel 2000), Buli (Ferreira and Ko 2000), Slave (as illustrated in (6b), see Rice 1989, Basilico 1998) and other Athabascan languages (Western Apache, Potter 1997; Babine-Witsuwit'en, Denham 2000), and in Ancash Quechua (Cole 1982b).

(105) a. *Siapa* yang Bill tahu Tom cintai? Bahasa Indonesia
who FOC Bill knows Tom loves
b. Bill tahu **siapa** yang Tom cintai?
who FOC
c. Bill tahu Tom men-cintai <u>siapa</u>?
loves who
'Who does Bill know that Tom loves?'

We argued earlier for the generalizations S1 and S2, to which we will return to below.

Generalization S1:
If a language tolerates SPM, it also tolerates *wh*-elements in situ and allows full *wh*-movement.

Generalization S2:
If a construction is grammatical with SPM, it can also be constructed with a *wh*-phrase in situ.

3.1.1 The relation to focus movement

Note that the fronting of *siapa* in (105a, b) is accompanied by the insertion of the particle *yang*, and the deletion of particles such as *men* (105c) marking transitivity. The marker *yang* may be omitted in certain varieties of Malay (Cole and Hermon 1998b). In Kikuyu, the *wh*-phrase is prefixed by a focus particle when it has undergone partial or complete *wh*-movement, as (106) shows.

(106) a. Kama.ú a-ón-'ìrɛ <u>o</u>? Kikuyu
Kamau SP-see-T who
'Who did Kamau see?'
b. **Nóo** ó-ɣw-eciìri-a [Ngoɣe a-úɣ-írɛ áte o-on-írɛ Kaanakɛ]?
FP-who you-think N. said that saw Kanake
'Who do you think Ngoɣe said that Kaanake saw?'

c. Ó-ɣw-eciìri-á [**nóo** Ngoɣe a-úɣ -íre áte o-on-íre Kaanakɛ?
d. Ó-ɣw-eciìri-á Ngoɣe a-úɣ-íre **nóo** ate o-on-íre Kaanakɛ?

If Cheng (1997) and Saddy (1991) correctly analyze Bahasa Indonesia *yang* as a focus marker (107), it is tempting to analyze (105b) as a instance of movement to an intermediate focus position, instead of partial *wh*-movement. Note that when there is full *wh*-movement (as in 105a), *yang* is inserted as well. It would thus be likely that the full movement of *siapa* goes to the specifier of a focus phrase as well, and there is no evidence that this position is not also the one *siapa* occupies at LF. Thus, there is no principled reason for not considering what we see in (105) and (106) as instances of (partial) *wh*-movement (since *wh*-phrases move to focus positions in many other languages as well). According to Saddy (1991) the absence of parasitic gaps with partial or full *wh*-movement (in line with what holds for focus movement, and in contrast to topicalization) and the absence of weak crossover effects argue against an analysis of the fronting in (105) in terms of *wh*-movement. But there are no principled grounds that would require that *wh*-movement always licenses parasitic gaps, and a lot of languages do not show weak crossover effects with *wh*-movement. So this argument is not compelling.

(107) Buku-buku yang saya cium.
books Foc I love

In contrast, the omissibility of *yang* in Singaporean Malay (see Cole and Hermon 1998b) need not be seen as a reason against analyzing relevant *wh*-frontings as being due to focus movement (rather than *wh*-movement), but the observation also certainly does not strengthen Saddy's position. Similarly, the presence of a focus particle on moved *wh*-words in Kikuyu is compatible with the idea that (partial) *wh*-movement is not necessarily *wh*-movement in a strict sense in this language. In Slave (Rice 1989: 1162, 1165), however, the marker *ri* for focus may (108) but need not (109) be present with *wh*-elements in situ and *wh*-elements that have undergone partial movement. Basilico (1998) claims it is therefore hard to maintain that the partial movement of question phrases is always focus movement in Slave – but the contrary does not follow from the facts either.

(108) a. Raymond Jane judeni ri yili kodisho? Slave
Raymond Jane where foc 3-is 3-knows
b. Raymond **judeni** ri Jane yili kodishi
'Where does Raymond know Jane to be?'

(109) a. John seya judeni ráwozée yudeli? Slave
John my son where 3-pot-hunt 3-want-4
b. John **judeni** seya ráwozée yudeli?
'Where does John want my son to hunt?'

In Babine-Witsuwit'en (Denham 2000) SPM and focus movement co-exist as well. In contrast to focus movement, no focus marker seems to appear on the

wh-phrases that have undergone partial or complete *wh*-movement. According to Denham, *wh*-movement is strictly optional in this language.

To sum up, whether or not SPM can always be interpreted as an instance of focus movement is still an open question (see Cole and Hermon 1998b and Sabel 2000 for opposing views). Likewise, it is not clear whether going for the focus movement option instead of '*wh*-movement' really makes a difference. An argument in favor of the position that the choice matters might be that focus movement does not serve the need of checking and/or licensing the *wh*-feature of the questions Comp. Rather, it serves the need of making the focal nature of *wh*-phrases explicit. For the former need, only one position is relevant (so that one might wonder why a phrases moves at all if it does not reach that position), for the latter requirement, any focus position available in the sentence will do. In any event, some explanation linking SPM to focus movement is called for, because – at least for the small sample of languages that has been investigated so far – generalization S3 appears to hold.

Generalization S3:
If a language allows SPM, *wh*-phrases can move to focus positions and can bear focus markers in that language.

If S3 is crucial for SPM, it would be difficult to integrate German and Romani (8) (partial movement of the second *wh*-phrase in a multiple question) into an analysis of SPM.

3.1.2 Locality

One important observation of Saddy (1991) is that partially moved *wh*-phrases differ from *wh*-elements in situ with respect to island sensitivity, as (110) illustrates. The presence of a negative island does not prevent a *wh*-phrase in situ from taking wide scope in (110a), but as soon as it has undergone movement, ungrammaticality arises even though the overt movement did **not** cross the island. The pair (110c–d) shows the same for adjunct islands.

(110) a. Tom tidak meng-harap Mary mem-beli apa?
Tom not expect Mary bought what
'What did Tom not expect that Mary bought?'
b. *Tom tidak meng-harap **apa** yang Mary beli?
c. Kamu men-cemburui Bill karena saya berbicara dengan siapa?
you be jealous of Bill because I spoke with who
'Who is such that you are jealous of Bill because I spoke with him?'
d. *Kamu men-cemburui Bill karena dengan **siapa** yang saya berbicara?
e. Kamu mem-cemburui Bill karena dengan Tom yang saya berbicara?
you be-jealous of Bill because with Tom Foc I spoke

Note that focus movement is possible within adjunct islands, as (110e) illustrates. Thus, if both types of attraction to a *yang* head have the same analysis, the

non-well-formedness of (110b, d) must be due to the fact that the scope of *apa/ siapa* goes beyond the island in the relevant examples.

The contrasts in (110a–d) suggest that *wh*-elements in situ and (partially) moved *wh*-phrases show different behavior in Bahasa Indonesia. *Wh*-elements in situ, it seems, are elements that need not undergo movement at all, not even in the covert component. They are bound unselectively by a *wh*-operator (see Tsai 1994a, among others). Therefore, no island effects can arise, and it is – in a sense – also expected that – according to Saddy – *wh*-phrases in situ always take wide scope: (111a) unambiguously asks for the (single) person that is loved by everybody, while (111b, c) show the scope ambiguity one is familiar with from corresponding English examples.

(111) a. Setiap orang men-cintai siapa?
every person loves who
b. *Siapa* yang setiap orang cintai?
who FOC every person loves
c. Setiap orang tahu **apa** yang Tom beli?
every person knows what Foc Tom bought

A further observation is in line with this assumption concerning *wh*-elements in situ. Example (112a) has only the indicated reading, while ambiguities arise (ceteris paribus) as soon as the *wh*-phrase is (partially) moved (112b).

(112) a. Kamu meng-gira Jon men-ceritakan Mary tahu Tom mem-beli apa?
you think John mentioned Mary know Tom bought what
'What do you think that John mentioned that Mary knows that Tom bought?'
b. Kamu gira Jon ceritakan Mary tahu **apa** yang Tom beli?
'what do you think that John mentioned that Mary knows that Tom bought?'
'You think that John mentioned what Mary knows that Tom bought?'
'You think that John mentioned that Mary knows what Tom bought?'

The clear differences Saddy observes in Bahasa Indonesia for *wh*-phrases in situ and for partially and fully *wh*-moved phrases are not visible in Singaporean Malay according to Cole and Hermon (1998b). Nevertheless, the Malay languages share what we saw in (110), i.e., they support S4.

Generalization S4:
A *wh*-phrase that has undergone (partial) *wh*-movement must not be separated from its scope position by an island for movement.

The *wh*-in-situ strategy is less restrictive than overt movement in Slave (Basilico 1998), as (113) shows: the complements of so-called 'indirect discourse verbs' are barriers for overt movement, but *wh*-in-situ is licensed (113b). In the light of S4, it is surprising that (113c) involving partial movement is grammatical.

(113) a. *?*Ode* netá nimbáa enáih?á kenéhdzáh Slave
where your father tent 3-pitch 3-tried
'Where did your father try to pitch the tent?'
b. Raymond Jane judeni ri yili kodisho
Raymond Jane where Foc 3-is 3-knows
c. Raymond [**judeni** ri Jane yili] kodisho
'Where does Raymond know Jane to be?' (Rice 1989; ex. 1875a, b)

Slave differs from the Malay dialects in a further respect; there are configurations in which partial movement is ruled out, while complete movement is not: complements of direct discourse verbs are transparent for movement, but disallow partial movement:

(114) a. John beya judeni ráwozée sudeli?
John my son where 3-Opt.hunt 3-wants-1
'Where does John want my son to hunt?'
b. *John **judeni** beya ráwozée sudeli
c. *Hodi* nurse egháuhndá néndi?
where nurse 1-Opt-see-2-Sg 3-told-2
'Where did the nurse tell you she would see you?'

Basilico (1998) suggests that complements of direct-discourse verbs lack a [Spec, CP] node (so that (113b) could not possibly arise) – the fact that the difference between direct- and indirect-discourse complements is reminiscent of the one between finite and non-finite constructions in the European languages (at least with respect to transparency) would allow us to link (114b) to the impossibility of WC with infinitival complements.

Iraqi Arabic fulfills S4 as well, but only very indirectly. Tensed clauses are not islands for full overt movement, but they are for moved *wh*-phrases (and for *wh*-in-situ) in contrast to Bahasa Indonesia – one further crucial point concerning Iraqi Arabic is that *wh*-in-situ is not possible within syntactic islands (cf. 116).

(115) a. *Sheno* tsawwarit Mona Ali ishtara?
what thought Mona Ali bought
'What did Mona think Ali bought?'
b. *Mona tsawwarit **sheno** Ali ishtara?
c. *Mona tsawwarit Ali ishtara sheno?

(116) *Mona nasat *li-meno* tinti sheno?
Mona forgot to whom to give what
'What did Mona forget to whom to give?'

The observation S4 seems to imply that the partially moved *wh*-phrase builds up a link to its scope position that is subject to subjacency or similar constraints – but that this is part of a standard chain-building process is, perhaps, a premature

conclusion. Recall that English clause-internal topicalization is subject to a comparable restriction (117), so the logic applied to S4 also forces a partial-movement account of English topicalization. Furthermore, the formation of verb-second structures is also banned within islands in the Germanic languages (see Vikner 1995) – keeping to the line of reasoning used earlier, we would need to assume some chain-formation process in, say, (118a–b) vs. (118c–d), too. Whether this is convincing or not cannot be decided now.

(117) a. I believe that revenooers, he does not like.
b. *That revenooers he does not like is believed by everybody.

(118) a. Ich glaube dass Peter ihn gesehen hat.
I think that Peter him seem has
b. Ich glaube Peter hat ihn gesehen.
I think Peter has him seen
'I think (that) Peter has seen him.'
c. Dass Peter sie liebt überrascht mich.
that Peter her loves surprises me
d. *Peter liebt sie überrascht mich.
Peter loves her surprises me
'It surprises me that Peter loves her.'

Although Passamaquoddy does not instantiate SPM in a strict sense, its PPM constructions shed an interesting light on the analysis of partial movement. Recall that Passamaquoddy has a WC, and that Bruening (2001) observed that there is no participle agreement on the verbs sitting between the 'real' *wh*-phrase and the WP. From this, he concluded that there is no covert movement of the real *wh*-phrase replacing the WP. In addition to the WC, Passamaquoddy also allows PPM. In line with what holds for the covert movement of focus operators, participle agreement is possible on any verb intervening between a *wh*-phrase that has undergone partial *wh*-movement, and the element *tan* that may be considered a scope marker. This suggests that a chain is built up between the partially moved *wh*-phrase and the scope position.

(119) Tan elitahasi-yin-(**ik**) **tan kehsi-n** Passamaquoddy
WH IC.think-2Conj-(Part3P) WH X.many-N
nemiy-oc-**ik** apiqsehsuw-ok?
IC.see-2Conj-Part3P rat-3P
'How many rats do you think you saw?'

3.1.3 Analyses

SPM constructions can be and have been analyzed in various ways. Basilico (1998) and Cole and Hermon (1998b) analyse SPM as a subcase of the WC, the only difference being that the WP is unpronounced in Slave and the Malay languages. This allows us to relate the contrast between (113a), e.g., (no long movement) and

(113c) (partial movement okay) to the situation of various German dialects that disallow long movement and use the WC instead. On its way to LF, the WP would be replaced by its associate in SPM as well. The various options for carrying this out were discussed earlier. The theoretical implications would be those of the WC.

Other approaches assume that the partially moved *wh*-phrase reaches its LF-scope position without the assistance of an overt scope marker. The position the *wh*-phrase occupies at LF would be a function of its *wh*-feature. Its overt position could be determined by the fact that it must be placed into a focus position, an analysis first argued for by Saddy (1991) and that would make SPM comparable, to, say, *wh*-scrambling or *wh*-imperatives: *wh*-phrases are displaced, but for reasons unrelated to the *wh*-feature they possess. SPM would thus fail to be an instance of PM in the strict sense. This might be an easier analysis than one in which there is true partial *wh*-movement in the strict sense.

New syntactic models such as the Minimalist Program (Chomsky 1995c) or Optimality Theory (e.g., Kager 1999) offer more flexibility. In particular, Fanselow and Ćavar (2000) take up ideas formulated, e.g., by Groat and O'Neal (1996) in their analysis of the SPM: movement is always an overt copying of a phrase from one position to another. The result of the copying operation is subject to an (economy based) set of principles that determined which of the copies so created will be spelled out eventually (see also Pesetsky 1997). Thus, for (105), one would assume that a chain with three occurences of *siapa* is formed first – as sketched in (120) – and that principles (possibly making reference to focus, an option not explicitly discussed in Fanselow and Ćavar 2000) determine which of these copies will be pronounced. In the easiest analysis of SPM, the relevant principle would not say a whole lot more than that exactly one copy has to be retained.

(120) Siapa yang Bill tahu siapa Tom cintai siapa?

One argument in favor of such a view may be found in the agreement facts illustrated in (119). Covert movement in the classical sense (following the spell-out of the whole construction, or of a phrase) may simply come too late for triggering the phonologically visible participle agreement. In the approach favored by Fanselow and Ćavar (2000), such agreement facts are expected. Cole and Hermon (1998b) argue that full overt movement theories involving separate spell-out positions cannot account for certain pecularities in the distribution of verbal prefixes in the Malay languages, but Fanselow and Ćavar (2000) claim they have developed the pertinent analysis.

The crucial differences between the analyses are therefore: (a) is a phonetically empty *wh*-expletive involved in the construction – which would make SPM and WC structurally identical – and if not: (b) does full movement to the scope position already happen in the overt component of grammar (as proposed by Fanselow and Ćavar 2000) or not (as in the focus movement accounts)? The only clear criterion we can apply seems to be generalization S3 that favors theories

which link focus movement and partial movement to each other in one or the other way – but not necessarily so by making partial *wh*-movement an instance of focus movement.

3.2 Clausal pied-piping

Notice that there is a potential further analysis of SPM that has apparently not been proposed so far; we might link it to clausal pied-piping (CPP). The only difference between Basque (121) and SPM would be the fact that the pied-piping of the CP α the specifier of which is occupied by the *wh*-phrase happens at LF and not in overt syntax. As long as LF-movement can be phrasal (and ACD-constructions show it must be able to be so; see Pesetsky 2000 for a recent discussion) such an analysis will always be possible.

(121) **Nor** etorriko d-ela bihar esan diozu Mireni? Basque
who come Aux-that tomorrow said Aux to Mary
'Who did you say to Mary t will come tomorrow?'
'That who will come tomorrow have you said to Mary.'

The analysis of (121) seems much more obvious than the one of the constructions discussed earlier. There is a clear grammatical concept of pied-piping in the course of movement. In the spirit of Chomsky (1995c), options for pied-piping can be ordered as in (122), which are (partially) illustrated in (111). Note that in such a system the interesting question is not so much why (121) is possible at all, but, rather, why clausal pied-piping seems so rare. An answer might be sought in the idea that pied-piping is always a last-resort phenomenon and should be minimal (see, e.g., Chomsky 1995c), but a thorough discussion of pied-piping is clearly beyond the scope of this chapter.

(122)	a.	*Wh*-feature	WC (according to Hiemstra (1986) LF movement
	b.	Minimal word containing *wh*-feature	Split constructions (111a)
	c.	Minimal phrase containing *wh*-feature	normal *wh*-movement (111b)
	d.	'classical' pied-piping	of PP (111c) of DP (111d) of AP (111e)

(123) a. *Wieviel* habt ihr Schweine?
how many have you pigs?
b. *Wieviel Schweine* habt ihr?
how many pigs have you
'How many pigs do you have?'

c. *Mit wem* hat sie getanzt?
with whom has she danced
'Who has she danced with?'
d. *Wessen Bruder* hat sie geküsst?
whose brother has she kissed
'Whose brother has she kissed?'
e. *Wie intelligent* ist sie?
how intelligent is she

Note, however, that CPP and WC stand in a close relation if the latter is analysed as involving a clausal expletive. Suppose S in (124) is the scope position for a *wh*-phrase moved to the specifier position of CP#. The *wh*-phrase might then move further up alone or it might pied-pipe CP#. Instead of moving CP#, an expletive (the WP) might be inserted, ending up in S, where it is finally replaced by CP# in an instance of LF clausal pied-piping.

(124) $[_{CP^*}$ S [. . . . $[_{CP}$ *wh*-phrase [. . .]]]]

Van Riemsdijk (1985) was the first to postulate such an intimate connection between CPP and the WC (although he did not express the relation in the way it was just put), and he notes that CPP and WC are in complementary distribution in German: CPP is possible with infinitives only (113) – which must not enter the WP. It is therefore tempting to account for W8 (the absence of infinitives in a WC) in terms of a blocking relation with (125). See Trissler (1999) for a recent pied-piping analysis of (125) and related constructions.

(125) Wen zu küssen würde ein Fehler sein?
who to kiss would a mistake be
'Who would it be a mistake to kiss?'

Being an instance of extended pied-piping, CPP does not fall under the term partial movement in the strict sense.

NOTES

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1 (i) Western Apache:
John [Earl hant'é nayishniih go] nzih?
John Earl what bought that thinks
John [hant'é Earl nayishniih go nzih
hant'é John [Earl nayishniih gonzih
'What does John think that Earl bought?'
(Potter 1997, as cited in Denham 2000: 244–245)

(ii) Babine-Witsuwit'en:
George [Lilian ndittni book yik' iyelhdic] yilhni?
George Lilian which book read told
George [**ndittni book** Lilian yik'iyelhdic] yilhni
ndittni book George [Lilian yik' iyelhdic]yilhni
'Which book did George tell that Lilian read?'
(Denham 2000: 204)

(iii) Ancash Quechua:
José munan María may-man away-na-n-ta?
José wants Mary where-to go
José munan may-man María away-na-n-ta
May-man José munan María away-na-n-ta
'Where does Joseph want Mary to go?'

2 Russian examples such as (i) might refute this generalization if a clear subordination relation is involved in such structures:

(i) Ty dumaesh **kogo** Masha ljubit?
you think who Mary loves
'Who do you think Mary loves?'

3 Serbian–Croatian, from Damir Ćavar (p.c.):
(i) što ti misliš **kto** spava
what you think who sleeps

4 Czech, from Peter Kosta (p.c.)
(i) chtel bych rad vedet co myslis **kdo** prijede
I would like to know what you-think who comes

5 The CPP analysis for German and Basque is contested. Arregi (2003) argues against it, showing that *wh*-phrases in Basque go to focus positions. For German, see Haider (1985a) and Van Riemsdijk (1985).

6 Cicero, *De officiis* 2, 25: *Quid enim censemus superiorem illum Dionysium quo cruciatu timoris angi solitum?*

7 Ungrammatical extraction crossing *kyaa* in Hindi:

(i) ???*kis-ko* siitaa-ne kyaa socaa ki ravii-ne _ kyaa ciiz dii
who-Dat Sita-Erg what thought that Ravi-Erg what thing gave

8 See, e.g., this Danish example:

(i) vi ved at denne bog har Bo ikke læst
we know that this book has Bo not read

9 I learnt about this in a talk given by Sjeff Barbiers at a workshop at the University of Potsdam in July 1999.

10 A German example would be (the split phrase appears in italics, its base position is marked by _):

(i) Was hast du *für Frauen* gedacht dass er _ einladen wird?
what have you for women thought that he invite will
'What kind of women have you thought that he will invite?'

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48 (Past) Participle Agreement

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1 Introduction: past participle agreement as Spec–Head agreement and clause structure

One of the most influential developments of recent syntactic theory is the articulated and abstract conception of clause structure first inspired by Pollock's (1989) article. Functional categories constitute the skeleton upon which clause structure is built up. Although abstract in a certain way, this conception can in fact be seen as very 'concrete' as it explicitly translates into syntactic positions features which can be overtly realized in the inflectional morphology (or are indirectly signaled by the (fixed) position of different classes of adverbs; Cinque 1999). The Infl node of Chomsky (1981) has been internally analyzed in several distinct syntactic (morpho) heads. Typical labels for these heads directly mirror

their morphological feature content: Agr(eement), T(ense), Asp(ect), M(ode), Voice, and Fin(itness) for those related to verbal morphology, and Neg(ation), Foc(us), Top(ic), and Force for those related to the informational content of the clause (cf. Belletti 1990, Zanuttini 1997, Rizzi 1997, among many others of a quite extensive literature, according to the different aspects treated; and see chapters 26 and 45). A central role is played in the clause structure by Agr nodes and their projections, which constitute a kind of bridge between the purely lexical content of verbs and the nominal content of the arguments: they are the reflection of nominal features in the verbal morphology (on the role and status of Agreement projections, see Belletti 2001).

Although in the most recent developments of the Minimalist Program (MP) the status of Agr nodes in the functional (minimal) clause structure has been questioned as their feature content is not 'interpretable' in the relevant minimalist sense (Chomsky 1995c, 2000, 2001b), positions that (preminimalist) Agr nodes designate, although possibly differently labeled, should be preserved in order to account for the morphosyntactic interaction which agreement processes display. With this qualification in mind, we can continue to use the label Agr in the traditional way to refer to the syntactic position(s) where agreement relations are established between a nominal element projection and heads connected to verbal inflectional morphology.[1]

Between the late 1980s and mid 1990s, especially under the impulse of Kayne's (1989a) article on Romance past participle agreement and Chomsky's first formulations of the Minimalist Program, the idea was put forth that clause structure should contain not only Agr-type projections related to the preverbal (high) subject position, but also other positions of this type in the lower part of the clause, closer to the VP area (see Belletti 1994, 2001; Cardinaletti 1997; Cardinaletti and Roberts 2002; for the proposal that the upper part of the clause could contain more than one single Agr-type position hosting the preverbal subject in its Spec). One of these positions, initially identified with the so-called object Case/agreement projection (AgrOP), later distinguished from it and sometimes labeled AgrPstPrtP, is the one where past participle agreement obtains (Belletti 2001; Friedeman and Siloni 1997).

Under the view that agreement processes can be taken to be the reflex of an established Spec–Head relation inside an Agr projection, as revealed by (preverbal) subject agreement, Kayne (1989a) has proposed that past participle agreement is no exception to this general characterization. As a first illustration, take the case of past participle agreement in structures containing an object clitic in Italian:

(1) L' ho conosciut**a** ieri.
her (CL) (I) have known (Fem, Sing) yesterday
'I knew her yesterday.'

Here, the past participle agrees with the moved object clitic. This agreement can be assumed to be obtained through the Spec–Head relation in the relevant low Agreement projection related to the past participial morphology,

labeled AgrPstPrtP. The relation is established in the course of movement of the clitic to its final landing site in some (functional) head in the upper part of the clause. So, past participle agreement is a reflex of the displacement of the nominal projection determining agreement. Note, incidentally, that past participle agreement gives an interesting hint as to the way the process of cliticization takes place. The process must involve a first part of movement as a maximal projection of the projection containing the clitic, passing through the Spec of the relevant agreement projection. It is only toward the end of the process, and anyway after the passage through the Spec of the projection responsible for past participle agreement that the clitic can accomplish its movement as a head, ultimately incorporating into the (finite) verb (Kayne 1989a; Rouveret 1989; Sportiche 1996b; Belletti 1999b; Rizzi 2000b; see section 3.3, for a discussion of the cases of object agreement which constitute apparent exceptions to this general pattern).

2 Past participle agreement in Romance: basic data

Past participle agreement phenomena are widespread in Romance, with differences among the various languages and dialects. Some of these will be mentioned in the course of the discussion. The Romance languages most widely discussed in the literature in this connection are standard Italian and standard French. These two languages will also constitute the central focus of the following discussion.

2.1 Standard Italian

Past participle agreement holds in the following syntactic contexts:[2]

(a) With unaccusative verbs:

(2) Maria è partit**a**.
Maria is left (Fem, Sing)
'Mary has left.'

(b) With passive morphology, both on the passive auxiliary and on the lexical verb:

(3) Maria è stat**a** assunt**a**.
Maria is been (Fem, Sing) hired (Fem, Sing)
'Mary has been hired.'

(c) Under direct object cliticization:[3]

(i) obligatorily for the third person:

(4) a. L' ho vist**a**/*o
her (CL) (I) have seen (Fem, Sing/*NonAgr[4])

b. Le ho vist**e**/*o
them (Fem, Pl) (I) have seen (Fem, Pl/*NonAgr)
c. Li ho vist**i**/*o
them (Fem, Pl) (I) have seen (Masc, Pl/*NonAgr)
'I have seen her/him/them.'

(ii) optionally with the other persons:

(5) a. Mi/ti ha vist**a/o/o**.
me/you (CL) (he) has seen (Fem, Sing/Masc Sing/NonAgr)
b. Ci/vi ha vist**e/i/o**.
us/you (he) has seen (Fem Pl/Masc Pl/NonAgr)
'He has seen me/you/us/you.'

(d) With reflexive/reciprocal clitics (including the inherent reflexive/ergative *si*-constructions of Burzio (1986)):

(6) a. Mi sono guardat**a** allo specchio.
me (Refl, CL) (I) am watched to the mirror
b Ci siamo guardat**e** allo specchio.
us (Refl, CL) are watched to the mirror
'I/we have watched myself/ourselves in the mirror.'

(e) With impersonal (passive) *si*:

(7) Ultimamente si sono costruit**e**/*o molte case.
lately SI have been built many houses
'Lately, many houses have been built.'

2.2 *Standard French*

Past participle agreement holds in similar contexts in French, with the following qualifications distinguishing it from the Italian paradigm:

(a) With unaccusative verbs taking *être* as aspectual auxiliary (hearable in some regional varieties; same constraint as in standard Italian except that *être* is not the only auxiliary taken by unaccusative verbs in French; see section 3.4):

(8) Elles sont venu**es**.
they (Fem, Pl) are come
'They have come.'

(b) With passive morphology on the lexical verb only:

(9) Ces sottises ont été fait**es** par les
these stupid things (Fem, Pl) have been done (Fem, Pl) by the
élèves de cinquième.
students from 5th grade

(c) Under direct object movement, via cliticization and *wh*-movement, optionally in both cases:[5]

(10) Ces sottises, Jean ne les a jamais
these stupid things (Fem, Pl) Jean not them (CL) has ever
fait**es/-**.
done (Fem, Pl)
'These stupid things, John has never done them.'

(11) Voilà les sottises que Jean n'aurait jamais
here are the stupid things (Fem, Pl) that Jean wouldn't have ever
fait**es/-**.
done (Fem, Pl)
'These are the stupid things that John would never have done.'

(d) With reflexive/reciprocal clitics (including the inherent reflexive/ergative *si/se*-constructions of Burzio (1986), the so-called pronominal verbs of normative descriptions, both requiring *être* as aspectual auxiliary, hence falling under case (a):

(12) Elles se sont repris**es**.
they themselves have recovered
'They have recovered.'

Beside these basic data there are other domains where past participle agreement gives rise to various complications. Let us consider standard Italian, where the phenomenon is clear as it always has a phonetic correlate. In transitive structures containing an overt direct object and a reflexive clitic corresponding to an indirect object (benefactive/dative), the past participle obligatorily agrees with the indirect reflexive clitic, hence with the subject:

(13) a. Maria si è lavat**a**/*o i capelli.
Maria (to) herself is washed the hair
'Maria washed her hair.'
b. Gianni e Mario si sono stretti la mano.
Gianni and Mario (to) themselves are shaken the hand
'Gianni and Mario have shaken hands.'

However, if the direct object of sentences like (13) is cliticized, past participle agreement is with the direct object clitic:

(14) a. Maria se li è lavat**i**.
Maria (to) herself them (CL, Masc, Pl) is washed (Masc, Pl)
'Maria washed it.'
b. Gianni e Mario se la sono
Gianni and Mario (to) themselves her (Fem, CL, Sing) are
stret**t**a.
shaken (Fem, Sing)
'Gianni and Mario have shaken it.'

A hierarchy seems operative according to which past participle agreement with the direct object clitic necessarily takes priority over agreement with the indirect object (reflexive) clitic. The same paradigm is preserved if the reflexive clitic corresponds to a benefactive:

(15) a. Maria/io si/mi è/sono lett**a** questi libri
Maria/I (to) herself/myself is/are read (Fem, Sing) these books
volentieri.
gladly
'Maria/I has/have read these books gladly for herself/myself.'

b. Maria/io se/me li è/sono
Maria/I (to) herself/myself them(CL, Masc, Pl) is/are
lett**i** volentieri.
read (Masc, Pl) gladly
'Maria/I have read them gladly for herself/myself.'

Burzio (1986) states the operation of a hierarchy of this sort leaving the reasons for its existence as an open question. See section 5 for further discussion and a proposal.

Finally, past participle agreement with a direct object clitic is preserved and obligatory in standard Italian, also in so-called A(bsolute) S(mall) C(lauses):

(16) a. Conosciut**a**la, . . .
known (Fem, Sing) her (CL) . . .
'Having known her . . .'

b. Incontrat**a**la, . . .
met (Fem, Sing) her (CL) . . .
'Having met her . . .'

c. *?Conosciut**o**la, . . .
known her (CL)

d. *?Incontrat**o**la, . . .
met her (CL)

Note that here the clitic is an enclitic on the past participle.[6]

3 Past participle agreement as Spec–Head agreement

As mentioned earlier, a partial reformulation of Kayne's influential approach to past participle agreement (PPA), originally formulated in terms of the relation government, interprets the occurrence of PPA as a consequence of passing through the Spec of the past participle projection of an element, typically the direct object, moving to some other position in the clause: the preverbal subject position in the

case of unaccusatives and passives;[7] the clitic landing site in the case of cliticization; the (left) periphery of the clause in the case of *wh*-movement. Clearly, the most salient and interesting feature of this approach is its unifying character which drastically simplifies the understanding of a complex pattern. Let us concentrate more closely on the agreement occurring under cliticization and *wh*-movement, leaving for section 3.3 the discussion of some (apparent) cases of object agreement. Section 3.4 addresses the issue of the (apparent) correlation between auxiliary selection and past participle agreement.

3.1 Cliticization

The described approach to past participle agreement requires a movement analysis of cliticization.[8] The clitic projection in its movement to its final landing site in the upper part of the clause, passes through Spec of AgrPstPrt and triggers agreement in a way parallel to the one assumed for the case of preverbal subject–verb agreement in finite clauses. The only difference between the two cases is related to the nature of the past participial morphology which only manifests gender and number features and no feature person. Kayne's original account, as well as the subsequent literature on the topic, has typically left unexplained why such agreement process should be obligatory in some cases and optional in other cases which would otherwise meet the relevant configuration. Consider the difference in Italian, presented in section 2, between third-person clitics on the one side, obligatorily triggering past participle agreement, and first- and second-person clitics, doing so only optionally on the other. This pattern seems to identify an area of genuine optionality, also systematically manifested in the French paradigm of cliticization with clitics of all persons and numbers.

The question is a complex one. Occurrence vs. non-occurrence of past participle agreement could in fact be a sign of different types of derivation: one involving passage through the Spec of the past participial projection, one not involving it (see Sportiche 1998: ch. 3). Alternatively, the different agreement pattern could be related to other independent differences, internal to Italian and between Italian and French. The system elaborated in Guasti and Rizzi (2002) can provide a way of making the relevant distinction. In that work, the proposal is put forth that overt manifestation of agreement should in general be correlated to morphological checking taking place in the syntax; in particular, as far as verbal agreement is concerned, to syntactic Verb movement. Suppose that the hypothesis is made that the internal structure of the Agr past participial projection is more articulated than hypothesized so far in that it could involve different designated positions for clitics of different persons, with first and second person higher than third person. A way of accounting for the way the optionality is manifested in Italian suggests itself. If syntactic V movement implementing morphological checking takes place obligatorily in the first Agr head, but only optionally in the others, past participle agreement is expected to be obligatory with third-person clitics only. The difference internal to Italian could thus find a reasonable account.[9] As discussed in Guasti and Rizzi (2002), this approach can

also provide a way of accounting for the difference between Italian and French in this connection. As has been known since Pollock (1989) and Belletti (1990), the verb only moves optionally with non-finite morphology in French, while Verb movement is generalized in Italian. The optionality of past participle agreement with object clitics of all persons in French could then be reduced to a further manifestation of the optionality of non-finite Verb movement in this language.

3.2 Wh-*movement*

As illustrated in section 2, a similar issue arises in the case of *wh*-movement. Taking into consideration standard French, this language optionally manifests past participle agreement under *wh*-movement ((10), (11)). In standard Italian, this type of agreement is never manifested, as the following contrasts indicate:

(17) a. *I libri che ho letti.
the books (Masc, Pl) that (I) have read (Masc, Pl)
b. I libri che ho letto.
the books that (I) have read
c. *Quanti libri hai letti?
how many books have you read (Masc, Pl)
d. Quanti libri hai letto?
how many books have you read

The contrast between French and Italian does not go in the usual direction in this case in that Italian does not manifest agreement in cases where French does. French does not seem to make any distinction between cliticization and *wh*-movement, past participle agreement being optional in both cases. Indeed, this could ultimately be viewed as an indirect consequence of the relative poverty of French (past participial) morphology whose structural correlate could be a (relatively) flat projection for the past participle. In the spirit of the discussion in section 3.1, optionality of past participle agreement should then be expected across the board in French as a function of the optionality of non-finite V movement, independently of the kind of movement involved.[10] For Italian, the proposal should be that the verb never reaches the (by hypothesis) high(est) head in the richly articulated past participle projection, whose specifier hosts the passage of the *wh*-phrase. Lack of agreement with *wh*-movement would then follow in the way discussed in section 3.1.

Contrasts arising in standard French in the domain of *wh*-movement are particularly interesting in this connection. As past participle agreement is normally optionally admitted in this language, cases where it is impossible must reveal the operation of some principled source of their ungrammaticality. The relevant contrasts are those in (18), discussed in Rizzi (1990b) and Obenauer (1994).

(18) a. Combien de voitures a-t-il conduit**es**?
how many of cars has he driven (Fem, Pl)

b. *Combien a-t-il conduit**es** de voitures?
how many has he driven (Fem, Pl) of cars

In (18a) the whole direct object is *wh*-moved (into CP), while only the quantifier is moved in the ungrammatical (18b). The possibility in French of moving only the *wh*-quantifier, leaving the rest of the phrase containing the nominal projection behind, is shown by the grammaticality of sentences like (19) which in fact differ from (18b) only in that they do not display past participle agreement:

(19) Combien a-t-il conduit de voitures?
how many has he driven of cars

This is a straightforward indication that the source of the ungrammaticality of (18b) is solely to be found in the illegitimate past participle agreement.

Adapting Rizzi's discussion, the impossibility of (18b) can be interpreted as a case of improper movement ultimately induced by Relativized Minimality (RM). Assume that, due to RM, the derivation of sentences like (19) involves movement of the *wh*-quantifier to and from the same syntactic position in the VP area also available for the adverbial modifier *beaucoup*, illustrated by sentences like (20):

(20) Il a beaucoup consulté ces livres.
he has much consulted these books

The same position is also used as landing site for movement of the QP in sentences like (21b), related to (21a):

(21) a. Il a consulté beaucoup de livres.
he has consulted many of books
b. Il a beaucoup consulté de livres.
he has much consulted of books
c. Il a beaucoup conduit**es** de voitures.
he has much driven (Fem, Pl) of cars

The relation of sentences like (21b) and (20) is pointed out in Obenauer (1994) and discussed in Rizzi (1990b). This adverbial position is considered an A′-position, as adverbial positions in general. The impossibility of (18b) can then be attributed to the fact that, in order for past participle agreement to obtain, passage to the Spec of the past participial morphology should be necessary. It seems natural to consider this position an A-position, as specifiers of agreement projections are in general.[11] If the adverbial position is located lower than the past participle projection, the resulting derivation would constitute a case of improper movement involving the illegitimate step A′ > A, crucial in order for past participle agreement to be triggered. Note that interaction between *combien* extraction and the adverb *beaucoup* in the pre-VP position of (20) is confirmed by

the following paradigm, first discussed in Obenauer (1976) and interpreted by Rizzi (1990b) as a typical instance of the operation of the RM principle:

(22) a. Combien de livres a-t-il beaucoup consultés?
how many of books has he much consulted
b. *Combien a-t-il beaucoup consulté de livres?
how many has he much consulted of books

If, contrary to the hypothesis just explored, we were to assume that the past particle projection is lower in the clause structure than the adverbial position (the speculative proposal of section 5 would probably lead to this conclusion), agreement could take place and *combien* could subsequently move into the adverbial position with no improper movement step being created. The alternative explanation suggested in Rizzi (1990b) could then be accepted. According to this interpretation, movement of *combien* to the Spec of the past participial projection should be excluded in principle under structure preservation, as this position should be reserved to noun phrases, hence excluding QPs.

3.3 Object agreement

As seen in the previous sections, past participle agreement is possible and/or obligatory with direct objects under the particular structural conditions created by DP movement, clitic movement, and *wh*-movement, with the described asymmetries. It appears to be the case that past participle agreement can sometimes occur with a direct object which, at least apparently, fills the regular direct object position, linearly following the verb. This is neither true in standard Italian nor in standard French. However, it is true in some dialect varieties of (southern) Italian, in some other Romance languages (e.g., Occitan), and also in a somewhat more literary Italian.[12] The question then arises as to how the Kaynean approach can account for these cases, which correspond to sentences like (23), using an Italian example (marginally possible at the relevant stylistic level):

(23) Maria ha conosciut**e** le ragazze.
Maria has known (Fem, Pl) the girls (Fem, Pl)

There seem to be two solutions to this pattern. The first is to assume that the direct object is only apparently a regular direct object in (23); in these cases it actually fills a position different from the canonical position of direct objects (e.g., it could be dislocated, see below). The second solution is to assume that there is more structure defining the past participle area with at least one further position higher than the projection of the past participle; the past participle has to move into the head of this higher projection, while the direct object moves to and remains in Spec of AgrPstPrt. Under the first approach, tentatively adopted in Kayne (1989a), the kind of position the direct object fills should be made clear. Kayne suggests that it fills the right-dislocated position. Presence of a silent clitic

is assumed as the real trigger of agreement. A proposal along these lines does not seem adequate to account for those varieties where agreement appears to be obligatory: after all, why should a direct object systematically be right dislocated? Moreover, how could the presence of the silent clitic be independently justified? Under the second approach, one should clarify what kind of further functional projection would dominate the past participle agreement projection as well as what would force the verb to move into its head.[13] Hence, both approaches are tentative and leave a number of open questions. This second approach would probably provide a more natural way to account for the difference among languages. Presence vs. absence or optional presence of object agreement could be viewed as a function of object movement and syntactic verb movement (both allowing for an amount of optionality which may vary along the lines reviewed in section 3.1 for the case of non-finite V movement). Agreement would result from the combination of both object movement and syntactic verb movement. The difference among the various languages could be phrased in terms of whether movement of the object goes further than the VP area, as in the case of DP movement (in passives and unaccusatives), cliticization and *wh*-movement, or not. Some languages (standard Italian, French) would allow object movement only in the former case, others would extend the process to all cases.[14]

As discussed in Belletti (1990, 1992), standard Italian has past-participial small clauses, referred to as absolute small clauses (ASC). These display a special agreement pattern. The past participle is the first constituent of the small clause, followed by the subject in the case of unaccusative verbs, and by the direct object in the case of transitive verbs.[15] In both cases, past participle agreement is obligatory:

(24) a. Arrivat**a** Maria, . . .
arrived (Fem, Sg) Maria, . . .
'Having Maria arrived, . . .'
b. Conosciut**a** Maria, . . .
known (Fem, Sg) Maria, . . .
'Having known Maria, . . .'

If the agreement in (24a) appears to be a standard case – as the past participle always agrees with the postverbal subject in unaccusative structures – the same is not true for (24b); as discussed earlier, transitive past participles do not normally agree with the direct object in standard Italian. The idea of analyzing (24b) as a passive past participle, thus reducing this kind of agreement to the standard case of past participle agreement under passive morphology, ultimately equivalent to the unaccusative structures, does not appear to be empirically correct, as discussed in detail in the references quoted. The most direct indication is provided by the fact that the nominal following the past participle is marked with accusative case, visible when it is a (first- or second-person) personal pronoun (cf. *Conosciuta me/*io*). ASCs like (24b) are better dealt with as transitive structures with a control PRO filling the subject position. Past participle agreement in (24b) is then a genuine case of agreement with the direct object. Various ideas

come to mind to express this pattern. Notice that the second analysis hinted at above for cases like (23) can provide a fairly straightforward account: the direct object moves to Spec of the past participle agreement projection and the past participle moves higher (maybe to C; see the references quoted). Word order is obtained. The necessity of agreement in this case, contrary to regular full transitive clauses of standard Italian, should be due to special properties characterizing ASC, possibly crucially related to Case requirements. As proposed in the works quoted, agreement here provides a device to assign Case to the direct object.[16]

3.4 On auxiliaries and past participle agreement

The widespread co-occurrence of past participle agreement and presence of auxiliary *essere* might lead one to think that the two processes are strictly dependent on one another. In particular, selection of *essere* as aspectual auxiliary could be taken to be the crucial factor forcing agreement. However, the simple correlation between auxiliary selection and presence or absence of agreement is empirically incorrect in both directions. There are cases where *avere* is selected, e.g., with transitive verbs, and agreement is manifested (see the discussion in connection with (23)); furthermore, there are Romance varieties where *avere* is selected with unaccusatives and still agreement is manifested.[17] On the other hand, there are cases where *essere* is selected in standard Italian and yet agreement is impossible. Compare the impersonal SI construction with intransitives and transitives, also pointed out in Burzio (1986) in this connection:

(25) a. Si è telefonato/*i.
one is called (*Masc, Pl)
'Someone rang.'
b. Si è mangiato/*i due castagne.
one is eaten (*Masc, Pl) two chestnuts
'Two chestnuts were eaten.'

It can be suggested that selection of *essere* is due to the presence of the impersonal SI in these cases, but as no movement is involved here from the VP-internal/object position, contrary to, e.g., the impersonal passive of examples like (7), no past participle agreement is produced. This indicates that movement from the VP-internal (object) position, and not the kind of auxiliary selection, is the crucial step triggering agreement.

Lack of past participle agreement in (25) is also interesting in comparison with (26), where the adjective agrees in gender and number with the arbitrary plural impersonal SI – third person singular on the verb is often interpreted as the unmarked person agreement, the only one compatible with the impersonal subject (cf. Belletti 1982, Burzio 1986):

(26) Si è felic**i**/*e.
one is happy (Masc, Pl/*Sing)

This contrast may indicate that the AP involves a different internal representation than the intransitive or transitive past participle. Its representation is possibly, closer to the one of the past participle of unaccusatives which systematically manifest agreement (cf. *Si è partit**i*** 'someone left'). See section 5 for a proposal concerning unaccusatives which could extend to this case.

4 On some cases of past participle agreement in French and the comparison with Italian

4.1 On the A- vs. A'-status of the specifier of the past participle projection

Kayne (1989a) discusses impossible cases of past participle agreement in *wh*-constructions involving an expletive subject:

(27) a. Quelle chaleur atroce il a fait/*e.
what heat terrible it has done
'What a terrible heat!'
b. Je me demande combien de chaises il sera
I to me wonder how many of chairs (Fem, Pl) it will be
repeint/***es*** cette année.
repainted (*Fem, Pl) this year
'I wonder how many chairs will be repainted this year.'
c. Les chaises qu'il m'aurait fallu/***es***.
'The chairs which I would need.'

The account proposed by Kayne (1989a) crucially relies on the assumption that the Spec position of the past participle projection is an A'-position. Assuming that at LF the expletive must be eliminated through substitution from the associate (Chomsky 1986b), the impossibility would follow from the fact that the LF movement at work for substituting the expletive would imply an illegitimate A' > A step, from Spec of the past participle projection to the subject position in Spec of IP. However, the hypothesis that the Spec of the past participle projection is an A'-position does not look plausible, both on theoretical and empirical grounds.[18] From the theoretical point of view, the specifier of the past participle projection would constitute an isolated exception to the general A status of the specifiers of agreement projections. This is an implausible conclusion which is not independently justified. On the empirical side, consider the following pair (presented in Ruwet 1982, Grevisse 1986, and Kayne 1989a):

(28) a. *Une femme qu'on aurait dit**e** ne pas être belle.
'A woman that one would have said (Fem, Sing) not to be beautiful.'
b. Une femme qu'on aurait dit**e** belle.
'A woman that one would have said (Fem, Sing) beautiful.'

If *wh*-extraction in (28a) requires passage through the CP of the subordinate infinitival clause (Kayne 1984a), the impossibility of past participle agreement here can directly follow from the assumption that the specifier of the past participle projection is an A-position in the following way. The derivation would imply an improper movement in one of its steps: the step from [Spec, CP], an A'-position, to [Spec, AgrPstPrt], an A-position. On the other hand, if the small clause in (28b) is not a CP projection, no passage through this position is ever at work, hence the *wh*-phrase can directly move to the specifier of the past participle projection and from there into the CP position of the relative clause. No improper movement is involved in any step of the derivation. This is the interpretation proposed for contrasts of this type in Belletti and Rizzi (1996b), which crucially requires that the specifier of the past participle projection be an A-position.

4.2 Past participle agreement and inherent Case

In the same work the impossibility of past participle agreement in expletive constructions like (27) is interpreted as due to the unavailability in French of (past participle) agreement with indefinite postverbal subjects, under the hypothesis that they be marked with inherent Case in these constructions (Belletti 1988; see also Sportiche 1998: ch. 3). These examples would then fall under the often observed lack of agreement triggered by nominal expressions marked with inherent Case.[19] Indeed, if the assumption is made that agreement with inherently Case-marked noun phrases is systematically excluded in French, three apparently unrelated cases of impossible agreement – some having passed unnoticed in the theoretical literature – are attributed a unified interpretation (cf. Belletti and Rizzi 1996b, where it is also pointed out that the data on psych verbs are implicitly noted in Grevisse 1986).

(a) The impossibility of agreement under *en* cliticization (where *en* realizes partitive case, possibly assigned by the indefinite quantifier here: cf. Cardinaletti and Giusti 1992):[20]

(29) Il en a repeint /***es** deux.
he of them (CL) has repainted /*(Fem, Pl) two
'He has repainted two of them.'

(b) The impossibility of agreement with psych verbs of the *worry* class:[21]

(30) a. Cela l' a surpris /***e**.
this her (CL) a suprised /*Fem, Sing
'This has surprised her.'
b. La fille que ton départ /ce spectacle a profondement
the girl that your departure /this show has deeply
supris /***e**.
surprised /*Fem, Sing

(c) The impossibility of agreement with the postverbal subject in subject inversion structures:

(31) Il a été repeint /***es** trois voitures.
it has been repainted /*Fem, Pl three cars

This case of impossible agreement can be seen as the same lack of agreement systematically manifested in this type of structure, independent of the presence of a past participle:

(32) Il arrivera /*arriveront trois filles.
there will arrive /*Pl three girls

Note that lack of agreement in (31) and (32) cannot be related to presence of the expletive. The same impossibility is preserved in Stylistic-Inversion structures containing a semi-idiomatic expression V+N where the expletive can be absent, as first pointed out in Kayne and Pollock (1978):[22]

(33) a. Le jour où a été mis /*mise fin au conflit.
the day where has been put /*Fem, Sing end to the conflict
'The day when the conflict was ended.'
b. J'exige que soit mis /*mise fin au conflit.
I pretend that be put /*Fem, Sing end to the conflict
'I pretend that the conflict has ended.'

The comparison with standard Italian is interesting in that all the data where a comparison is directly possible have an opposite shape: past participle agreement is possible and obligatory under *ne* cliticization, with psych verbs of the *worry* class, and in subject inversion structures, including those containing a semi-idiomatic V+N expression:

(34) a. Ne ho comprat**e** /*comprato molte.
of them (CL) have bought (Fem, Pl) /*bought many
'I have bought many of them.' (cf. (29))
b. Questo l'ha sorpres**a** /*sorpreso.
this her (CL, Fem, Sing) has suprised (Fem, Sing) /*suprised
'This has surprised her.' (cf. (30))
c. Sono entrat**i** /*entrato due ladri dalla finestra.
are entered (Masc, Pl) /*entered two robbers from the window
'Two robbers have entered through the window' (cf. (31))
d. Esigo che sia mess**a**/ *?messo fine al conflitto.
(I) pretend that be put (Fem, Sing) *?put end to the conflict
'I pretend that the conflict was ended.' (cf. (32))

(The last example is slightly more acceptable than the other impossible cases. The marginal possibility of lack of agreement here could reflect the fact that the

expression is analyzed as fully non-compositional.) The proposal sketched in Belletti and Rizzi (1996b) to deal with the French–Italian contrast is that a parameterization is possible for the availability of agreement with inherent Case. Italian admits (and requires) it, French does not (cf. also Mahajan (1990) for a similar proposal in the context of a comparison between Hindi and closely related languages).

It should be pointed out that (past participle) agreement is systematically excluded with dative case, a general fact in Romance, illustrated here for Italian in the context of cliticization:

(35) *Le ho parlat**a**.
to her (I) have spoken (Fem, Sing)
'I have spoken to her.'

One possibility to capture the difference between dative and inherent case is that, as witnessed by the presence of a preposition, datives imply a further level of structure, namely, a PP level. P being incompatible with phi-features, agreement is excluded in principle when this level is activated. The hypothesis should then be that inherent Case is not prepositional.[23]

In those cases where *ne* corresponds to an adnominal complement, past participle agreement is optional (see also Lepschy and Lepschy 1977):

(36) a. Ne ho lett**a** /?letto la metà.
of it (CL) (I) have read (Fem, Sing) /?read the half
'I have read half of it.'
b. Ne ho consultat**a** /consultato l'opera.
of it (CL) (I) have consulted (Fem, Sing) consulted the work
'I have consulted his work.'

A possible interpretation here is that *ne* is ambiguous here between being inherently case-marked and as a PP.

4.3 Past participle agreement and effects on the interpretation

As first pointed out in Obenauer (1992, 1994) and discussed in Déprez (1998), the optionality of past participle agreement in *wh*-structures in French is not without consequences from the point of view of the interpretation. The distinction is particularly clear in *wh*-structures involving *combien*. Consider (37).

(37) a. Combien de fautes a-t- elle fait**es**?
b. Combien de fautes a-t- elle fait?
how many mistakes has she made? (Fem, Pl) /-

In the agreeing case a set of specific typical mistakes is presupposed, while there is no such presupposition in the non-agreeing case, at least not necessarily.

The two interpretations can be linked to different syntactic positions: the presuppositional (D-linked) interpretation to a VP-external one, the non presuppositional (non-D-linked) one to a VP-internal one. [24] In the spirit of the discussion in section 4.2, a possible interpretation of the contrast could then be the following. Assume that the *wh*-moved direct object is marked with structural accusative case in (37a) and with inherent case in (37b). Assume furthermore that the inherent case, which is available VP internally by assumption, is only compatible with weak, non-presuppositional, indefinite objects, while no such limitation constrains structural accusative case, which is assigned and checked in some functional projection outside the VP projection. The contrast in (37) is then directly accounted for. In the derivation of (37b) the inherently case-marked object does not trigger agreement in its passage through the Spec of the past participle agreement projection on its way to the CP area, as is generally the case with inherently case-marked phrases in French; in (37a) the direct object does not carry inherent case, but structural accusative case, hence in its passage through the same Spec position it does trigger agreement.

As discussed in section 2, agreement is usually optional in *wh*-constructions in French. This also implies that a structurally case marked *wh*-object can avoid triggering agreement. Hence, lack of agreement can derive from two distinct factors: either from inherent case marking or from optional agreement with an accusative case marked indefinite object. This in turn implies that the presuppositional interpretation, only compatible with accusative case, can also be available in the non-agreeing form. Obenauer's data confirm this prediction. As noted above, the presuppositional reading is not impossible also in the non-agreeing form.

5 Conclusion

A crucial observation concerning the phenomenon of past participle agreement in Romance is that no variety allows the past participle to agree with the subject of intransitive/unergative and transitive verbs. This fact is illustrated in (38) with Italian examples.

(38) a. *Maria ha parlata.
Maria has spoken (Fem, Sing)
b. *Maria ha letta un bel romanzo.
Maria has read (Fem, Sing) a nice novel

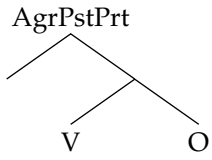
Any treatment of the computation involved in past participle agreement must account for this fact. In particular, any account should explain the difference between the impossible cases in (38) and all the possible cases discussed so far.

Following Burzio's original fundamental insight, the appropriate generalization seems to be that past participle agreement involves arguments belonging to the lowest level of the VP projection, typically the direct object (on the agreement

cases involving indirect object reflexive clitics as in (13), see below). It does not involve external arguments (in Williams's original 1981a terminology which, taken literally, is not appropriate once all arguments are projected VP internally, given the VP internal subject hypothesis of Koopman and Sportiche 1991b). The external argument is in fact the argument which is merged as the highest one within the VP (Chomsky 2000, 2001b). In what follows, a possible line of explanation of this fundamental pattern is suggested.

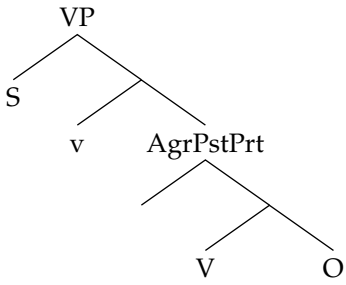
A straightforward way of excluding the highest VP argument (S) of intransitive/unergative and transitive verbs from triggering past participle agreement consists in assuming that this argument cannot pass through the Spec position of the past participle projection (on its way to the preverbal subject position). The most direct way of excluding this possibility, in turn, is to assume that this is so because the relevant agreement projection is located in a position lower than the base position of S. This amounts to claiming that the relevant agreement projection is in fact VP-internal. According to this hypothesis, past participles always correspond to unaccusative and passive structures: they are VPs with no external argument (not including the argument which is merged last). The idea is schematized in (39) (where the label O stands for the typical internal argument, i.e., the direct object).

(39)



The internal structure of an intransitive/unergative or of a transitive VP should correspond to a projection along the lines of (40).

(40)



Only O, the argument merged first filling a low position within the VP, has access to the specifier of the past participle projection in its movement(s). The hypothesis schematized in (40) directly derives the basic data presented in section 2 as well as the impossibility of (38), with the supplementary assumption that, systematically in standard Italian and less so in other Romance languages,

the auxiliary *essere* selects projections like (39), *avere*, those illustrated by (40) (on sentences involving impersonal SI, see below).[25]

Some of the data in section 2 require more discussion. Consider structures involving a reflexive clitic like (6), repeated in (41).

(41) Mi sono guardat**a** allo specchio.
myself (Refl, CL) (I) am watched (Fem, Sing) to the mirror
'I have watched myself in the mirror.'

Here, agreement is obligatory. The idea of relating this agreement to movement of the direct object reflexive clitic as in standard clitic constructions leaves its obligatoriness unexplained. It contrasts with the general optionality of past participle agreement with first- and second-person clitics in Italian, noted in section 2 and discussed in section 3.2. Hence, past participle agreement in (41) must be due to the reflexive nature of the construction. Following the spirit of one of Kayne's original proposals, it can be assumed that reflexive clitics are generated outside the VP projection (possibly as a kind of agreement marker within the clause functional structure). Structures like (41) can then be considered on a par with unaccusative structures: what actually moves here is not the clitic, but the internal argument of the unaccusative construction (in this case a silent first-person singular pronoun with feminine reference). The same analysis would be used for unaccusative structures involving an inherent reflexive.

Now consider structures containing a reflexive (indirect object, benefactive) clitic and a full direct object, like those in (13), repeated here in (42):

(42) a. Maria si è lavat**a** i capelli.
Maria (to) herself is washed (Fem, Sing) the hair
'Maria has washed her hair.'
b. Maria si è lett**a** questo libro.
Maria (to) herself is read this book
'Maria has read this book.'

The VP in (42) is transitive, projected as in (40). The reflexive clitic (indirect object, benefactive) is generated outside the VP as in the preceding discussion. But suppose that a further Agr projection above the transitive VP is selected in these cases.[26] Now, when the subject *Maria* moves out of the VP to reach the preverbal subject position in the high portion of the clause structure, it passes through the specifier of the further, higher (past participle) Agr projection and triggers past participle agreement. According to this proposal, past participle agreement is triggered here by movement of the subject, not of the reflexive clitic (a necessary conclusion, given the assumed line of analysis for reflexive clitics). The object does not move in this case. When the object moves, e.g., to cliticize, past participle agreement is triggered in the lower agreement projection:[27]

(43) a. Maria se li è lavat**i**.
Maria (to) herself them (Masc, Pl, CL) is washed (Masc, Pl)
'Maria washed them.'
b. Maria se lo è lett**o**.
Maria (to) herself it (Masc, Sing, CL) is read (Masc, Sing)
'Maria has read it.'

Note that in order to exclude the impossible examples of (25) of section 3.4, projection of the further past participle agreement projection above VP should not be allowed with impersonal (non-passive) SI, even if *essere* is the selected auxiliary. If movement of a null subject (linked to SI) from the highest merged VP-internal position to the preverbal subject position is at work, as seems natural to assume, if the further higher agreement position were made available, past participle agreement would be expected, contrary to fact. Consider now that impersonal (non-passive) constructions corresponding to (25) involve the subject clitic *on* in French which does not require selection of auxiliary *être*, contrary to the various instances of *se* (*se moyen*, reflexive; see chapters 42 and 56). This may be relevant for the Italian paradigm. It suggests that *essere* with impersonal (non-passive) SI in standard Italian is more akin to *avere* than to *essere* of structures involving true reflexives as those in (41) and (42).[28] Hence, only in the latter case should the further higher past participle projection be activated. On the strict relation between auxiliaries *avere* and *essere*, see Kayne (1993a); see also Cocchi (1995), Vikner and Sprouse (1988).

The (tentative) proposal sketched here has a feature which deserves some closer discussion. In current treatments of past participles, the agreement projection related to the past participial morphology is generally assumed to be (immediately) outside the VP projection. In the proposal outlined here, it may be located in the lexical projection of V.[29] This allows a simple account of a complex pattern. Is the assumption plausible and well grounded? At this stage we can only speculate. Let us assume that the plausibility of such a low location of the past participle agreement projection could come from the consideration that the past participle typically constitutes part of the periphrastic passive morphology in Romance. Keeping the focus on standard Italian and French, passive morphology involves auxiliary *essere/être* + past participle. It is not unreasonable to identify the passive past participle projection with (or at least strictly to link it to) the projection of a Voice head (cf. Sportiche 1996b and Cinque 1999 in particular). Cinque (1999) proposed that the Voice projection is located in a very low position in the clause structure; it may be the lowest functional projection in the functional architecture of the clause, possibly VP-internal. Interesting empirical evidence indicating the low location of the passive voice/past participle is provided by contrasts like the one in (44), presented in Cinque (1999) (see also chapter 4).

(44) a. Hanno **accolto bene** il suo spettacolo solo loro.
(they) have received well (the) his show only they
'Only they received his show well.' (Cinque (1999, (79a), (102))

b. *Hanno **bene accolto** il suo spettacolo solo loro.
(they) have well received (the) his show only they
(Cinque (1999, (79b), (102))

c. Questo genere di spettacoli è sempre stato **bene accolto**.
this kind of show is always been well received
'This kind of show has always been well received.'

Following Cinque's insight, the contrast in the relative order of the past participle and the low adverb *bene* in (44a) (active) and (44c) (passive) indicates that the passive past participle can remain low in the structure, lower than the active one.[30] The reason for that could be that the passive past participle does not (have to) move higher than the low Voice head. The proposal outlined in this section identifies the passive voice/past participle with the structure in (39). No further landing sites are available for the lexical verb. Active past participles necessarily involve more structure, at least as much as in (40); hence the verb moves higher in an active past participle anyway.

NOTES

1 To the extent that agreement is also seen as possibly a long-distance process (Chomsky 2001b), the relevant Agr positions should be identified with (some of) those filled by V+agr features. In this chapter I will not attempt to translate the more traditional, Kaynean, approach into the long-distance procedure.

2 See Burzio (1986) for the first systematic presentation and account in GB terms of the Italian and French paradigms, linking the presence of past participle agreement to the geometry of the tree requiring and/or allowing it in the presence of an antecedent–trace relation between the moved agreeing argument and its original position within the VP. Part of more recent accounts inspired by Kayne's approach, summarized in section 1, preserves Burzio's intuition, which was phrased within a functionally impoverished clause structure. See in particular Sportiche (1998: ch. 3) for a thorough development of Kayne's approach; see also Perlmutter (1989) and La Fauci (1994) for treatments of the phenomenon of past participle agreement pursued in Relational Grammar terms, and, for a fine-grained typology in the same perspective, taking into account different Romance languages, Loporcaro (1998).

3 Both under cliticization and under passive morphology, past participle agreement is preserved with complex predicates as those arising from causativization and restructuring (Rizzi 1982a, Burzio 1986, Guasti 1993 among others, and chapter 13).

(i) Maria è stat**a** fatt**a** assumere.
Maria has been made(Fem, Sing) to assume

(ii) Mario li ha volut**i** conoscere.
Mario them (cl) has wanted (Masc, Pl) to know

As for the interaction of agreement and unaccusatives in restructuring contexts, consider the following contrast, discussed in Burzio (1986):

(iii) a. Noi avremmo volut**o/*i** andare.
we would have wanted/*Masc, Pl) to go
b. Noi saremmo volut**i/*o** andare.
we would be wanted(Masc, Pl)/*- to go

In (iiib) restructuring has taken place, as signalled by use of *essere* as an aspectual auxiliary with the matrix verb *volere* (taking *avere* otherwise), conditioned by the presence of the unaccusative *andare* in the embedded infinitival. Past participle agreement is consequently obligatory as it usually is with unaccusatives.

4 The gloss 'nonagr' here stands for non-agreeing. The non-agreeing form of the past participle also corresponds to the masculine singular ending. Thus, a sentence like (4a) is grammatical if the clitic is a masculine singular third-person pronoun. The past participle ending is then interpreted as masculine singular.

5 Normative grammars indicate agreement as obligatory in both cases, which in fact appears to be optional in colloquial French (with some possible consequences in the interpretation to be discussed in section 4.3).

6 On ASC, see Belletti (1990, 1992), Kayne (1989a), and Belletti (1999b) in the context of the discussion of cliticization and enclisis. See also Egerland (1996), who studies the construction in old Italian, where it was more widespread with partially different properties, probably due to presence of a richer functional structure, as in Egerland's account.

7 With the difference between Italian and French according to whether the relation is established in every single past participle projection including those of the auxiliaries (Italian) or not (French) (cf. (3) and (9)). The difference could stem from an impoverished functional structure of the French past participle projection for auxiliaries. The question would then be whether this difference relates to other differences between the two languages. See Burzio (1986), who relates it to the differences in the selection of the aspectual auxiliary, and, more recently, Richards (1998).

8 This is compatible with Sportiche's (1996b) indirect-movement analysis of cliticization, where the moving element is not the clitic projection generated in the final clitic position, but a silent *pro* agreeing with it originating in the argument position inside the VP.

9 Hence, Italian would also manifest an amount of optionality in verb movement, normally obscured and undetectable in other domains. Given the proposed account, one might expect to find different distributions in the location of some adverbs according to whether past participle agreement occurs or not with first- and second-person clitics. However, differences do not appear to be detectable. It seems likely that agreement projections in general should not contain adverbial modifiers internal to the projection, as they should not count as possible modification domains. The idea that first- and second-person clitics could be higher in the Agr past participle internal structure can be supported indirectly by the observation that they are usually more external (hence, higher) than third-person clitics in clitic clusters. Compare the examples in (i) and (ii).

(i) Mi/ti ci manda.
to me/you (CL) there (CL) (he) sends

(ii) Ce lo manda.
there (CL) him (CL) (he) sends

See also Zanuttini (1997) for converging evidence from Italian dialects showing the different distribution of negation and first- and second-person clitics, on one hand, displaying the order Cl+NEG, and third person clitics, on the other, displaying the order NEG+Cl.

10 DP movement with passives and unaccusatives gives rise to obligatory past participle agreement in French. Possibly, there is a low DP-related position internal to the past participial projection that DPs pass through (but not necessarily clitics); the verb should be taken to move to the head of this position obligatorily in French as well. This position could be the same that quantified noun phrases must pass, given the obligatory nature of past participle agreement under quantifier floating combined with cliticization, detected by some speakers of French:

(i) Il les a tout**es** pris**es**/*-.
he them (Fem, Pl, Cl) has all (Fem, Pl) taken (Fem, Pl)

In this case, the usual optionality of past participle agreement under cliticization would otherwise (surprisingly) be suspended. Hence, there seems to be a portion of obligatory V-movement with the non-finite past participle in French as well. This portion concerns a very low area, possibly the lowest in the past participial projection.

11 Déprez (1998); Sportiche (1998: ch. 3), Rizzi (2000b). In Kayne (1989a) a different assumption is made which will be partly reviewed in section 4.1.

12 See the discussion in Lepschy and Lepschy (1977), Kayne (1989a), and the overview in Loporcaro (1998). Past participle agreement with (apparently) unmoved direct objects is also attested in early stages in the acquisition of standard Italian (cf., in particular, Antinucci and Miller 1976, Borer and Wexler 1992, McKee and Emiliani 1992, Schaeffer 1996).

13 It could be a perfective aspectual head with enough morphological attracting capacity. See section 5 on that and the presentation of Cinque's (1999) evidence, possibly relevant in this respect.

14 Cf. Richards (1998) for a suggestion on past participle agreement which seems to exclude the possibility of languages of the latter kind in principle, possibly not a desirable conclusion. The picture could also be more complex in that object agreement does not necessarily seem to correlate with agreement under overt syntactic movement, e.g., wh-movement. See Kayne (1989a) and his reference to Calabrese's judgments on Salentino, and Miremont (1976) on Occitan. Kayne (2000: ch. 8) observes that optionality of agreement with first- and second-person clitics becomes almost impossibile under restructuring. In the spirit of the hypothesis suggested in the text, this could indicate that modals have a less richly articulated past participle functional structure. See Kayne (2000) for a different proposal.

15 The construction has several peculiarities which are not all relevant here. See the references quoted, and also the discussion in Kayne (1989a) and the observations in Cinque (1990b).

16 See Belletti (1992) for an implementation of this idea according to which accusative case would here be assigned through agreement. The hypothesis can be phrased in the following terms. The past participle morphology blocks the case assignment ability of V; the direct object is then case-licensed through agreement. In full clauses containing a (transitive) auxiliary and a past participle, a crucial role in the assignment of accusative case should then be attributed to the auxiliary, which accounts for lack of obligatory past participle agreement. When the direct object is a clitic, past participle

agreement in ASC takes place as it always does in full clauses. However, the clitic is an enclitic on the past participle in ASC (cf. (16)), contrary to full clauses, where it is a proclitic on the auxiliary. This indicates that further processes are at work in ASC; see Belletti (1999b) for discussion on enclisis and proclisis in this area.

17 Compare section 3.3 for object agreement and the cases of agreement under cliticization and *wh*-movement discussed in section 3.1 and section 3.2 for cases of the former type. Compare the Altamura dialect, described in Loporcaro (1998), for cases of the latter type.

18 See Belletti and Rizzi (1996b), Déprez (1998) Sportiche (1998: ch. 3); section 3.2, n. 11.

19 Compare Icelandic, where agreement never arises with quirky subjects. But see the parameterization hypothesis below.

20 There seems to be some variation among speakers as to the impossibility of past participle agreement in (29). Some speakers allow agreement here. This might suggest that *en* is not necessarily taken to realize (partitive) inherent case by these French speakers. It could be analyzed as a possible realization of (structural) accusative as well. Note that no variation is ever found among Italian speakers in this domain.

21 Under Belletti and Rizzi's (1988) analysis the object of this class of psych verb is inherently case marked with accusative case. Interestingly, when the verb *surprendre* is used in its non-psych interpretation but as a regular transitive verb with the object marked with structural accusative, past participle agreement becomes possible again:

(i) Cette fille, le proviseur l'a surpris**e** en train de fumer.
this girl, the director her (cl) has surprised (Fem, Sing) while smoking
'The director surprised the girl while she was having a smoke.'

As for the impossibility of agreement with *falloir* (cf. (27c)), the account implies that the accusative available with this verb is an inherent accusative (cf. *Il me* le *faut*). A plausible assumption, since *falloir* would otherwise constitute an isolated exception to Burzio's generalization.

22 See Kayne and Pollock (2001) for a new analysis of this type of structure, where *au conflit* is taken to fill the subject position (as a quirky subject) and no (covert) expletive is assumed to be present. The proposal is framed within the general analysis of Stylistic Inversion (SI) as involving Remnant IP movement across the (here quirky) subject. As J. Y. Pollock has pointed out (p.c.), past participle agreement becomes possible in SI sentences similar to (33) if the postverbal subject is made heavier:

(i) Le jour où a èté mise au conflit la fin que tout le monde esperait.
the day where has been put to the conflict the end that everybody hoped

Note that the postverbal subject *la fin* contains an overt definite determiner. I take this to suggest that it should not be analyzed as being inherently case-marked. Agreement here could follow from the familiar mechanisms discussed, that is, the heavy DP moves from the original object position to the preverbal subject position where it is assigned nominative case, as in regular passive structures. The processes at work yielding SI structures would then take place (e.g., Remnant IP movement across the subject as in Kayne and Pollock 2001; but note that here *au conflit* would not be treated as a quirky subject). As the noun *fin* is inherently case marked in the idiomatic

reading, no past participle agreement should take place anyway in (33) (regardless of the adopted analysis of SI). Note that no improvement is brought about by heaviness in subject inversion structures containing expletive *il*. Compare (32) with the equally bad (ii):

(ii) *Il arriveront trois des plus belles filles que j'ai jamais rencontrées.
it will arrive (Pl) three of the most beautiful girls I have ever met

In the analysis adopted here, this is due to the fact that the postverbal subject has access only to inherent (partitive) case marking in these structures.

23 It could realize a KP level; see, e.g., Giusti (1993). A possible partially different implementation of the parameterization proposal could focus on the way in which inherent case is realized in Italian and French. It could systematically be a PP in French (with an empty P) and a NP or DP in Italian, explaining lack of agreement in French. This implementation could receive support from the fact that partitive case involves the presence of the preposition *de* with the indefinite quantifier *beaucoup*, which could be the overt trace of a general PP realization. This alternative is left as an open option here.

24 This adapts part of the spirit of Déprez's (1998) discussion, formulated in terms of different sites of reconstruction for the two *wh*-phrases, with the agreeing one being reconstructed outside the VP and the non-agreeing one inside it, assuming Diesing's (1992b) Mapping Hypothesis.

25 In the dialect referred to in n. 17, *avere* too should be allowed to select a past participle like (39). A possible characterization of French, where *avoir* is often the auxiliary with unaccusatives, and past participle agreement is nevertheless never realized in these cases, could be that a whole VP projection is always selected by *avoir* and that the nominal argument fills the highest (Spec) position of the VP projection. Hence, in its move to the preverbal subject position it does not pass through the specifier of the past participle projection. The difference with respect to intransitive VPs should stem from the fact that the argument in this case must be assumed to fill this highest position derivatively, after moving from the VP internal (object) position. This is the source of the unaccusativity of the VP. Crucially, the assumption should be that this movement be presyntactic or lexical (Hale and Keyser 1993a). As for Spanish, which lacks past participle agreement under cliticization, *wh*-movement, and with unaccusatives, and which does not have auxiliary alternation (Lois 1990) it could be assumed that the AgrPstPrt projection is altogether absent VP-internally. Interestingly, past participle agreement is manifested in Spanish only with the passive auxiliary *ser*, which, in the spirit of the proposal sketched out here, should select a past participle analyzed as in (39).

26 This could be linked to the presence of *essere*, which is always the designated auxiliary in structures involving a reflexive clitic.

27 Note that the ungrammaticality of (i), also pointed out in Burzio (1986), could be due to a violation of strict cyclicity under the proposed account:

(i) a. *Maria se li è lavat**a**.
(Maria (to) herself them (CL) is washed (Fem, Sing)
b. *Maria se lo è lett**a**.
(Maria (to) herself it (CL) is read (Fem, Sing)

Movement of the subject (activating the upper agreement projection) should be completed before object cliticization (which activates the lower agreement projection). This could provide a reason for the hierarchy of past participle agreement suggested and left unexplained by Burzio (1986). Furthermore, some principle of morphological well-formedness should be assumed to rule out the possibility of activating the higher Agr projection with different phi-features than the lower one, when the latter is activated (i.e., through object movement). Thus, a derivation not violating strict cyclicity would be ruled out by the principle of morphological wellformedness as well. The principle should be restricted to operate within the set of Agr heads belonging to the same morphological checking domain, here the domain of AgrPstPrt heads.

28 This amounts to assuming that both the impersonal and reflexive constructions determine the selection of *essere* in Italian, independently of the shape of the past participial projection.

29 This idea shares some similarities with the proposal in Collins and Thráinsson (1993), which also assumes an Agr-type projection generated VP-internally. However, the kind of Agr projection is different in the two cases. In Collins and Thráinsson it is crucially related to case assignment/checking; in the proposal in the text it is assimilated to Voice, see further the main text.

30 According to Cinque's proposal this must be related to a perfect head, located higher in the clause functional structure. This is compatible with the hypothesis in the text, although not necessary. A movement of the same sort should be allowed, without it being obligatory, also for the passive past participle if the also possible order in (i) is to be derived through V-movement:

(i) Questo genere di spettacoli è sempre stato **accolto bene**.
this kind of show is always been received well

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49 Phrasal Stress and Syntax

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1 Introduction

It has been observed that in many languages of the world there is a correlation between prosodic prominence and the informational structure of the sentence. Much current work attempts to determine the laws that govern this correlation. Although we have made some progress, a lot remains unknown factually and therefore our understanding of the phenomenon is still precarious.

On the factual side, the difficulty lies in the nature of the data itself. Much of it is based on introspective judgments. Although this is common practice in linguistics, it is not without problems, especially in the area under discussion, which consists of native speakers' intuitions about the contextual appropriateness of a sentence with a certain prominence pattern. The delicate nature of the judgments is twofold. On the one hand, within impressionistic phonetics, the level of stress of a vowel in a given utterance can be a rather elusive feature. It is certainly a difficult feature to identify in complex utterances. It has no unique correlate, such as pitch level, vowel duration, amplitude, or a combination of these.[1] And while speakers are generally good at identifying the syllable with the highest pitch, they often lack linguistic awareness of the other acoustic properties. As it turns out, the perception of relative prominence is really bound to the perception of the groupings determined by the surface structure of the utterance.[2] The particular difficulty in the case of the association of stress with focus is that the information structure of the utterance is only partially governed by the rules of syntax. Thus, the determination of stress as a function of the information structure of the utterance or vice versa does not have the automatic character that its determination as a function of constituent structure has (see n. 2).

The second problem with judgments concerning the appropriateness of a certain prominence pattern is that it is very hard to control for context. Strictly speaking, there is no context-neutral sentence because speakers tend (un)consciously to add background information. In other words, speakers tend to provide a context for isolated sentences because this is the way that they are naturally used. Furthermore, we need to elucidate which aspect of the relation between prosodic prominence and informational structure is grammatically relevant. Numerous disparate notions and much terminology have been brought to bear on this issue (for a review, see Vallduví and Engdahl 1996), sometimes giving this area an aura of confusion.

Despite the above shortcomings and while awaiting new experimental tools better to elucidate the facts and define the object of study,[3] there are some preliminary core data which have given rise to interesting questions and theoretical debates. The present chapter intends to discuss some of these.

2 The relation between phrasal prominence and the focus structure of the sentence

Let us begin by briefly defining the notion of focus (on the notion of focus, see Chomsky 1971; Jackendoff 1972; Szabolsci 1981b; Rooth 1985; Rochemont 1986; Kiss 1998; among others). According to Chomsky and Jackendoff, the sentence is partitioned into two complementary parts, the presupposition and the focus. The focus is then understood to be the non-presupposed part of the sentence. The most reliable (although not infallible) test that we have at our disposal to determine the partitioning of the sentence into focus and presupposition is the question–answer pair.

In a question like *What happened?*, the presupposition is that there is an *x*, *x an unspecified event*, *such that x happened*. Roughly speaking, the *wh*-phrase in the question stands for the focus variable and the corresponding answer provides a value for that variable.[4] This is illustrated by the examples below, where the focus is the material contained within brackets. In (1), the focus is the TP, in (2), the focus is the VP, in (3), it is the DP object, and in (4), the DP subject. We use the term wide focus for the largest focus structure, namely (1) below, and narrow focus for all others, namely (2–4).

(1) Q. What happened?
A. [$_{TP}$ The cat in the blue hat has written a book about rats].

(2) Q. What did the cat in the blue hat do?
A. The cat in the blue hat [$_{VP}$ has written a book about rats].

(3) Q. What has the cat in the blue hat written?
A. The cat in the blue hat has written [$_{DP}$ a book about rats].

(4) Q. Who has written a book about rats?
A. [$_{DP}$ The cat in the blue hat] has written a book about rats.

In general, then, one can adopt the following operational definition:

(5) In a sentence S = α *X* β, *X* is a possible focus just in case *S* would count as a felicitous answer to the question *Q* = *wh-X* $\alpha\beta$.

One must distinguish two types of focus: informational focus (i-focus) and contrastive focus (c-focus). It is the property of exhaustivity that distinguishes the two: an i-focus is non-exhaustive, while a c-focus is exhaustive. The above *wh*-fronted questions allow for answers with i-focus interpretation, while the clefted questions in French give rise unambiguously to a c-focus type.

(6) Q. C'est qui qui a écrit un livre sur les rats?
'It is who that wrote a book about rats?'
A. C'est [$_{DP}$ le chat] qui a écrit un livre sur les rats.
'It is the cat that wrote a book about rats.'

(7) Q. C'est quoi que le chat a écrit?
'It is what that the cat wrote?'
A. C'est [$_{DP}$ un livre sur les rats] que le chat a écrit.
'It is a book about rats that the cat wrote.'

The difference between the two types of focus with respect to exhaustivity can be seen in the following contrast:

(8) Q. Who wrote a book about rats?
A. [$_{DP}$ The cat] wrote a book about rats, and [$_{DP}$ the bat] did too.

(9) Q. C'est qui qui a écrit un livre sur les rats?
'It is who that wrote a book about rats?'
A. *C'est [$_{DP}$ le chat] qui a écrit un livre sur les rats, et c'est aussi [$_{DP}$ la chauve-souris].
'It is the cat that wrote a book about rats, and also the bat.'

Vergnaud and Zubizarreta (forthcoming) suggest that because contrastive focus is exhaustive in nature, it requires uniqueness of description. And it is precisely this requirement that is violated in the answer form in (9), since the focus value is given in two separate (conjoined) clauses (the second of which has undergone conjunction reduction). On the logical structures of i-focus and c-focus, see Vergnaud and Zubizarreta (forthcoming).

3 Phrasal prominence and informational focus (i-focus) in Germanic

3.1 The classic view: the Nuclear Stress Rule-based account (Chomsky 1971; Jackendoff 1972)

From the earliest work on focus, researchers have noticed that there is a correlation between the locus of main prosodic prominence and the focus structure of the sentence; cf. Chomsky (1971); Jackendoff (1972). Thus, a transitive sentence like (10a), with main prominence on the object, can have the DP object, the VP, or the TP as its focus, but not the DP subject. In other words, it is an appropriate prominence pattern in the discourse context (1–3), but not in context (4). The sentence in (10b), on the other hand, is only appropriate in the discourse context (4), i.e., the DP subject is unambiguously the focus in that sentence.

(10) a. The cat in the blue hàt has written a book about ráts.
b. The cat in the blue hát has written a book about ràts.

From such observations, Chomsky (1971) and Jackendoff (1972) concluded that a constraint like (11) was at work:[5]

(11) The focused constituent must contain the intonational nucleus of the intonational phrase, where the intonational nucleus is identified as the syllable that bears main phrasal prominence.

In the above-mentioned works, it was assumed that main phrasal stress is assigned by the Nuclear Stress Rule (NSR), as formulated by Chomsky and Halle (1968). This version of the NSR basically states that:

(12) The rightmost word-level stress of a phrase bears main stress within that phrase.

If a bottom up, cyclical application of the NSR is assumed, then the rule can account for both primary and secondary phrasal stress in examples like (10a). In this example, the NSR assigns phrasal stress to *hat* and *rats* at the DP cycle. It reapplies to the VP and TP cycles, assigning primary phrasal stress to *rats* and demoting the stress level on *hat* to secondary prominence (by convention). In the case of (10b), the constraint in (11) requires that the prosodic pattern be reinterpreted at the TP cycle, shifting main prominence to the DP subject and demoting NS on the DP object to secondary status.

The formulation in (12) raises a number of questions, which we consider briefly in the next section before continuing the discussion of (11).

3.2 Some general remarks on the Nuclear Stress Rule (NSR)

3.2.1 The algorithm

For the purpose of analyzing the formulation in (12), it will be convenient to adopt the terminology in Chomsky and Halle (1968). Accordingly, we shall call the main stress within some phrase α the primary stress within α. The next level of stress below the primary stress, we shall call secondary stress, etc. The formulation in (12) can be viewed as a rule applying to the surface structure of an expression and assigning relative prominence within all the phrases. Within the derivational framework assumed in Chomsky and Halle (1968), this could be done in one of two ways. The prominence assignment could be a one-step process, with the rule (12) applying to all the phrases in a simultaneous fashion. Call this the one-step algorithm. Alternatively, rule (12) could be defined as a cyclical rule applying in a bottom-up fashion, first to the smallest phrases in the structure, then to the next bigger ones and so on and so forth (see Chomsky and Halle 1968: ch. 2 and pp. 340–350 for discussion). Call this the cyclical algorithm. It is clear that the one-step algorithm will yield the right result for subordinate stresses only if, for each subordinate stress, it includes a device that registers the number of domains in which subordination takes place, some function of the depth of embedding. To illustrate, consider the structure in (13), where *t*, *u*, *v*, *w* are words and α, β and γ phrases:[6]

(13) $(_{\alpha}\ (_{\beta}\ (_{\gamma}\ t\ u)\ v)\ w)$

The neutral stress contour for (13) is the one in (14), where stress levels are indicated by numerals, with 1 representing primary stress, 2, secondary stress, etc. (following the convention adopted in Chomsky and Halle 1968):

(14) $t^4\ u^3\ v^2\ w^1$

To derive the contour in (14) by the one-step algorithm, it is necessary to have a counter that indicates the number of phrases containing each subordinate stress in (13). The formal difficulty arises from the conjunction of the two facts in (15):

(15) (i) A 'level of stress' is a feature (of words and, ultimately, of vowels or syllables).
(ii) A level of stress is relative to a phrasal domain. Thus, a given word-stress may at the same time be the main stress within a phrase β and a subordinate stress within another phrase α.

The cyclical algorithm provides an elegant resolution of the tension between (15i) and (15ii). In (16–17) we give the formulation put forth in Chomsky and Halle 1968 (see Chomsky and Halle 1968: 16–18):[7]

(16) Assign primary stress to a primary-stressed word w^1 in the context
$w^1 \ldots — \ldots]_\alpha$
where α is a nonlexical category

(17) When primary stress is placed in a certain position, then all other stresses in the string under consideration at that point are automatically weakened by one.

Rule (16) assigns primary stress to a primary-stressed vowel which is preceded by another primary-stressed vowel in a phrase α. Both rule (16) and convention (17) apply cyclically. The cyclical application of (16–17) to the structure in (13) yields a natural derivation of the contour in (14). Facts of this kind constitute empirical evidence in support of the principle of the transformational cycle, stated as follows in Chomsky and Halle:

(18) it is natural to suppose that in general the phonetic shape of a complex unit (a phrase) will be determined by the inherent properties of its parts and the manner in which these parts are combined, and that similar rules will apply to units of different levels of complexity. (Chomsky and Halle 1968: 15)

The conjunction of (16–17) and of the principle of the transformational cycle constitutes a particular formalization of rule (12). Recent work within the framework of the Minimalist Program suggests that the derivational history of a sentence and its constituent structure are really two alternative ways of analyzing the sentence; see Chomsky (1994), Epstein (1999). For concreteness, we shall postulate the following (see Freidin and Vergnaud 1999):

(19) The structural description of a sentence ω is an abstract analysis Ω which can be interpreted either as a derivational history or as a phrase marker.[8]

Assuming (19), we are led to conjecture that there should be a nonderivational correspondent to the cyclical derivational implementation of (12) above. In fact, the proposal in Liberman (1979) appears to be just that. This proposal requires that the notion of stress be generalized so that not only words (and phonemes), but also every lexical or phrasal category, will be marked for stress:

(20) 'Level of stress' is a feature of phonemes, words, and categories.

Given the more abstract notion in (20), the formulation in (12) can be replaced by that in (21), which is essentially the formulation of the NSR in Liberman (1979):

(21) The rightmost immediate constituent of a phrase bears main stress within that phrase.

The formulation in (21) should be construed as a well-formedness condition on surface constituent structure. Quite obviously, that condition must be supplemented by a convention that relates the level of stress of a category to those of its constituents, since stress is ultimately realized on words and, as a phonetic feature, on vowels (or syllables). Such a convention is provided in Halle and Vergnaud (1987), where it is defined in terms of the X-bar theoretic constructs 'head' and 'projection'. Specifically, one may postulate the following corres- pondence between the notion 'main stress' and the X-bar notion of head:[9]

(22) Given a category α, let $H_m(\alpha)$ be the category or word immediately dominated by α that has main stress within α. The interpretation of the abstract feature 'level of stress' is governed by the following convention:
For any category β that dominates α, the levels of stress of α and of $H_m(\alpha)$ within β are defined to be equal.
Correspondingly, $H_m(\alpha)$ is defined as the *metrical head* of α and α, as the *metrical projection* of $H_m(\alpha)$.

The 'head-of' and 'projection-of' relations defined in (22) are transitive in the following sense:

(23) Let α be a category with metrical head $H_m(\alpha) = \delta$. If δ is itself a category, then, by definition, the metrical head of δ $H_m(\delta) = H_m(H_m(\alpha))$ has the same level of stress as α in any category that dominates α.

Accordingly, the definitions of metrical head and metrical projection can be generalized by transitivity as in (24):

(24) Given a sequence $\alpha_1, \alpha_2, \ldots, \alpha_i, \alpha_{i+1}, \ldots, \alpha_n$ such that, for $1 \leq i \leq n - 1$, α_{i+1} is the metrical head of α_i in the sense of definition (22), $\alpha_{i+1} = H_m(\alpha_i)$, then α_n is defined to be a metrical head of α_1 and, correspondingly, α_1 is defined to be a metrical projection of α_n.

The conventions in (21–23), which account for the location of the main stress in each constituent, will in general fail to determine the hierarchy of subordinate stresses in a direct or complete fashion. It is instructive, in that respect, to compare the way these conventions apply to a left-branching structure such as that in (13) with the way they apply to a right-branching structure such as that in (25):

(25) John liked ET.

In the case of the structure in (13), the conventions in (21–23) fully determine the stress levels of all the words, yielding the contour in (14). But in the case of (25), these conventions, while assigning a subordinate stress to each of the two words *John* and *liked*, fail to define any relative ranking between them. Note that the transformational algorithm in Chomsky and Halle (1968) (see (16–17)) generates the contour in (26) below for (25), assigning more stress to *John* than to *liked* (see, for example, Chomsky and Halle 1968: 89–91 and Halle and Vergnaud 1987: 265).

(26) John[2] liked[3] ET[1]

It is of course an empirical issue whether a unique stress contour is manifested in the right-branching structure in (25) and, if so, whether that contour is the one in (26).[10] Since this chapter is concerned with the location of main stress within the sentence, in particular in relation to the information structure of the sentence, we will not consider any further the question of stress subordination.[11] But a few remarks on the nature of secondary stress are in order.

3.2.2 *Secondary stress and eurhythmicity*

Secondary stress (with the exception of echo accent discussed below) is fundamentally different from primary stress in that it is sensitive to factors such as length, a phenomenon known as eurhythmicity, rather than to discourse-related factors such as focus.[12] As an illustration of this phenomenon, see the examples below (due to Bruce Hayes, p.c.). There are two possible loci for the secondary stress: it may surface on the rightmost edge of the DP subject or specifier (as predicted by the classical NSR) or it may appear at the leftmost edge of the DP subject or specifier (contrary to what is predicted by the NSR). In the case of (27) the second option is preferred, while in the case of (28) the first option is preferred. It seems that the difference in preference between the two cases is due to the presence or absence of a break following the DP in question. More precisely, it is more natural to have secondary stress on the right edge of the DP if there is a bit of a break after it, but not otherwise. And it seems that it is more natural to have a bit of a break between the verb and its nominative subject than between the noun and its genitive specifier.

(27) a. nineteen hundred lìnguists' dógs
b. nìneteen hundred linguists' dógs

(28) a. Nineteen hundred lìnguists sáng.
b. Nìneteen hundred linguists sáng.

Note furthermore that a heavier VP has the effect of blocking secondary stress on the right edge of the DP subject, as shown in (29a). Again this is probably due to the fact that a longer VP calls for an obligatory break immediately following the subject.

(29) a. *Nìneteen thousand linguists sang the Marseilláise.
b. Nineteen thousand lìnguists sang the Marseilláise.

Main phrasal prominence, on the other hand, is never affected by factors such as length; it is only sensitive to discourse-related factors. If main phrasal stress falls within the DP subject (as is necessarily the case if the subject is the focus of the sentence), then phrasal stress within the DP is obligatory where the NSR predicts it should be, namely, at the rightmost edge of the phrase. In effect, while both options in (28) are possible as an answer to the question *what happened?*, only (30a) is possible as an answer to the question *who sang?*. Sentence (30b) is possible only if it is understood as introducing a contrast with some other number of linguists.

(30) a. Nineteen hundred línguists sàng.
b. Níneteen hundred linguists sàng.

For this reason, we will ignore secondary stress in this chapter, except when a secondary stress is of the echo-accent type.

In certain cases, secondary stress is an echo of the most prominent pitch accented syllable in the context question, and for this reason it is referred to as echo accent by Zubizarreta (1998). Secondary stress in (10b) as an answer to (4) (repeated in (31)) is a case in point. (We underline words with an echo accent, as well as their source in the context question.) The focus in the answer-statement in (31) is the DP subject; therefore main phrasal prominence falls within the subject. Secondary stress within the defocalized VP is in this case a remnant (or an echo) of primary stress in the context question.

(31) Q. Who has written a book about ráts?
A. [The cat in the blue hát] has written a book about ràts.

Note furthermore that:

(32) A word that bears an echo stress within a phrase is rhythmically subordinate to the word that bears a non-echo stress within the same phrase.

In fact, (32) follows from a more general intonational principle to be discussed below (see (49)). We can see that the echo accent in the answer part in (31)

originates in the NS of the context question because its displacement does affect the focus structure of the sentence. Thus, secondary stress in the answer part in (33) signals the c-focus status of *book*, as it does in the context question where it originates.

(33) Q. Who has written a BOOK about rats? (not a squib)
A. [The cat with the blue hát] has written a bòok about rats.

3.3 *Cases not covered by the classical view: in search of a new generalization*

While the classical formulation of the NSR accounts for the prominence patterns in (10), it fails to account for several others. As shown by Schmerling (1976), Gussenhoven (1984), Selkirk (1984, 1995), in Germanic (including English) not all cases of widest focus take a rightmost stress. We will review many of these cases in section 3.3. In fact, the version of the NSR in (12) even fails to account for some basic cases in German (and Dutch), namely, verb-final transitive structures where main stress falls on the direct object, rather than on the final verb:

(34) Hans hat ein Búch gelesen.
Hans has a book read

Note that if we can come up with a successful version of that rule, then we should be able to deduce the scope of the i-focus solely from the locus of the primary nuclear stress. Consequently, we would not need to annotate the syntactic structure with a focus feature. This would indeed be a desirable result to the extent that such a feature does not have any independent justification in the grammar. We will return to this point in the last section.

An NSR-based theory intends to account only for the relation between prominence and i-focus. Therefore, this theory must assume the existence of an independent phrasal stress rule that places main prominence on the c-focus constituent. This rule, generally referred to as emphatic or contrastive, not only serves to identify the c-focus, but also has metalinguistic functions such as correction; cf. *I said CONfirmation, not Affirmation*. The contention that c-focus is or can be identified by emphatic stress (generated by the emphatic stress rule rather than by the NSR) is justifiable on several grounds. Function words are invisible for the computation of the NSR (as we shall see in section 3.3) and NS never surfaces on a function word. On the other hand, contrastive stress can surface on a function word; cf. John *DID leave*. Furthermore, contrastive stress is always associated with an audibly higher pitch level than nuclear stress and it is strictly narrow in scope. Compare (4), with NS on *hat,* and (35), with contrastive stress on *blue* (as indicated by capitals).

(35) The cat in the [$_{\text{ADJ}}$ BLUE] hat wrote a book about ràts (not the one in the RED hat).

In what follows, we will center the discussion only on nuclear stress and its relation to the i-focus structure of the sentence.

3.3.1 Wide i-focus structures

Schmerling (1976) noted that phrasal prominence in Germanic is sensitive to argument structure. This point was further reinforced in work by Gussenhoven (1984) and Selkirk (1984, 1995). Typically, in non-V-final structures in German and in English, NS goes on the rightmost word irrespective of transitivity. See the examples below:

(36) a. Hans arbeitet an einem Papíer.
b. Hans is working on a páper.

(37) a. Hans arbeitet an einem kleinen Tísch.
b. Hans is working on a small táble.

(38) a. Hans arbeitet an einem Papier in seinem Zímmer.
b. Hans is working on a paper in his róom.

(39) a. Das Taxi kommt spät.
the taxi is-coming láte
b. The mail arrived láte.

On the other hand, in V-final structures, an approximate generalization that seems to emerge is that phrasal prominence is sensitive to the transitive–intransitive distinction and that within the intransitive class, the unaccusatives behave differently from unergatives. In German, in a transitive structure like the one in (34a), repeated below, NS goes on the direct object. (This form is non-existent in Modern English since this language is head initial.)

(40) Hans hat ein Búch gelesen.
Hans has a book read

Within the class of intransitives, we find that unaccusatives behave differently from unergatives. In unaccusative structures, NS falls unambiguously on the subject. Compare (41) with (39a).

(41) Das Táxi kommt.
the taxi is-coming

Although there are German speakers that have a preference for the verb in V-final structures to be unstressed (see more on this below), it appears that in the case of unergatives NS may go either on the subject or on the verb (in wide focus structures):

(42) a. Es heisst, dass ein Júnge gelacht hat.
it is-said that a boy laughed has.
b. Es heisst, dass ein Junge gelácht hat.

Compare (42) with the unaccusative example in (43), where NS falls unambiguously on the subject in wide focus contexts:

(43) Es heisst, dass ein Júnge kommt.
It is-said that a boy comes

Similarly, in English, Schmerling notes that unergatives (in V-final contexts) allow NS on the subject. But as noted by Selkirk and Gussenhoven, NS may also fall on the verb. Of course, this does not mean that both prosodic patterns are used in the same context. In effect, it would appear that some speakers have a preference for using the pattern in (44) in a surprise context or in order to highlight a certain aspect of the information being conveyed, namely, the subject of the action. The point is that both options are possible as an answer to *What is the matter?*, indicating that both prominence patterns are compatible with a wide focus structure. This shows that prominence has multiple discourse and grammatical functions, one of which is to prosodically identify the scope of the focus.

(44) a. The báby is crying.
b. The báby is laughing.

(45) a. The baby is crýing.
b. The baby is láughing.

On the other hand, in comparable structures with an unaccusative verb, NS falls unambiguously on the subject:[13]

(46) a. The máil arrived.
b. The sún came out.
c. My bág has disappeared.

Suppose we were to put aside the pattern of unergatives with initial stress (as in (44)). To account for the unambiguous initial stress in (46), we might capitalize on the fact that the surface subject in unaccusative structures is an object at a deeper level of representation.[14] But the data is in fact more complex, as noted in Gussenhoven. While NS is unambiguously on the subject in (46c), the presence of an adverb between the subject and the verb pulls the NS onto the verb:

(47) The dog mysteriously disappéared.

Another grammatical distinction that is relevant with respect to the computation of the NSR is the complement–adjunct distinction in V-final structures; cf.

Gussenhoven op.cit., Selkirk op.cit., and also Krifka (1984). This is illustrated by the following examples (from Krifka 1984, cited in Truckenbrodt 1993), in which a complement left adjacent to the verb attracts NS (see (48a)), but not an adjunct in the same position (compare (48b) with (37b)):

(48) a. Peter hat an einem Papíer gearbeitet.
Peter has on a paper worked.
'Peter worked on a paper.'
b. Peter hat an einem kleinen Tisch geárbeitet.
Peter has on a small table worked
'Peter has worked on a small table.'

As can be easily appreciated, the NSR in (12) does not cover the distinctions discussed above. That formulation of the NSR wrongly predicts main phrasal stress on the verb across V-final structures. Another problematic case for the NSR is that of wide-focus structures that contain anaphoric material. Anaphoric material is generally pronounced with a reduced pitch range, an intonational property that is often referred to as 'de-accenting'.[15] Furthermore, we have the general intonational property in (49) (due to Selkirk 1984, Gussenhoven 1984).

(49) De-accented material is perceived as less prominent than accented material.

It follows from (49) that main phrasal prominence cannot fall on anaphoric material in Germanic (unless it is contrastive). A few examples are given below, but see Gussenhoven (1984) for many more (de-accented material is highlighted with italics):

(50) Q: Mary walked in. And then what happened?
A: John kíssed *her.*

(51) Remember John? Have you héard from *him*?

(52) A bill was sent to Congress today by President Carter which would require peanut butter sandwiches to be served at all government functions. At a press conference today, a group of Senators led by Republican Barry Goldwater of Arizona denóunced *the measure*. (Ladd 1980)

Like anaphoric elements, defocalized material is also de-accented in Germanic. Therefore (32) also follows from (49). In effect, since echo accents are contained within defocalized constituents and given that defocalized material is pronounced with a reduced pitch range (i.e., it is de-accented), then it follows from (49) that an echo accent will be perceived as subordinate to an accent contained within the focused phrase.

In (50)–(52), as well as in (31), the NSR would have to appeal to an extra mechanism that shifts main phrasal stress to the left sister node. The problem is

that this solution misses an important generalization. As we will see in the next section, patterns with de-accented material by and large fall under the same generalization as other patterns. Appending the NSR with a mechanism that shifts stress to the left fails to account for this observation.

3.3.2 *Narrow i-focus structures*

The prosodic pattern of narrow i-focus structures follows the same generalization as the wide i-focus patterns. To illustrate this point, we will examine some examples from German (discussed by Höhle 1982). In the answer in (53), the DP subject *Karl* is defocalized; it is therefore de-accented (as well as the auxiliary *hat*, given its status as a function word). This example with narrow focus on the fronted DP object and the verb (*den Húnd geschlagen*) follows the typical pattern for transitives discussed in the previous section: main phrasal stress falls on the DP object.

(53) Q: What did Karl do?
A: Den Húnd *hat Karl* geschlagen.
the dog (ACC) has Karl (NOM) beaten

Of particular interest are the examples where the object is defocalized, as illustrated in (54). The pattern we see in the answer form A_1, with main prominence on the subject, suggests that transitive structures with a defocalized object behave like intransitives (more precisely, like unergatives). In effect, for speakers that dislike main prominence on the verb when it is in final position, this is the only pattern available (these are the same speakers that dislike (42b)). Such speakers allow prominence on the final verb only if the subject is anaphoric (i.e., if it has been previously mentioned) and is therefore itself de-accented. But, interestingly, there are speakers that lack this restriction. These speakers allow the pattern in (42b) alongside (42a) and they also accept the prosodic pattern A_2 in (54). Thus, although there are idiolectal differences, the data seem to be coherent.

(54) Q: Why is Hans happy?
A_1: Weil *ihn/Hans* ein Verwándter angerufen *hat*.
A_2: Weil *ihn/Hans* ein Verwandter ángerufen *hat*.

The following empirical generalization seems to emerge:

(55) Transitive structures with a defocalized object behave like unergative structures and not like unaccusative structures.

The above generalization is also supported by the following paradigm. Although some speakers strongly prefer for defocalized objects to undergo scrambling, others lack any strong preference. The latter allow the word order in (56), where the object is defocalized, and NS is either on the subject or on the verb:

(56) Q: What happened to the book?
A_1: Ich glaube, dass ein Júnge das Buch genommen hat.
I believe that a boy the book taken has
A_2: Ich glaube, dass ein Junge das Buch genómmen hat.

Note that the classical NSR (even if amended with a stress-shifting mechanism that moves NS to the left when it falls on de-accented material) cannot account for the difference in behavior between the different verb classes in wide focus contexts, nor can it account for the generalization in (55).

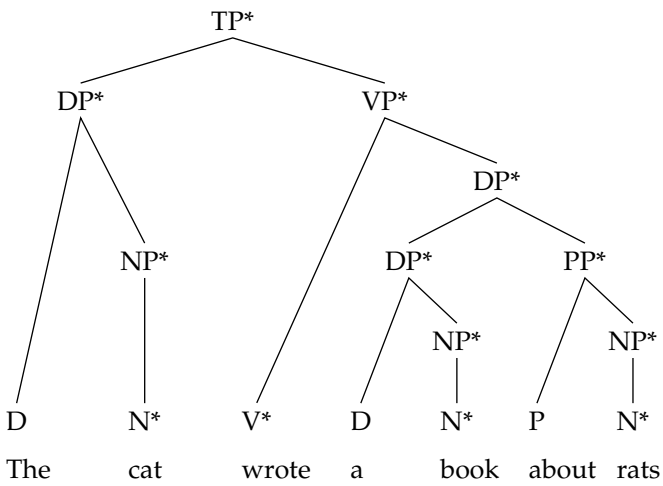
3.4 Cinque (1993)

Cinque (1993) puts forth a revised NSR that is both conceptually and empirically different from the classical NSR. Like the classical NSR, Cinque's theory assumes that the syntactic tree is the object on which the NS is computed. But his theory of phrasal stress is even more syntax-dependent than the original NSR. It is designed to capture the following basic generalization:

(57) NS falls on the most embedded element on the recursive side of the tree.

Cinque builds upon the metrical version of the classical NSR put forth by Halle and Vergnaud (1987). In a nutshell, like the classical NSR, the metrical NSR applies to the syntactic tree in a bottom-up, cyclical fashion and derives a metrical grid as output by assigning an asterisk to each syntactic node.

(58)



The most prominent word within a domain is the one that is dominated by the greatest number of asterisks. Like the classical NSR, *cat* is assigned NS within the DP subject domain and *rats* is assigned NS within the VP domain. We know

that *rats* is more prominent than *cat* and that this is achieved by the classical NSR by assigning main prominence to the rightmost category (this time at the TP cycle).

Cinque's theory, which is sensitive to depth of embedding (as encoded by the number of asterisks stacked up on a word), and not to linear order, needs yet another ingredient in order to account for the following generalization: irrespective of the degree of embeddedness within a specifier, main prominence is contained within the sister category of the specifier; cf. *The cat that chased the ràt won a príze*. To address this issue, Cinque introduces a distinction between major and minor paths of embedding and proposes that the algorithm be sensitive to that distinction. Informally, the major path of embedding within some tree *U* is the tree obtained by stripping *U* off all the specifiers and adjuncts in it. Thus, the major path of embedding within *U* is the connected set of categories which includes the head of *U* and is such that, if it includes a head *H*, it also includes the projections of *H* and the categories governed by *H* (in the sense of GB theory) together with their heads, but excludes the non-governed categories. Formally, the notion major vs. minor path of embedding is defined relative to a given maximal projection *XP* (or, equivalently, relatively to a given head *X*). To make explicit the relative character of the notion, we reformulate the definition in Cinque (1993) as in (59), where the clause in (i) defines the primitive notion and that in (ii) extends it by transitivity:[16]

(59) (i) Given some head category *X*, the major path of embedding with respect to *X* is primitively constituted by *X* and the projections of *X* together with the head of the complement of *X* and the projections of that head. The minor path of embedding with respect to *X* is primitively constituted by the head of the specifier of *X'* and the projections of that head.

(ii) Given heads *X*, *Y* and *Z* such that *X* belongs to the major path of embedding with respect to *Y*, whatever status *Y* has with respect to *Z* is extended to *X*: if *Y* belongs to the major (resp. minor) path of embedding with respect to *Z*, then, by extension, *X* is defined to belong to the major (resp. minor) path of embedding with respect to *Z*.

When there is no ambiguity, we shall refer to "the major (resp. minor) path of embedding with respect to *XP*" simply as "the major (resp. minor) path of embedding." The convention that Cinque (1993) postulates to account for the metrical asymmetry between the specifier and its sister is the following:

(60) **Convention:**
When the minor path joins the major path, the cycle corresponding to the minor path is visible in the form of one asterisk.

Cinque's algorithm delivers one very important result. Unlike the classical NSR, it is able to account for the presence of NS on the object in German V-final

transitive structures. In effect, the head of the complement phrase is more deeply embedded than the head of the verb phrase and therefore it is dominated by a bigger number of asterisks. But as it stands, Cinque's theory, like the classical NSR, fails to account for the data discussed in section 3.3.

3.5 Zubizarreta (1998)

This work is an attempt to meet descriptive adequacy while keeping alive the basic insight in Cinque's theory: NS falls on the lowest element in the (visible part of the) syntactic tree. We begin by presenting some basic assumptions about this analysis.

3.5.1 Some assumptions and a revision of the NSR

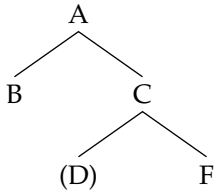
In the spirit of Liberman (1979), the NSR applies to sister nodes and it assigns relative strength to them (i.e., weak vs. strong); see (20–22) above.

NSR applies to a metrical interpretation of the syntactic tree, rather than to the syntactic tree itself. In other words, metrical sisterhood and syntactic sisterhood do not always coincide. The reason is that anaphoric, defocalized, and functional categories are pronounced with a reduced pitch range, an intonational property, which, as mentioned earlier, is referred to as de-accented. And as stated in (49), it is a fact that de-accented material is always perceived as less prominent than any accented material. Consequently, the algorithm that determines which element is the most prominent in the string can only apply to accented material. It therefore follows that:

(61) A syntactic category that fully dominates anaphoric or defocalized material, a functional word, or an empty category is invisible to the application of the NSR.

To illustrate, consider the following tree, where the parenthesized node (D) is metrically invisible because it dominates de-accented material. We then say that in this structure, C and F are metrically non-distinct. Therefore, B and F, as well as B and C, count as metrical sisters.

(62)



Based on the data discussed in section 3.3, the following approximate generalization is assumed. NS in V-final and non V-final structures in Germanic follow two distinct patterns (putting aside the cases of intransitives with NS on the verb, such as (45) and (47)):

(63) In V-final structures NS falls on the right-most selected visible element in the tree
In non-V final structures, NS falls on the right-most visible element in the tree.

Suppose we adopt the essential ideas on phrase structure proposed by Kayne (1994). First, syntactic trees are universally right-branching, i.e., they conform to the X-bar form $[_{XP}$ ZP $[_{X'}$ X^0 YP]]. Second, languages universally obey the Linear Correspondence Principle (LCA), a weaker version of which is given in Chomsky (1995c) and reads as follows:

(64) a. Given two constituents A and B, if A asymmetrically c-commands B, then every terminal node that A dominates precedes every terminal that B dominates.
b. A asymmetrically c-commands B iff. A c-commands B and B does not c-command A.[17]

It then follows that the right-most (visible) element in the tree is also the lowest one. As mentioned at the beginning of this section, Zubizarreta's analysis preserves the basic insight of Cinque's algorithm, in that NS attaches to the lowest (metrically visible) element in the tree. Embeddedness and ordering coincide, and for present purposes they are indistinguishable.

The ordering relevant for the notion 'lowest' may be defined along two distinct dimensions of the tree: either with respect to the subpart that defines selectional relations (giving rise to selectional ordering) or with respect to the constituent structure irrespective of selectional considerations (giving rise to asymmetric c-command ordering). For ease of exposition, we depart with respect to a number of details from the analysis in Zubizarreta (1998).[18] The notion of asymmetric c-command-ordering is defined in (64). Selectional ordering relative to some head *H* is then defined as the restriction of the asymmetric c-command-ordering to the set of constituents directly or indirectly selected by *H*:

(65) Let *H* be a head and let K_H be the set of constituents selected by *H* or a projection of *H*. Given two constituents C_i and C_j in K_H such that C_i asymmetrically c-commands C_j, then C_j is lower than C_i in the selectional ordering.

The NSR is then modularized in terms of these two types of orderings:

(66) **Revised NSR:**
S-NSR: Given two metrical sister-categories C_i and C_k in which one is selectionally dependent on the other, assign main prominence to the dependent category if it is the lowest in the selectional ordering.
C-NSR: Given two metrical sister-categories C_i and C_k, assign main prominence to the category that is lowest in the asymmetric c-command ordering.

Note that the context to which the S-NSR applies is a proper subset of the context to which the C-NSR applies. The S-NSR will then get a chance to apply only if it is ordered before the C-NSR (cf. the 'Elsewhere Condition' on the application of phonological rules put forth by Kiparsky 1973). It is therefore assumed that the order of application is as stated in (66).

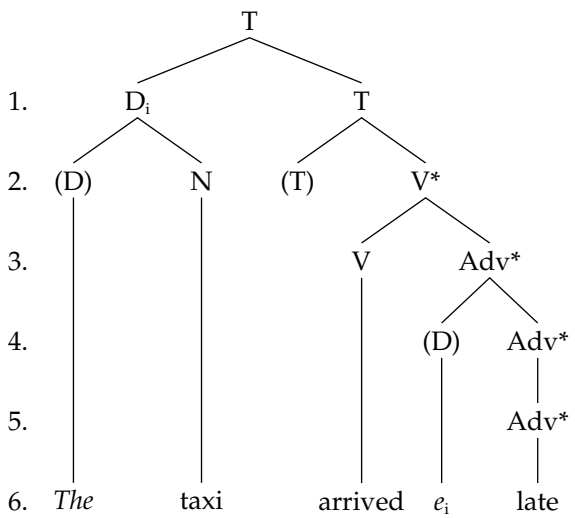
We have two tree structures: a metrical tree (which is the syntactic tree with the de-accented nodes omitted) and the full-fledged syntactic tree; see (62) above. When applying the NSR, one of the two structures, the metrical tree or the fully fledged syntactic tree, is selected and the ordering relations are assessed within the selected structure, and solely within that structure. It is suggested below that the cases of stress ambiguity (like (44–45)) are due precisely to this option.

In the next section we illustrate how the rule works with some of the basic examples discussed in section 3.3. As we shall see, the analysis sketched here accounts not only for the cases that fall under the approximate generalization given in (63) above, but also those that fall outside of it (such as examples (45) and (47)).

3.5.2 The basic examples

Recall that in non V-final structures, such as (36–39), NS falls systematically on the right-most element. Let us examine (39). As we have seen in section 3.3, the position of NS in unaccusative structures varies when other material such as adverbs is added on. The English example in (39) may be assumed to have roughly the structure below, where the parenthesized nodes are metrically invisible because they dominate de-accented or phonologically empty material. (The asterisks encode main prominence among metrical sisters, as assigned by the revised NSR. It is equivalent to the 'S' label in Liberman 1979.)

(67)

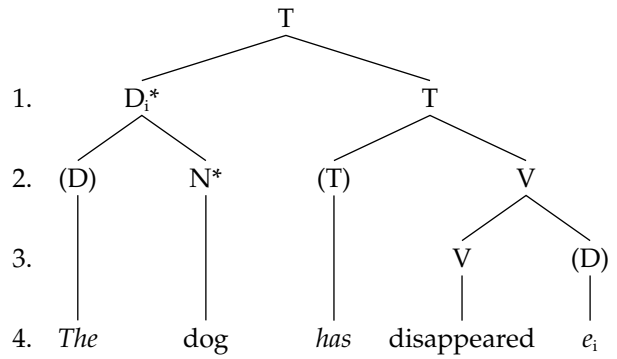


Consider a step-by-step (top-down) application of the rule (a bottom-up application would give the same result):

(i) D in line 1 and N in line 2 are metrically non-distinct. Therefore any rule application to D in line 1 extends to N in line 2. D and T are sisters but not selectionally related. Therefore, C-NSR applies, instead of the S-NSR. Since D asymmetrically c-commands T, T is assigned main prominence.
(ii) T in line 1 and V in line 2 are metrically non-distinct. Consequently, D in line 1 and V in line 2 count as metrical sisters. There is no selectional relation between them; therefore S-NSR fails to apply to these metrical sisters. Instead C-NSR applies and assigns main prominence to V in line 2, given that D in line 1 asymmetrically c-commands V in line 2.
(iii) V and Adv in line 3 are (metrical) sisters. There is no selectional relation, therefore S-NSR does not apply. Instead, C-NSR applies and assigns main prominence to the Adv since V asymmetrically c-commands Adv.
(iv) Since the Adv node in line 3 is metrically non-distinct from the Adv node in lines 4 and 5, V in line 3 counts as metrical sisters to Advs 4 and 5. Again, S-NSR fails to apply in each of these cases; C-NSR applies instead to the lowest node in the asymmetric c-command ordering, namely to Adv in lines 4 and 5.

Consider next the unaccusative structures without the adverb in final position. In this V-final unaccusative structure, NS falls on the subject (cf. (41)). The structure is as follows:

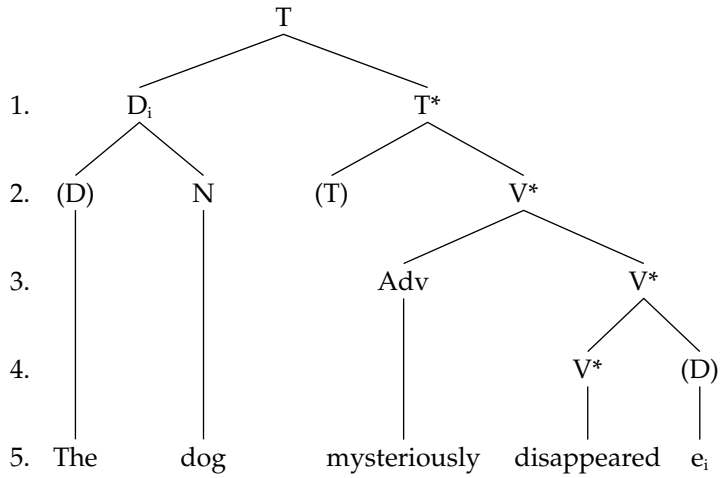
(68)



As before, D in line 1 and N in line 2 are metrically non-distinct. T and D in line 1 (and therefore N) are (metrical) sisters. Since T in line 1 and the Vs in lines 2 and 3 are metrically non-distinct, D in line 1 (and the N it dominates) function as a metrical sister of the Vs as well. Since these are selectionally related, the S-NSR applies and assigns main prominence to D (and N).

We now compare the above unaccusative structure with one which contains an adverb between the subject and the verb (cf. (47)):

(69)



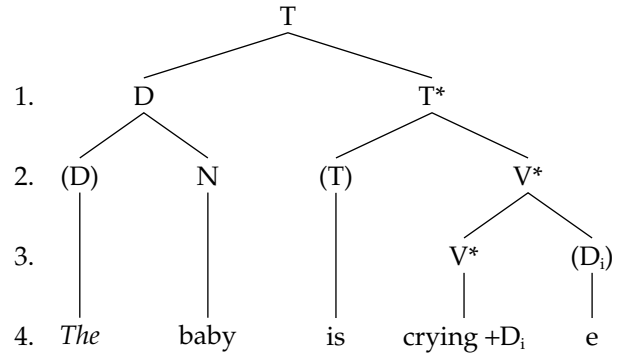
This metrical structure differs with respect to the previous one in a crucial way. The D in line 1 and the Vs in lines 3 and 4 are not metrical sisters. In this structure, D in line 1 and V in line 2 are metrical sisters but they are not selectionally related. Therefore, the C-NSR applies and assigns main prominence to V in line 2. Adv in line 3 is a metrical sister of the Vs in line 3 and in line 4 (the two Vs being metrically non-distinct). Again, since there is no selectional relation between the Adv and the Vs, the C-NSR applies and assigns main prominence to V.

The last two examples are very relevant to evaluate Cinque's system. The case of (68) is problematic because in that system we do not expect the minor path of embedding to receive NS. Recall that within that system the non-recursive side of the tree is visible only in the form of one asterisk. We could amend his system to account for this case by appealing to the presence of the subject's trace within the VP. In other words, we could say that the subject receives NS not by virtue of its surface position but by virtue of being a copy of the DP in object position, which is the most embedded node in the tree. But (69) shows that this cannot be the case. In effect, if the trace of the displaced object plays a role in determining the location of NS in (68), we would not expect the presence of a preverbal adverb to pull NS to the right, as is the case in (69). We conclude therefore that the notion of minor vs. major path of embedding is not the right notion to compute NS.

We turn next to the unergative structures. These are particularly challenging because NS may appear either on the subject or on the verb with a wide focus interpretation (e.g., (44) and (45)). Let us assume, following Hale and Keyser (1991), that unergatives are covert transitives. They have a cognate object which may be syntactically incorporated into the verb. Cf. *John slept* vs. *John slept a long sleep.* We show below that the NSR generates two distinct patterns in the case of unergatives depending on whether the full-fledged syntactic tree or the metrical tree (which is a subpart of the syntactic tree) is used to compute ordering.

If ordering is computed on the basis of the fully fledged syntactic tree, the trace of the cognate object that has been incorporated into the verb counts for the computation, more specifically it counts for the computation of selectional ordering. In this case, the pattern in (45) is obtained: NS falls on the verb.

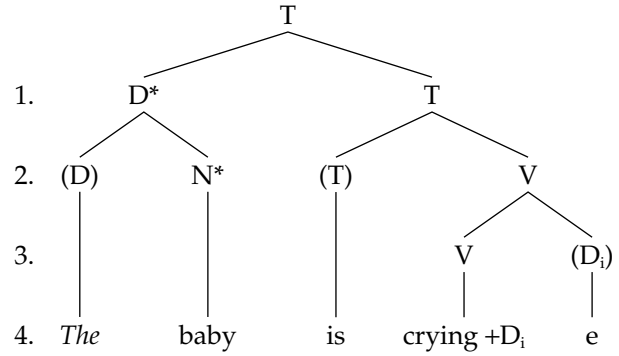
(70)



The computation in (70) proceeds as follows. As in the structures examined earlier, D and T in line 1 are sisters; C-NSR applies and assigns main prominence to T. T in line 1 is metrically non-distinct from the V nodes in lines 2 and 3. Therefore D in line 1 and the V nodes in lines 2 and 3 are metrical sisters. While D in line 1 and the Vs are selectionally related, D in line 1 is not the lowest element in the selectional ordering; D in line 3 is the lowest element in the selectional ordering. Therefore NSR fails to apply; C-NSR applies instead and assigns main prominence to the V nodes in lines 2 and 3, since these nodes are asymmetrically c-commanded by D in line 1.

If ordering is computed solely on the basis of metrically visible nodes, then the trace of the incorporated object does not count for the computation. The pattern in (44) is obtained: NS falls on the subject (as in the unaccusative structure in (68)).

(71)



In (71), as in (70), T in line 1 and the Vs in lines 2 and 3 are metrically non-distinct; D in line 1 and the V nodes are therefore metrical sisters. The two sets

of nodes are selectionally related. Given that the silent object is invisible to the computation, D in line 1 counts as the lowest selected node in the tree. The S-NSR therefore applies and assigns NS to it.

The analysis sketched above for English readily extends to German V-final and non-V-final structures. Recall that not all German speakers accept the unergative structure with NS on the final V-node; see the discussion with respect to (42a) and (42b). Given the above analysis, we can account for this idiolect by assuming that for such speakers ordering relations is unambiguously determined in terms of the metrical tree.

An interesting contrast that surfaces in German V-final structures and which is unavailable in English is the one in (48), repeated below.

(72) a. Peter hat an einem Papíer gearbeitet.
Peter has on a paper worked.
'Peter worked on a paper.'
b. Peter hat an einem kleinen Tisch geárbeitet.
Peter has on a small table worked
'Peter has worked on a small table.'

In (72a) the PP immediately preceding the lexical verb is selected by the verb and therefore the S-NSR assigns it main prominence. On the other hand, in (72b) the PP that immediately precedes the lexical verb is an adverb which bears no selectional relation with the verb. Consequently, the S-NSR does not apply; the C-NSR applies instead assigning main prominence to the verb, the lowest node in the asymmetric c-command ordering.[19]

3.5.3 Beyond the basic examples: the cases of narrow i-focus

The case of (53), repeated below, is straightforward.

(73) Q: What did Karl do?
A: Den Húnd *hat Karl* geschlagen.
the dog (ACC) has Karl (NOM) beaten

The subject that intervenes between the fronted object and the verb is metrically invisible. Therefore the fronted object and the verb are metrical sisters. The S-NSR applies and assigns main prominence to the object.

The case of (54) and (56) are more challenging. We repeat (54) below.

(74) Q: Why is Hans happy?
A_1: Weil *ihn/Hans* ein Verwándter angerufen *hat.*
A_2: Weil *ihn/Hans* ein Verwandter ángerufen *hat*.

In transitive structures where the object is defocalized, NS falls either on the subject or on the verb, as in the unergative structures examined earlier. Why should this be the case? The analysis of unergatives suggested above provides a

straightforward answer. Unergatives are covert transitive structures. And, as in the case of unergatives, if ordering is assessed on the fully fledged syntactic tree (including the defocalized object and its trace), then the S-NSR fails because the subject is not the lowest selected element in the tree. The C-NSR applies and assigns main prominence to the verb. Alternatively, if ordering is assessed with respect to the metrical nodes (which exclude the defocalized object and its trace), then the S-NSR applies. The subject is the lowest selected element in the metrical tree and is therefore assigned main prominence.

Recall that there is an idiolect of German that dislikes NS on the verb in cases like (74). As mentioned earlier, these seem to be the same speakers that reject NS on the verb in unergative structures like (42b) (unless the subject itself is defocalized). The same explanation applies in both cases. These speakers compute ordering relations solely on metrically visible nodes; therefore the subject will inexorably be assigned main prominence by the C-NSR in such structures.

4 A typologically different way of identifying the intonational nucleus: Bengali and Romance

We know that main phrasal stress plays a crucial role in identifying the intonational nucleus of the intonational phrase (or I-phrase) and that the intonational nucleus is the center around which the intonational contour is organized. The studies that assume the classical NSR, as well as some of those that have attempted to revise it (e.g., Cinque 1993, Zubizarreta 1998), have recognized that syntactic information plays a crucial role in the computation of main phrasal prominence (and therefore of the intonational nucleus) in the Germanic languages. But this does not seem to be universally true. A case in point is Bengali, described by Hayes and Lahiri (1991).

In Bengali, as in Germanic, the locus of NS plays a role in determining the possible scope of the focus. But the syntax does not play any direct role in the computation of NS (and therefore of the intonational nucleus). Instead, NS in Bengali is computed in terms of prosodic phrasing, which itself is constrained by the syntax (see further below).

In Bengali, there are two types of prosodic phrases, as identified by Beckman and Pierrehumbert (1986) for Japanese and English; the intermediate prosodic phrase (also referred to as phonological phrase or P-phrase) and the intonational phrase or I-phrase, mentioned earlier. The I-phrase is composed of one or more P-phrases. Hayes and Lahiri (p. 57) identify the following phrasal stress rules:

(75) **Bengali P-phrase stress:**
Within the P-phrase, the leftmost non-clitic word is the strongest.

(76) **Bengali I-phrase stress:**
a. A P-phrase bearing narrow focus receives the strongest stress of its I-phrase.

b. Under wide focus, the rightmost P-phrase within the I-phrase is the strongest.

Furthermore, Hayes and Lahiri show that:

(77) In Bengali a P-phrase boundary must be inserted at the right edge of the focused constituent.

Given (77), we may rephrase (76) as follows:

(78) Within the I-phrase, NS falls on the right-most P-phrase, the right edge of which must coincide with the right-edge of the focused constituent.

In the case of wide-focus structures and in the case of a narrow focused constituent in final position, NS will fall within the last P-phrase of the I-phrase. In these cases, the last phrasal stress will be the strongest. In cases where the narrow focused constituent is internal within the I-phrase, the NS will not be rightmost.

To repeat, in Bengali, the position of nuclear stress is not sensitive to syntactic structure; instead it is sensitive to prosodic phrasing. On the other hand, syntactic structure is relevant in constraining the formation of P-phrases. Hayes and Lahiri (p. 91) report that:

(79) a. Two constituents X and Y may be grouped into a single P-phrase only if X c-commands Y.
b. The verb, which is in final position, is phrased separately.

We may think of Romance languages as belonging to the same typological class as Bengali. But unlike Bengali, the P-phrase in Romance is not relevant for the computation of the NS. More precisely,

(80) In Romance, NS falls on the rightmost accented word within the I-phrase.

Zubizarreta (1998) shows that languages such as Spanish and Italian do not de-accent anaphoric and defocalized constituents. On the other hand, these languages (like Germanic and Bengali) comply with the focus–prosody correspondence principle in (11), which we repeat here:

(81) The focused constituent must contain the intonational nucleus of the intonational phrase, where the intonational nucleus is identified as the syllable that bears main phrasal prominence.

Zubizarreta (1998) argues that Spanish and Italian resolve cases in which (80) and (81) clash by movement (which she terms p-movement, meaning that it is a

type of movement that is prosodically motivated). More precisely, when the last constituent in the I-phrase is defocalized, the defocalized constituent is fronted in order for NS to be able to fall on the right-most constituent within the I-phrase, while complying with the requirement in (81). An example is provided below (where the focused constituent is the direct object). The canonical word order SVOPP is not acceptable in this context, as shown in A1 and A2. The focused direct object must appear at the right-most edge of the I-phrase to receive NS. For this reason the defocalized PP must be fronted, as shown in A3. Alternatively, the PP may be right-dislocated, in which case it is outside of the I-phrase, as shown in A4.[20]

(82) Q: Qué puso Juan sobre la mesa?
what put Juan on the table
'What did Juan put on the table?'
*A1: Juan puso el pán sobre la mesa.
Juan put the bread on the table
*A2: Juan puso el pan sobre la mésa.
A3: Juan puso sobre la mesa el pán.
A4: Juan puso el pán # sobre la mesa.

Note that the Germanic NS algorithm share something with the Bengali type system at a more abstract level. In Bengali and Romance it is the linear notion 'right-most' within the I-phrase that counts. In Germanic, it is 'being the lowest' within the syntactic tree or a subpart of it that counts. Interestingly, the LCA (stated in (64)) establishes that the phonological notion of right-most and the syntactic notion of lowest coincide. In fact, in Romance the rightmost node in the I-phrase and the lowest node in the asymmetric c-command ordering are indistinguishable. But why do Germanic and Bengali differ? Recall that in Bengali the focused constituent is obligatorily flanked by a P-phrase boundary. On the other hand, in English, as shown by Beckman and Pierrehumbert (1986) the focused constituent is not systematically followed by a P-phrase boundary. If that turns out to be the case for German as well, then we could advance the hypothesis that that is the source for the divergence between the two language types. More precisely,

(83) A system in which a focused phrase is not systematically flanked by a prosodic boundary computes prominence in terms of the syntactic notion of 'lowest', rather than in terms of its phonological counterpart, namely the notion of 'rightmost'.

Future research on prosodic prominence, prosodic phrasing, and their relation to syntactic structure should say whether or not (83) is on the right track. If (83) turns out to be correct, it would lend support to the hypothesis that rightmost and 'lowest' are the two sides of the same coin, as suggested by the LCA.

5 Where does the NSR apply?

It has been suggested above that there are two typologically distinct classes of language: one (like Germanic) in which the metrical interpretation of the syntactic tree is relevant in computing NS and another one (like Bengali and Romance) in which NS is computed strictly in terms of prosodic phrases. What can we infer from this conclusion regarding the locus of application of the NSR? Does it mean that NS applies within the syntax in Germanic and within the phonological component (or PF) in Bengali and Romance? While tempting, this conclusion cannot be correct under the standard assumption that PF and Logical Form (LF) are systematically mediated by syntax. First, as we have seen, prominence plays a fundamental role in identifying the focus domain of a sentence in both language types (cf. the principle stated in (11), repeated in (81)). To the extent that focus is part of the logical representation of a sentence (see Vergnaud and Zubizarreta (forthcoming)), it follows that information regarding prominence must be available at LF in both types of language (i.e., in Germanic as well as in Bengali and Romance).

Second, Zubizarreta (1998) has argued that the formulation of p-movement in Romance (see section 4) is intimately related to the NSR; therefore, they must both apply at the same point in the derivation. (For details on the formulation of p-movement, see Zubizarreta op. cit.: sec. 3.5.1.) Furthermore, Suñer (2000) has shown that p-movement in Romance affects binding relations. If binding relations are determined in the LF component of the grammar, then p-movement must feed LF, and so must the NSR.

Third, it was shown above that NS in Bengali (and in Romance) is computed in terms of prosodic boundaries, while in English, NS is computed on the basis of metrically interpreted syntactic structures. Nevertheless, even in English, a sentence may be composed of more than one intonational phrase, with each intonational phrase containing a NS (as required by the principle in (11)). See, for example, the famous example from Chomsky and Halle (1968):

(84) (This is the cát) (that chased the rát) (that stole the chéese).

The implication is that information regarding prosodic boundaries must be available at the point where the NSR applies – even in English.

Our conclusion is that prosodic information (such as prosodic boundaries and main phrasal prominence) must be present at the stage in the derivation where LF is constructed. That conclusion appears to be broadly in line with the standard derivational architecture. Within that architecture, PF interpretation (Spell-out) applies at the level of S-structure, from which LF is also derived (see Chomsky and Lasnik 1993; Zubizarreta 1998). Zubizarreta (1998) develops a particular version of the standard model in which prosodic information is incorporated into S-structure. In particular, prosodic structure in Germanic-like languages is presented as an annotation of S-structure, which is produced by interpretive

principles that apply to local configurations of the constituent structure (see section 3.5). But we saw earlier that a constituent structure is a derivation in a different guise (cf. (19) and n. 8 in section 3.2.1). So the account in Zubizarreta (1998) can presumably be recast and be embedded in an architecture in which PF interpretation is cyclical (see Frampton and Gutmann 1999; Uriagereka 1999; Chomsky 2001b). We sketch this alternative rendering below.

Chomsky op. cit. outlines a particular cyclical architecture, in which the cycles are called *phases*. To illustrate the workings of a derivation by phase, let us consider the structure in (85):

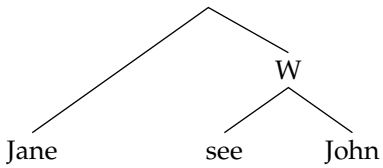
(85) [Jane saw John]

We assume that that structure has five primitive constituents, namely those given in (86), where *C* is a (silent) complementizer:

(86) {Jane, John, see, Past, C}

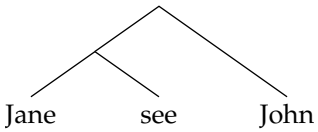
This is an oversimplification but it will do for our purpose. The first cycle may be represented as the derivation-marker in (87):

(87)



That is, Merge first applies to the pair {*John*, *see*}, then to the pair {*Jane*, *W*}, where *W* is the product of the application of Merge to {*John*, *see*}. Constituents can be described as sets and Merge can be defined as set union, so that *W* is the set {*John*, *see*}, formed from the union of {*John*} and {*see*}. And the outcome of the complete derivation in (87) is the set {*Jane John*, *see*}. Of course, that set could also be generated by the derivation in (88), since set union is associative:

(88)

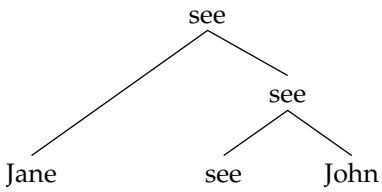


The derivations in (87) and (88) define different constituent analyses based on the same array of syntactic primitives.

A syntactic set created by Merge has a very special feature: among its elements, it counts one which may be taken to stand for the whole set. That element is called the head of the set. In the particular derivation in (87), the head of the first constituent created by Merge is *see*, which is also the head of the final outcome.

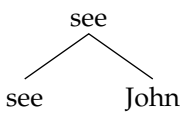
Then, the description of the derivation in (87) can be simplified as follows. Merge first applies to *John* and *see*, then it applies to *Jane* and *see*. This is represented in (89):

(89)



The derivation marker in (89) constitutes the first phase. Spell-out applies to that first cycle. Following Chomsky (2001b), we assume that the interpretively relevant part of the phase does not include the highest specifier in it. In the case of (89), it is then the submarker in (90):

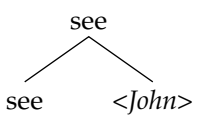
(90)



One may distinguish three functions or components of Spell-Out. The first component (SO^{I}) defines the primitive domains of PF interpretation. These are the minimal syntactic collocations which can be translated into assemblages of morphosyntactic and, ultimately, PF features. Call these primitive domains morphosyntactic domains (MSDs). An MSD is a local object: it may be a syntactic head or a short continuous sequence thereof, but nothing bigger than that. The second component of Spell-Out (SO^{II}) determines how the MSDs are strung together. In particular, SO^{II} delimits the prosodic domains and assigns relative prominence to the various MSDs within these domains. The third component (SO^{III}) actually effects the translation of MSDs into morphosyntactic and, ultimately, PF representations. The theory of SO^{III}, we assume, is Distributed Morphology (DM) (see Halle and Marantz 1993). SO^{III} treats the MSDs created by SO^{I} as independent domains and applies to these domains in an unordered fashion. From the point of view of the cyclical architecture, the critical parts of Spell-Out are then SO^{I} and SO^{II}.

The output of SO^{I} is not an independent 'PF derivation marker', but merely an annotated version of the syntactic derivation marker, in which MSDs are identified. SO^{I} converts the derivation marker in (90) into the tree in (91), where < . . . > represents an MSD:

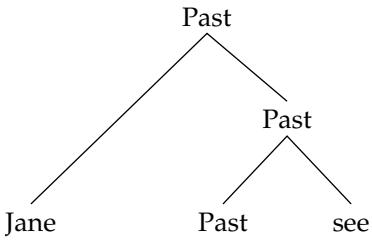
(91)



A verbal head can be identified as an MSD only in combination with the *T*(*ense*) head. This is why there is no MSD corresponding to *see* in (91). The SO^I interpretation of the first phase in (89) then reduces to the marking of *John* as an MSD (the constituent *John* is assigned Case in the first phase in (89), so it is a complete MSD by the end of that phase).

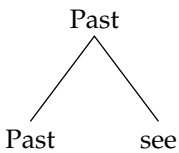
The array for the next phase includes the primitive element *Past* together with the elements at the 'margin' of the previous phase, i.e., the phasal head and its specifier. The second phase has the structure in (92):

(92)



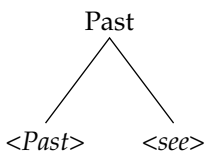
The interpretive domain in (92) is the marker in (93):

(93)



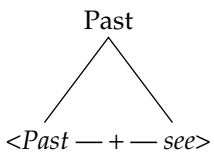
SO^I transforms this marker into the tree in (94):

(94)



In isolation, each of the MSDs <*Past*> and <*see*> would surface as *did* and *see*, respectively – more exactly, as the PF representations corresponding to *did* and to *see*. On the other hand, since <*Past*> and <*see*> are adjacent in the structure in (94), a more economical interpretation is to fuse the two MSDs into a single one, ultimately giving rise to the PF corresponding to *saw*. So the image of (93) by SO^I is the tree in (95):

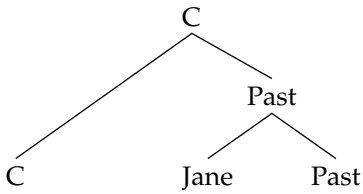
(95)



The transformation of (94) into (95) is the rule of Affix-Hopping.

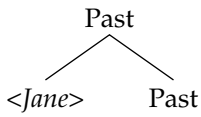
The array for the third and final phase includes the primitive element *C* together with the head of the second phase and its specifier. The final phase has the structure in (96):

(96)



The interpretive domain in (96) is the whole marker. The application of SO^I to (96) yields the tree in (97):

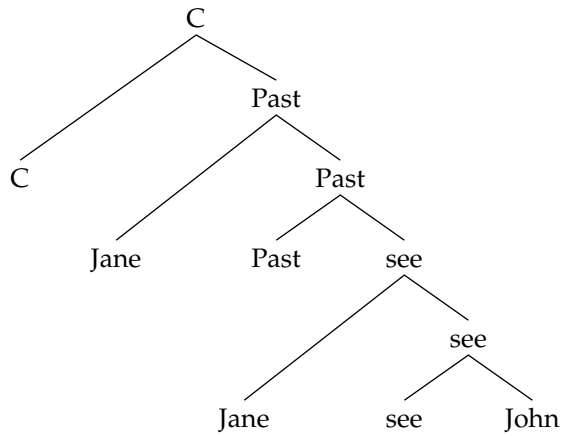
(97)



The complementizer *C* has no morphosyntactic translation. Furthermore, a functional head such as *Past* cannot be identified as an MSD unless it is combined with some verbal projection (this is the converse of the situation in (91)). The SO^I interpretation of the final phase in (96) then reduces to the marking of *Jane* as an MSD.

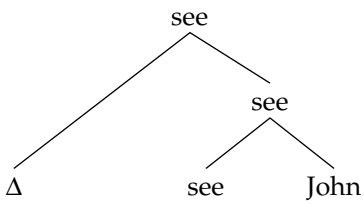
Note that we are assuming that the derivation of the stucture in (85) involves three phases, a departure from Chomsky (2001b). The latter postulates two phases, a first phase associated with the verb domain and a second one, with the complementizer domain. The difference between the two analyses rests on the status of the functional category *T*. Implicit in our proposal is the assumption that *T* is a complementizer-like category and *C* a higher complementizer. Hence the additional phase. The question at this point is how the various phases are formally linked together. How does one know that, e.g., *see* in the phase in (89) is the same element as *see* in the phase in (92)? A natural approach is to try to incorporate all the phases into a single connected derivation marker. To that effect, we capitalize on the fact that a syntactic head may represent several levels of constituency at the same time. For example, *see* in (92) can represent the head in the phase in (89) or it can represent any projection of that head. The derivation markers in (89), (92), and (96) were defined with the first interpretation in mind. If, on the other hand, we assume the second interpretation, it becomes possible to join the three markers into a single one describing the whole derivation, as shown in (98) (note that the two overlapping markers in (96) and (92) have been unified in the sense that the common subtree is represented only once):

(98)

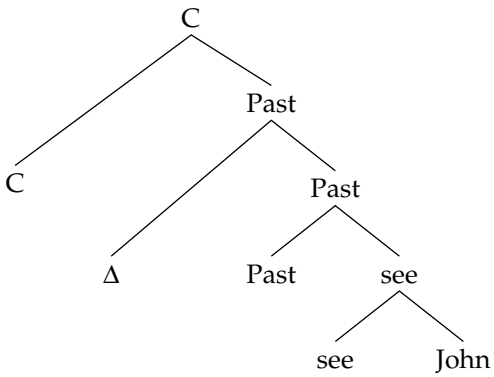


There remains a problem, though, common to the new integrated representation in (98) and to the disconnected one displayed in (89), (92), and (96). Both fail to identify the multiplicity of occurrences of *Jane* as a *chain*, i.e., as the same constituent partaking of separate phases. A chain is the association of a constituent α with a list of contexts K_α for α (see Chomsky 1995c). For any given α, the derivation may then be equated with the generation of K_α. Under the simplest definition, a context for α identifies only one occurrence of α (thus, X — U — W is not a context in that restricted grammatical sense). The pair of derivation markers in (99), where Δ is a fixed dummy symbol, is a description that identifies the chain of occurrences of *Jane* so defined:

(99) (i)



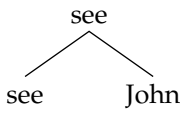
(ii)



(iii) Δ = *Jane*

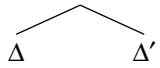
We note that there is a second constituent that shows up in two contexts, namely, the structure in (100):

(100)

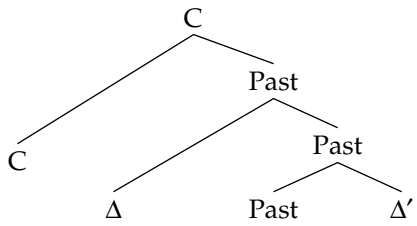


The verbal structure in (100) has two distinct grammatical roles in the sentence in (85); predicate of the constituent *Jane* and complement of the functional head *Past*. The two occurrences of (100) in (99) then also constitute a chain. Accordingly, we revise (99) to (101), where Δ and Δ′ are two distinct dummy symbols:

(101) (i)



(ii)



(iii) Δ = *Jane*
(iv) Δ′ = ($_{see}$ *see John*)

The whole description in (101) can legitimately be identified as the LF of the sentence in (85). In some sense, we are back to the two phase theory in Chomsky (2001b), with the diagram in (101i) representing the first phase and that in (101ii) the second phase. There are differences, though. The derivation described in (101) goes like this. First, a small clause is assembled, with a verb, a subject, and an object. The small clause is then separated into two parts, its subject (*Jane*) and the predicate cycle (*see John*). At this point, the derivation starts afresh, using the parts from the disassembled first phase as well as new material. The cycle [*see John*] from the first phase is plugged in the second phase at the stage where the functional category *T* is merged with its verbal complement. Following this, the subject *Jane* is merged as the specifier of *T*. In general, the LF of a sentence will have the following structure:

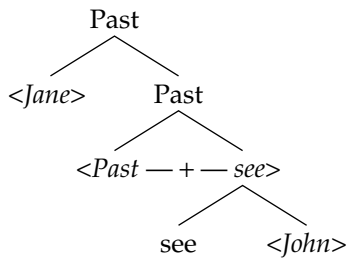
(102) An LF representation is a partially ordered set of derivation markers, where the ordering is defined in (i):
  (i) The derivation marker *p* precedes the derivation marker *q* $=_{\text{def}}$ the lexical items in *p* form a subset of those in *q*.

Note that one effect of disassembling the first phase before starting the second one in an LF such as (101) is what has been called trace deletion (see Chomsky

1995c, for example). Assuming this as a general mechanism, no phase will ever include any trace (at least, of A-movement).[21] A trace is now viewed as a derived construct: a constituent in a phase p_i is a trace to the extent that it partakes of a more inclusive phase p_j.

Within the above execution of phase theory, it is not necessary for Spell-Out to go by the same phasal 'clock' as LF. In particular, a single LF phase might correspond to a multiplicity of PF phases (see Megerdoomian 2002 for a discussion of this issue). We will assume that this is indeed the case. For example, we will maintain the PF analysis of the structure in (101) (the description of the sentence in (85)) in three phases, displayed in (91), (95), and (97). Linking these SO^I phases together yields the tree in (103):

(103)



The PF linear sequence of MSDs mirrors the derivational ordering.[22] That is, the sequence of MSDs is that in (104), where ^ is the concatenation operator:

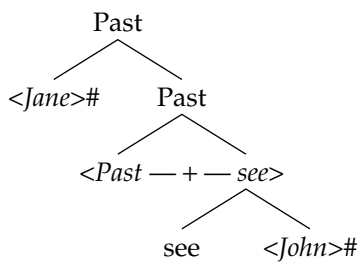
(104) <Jane> ^ <Past+see> ^ <John>

Determining the string of MSDs from the SO^I derivation marker is one of the roles of SO^{II}. In addition, SO^{II} defines prosodic domains, assigning stress at the boundaries of these domains. Concretely, we shall assume the following rule:

(105) Let μ be a sequence of MSDs (possibly reduced to one) such that μ corresponds to an LF phase. A prosodic boundary (denoted by #) is inserted after μ, unless one already exists within or after μ (having been inserted in a prior phase).

Furthermore, we assume that any DP is an LF phase by itself (on par with CP).[23] In the derivation in (103), SO^{II} will then insert # after the MSDs <*John*> and <*Jane*>:

(106)



The only other string in the representation in (106) that corresponds to an LF phase is the whole string itself (neither [*see John*], nor [*Past see John*] are phases in the analysis in (101)). The string of MSDs is then parsed as in (107):

(107) <Jane> # ^ <Past+see> ^ <John> #

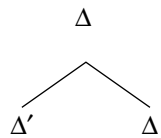
We assume that some principle subordinates *<Jane>#* to *<John>#*.[24] Thus, main prominence is assigned at the last (rightmost) boundary within the sequence.

Now consider the sentence in (108) (cf. the discussion of (68) above):

(108) Jóhn disappeared

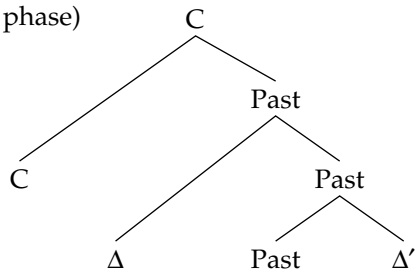
The neutral stress contour is the one indicated, with main stress on *John*. The LF description of the sentence is given in (109):

(109) (i) (1st phase)



(ii) (2nd phase)

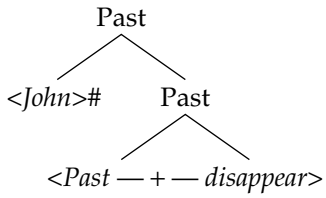
(iii) (3rd phase)



(iv) (identification of the dummy symbols)
Δ = *John*, Δ′ = *disappear*

One difference between the structure in (109) and that in (101) is that, whereas the object of the verb in (101) gets Case in the second phase, the object in (109) does not get Case until the last phase. As a consequence, the object in (109) is not interpreted as an MSD by SO^I until that final phase, once it has moved to subject position. The prosodic boundary # is then inserted after the subject. We display in (110) the image of (109) by SO^I, together with the prosodic boundary inserted by SO^{II}:

(110)



The corresponding string is that in (111):

(111) <John> # ^ <Past+disappear>

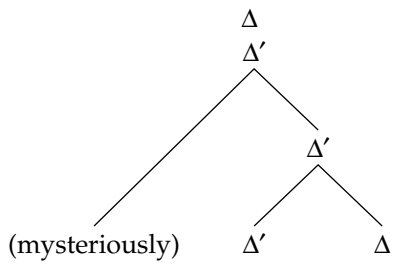
Compare next the sentence in (112) (cf. the discussion of (69)):

(112) John mysteriously disappéared.

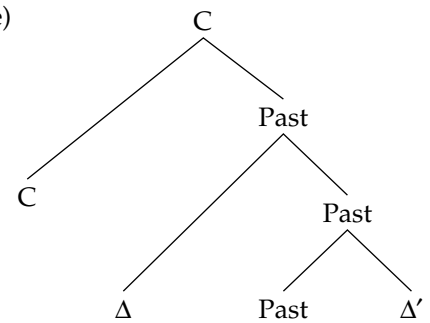
In the sentence in (112), the neutral intonation is with main stress on *disappear*. The essential difference between (112) and (108), of course, is the presence of an additional constituent in (112), namely the adverb adjoined to the verb phrase. We analyze the structure as in (113):

(113) (i) (1st phase)

(ii) (2nd phase)



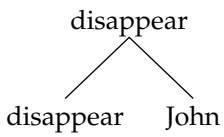
(iii) (3rd phase)



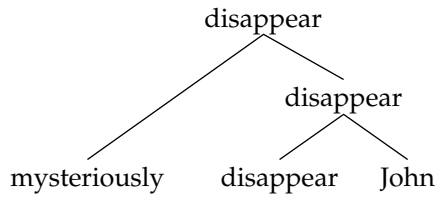
(iv) (identification of the dummy symbols)
Δ = *John*, Δ′ = *disappear*

The parentheses around the adverb *mysteriously* in (113ii) indicate that the second phase really is an abstract construct made up of two actual phases: one phase has the adverb *mysteriously* in it, the other lacks it. In other words, the second phase is a pair of 'parallel' derivations, a short one, represented in (114), and a long one, represented in (115):

(114) Short derivation:

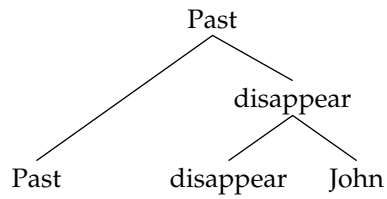


(115) Long derivation:

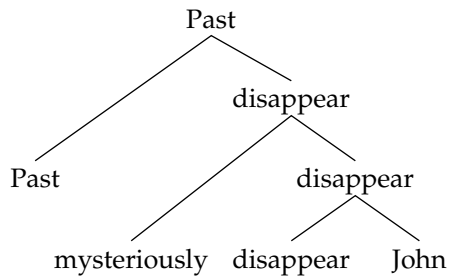


The two derivations in (114) and (115) have different outcomes, the short one yielding the set {*disappear*, *John*} and the long one, the set {*disappear*, *John*, *mysteriously*}. That difference affects later cycles. For example, consider the stage at which *Past* is brought into each derivation. The two parallel cycles that constitute the second phase give rise to the two parallel derivations in (116) and (117):

(116) Short derivation:

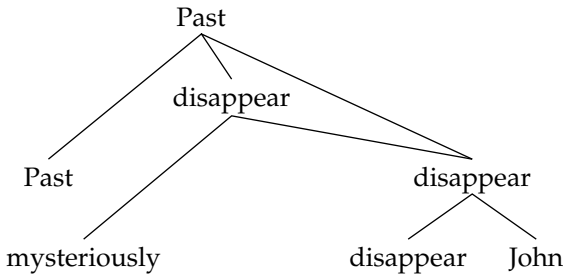


(117) Long derivation:



The two parallel derivations above may be combined into a single complex marker:

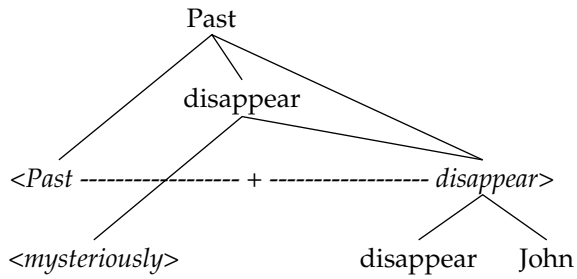
(118)



The double connection between *Past* and *disappear* in (118) reflects the constituent analysis distinction between *category* and *segment* introduced in May (1985). We take this derivational ambiguity to be characteristic of adjunction.

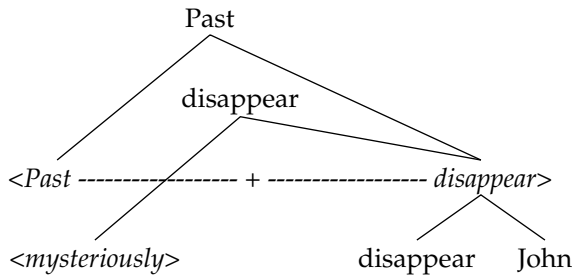
The diagram in (118) is the LF representation generated by the derivation up to the stage where *Past* is merged with the outcome of the second phase in (113ii). The SO^1 image of that stretch of the derivation is as in (119):

(119)



One issue is how the PF ordering of <*mysteriously*> and of <*Past+disappear*> is determined. One may again appeal to the principle that the PF ordering mirrors the derivational one (cf. the structure in (103) and the comment that follows it). Specifically, we will assume that the PF ordering of the MSDs displayed in (119) is determined at the combined derivational stage represented in (120):

(120)



The diagram in (120) represents the combination of the following cycles from the two parallel derivations. The cycle in the long derivation in which the verb *disappear* is merged with *mysteriously,* and the cycle in the short derivation in which it is merged with *Past*. Each cycle immediately follows that in which *disappear* is merged for the first time in each derivation. At the combined stage depicted in (120), *disappear* both precedes *mysteriously* and *Past* in the derivational ordering, while *mysteriously* and *Past* are unordered with respect to each other. Since *Past* is incorporated with *disappear* into a single MSD, the unique PF ordering compatible with the derivational ordering defined by (120) is that in (121), where <*mysteriously*> precedes <*Past+dispappear*>:

(121) <mysteriously> ^ <Past+disappear>

We see that using the complex cycle in (120) to determine the PF ordering of MSDs has the same effect as having Affix-hopping lower the inflection onto the verb. If we now assume that the combination of an adverb with the verb phrase

it modifies constitutes an LF phase, a prosodic boundary will be inserted after *disappeared*. The result is the form in (122):

(122) <John> ^ <mysteriously> ^ <Past+disappear> #

We have illustrated the cyclical framework in some detail to show that, within such an architecture, PF interpretation raises issues which are conceptually analogous, or even identical, to those arising within the standard architecture. The solutions proposed in the literature can often be translated quite directly into the cyclical format. Obviously, there are differences. Indeed, the cyclical theory allows for a more felicitous definition of 'depth of embedding' in the sense of Cinque (1993) or the revised sense of Zubizarreta (1998). A maximally embedded constituent within some structure *K* is one that constitutes a primordial LF phase in the cycle corresponding to *K*. As a consequence of the derivational approach, the interplay of structural and selectional ordering in Zubizarreta (1998) may have to be revised, possibly to be replaced by some interplay of structural and linear ordering. This would leave the logic of the parametric account unaffected, though.

6 Conclusion: some final remarks

While we have chosen to focus on a certain view of the world in this chapter, it is certainly not the only one around. The view assumed here and captured by the principle in (11) is that the possible scopes of the focus are determined by the location of the intonational nucleus. There is an alternative view, the pitch-accent-based theory of focus, put forth by Gussenhoven (1984) and Selkirk (1984, 1995). These authors propose that in Germanic pitch-accent assignment and predicate–argument relations are mediated by focus-projection rules (or focus-domain formation rules). Selkirk (1995) proposes the following rules, where the feature F is a diacritic for annotating syntactic structure (this is a non-technical rephrasing of her rules:)

(123) a. **F-marking rule:**
An accented word must be marked in the syntactic structure with the feature F.
b. **F-projection rule:**
F-marking may project upward within the syntactic structure from a head or its internal argument.

A late rhythmic rule ensures that the last accented word receives main prominence, but it plays no role in determining the possible F-structures of the sentence:

(124) **Nuclear Stress rule:**
The most prominent syllable of the rightmost constituent in a phrase P is the most prominent syllable of P.

The F-marked structures are related to the informational structure of the sentence by the following rules:

(125) a. The Focus of a sentence (FOC) is defined as an F-marked constituent not dominated by any other F-marked constituent.
b. F-marked constituents which are not a Focus are interpreted as new in the discourse, while a constituent without F-marking is interpreted as given. A Focus constituent, on the other hand, may be interpreted as either given or new in the discourse.

We will not attempt to evaluate here the empirical success of the pitch-based theories of focus. (For some discussion, see Zubizarreta 1998: section 3.5 and Ladd 1996.) We simply note here that this theory must make use of an ad hoc feature F to annotate the syntactic structure. This feature is undesirable because it lacks independent justification. It is only needed to establish the relation between pitch accent and the informational structure of the sentence. An NSR-based theory of focus does not require such a feature. In this theory, focus is directly identified by prosodic notions such as relative prominence. Other grammatical means for focus identification are also available. For example, contrastive focus may be associated with logical operators such as *only*. Some languages may make use of a bona fide syntactic position or it may make use of a particular morphological marking. But these are all independently justified notions. F-marking is not.

While some progress has been made in our understanding of the relation between prosody, focus, and syntax, much remains to be done. In effect, we have only scratched the surface of it. More typologically different languages need to be studied. In particular, it would be useful to learn the exact correlation between focus and prosody in tone languages, in particular those in which pitch is distinctive. It has been claimed that certain African languages (such as Chadic; see Tuller 1992) resort to morphology and syntactic position rather than to pitch to mark the focus of the sentence. It may be premature to draw such a conclusion before we have more in-depth studies of the phonology and phonetics of such languages. As we said in the introduction, prominence is a rather abstract notion for which there is no unique phonetic correlate. In fact, there may be relevant phonetic cues other than pitch accent (such as other aspects of the intonational contour). It is precisely this type of language that we need to investigate further in order better to understand the relation between prosody, focus, and syntax.

NOTES

1 The most consistent acoustic correlate in a language like French or English may be the amplitude and sharpness of fundamental frequency (F_0) variation associated with a given syllable (see Martin 1975, 1982).

2 The following quotation from Chomsky and Halle (1968) is relevant here:

> We do not doubt that the stress contours and other phonetic facts that are recorded by careful phoneticians and that we will study here constitute some sort of perceptual reality for those who know the language in question. In fact we are suggesting a principled explanation for this conclusion. A person who knows the language should "hear" the predicted phonetic shapes. In particular, the careful and sophisticated impressionistic phonetician who knows the language should be able to bring this perceptual reality to the level of awareness, and there is ample evidence that phoneticians are capable of doing this. We take for granted, then, that phonetic representations describe perceptual reality. Our problem is to provide an explanation for this fact. Note, however, that there is nothing to suggest that these phonetic representations also describe a physical or acoustic reality in any detail. For example, there is little reason to suppose that the perceived stress contour must represent some physical property of the utterance in a point-by-point fashion; a speaker who utilizes the principle of the transformational cycle and the Compound and Nuclear Stress Rules should "hear" the stress contour of the utterance that he perceives and understands, whether or not it is physically present in any detail. In fact, there is no evidence from experimental phonetics to suggest that these contours are actually present as physical properties of utterances in anything like the detail with which they are perceived. Accordingly, there seems to be no reason to suppose that a well-trained phonetician could detect such contours with any reliability or precision in a language that he does not know, a language for which he cannot determine the surface structure of utterances.
>
> Considerations of this sort lead us to suspect that the question of how highly differentiated the stress contours in a representation should be is of little significance. In a complex utterance with a rich surface structure, the rules outlined in the preceding section will lead to a stress contour of many levels. There may be no empirical sense to the question of whether the resulting representation is correct in full detail. Because of the completely impressionistic character of judgments of relative stress, decisions over a broad range are of little value. It is not at all surprising that there should be great difficulty, within impressionistic phonetics, in determining how many stress levels should be marked and how they are distributed in utterances that exceed a certain degree of complexity. The shape and the degree of differentiation of a stress contour are largely determined by obligatory rules and are therefore below the level of systematically significant representation. Once the speaker has selected a sentence with a particular syntactic structure and certain lexical items (largely or completely unmarked for stress, as we shall see), the choice of stress contour is not a matter subject to further independent decision. That is, he need not make a choice among various "stress phonemes" or select one or another "superfix." With marginal exceptions, the choice of these is as completely determined as, for example, the degree of aspiration. Similarly, a hearer who has grasped the structure and morphemic constitution of an utterance from a rough sampling of the physical input need not attend to stress variation, to whatever extent this may actually be a physical property of utterances.
>
> It is to be expected that determined phonetic features should be quite difficult for the user of the language to learn to identify, whether they involve stress or degree of aspiration (where undoubtedly there are many levels, predictable, at least roughly, by general rules). The apparent ease with which phoneticians

> trained in the same conventions can, to a large extent, agree on the assignment of four or five stresses in utterances may very well be traceable to their ability, as speakers of the language, to grasp the syntactic structure of utterances and to assign to them an "ideal" stress contour by the rules of the transformational cycle. Such an achievement may have little to do with any physical fact. This is, incidentally, a matter which should be subject to experimental investigation. (Chomsky and Halle 1968: 25–26)

3 There is promising work coming out of Laboratory Phonology that might pave the way toward remedying this state of affairs. See, for example, Godjevac (2000) and references cited therein.

4 This test, of course, works only to the extent that the form of the answer respects the form of the question and the relation between the two is not mediated by any hidden inferences. It is precisely for this reason that the question–answer test is not an infallible one for determining the focus structure of a sentence. See Zubizarreta (1998: 161, n. 6).

5 See also Liberman (1979); Ladd (1980); Pierrehumbert (1980); Culicover and Rochemont (1983); Halle and Vergnaud (1987); Cinque (1993); Zubizarreta (1998).

6 For example, this could be the structure for the sentence *John's son's baby cried*.

7 Chomsky and Halle (1968) actually formulate the NSR as a rule assigning stress to vowels, with the structural description in (i):

(i) $V^1 \ldots — \ldots]_\alpha$

Thus, the text formulation is more abstract since it involves the notion of stress of a word relative to other words, while stress is perceived as a phonetic property of vowels. See the text below. Nothing in our development hinges on the particular choice of formulation in terms of word stress or of vowel stress.

8 One may recall that in a constituent-analysis (i.e., context-free) grammar of the standard type, a phrase marker *is* a derivation (more exactly, a class of derivations); see Chomsky (1957: 26–33). The equivalence postulated in (19) in the text can then be viewed as a generalization of this definition to derivations involving transformations. In a sense, the duality between constituent structure and derivation manifests the compositional nature of language. The duality would break down if language structure were to display properties of a global type. A full discussion of the duality would have to address the issue of cyclical interpretation. We briefly return to this question at the end of section 5. Note that compositionality holds even when the operation involved (say Merge, or Concatenate) is associative. That the operation is associative means that all constituent structures of a given string are equivalent.

9 The convention in (22) in the text is a partial reformulation of the mechanisms postulated in Halle and Vergnaud (1987); see in particular Halle and Vergnaud (1987: 263–266).

10 An account of the contour in (26) in the text could be given within the text formalization (20–23) by recording the depth of embedding. Thus, given a category α with immediate metrical head $H_m(\alpha)$, a sister of $H_m(\alpha)$ has secondary stress within α. A sister of the immediate metrical head of $H_m(\alpha)$ has tertiary stress within α, as does a sister of the immediate metrical head of a sister of $H_m(\alpha)$. And so on and so forth. We encounter here the same unwieldiness that was noted in the text for the case of the one-step derivational algorithm, and for an obvious reason. Indeed, one should view

the natural implementation of a one-step procedure to be an interpretive system such as that in (20–23) in the text, and not a transformational algorithm. The question is then whether the interpretive algorithm just defined and the cyclical transformational algorithm in (16–17) in the text are empirically distinguishable.

11 The question of stress subordination has two distinct, but related, aspects. First, we have the question of the preservation of stress contours under embedding. To illustrate, consider the structure in (i):

(i) John's baby liked ET.

At issue here is whether the internal relations of stress in the phrases *John's baby* and *liked ET* are the same in the sentence *John's baby liked ET* as in isolation. We note that all three algorithms mentioned in this paper, the cyclical transformational algorithm of Chomsky and Halle (1968), the algorithm in Halle and Vergnaud (1987) and the interpretive algorithm discussed in note 8, assign the same stress contour to the structure in (i); namely, primary stress is assigned to *ET*, secondary stress to *baby*, and the same tertiary level of stress to *John* and *liked* (see Chomsky and Halle 1968: 90). Thus, the three algorithms presented here all imply that the internal relations of stress in the phrase *John's baby* are the same in the sentence *John's baby liked ET* as in isolation, while those of *liked ET* differ. However as Chomsky and Halle (1968) note (p. 90, n. 43), there is really no evidence bearing on the matter.

This leads to the second general question concerning stress subordination, namely, the question whether there exists any perceptual relation at all between the stress level of *John* and that of *liked* in a structure like (i). It may very well be the case that stress levels are comparable only to the extent that they independently relate to the same main stress. This is the case in (25) in the text, where *liked* and *John* are directly subordinated to the same main stress in distinct phrases. The text discussion in section 3.2.2. provides some indirect support for that view, as it suggests that the distribution of secondary stresses may be ruled by a different set of principles. If this turned out to be true, it would constitute evidence in favor of the interpretive approach.

12 For a detailed discussion of eurhythmicity in French, see Dell (1984).

13 Tokizaki (2000) argues that the stress pattern in (44) corresponds to a thetic-judgment interpretation, while the stress pattern in (45) corresponds to a categerical-judgment interpretation. While this may very well be the case, the point is that the unaccusatives in (46) give rise to an unambigous stress pattern. Main stress on the verb gives rise to a contrastive focus interpretation.

14 Bresnan (1971b) attempts to do just this by proposing that the NSR applies cyclically. For a critique of Bresnan's data, see Bolinger (1972a).

15 The term is a misnomer since de-accented words are in many cases associated with miniature but quite audible pitch accents.

16 The notion is defined as follows in Cinque (1993):

(i) a. The major path of embedding is constituted by nodes on the X-bar axis (X, X', XP) and the nodes on the recursive side of the tree.
b. The minor path of embedding is constituted by nodes on the nonrecursive side of the tree.

However, the notion 'recursive side' used in that definition is somewhat infelicitous, since both the complement of *X* and the specifier of *X'* are recursive nodes. Furthermore, the definition should make explicit the fact that the distinction major vs. minor path

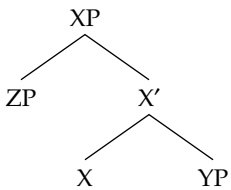
of embedding is relative to a maximal projection *XP* (or, equivalently, relative to a head *X*). This is why we have replaced Cinque's original formulation by the one in the text. Note that the notion of 'major path of embedding' has a natural interpretation in the theory in Kayne (1994), which assumes that specifiers are adjuncts.

17 The definition of c-command proposed by Zubizarreta departs slightly from the standard one. It distinguishes direct and indirect c-command:

(i) A directly c-commands B iff A and B are heads or maximal projections (excluding segments) and (a) A and B are sisters or (b) there exists a node C such that A and C are sisters and C dominates B.
(ii) If A directly c-commands B, then A indirectly c-commands C, C a projection of B that does not contain A.

According to the definition in (i), the Specifier ZP in the structure in (iii) *directly c-commands* the head X and its complement YP (as in the standard definition of c-command), but it does not directly c-command its sister X′ (because X′, being neither a head nor a maximal projection cannot be in a direct c-command relation with any category). According to the definition in (ii), ZP *indirectly c-commands* X′ by virtue of the fact that X′ is a projection of X and ZP directly c-commands X. It is this latter extension of the c-command relation that goes beyond the classical one.

(iii)



18 In Zubizarreta (1998), selectional ordering was defined on a separate, more abstract, tree. Here we assume that the syntactic tree encodes both selectional ordering and constituent ordering in terms of asymmetric c-command.

19 We see that the interplay of C-NSR and S-NSR yields the effects of the English Compound Stress rule (cf. Chomsky and Halle 1968), thus preserving an important result of Cinque (1993). To illustrate, consider the compound [*kitchen* [*towel rack*]], with the bracketing indicated. In the inner constituent [*towel rack*], *rack* is analyzed as a head taking *towel* for argument (heads are always on the right in words). Relative prominence is then determined by S-NSR, which assigns main stress to *towel*. In the higher constituent, no argument relation holds and C-NSR applies, assigning main prominence to the constituent [*towel rack*].

20 Arguably, a similar process is at play in the preposing of IP and VP with respect to selecting particle-type functional heads in Chinese. See Simpson and Wu (1999, 2000).

21 Obviously, this imposes a contraint on the relation between phases and movement; movement may never be internal to a phase.

22 Of course, the derivational ordering is a partial one. Suppose, for example, that the subject of the sentence contains more than one MSD. We will adopt the following rule:

(i) Let . . . *C* . . . be some structure, where *C* is a constituent ultimately interpreted as the sequence of MSDs $\mu = ({}_C\ m_1\hat{}m_2\hat{} \ldots \hat{}m_s)$, '^' the concatenation operator. Let *h* be the head of *C* and <*h*> be the MSD in μ associated with *h* (<*h*> is some m_i). The PF ordering of μ with respect to the context . . . — . . . is the same as that of <*h*> in isolation.

The complex formal issues which arise in connection with the projection of the partial ordering of constituent structure onto the total ordering of the time axis are discussed in great depth in Kayne (1994).

23 The LF description in (101) in the text will then have to be revised accordingly. Note that there must be some subordination principle that ensures that the boundaries introduced in previous phases do not interfere with current ones.

24 The principle might be formulated in terms of a *last* vs. *first* (*rightmost/leftmost*) parameter or, alternatively, in terms of depth of embedding (as in Halle and Vergnaud 1987, Cinque 1993, and Zubizarreta 1998).

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50 Pied-Piping

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1 Introduction

The notion of 'pied-piping' has been an integral part of all versions of the theory of generative grammar that assume transformational movements since it was first introduced by Ross (1986, from his 1967 dissertation). The term itself – attributed by Ross to Robin Lakoff – refers to the phenomenon whereby some particular movement operation T, designated to displace an element A, in fact displaces additional elements together with A; more specifically, pied-piping is involved when an application of T ends up moving some constituent B that properly contains A. Ross's Pied-Piping Convention was originally meant, for instance, to extend the application of the Relative Clause Formation transformation, so that it is able to move more than just the NP immediately dominating the relative pronoun in cases such as shown in (1–2), where (1b, c) and (2a) represent, according to Ross (1986), instances of pied-piping by the relative *wh*-pronoun.

(1) a. reports [*which*] the government prescribes the height of the lettering on . . .
    b. reports [the covers of *which*] the government prescribes the height of the lettering on . . .
    c. reports the [lettering on the covers of *which*] the government prescribes the height of . . .

(2) a. the boy [*whose* guardian's employer] we elected president
    b. *the boy [*whose*] we elected guardian's employer president

From its inception until now the existence of pied-piping has uniformly been assumed in the literature, and it has provided a widely used descriptive tool. Yet until recently, the pied-piping phenomenon itself received surprisingly little attention as a research topic in its own right. Thus, while the closely related topics of the proper formulation of, and constraints on, transformational movement operations have always been central to research in syntactic theory, even the most basic questions regarding pied-piping were not raised and addressed in any systematic fashion at least until the early 1990s. A possible reason for this may be the highly theory-dependent nature of pied-piping, namely, the fact that by its very definition, instances of pied-piping can be identified only relative to a particular formulation of the movement operation involved.

Thus, in any theoretical framework in which various movement transformations are formulated in a construction-specific manner, as was the case in the early stages of generative syntax up to the mid 1970s, a general theory of pied-piping could hardly be contemplated. Due to the excessive power of the formalism of transformations, the descriptive effects attributed by Ross to pied-piping could often be easily incorporated into the formulation of the movement transformation

itself. There were major discrepancies even involving the best-studied case, namely that of *wh*-movement, for instance between Ross's (1986) and Emonds's (1976) conception of the phenomenon of pied-piping. Under Ross's notion (see section 1.1), both cases like (1b, c) as well as cases like (2a) were analyzed as instances of the Pied-Piping Convention (given in (8) below); however, under Emonds's alternative proposal, only cases like (1b, c) were such, while those like (2a) were taken to be due to the particular formulation of the *wh*-movement transformation itself, and were claimed to involve no pied-piping. (See the formulation of *wh*-movement as moving an NP, AP, or PP with a *wh*-morpheme at its left periphery, and the analysis of the residue of Ross's pied-piping as a 'stylistic' process in Emonds 1976; on the latter idea, see also section 3). Bresnan (1976c) departs from Ross's hypothesis of pied-piping even more radically; her X-Bar theory-based, category-neutral statement of the transformation forming relative clauses eliminates the need for a stipulated pied-piping convention, not only with respect to examples of the type of (2a), but also with respect to examples like (1b, c) since it specifies the constituent that the movement operation applies to as any XP with the categorial feature [–V] (hence any NP or PP) that contains a *wh*-morpheme.

In the Principles and Parameters (P&P) framework of the 1980s, involving the reduction of the transformational component of the model to the universal Move α schema, and the development of X-Bar theory, as a uniform theory of phrase structure extending to all phrase types, it became possible to ask more general questions regarding the range and properties of pied-piping phenomena; namely, it became in principle feasible to start exploring how general pied-piping behavior is across different constructions, different category types, and across languages, and what its properties and distribution derive from. Yet, possibly due to the highly theory-internal nature of pied-piping, such issues remained essentially uninvestigated during the 1980s as well.

It was only in the 1990s that the general issue of pied-piping started to receive some more comprehensive treatment (e.g., Webelhuth 1992). General questions like the following were raised: What is it that makes pied-piping in individual constructions and with particular phrase types possible while in other cases impossible, and what factors can make it obligatory? What makes it stylistically marked in some particular cases? What is the source of some observed cross-linguistic and cross-categorial discrepancies? What are the structural and possibly non-structural conditions on pied-piping?

In accordance with the modular approach to accounting for syntactic phenomena in terms of interacting principles and parameters of UG, ideally one would like to make the various observed pied-piping options, or lack of those, also fall out of independent properties of UG. Attempts in this direction have been made in the past decade, e.g., by Webelhuth (1992), Moritz and Valois (1994), Chomsky (1995c), Koopman (1997).

The literature on pied-piping up until recently has concentrated mostly on particular cases of A-bar movement, primarily on *wh*-movements and marginally

on some other operator movements, such as negative preposing and quantifier raising. The set of languages investigated, at least with respect to overt pied-piping, has traditionally been limited to mainly English and a few other Germanic languages. Unavoidably, this will be reflected in our discussion as well: it will deal most extensively with *wh*-constructions, and will use Germanic, and primarily English, data; only some limited amount of comparative material drawn from other languages will be included where relevant.

It needs to be noted here that in the past few years, the above state of affairs started to change, mainly due to two recent developments. One of these, already referred to earlier, was the assumption of movement being feature-driven in the version of the MP presented in Chomsky (1995c), which as a consequence made all cases of movement of elements larger than the "driving" (attracted) features themselves be manifestations of pied-piping. The other factor contributing to the broadening of interest in pied-piping in recent years has been the body of research inspired by Kayne's (1994) Antisymmetry framework, which involves significantly increased reliance on the pied-piping mechanism in the analysis of a variety of languages (see, e.g., Koopman 1996, 1997; Koopman and Szabolcsi 2000; Nkemnji 1995; Pearson 2000b).

Given the sporadic and highly theory and analysis-specific nature of the claims about pied-piping in the literature, the following discussion does not purport to be exhaustive in any sense, and will address only some of the more prominent and influential observations, proposals, and directions for research. The organization of this chapter is as follows.

Section 2 provides a historical perspective on approaches to pied-piping and on the role it played at successive stages in the theory, from Ross (1986) and the Standard Theory (Chomsky 1965) to the current MP framework. Section 3 presents the various descriptive dimensions that pied-piping phenomena manifest, as observed with respect to the best-studied case, namely, instances of *wh*-movement. It demonstrates the existence of apparent variation according to construction-type based on (restrictive and non-restrictive) relatives, interrogatives, and free relatives, it examines the relevance of the position of the pied-piper within the larger phrase, and it outlines some observed differences relating to category type. Section 4 outlines the major directions and proposals towards a modular, comprehensive, structure-dependent view of pied-piping. Proposals to account for some apparent discrepancies between construction types and for cross-categorial differences will be presented and evaluated. The discussion will include the divergent behavior of PP pied-piping and the controversial issue of clausal pied-piping, as well as some cases of pied-piping under movements other than *wh*-movement. Section 5 will address the question of LF-pied-piping, that is, the issue of whether or not there is any evidence for the assumption that covert movements may also involve pied-piping. Section 6, finally, outlines the status of pied-piping and what may permit, and in fact force, it within versions of Chomsky's minimalist framework and in other current directions of research, addressing its relation to the PF-interface, to principles of economy and to the phrasal movement vs. head-movement distinction.

2 A historical overview: pied-piping and theories of movement

2.1 *The Standard Theory and Ross's Pied-Piping Convention*

The hypothesis of pied-piping by movement operations and the corresponding Pied-Piping Convention was originally introduced by Ross (1986) as part of his proposal to replace Chomsky's (1964a) A-over-A Principle – see (3) below, accounting for contrasts such as (2a) vs. (2b) – by a set of other constraints on the application of transformations, due to various empirical inadequacies he observed with respect to the former. A classic set of data Ross pointed out as crucial evidence in favor of introducing the option of pied-piping as opposed to maintaining the A-over-A Principle were the set of alternative options shown in (4–5) involving NPs contained within larger NPs moved by the Relative Clause Formation transformation:

(3) **A-over-A Principle:**
In a structure . . . $[_A$ . . . $[_A$ . . .] . . .] . . . , if a structural description refers to A ambiguously, then that structural description can only analyze the higher, more inclusive, node A.

(4) Reports [*which*] the government prescribes the height of the lettering on the covers of are invariably boring.

(5) a. Reports [the covers of *which*] the government prescribes the height of the lettering on almost always put me to sleep.
b. Reports [the lettering on the covers of *which*] the government prescribes the height of are a shocking waste of public funds.
c. Reports [the height of the lettering on the covers of *which*] the government prescribes should be abolished.

Examples (5a–c) involve movement of larger NPs than just the relative *wh*-pronoun itself that is designated by the Relative Clause Formation transformation to undergo preposing, and at the same time, examples (4) and (5a, b) demonstrate that these data are not attributable to the A-over-A Principle since they in fact violate it. Ross's proposal, beyond his independently argued move to eliminate the A-over-A Principle, was to introduce the Pied-Piping Convention to deal with the facts in (4–5). His actual formulation of the pied-piping option was shaped by some further cases indicating that in contrast to the examples of the type in (5b, c), in certain other configurations the element designated by the transformation to move cannot carry with it, i.e., cannot pied-pipe, a larger phrase containing it. The relevant observations made by Ross, involving coordinate NPs and clauses, are illustrated in (6) and (7) respectively.

(6) *The boy [Bill and *who*(*m*)] I watched was vain.

(7) a. They will give me a hat [*which*] I know that I won't like.
b. *They will give me a hat [that I won't like *which*] I know.

Accordingly, Ross states the Pied-Piping Convention, intended as a universal convention for the application of transformations, as follows:

(8) **The Pied-Piping Convention:**
Any transformation which is stated in such a way as to effect the reordering of some specified node NP, where this node is preceded and followed by variables in the structural index of the rule, may apply to this NP or to any non-coordinate NP which dominates it, as long as there are no occurrences of any coordinate node, nor of the node S, on the branch connecting the higher node and the specified node.

It needs to be noted here that the Pied-Piping Convention was crucially stated as taking along a larger phrase only optionally. This was appropriate for cases such as (4–5). However, in a well-defined set of instances, pied-piping seemed to apply obligatorily, as shown by (9a, b):

(9) a. *the boy [*whose*] we elected guardian's employer president
b. *the boy [*whose* guardian's] we elected employer president
c. the boy [*whose* guardian's employer] we elected president

It is this phenomenon – being essentially a residual A-over-A effect – for which Ross proposed the Left Branch Condition (10); this condition renders the application of pied-piping in such cases in effect obligatory.

(10) **The Left Branch Condition** (LBC)
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

Ross's statement of the Pied-Piping Convention, as well as the LBC, refer only to the category NP. But at the time, his category NP crucially included also PPs; PPs were considered by Ross as NPs immediately dominating P and NP, so movements carrying along Ps were analyzed as cases of pied-piping under this formulation as well. Furthermore, APs and AdvPs too were taken by Ross to be derived from or dominated by NPs, hence their obligatory pied-piping effects were also assumed to be covered by this formulation of the convention and of the LBC. The marked increase of category types in the course of the evolution of the theory in subsequent decades had an obvious impact on the issue of identifying the set of categories involved in pied-piping.

Unlike the highly construction-specific transformations themselves characteristic of the Standard Theory of the 1960s assumed also by Ross, the Pied-Piping Convention clearly was conceived as applying in a general way, to all transformational

movements, and irrespective of construction type. In addition to examples involving the Relative Clause Formation transformation, Ross (1986) demonstrated the pied-piping phenomenon, and the effects of conditions on its application, with respect to transformations such as the *wh*-movement rule forming interrogatives (his Question Rule), Topicalization and Heavy NP Shift (the latter two cases are exemplified in (11) and (12), respectively).

(11) a. The boy's guardian's employer we elected president.
b. *The boy's guardian's we elected employer president.

(12) a. We elected president the boy's guardian's employer.
b. *We elected employer president the boy's guardian's.

As for the issue of the universal status of the convention and cases of apparent cross-linguistic variation with respect to pied-piping phenomena, Ross noted problems at least in two major areas. One such case involved the LBC, which turned out not to apply in some languages, as for instance Russian and Latin; hence Ross proposed that it is a condition specified in particular grammars. The other area that posed important problems for the Pied-Piping Convention was the variation among languages with respect to PPs: stranding vs. pied-piping of Ps seemed not to be a free choice in particular languages as would be expected based on the convention. The stranding of Ps was known to be prohibited in a variety of languages (e.g., German, French, Italian, Russian), i.e., pied-piping of P was obligatory. On the other hand, in languages like Danish and English, pied-piping of Ps was claimed to be prohibited in some specific environments, as exemplified below for English by (13a, b) (=Ross's (4.211b, c)).

(13) a. ?*Did you notice of which difficulties she made light?
b. *Of whom are you trying to get hold?

Ross incorporated these cases of variation as separate stipulated conditions on pied-piping that appear in individual grammars, and left the original formulation of the convention in UG. Most of the empirical issues involved remain essentially unresolved until today.

2.2 *Pied-piping in the GB model: X-Bar Theory and Move α*

The major shift in the theory that took place in the 1980s GB era, replacing the Standard Theory's assumption of language-particular grammars with the Principles-and-Parameters theory, naturally resulted in a change in the view of the pied-piping mechanism as well. One factor that had an important impact on the kinds of questions that could be raised with respect to pied-piping was the development of a full-fledged X-Bar theory of phrase structure. A relevant aspect of this development was the postulation of new phrasal categories with a

uniform X-Bar structure for categories that previously either had been neglected – as for instance the category PP, as distinct from NP, and the subsequently introduced DP, projected by D(et) (see, e.g., Brame 1982; Szabolcsi 1983; Abney 1987) – or had been assigned an exocentric structure, radically different from the rest of the phrasal categories, such as the clausal categories S and S', which have become known since Chomsky (1986a) as IP, headed by I, and CP, headed by C. This in turn resulted in an increased number of category types which exhibited a uniform, precisely articulated internal hierarchical structure, with structurally defined relations such as Spec–Head and Head–Complement, and for which cross-categorial generalizations were expected to hold in principle, and had in fact been observed with respect to various empirical domains. Given this, the issue of whether the pied-piping phenomenon is category-neutral or not and if not, why not, became an obvious subject for empirical inquiry.

This direction leading towards the need for a more general, non-stipulative theory of pied-piping was further reinforced by the elimination of individual transformations in favor of the universal maximally general 'Move α' schema for transformational movement, permitting in principle free movement of any category to any position. With construction-particular statements of transformations gone, the task of accounting for observed properties of and limitations on actual movement options got assigned to universal constraints and principles, with a limited number and kinds of open parameters, within UG. UG acquired a rich modular structure consisting of a variety of subsystems of principles (e.g., theta theory, Case theory, binding theory, locality conditions); it was the interaction of these that was supposed to derive the actual clusters of empirical phenomena recognized descriptively as 'constructions', which had earlier been accounted for by stipulating various individual construction-specific transformations. Since under Move α any size constituents could undergo movement in any construction, unless it resulted in violation of a UG principle or condition, the challenge with respect to pied-piping in this framework became quite different from the situation in Ross's time. For Ross, what needed explanation in the first place, and what led him to introduce the Pied-Piping Convention, was the existence of cases when a 'larger-than-expected' constituent moved; in contrast, in the GB era, what was in need of an account was the large set of cases where pied-piping seemed to be impossible, for apparently no known reason. In other words, movements in effect became completely unlimited under the Move α schema, making the Pied-Piping Convention as such entirely redundant, and just like other instances of overgeneration by movements, cases as, e.g., those in (14–16), involving apparently illegitimate pied-piping effects, needed to be excluded in new, non-stipulative ways.

(14) *We wondered [the rumors about *whom*] shocked Mary.

(15) *[Some *how* old boys] have you met?

(16) *[Read *what*] has John?

The first systematic investigation into the nature and limitations of what pretheoretically continued to be referred to as pied-piping phenomena in the GB framework was presented by Webelhuth (1992: ch. 4). Webelhuth's study explored *wh*-movements in the Germanic languages, and arrived at a set of important structure-dependent descriptive generalizations about what positions in terms of X-Bar theory and in what types of phrases can serve as pied-pipers. His actual account of the generalizations he uncovered was based on a modular view of UG, and involved the interaction of independently motivated principles, such as the theta criterion, the definition of syntactic operator, the Bijection Principle, the definition of the modification relation, and others. (For a discussion of Webelhuth's analysis, see section 4.)

Other work on pied-piping during the GB period concentrated on more limited issues, such as the existence of clausal pied-piping and the severe restrictions on it in languages like English and German, studied, e.g., in Nanni and Stillings (1978), Ishihara (1984), and Van Riemsdijk (1985). (On CP pied-piping see also section 4.5 below.) Another specific aspect of pied-piping addressed in the 1980s was the issue of LF-pied-piping, debated primarily (a) in relation to apparent violations of Subjacency in cases of (alleged) covert *wh*-movement of in situ *wh*-phrases by Choe (1987), Nishigauchi (1990), Pesetsky (1987a), Fiengo et al. (1988), and (b) in relation to May's (1985) QR-based account of antecedent-contained deletion (ACD). (See also chapter 77 and a general overview of LF-pied-piping in section 5.) Some more general remarks about S-structure pied-piping phenomena involving *wh*-movement were presented by Kayne (1984a: ch. 8) with reference to his notion of g-projection set.

2.3 *A Minimalist perspective: feature movement and the status of pied-piping*

One major innovation that characterized the emerging Minimalist research program of the 1990s involved a change in the conception of movement operations. The minimalist framework (Chomsky 1995c) incorporated in a strict and systematic way the earlier idea of movement having a last-resort character. This was made precise by claiming that movement in the syntactic derivation, i.e., in the computational system (CS), must always be 'driven', and specifically, it is possible only for the satisfaction of abstract morphological requirements, namely, for the checking of uninterpretable formal features (such as Case, phi-features, etc.) occurring on lexical items. The assumption that all movements are feature-driven led directly to the proposal that the movement operation Move/Attract applies only to the formal features themselves. In other words, movement in the MP framework of the 1990s was conceived of as feature movement, rather than movement of full categories (but see Chomsky 2000 for a revision of the idea of feature movement). If so, as argued by Chomsky (1995c), any case in which more than just the formal features of items move is an instance of the application of pied-piping. Thus any displacement of overt material is construed in this

framework as a case of pied-piping. (On what forces such pied-piping, related issues of economy and predictions regarding LF-pied-piping, see Chomsky 1995c and section 6 below.) This extended notion of pied-piping is referred to in the MP literature as generalized pied-piping.

Observe here the contrast arising between the status of pied-piping in GB theory and pied-piping in the above version of the MP framework. While anything could in principle move under 'Move α', so the crucial question in the GB frameweork was how to exclude – usually by various well-formedness and interpretive conditions – unwanted instances of pied-piping, the issue is exactly the reverse under Chomsky's (1995c) MP. Other things being equal, nothing can move, in accordance with the notion of derivational economy, apart from formal features, and those move only when needed for feature checking. Hence the actual occurrence of any movement of elements 'larger' than such features not only constitutes pied-piping in this version of the MP, but more importantly, pied-piping itself needs to be accounted for in terms of what forces it under the MP notion of economy.

Chomsky (1995c) suggests the strong hypothesis that all pied-piping is forced by needs of the PF-interface. Bare feature movement results in scattered, isolated features, which as such are uninterpretable for the PF component, i.e., they cannot be pronounced. So pied-piping of (at least) the full lexical item bearing the relevant feature would be forced to take place in order to repair this, and thus to prevent the derivation from crashing at PF. The empirical challenge such a proposal faces is of course to find motivated PF-based reasons for the observed pied-piping of various larger than minimal pronounceable constituents (e.g., various phrasal categories). This unified PF-interface hypothesis of (generalized) pied-piping opens up some intriguing questions for future research, such as the problems raised by the existence of both head movement and phrasal movement in the theory, when both are assumed to be feature-driven, or for instance the question of the proper analysis of apparent cases of large-scale pied-piping and of the coexistence of alternative pied-piping options with respect to the same element (see also section 6).

3 Descriptive dimensions of pied-piping: *wh*-movement

The main body of phenomena considered as uncontroversial cases of pied-piping in the literature of the past three decades manifests variation along a number of different dimensions. Using the best-studied case, namely, pied-piping under *wh*-movement, the following subsections will sort out and organize the observed pied-piping phenomena along these distinct but interrelated dimensions. Each subsection will discuss one such dimension, keeping the rest of the factors of variation constant as much as possible. This outline of the relevant descriptive dimensions will be providing the empirical foundation and frame of reference for the discussion of proposed accounts in section 4.

3.1 Construction-specific variation

Contrary to what might be expected (other things being equal) under the conception of pied-piping as a unified property of movements, it turns out that at least prima facie, pied-piping applies differently to different construction types. Thus, three core cases of *wh*-movement construction of English, each involving an overt *wh*-morpheme, exhibit three distinct patterns of possible pied-piping. One such unexpected contrast holds between pied-piping options in relative clauses – of the type that led Ross to propose the Pied-Piping Convention in the first place – and pied-piping options in *wh*-questions. As will be demonstrated in section 3.1.1, a specific set of pied-piping cases exist in English with respect to relative clauses formed by *wh*-movement but not with respect to corresponding interrogatives being formed by *wh*-movement. In addition to this apparent relative–interrogative *wh*-movement contrast, a third distinct pattern of pied-piping options is attested in the case of *wh*-movement forming free relatives. As will be shown in section 3.1.2, pied-piping effects in free relatives are even more limited than they are in the case of *wh*-interrogatives. In a set of well-defined subcases, pied-piping by the *wh*-word seems impossible in free relatives while the same phrase can be pied-piped both in (restrictive and non-restrictive) headed relatives and in *wh*-questions.

3.1.1 Restrictive and non-restrictive relative clauses vs. wh-questions

Pied-piping under *wh*-movement has been observed to be most permissive in the case of relative clauses, and especially in non-restrictive relatives (on a contrast observed between pied-piping in restrictive and non-restrictive relatives, see the discussion of (21a, b) and (21c) below, as well as section 4.3.1). Consider first the kind of relative clause data (discussed also by Webelhuth 1992) that was used by Ross as the initial motivation for the Pied-Piping Convention.

(17) a. Reports [the height of the lettering on the covers of *which*] the government prescribes should be abolished.
b. He is a linguist [articles by *whom*] the editors always reject.
c. This is the kind of woman [proud of *whom*] I could never be.

Crucially, it turns out that the corresponding *wh*-questions are unacceptable. (The unacceptability of such pied-piping is even sharper in embedded interrogatives than in matrix ones, possibly due to interference from echo questions in the latter cases, as noted in Kayne 1994.)

(18) a. *[The height of the lettering on the covers of *which* reports] did the government prescribe?
b. *We don't know [articles by *whom*] the editors have rejected.
c. *I asked Bill [proud of *whom*] he has always been.

Descriptively speaking, what seems to characterize the *wh*-phrases that manifest contrasting pied-piping options in relatives vs. in *wh*-questions in English is that the *wh*-word itself in these types of phrases is located to the right of the head of the phrase (this will be made more precise in section 3.2). The cross-linguistic status of the above type of data suggests that it is the possibility of such (apparent) pied-piping in English relatives, rather than its unavailability in English *wh*-questions, that is special in some way, i.e., that is the unexpected aspect of the contrast. The reason is that relative clauses in the other Germanic languages uniformly fail to permit such instances of pied-piping, as shown for instance by Webelhuth's (1992: 129) examples for German, Dutch (see (19–20)), as well as for Swedish, Danish, and Norwegian.

(19) *der Präsident, [ein Bild von *dem*] an der Wand hing German
the president a picture of whom at the wall hung

(20) *de president, [een foto van *wie*] aan de muur hing Dutch
the president a picture of whom at the wall hung

Observe furthermore that such cases of pied-piping in English relatives as in (17) contrast not only with corresponding English *wh*-interrogatives, and not only are they ungrammatical in the other Germanic languages, but they also vary in acceptability among themselves. A systematic aspect of the latter kind of variation is pointed out by Emonds (1985: 304, n. 20).

Emonds claims that the marginal status and variability of judgments hold for pied-piping of this type specifically within restrictive relatives, indicating that such cases when acceptable, are only 'derivatively' generated, on the model of non-restrictive relatives. He bases this claim on restrictive relatives such as in (21a, b), where interference from non-restrictive relatives is reduced by the choice of the heads of these relatives (which would be inappropriate as heads of non-restrictive relatives), and on their contrast with the non-restrictive relative (21c). (Emonds's judgments below are not uniformly shared by speakers.)

(21) a. ?We should visit only the city [a favorable report on *which*] Jack received.
b. *Most students are interested in any professor [a security file on *whom*] the government won't release.
c. Most students are interested in Prof. Rotestern, [the security file on *whom*] the government won't release.

He concludes that pied-piping by a post-head *wh*-word is a legitimate, though stylistically literary, option only for non-restrictive relatives.

In sum, pied-piping (by a *wh*-word) in English has been shown to be more limited in questions than in relatives, or at least than in non-restrictive relatives.

3.1.2 Free relatives

Consider next the following contrast between *wh*-questions and headed relatives on the one hand and free relatives on the other, involving a type of pied-piping not discussed in section 3.1.1, namely, pied-piping when the *wh*-word occurs to the left of the head of the relevant phrase:

(22) ***Wh*-questions:**
a. I wonder [*what*] you bought.
b. I wonder [*whose* picture] you lost.
c. I wonder [*whose* mother's picture] is hanging on the wall.

(23) **Relatives with an overt head:**
a. the picture [*which*] you bought
b. the person [*whose* picture] you lost
c. the person [*whose* mother's picture] is hanging on the wall

(24) **Free relatives:**
a. I like [*what*] you bought.
b. *I admire [*whose* picture] you lost.
c. *[*Whose* mother's picture] is hanging on the wall should be fired.

The impossibility of pied-piping within free relatives demonstrated in (24b, c) above, and their striking contrast with the perfectly grammatical corresponding *wh*-questions and overtly headed relatives (as in (22b, c) and (23b, c)) was first pointed out and analyzed in Grosu (1989). As demonstrated by Grosu, this severe limitation on free relatives with respect to pied-piping effects is not specific to English, but holds for the full range of languages (e.g., also in German, Romanian, Finnish, Latin, Classical Greek), and is independent of where the particular free relatives fall in terms of the matching parameter (see also Grosu 1994 and chapter 27). The proposed account, based on the need of local identification for the *pro* head of the free relative, will be discussed in section 4.3.2.

3.2 The phrase-internal position of the pied-piper

The phenomena introduced in section 3.1.1 already suggested that the position of the potential pied-piper within a phrase is a relevant factor in determining whether that particular phrase will or will not undergo pied-piping. Specifically, we have seen that with the exception of some relative clauses in a literary register of English, pied-piping in the Germanic languages under *wh*-movement is possible only if the *wh*-word occurs to the left of the head of the phrase (see, e.g., (18), (19), and (20)). This observation needs to be made more precise by exploring the exact nature of the apparent constraint on the position of the pied-piper within the relevant phrase. Consider first the contrast shown in (25) and (26) regarding pied-piping options for DPs in English:

(25) a. I wonder [*whose* articles] they read.
b. I wonder [*which* airport] is the busiest.

(26) a. *I wonder [articles by *whom/which* linguists] they read.
b. *I wonder [the airport *where*/in *which* city] is the busiest.

Descriptively speaking, the relevant generalization in this set of examples is that a DP can get pied-piped under *wh*-movement only when the *wh*-word is either to the left of the head, more precisely, as suggested by (29–30) below, occupying its Spec position (as in (25a)) or is the head D itself (as in (25b)). When it follows the head of the phrase, specifically, when it is a complement of the lexical head or a modifier (adjunct), as in (26a, b), then it cannot induce pied-piping of the phrase. A similar pattern is observed also in the case of pied-piping of APs.

(27) I wonder [*how* proud of his achievements] your brother is.

(28) *I wonder [very proud of *what/whose* achievements] your brother is.

At this point one may still assume that the observed generalization about the pied-piper's phrase-internal position involves linear order with respect to the head, rather than notions of hierarchical structure and corresponding grammatical relations within the phrase. But consider the following relevant data from English and German DPs, as well as APs in German, discussed in Webelhuth (1992):

(29) a. *[The/Some *how* old books] has John lost?
b. *[Die *wie* alten Bücher] hat Hans verloren?
the how old books has Hans lost

(30) *[Auf *wen* sehr stolz] ist Hans?
of whom very proud is Hans

In (29a, b) the *wh*-word is to the left of the lexical head of the phrase, yet it cannot induce pied-piping. But this is precisely what one would expect if the correct generalization was based on hierarchical position in terms of X-Bar theory: unlike in (25) and (27), here the *wh*-word is not in the Spec position of the pied-piped phrase, but is in an adjunct of the noun phrase, namely, in an attributive-adjective phrase. The example in (30) provides even stronger evidence against a linear precedence-based generalization for what can be a pied-piper in a phrase. It shows that even though in German PP-complements of adjectives are possible both to the right and to the left of the head A (see Webelhuth 1992: 122), pied-piping of the AP by a pre-head *wh*-complement is still impossible, just like it is with post-head ones. Again, this suggests that it is being a complement rather than a Spec of the AP that is the crucial factor blocking pied-piping by the *wh*-word here, and not linear position.

Finally, one might perhaps try to claim at this point that all the above cases where the *wh*-word could not act as a pied-piper, (26), (28), (29), and (30) are due to a requirement that the pied-piper needs to be adjacent to the left periphery of the phrase, i.e., needs to be in absolute initial position. But notice that this amended linear alternative turns out to be inadequate as well, in light of the following evidence from pied-piping data involving Hungarian DPs (on a detailed analysis of the latter see Szabolcsi 1983 and subsequent work). The Hungarian facts indicate that in fact the pied-piper need not be initial in the pied-piped phrase.

(31) a. [János *melyik* fiát] szereted legjobban? Hungarian
John which son-3Sg Poss-Acc like-2Sg best
'Which son of John's do you like most?'
b. [Az anyád *hány* barátnőjének]
the mother-2Sg Poss how many woman-friend-3Sg Poss-Dat
telefonáltál?
phoned-2Sg
'How many of your mother's friends did you call?'

The type of facts presented in this subsection leads to the conclusion that the position of the (potential) pied-piper in the relevant phrase is a major factor in determining whether pied-piping will or will not be possible. Furthermore, the descriptive generalization emerging from the data so far is that specifiers and heads of phrases are able to induce pied-piping, whereas complements and adjuncts are not pied-pipers. (For further elaboration of this generalization and for proposed accounts, see Webelhuth 1992: ch. 4 and sections 3.3 and 4.)

3.3 Category type of the pied-piped phrase

An additional dimension of variation with respect to pied-piping phenomena involves the category type of phrases undergoing pied-piping. Even if we limit ourselves to the core set of category types that were assumed already during the GB period, we find that not all phrasal categories undergo the same range of pied-piping phenomena; rather there seem to exist some category-specific differences in pied-piping under *wh*-movement.

The case of DPs, APs, and AdvPs is the most straightforward. They can get pied-piped under *wh*-movement, as expected based on what we saw in sections 3.1 and 3.2. Specifically, the general case of pied-piping attested both in *wh*-questions and in relatives shown in section 3.1 (where the pied-piping *wh*-word is a specifier or a head) occurs consistently with all three of these categories. Furthermore, in languages like English, which exhibit Left Branch Condition effects, they get pied-piped obligatorily.

(32) **Pied-piping of DP:**
She wondered [*whose* closest friends] you had invited to the party.

(33) **Pied-piping of AP:**
I wonder [*how* proud of his achievements] is your brother?

(34) **Pied-piping of AdvP:**
I wonder [*how* well] she remembers her early childhood.

The cases of PPs and of clausal projections with respect to pied-piping options are far more complex, and they exhibit some patterns that are unexpected under the generalizations reached in section 3.2 above.

Regarding PPs, the major phenomenon to observe involves the existence of standard (not stylistically restricted) pied-piping of PP by a *wh*-word or phrase in its complement position, instantiated in *wh*-questions as well as in the various types of relatives; this is in contrast with the case of the other phrase types discussed, where complements were not pied-pipers. The pied-piping of Ps involves significant language particular variation: some languages, such as those permitting preposition stranding (see chapter 50), e.g., the Scandinavian languages and (colloquial versions of) English, exhibit pied-piping by the complement of P only optionally, and in certain cases not at all, whereas in a wide variety of other languages, including German, French, Spanish, and Russian, complements of P pied-pipe obligatorily under *wh*-movement. Pied-piping of PP by a *wh*-complement is illustrated below from German and Dutch.

(35) **PP-pied-piping by complement:**
a. [Mit *wem*] hat Hans gesprochen? German
with whom has Hans spoken
b. [Van *wie*] heb je die schaar gekregen? Dutch
from whom have you those scissors gotten
(Webelhuth 1992: 124)

Beyond the surprising behavior of complements of P, pied-piping by *wh*-elements in Spec is possible (though contrary to Ross's Left Branch Condition, is not obligatory), and pied-piping by modifiers is impossible, as expected based on the discussion in section 3.2:

(36) **PP-pied-piping by Spec:**
[*How many* feet behind the house] should I put the table?
Cf. [*How many*] feet should I put the table behind the house?
(Emonds 1976: 184)

(37) **PP-pied-piping by Modifier:**
a. *[Where into the kitchen] did John go?
Cf. He went [downstairs [into the kitchen]].
b. *[Wohin in die Küche] ist er gegangen?
where into the kitchen is he gone
(Webelhuth 1992: 125)

What is left to examine now is the behavior of the extended projections of V (in the sense of Grimshaw 1991), i.e., VP and the clausal functional projections postulated above VP. With respect to these clausal projections, we will limit our discussion here to the highest canonical clausal projection, namely to CP. (On proposals involving pied-piping of IP, in particular to Spec of CP, see, for instance, Sportiche's 1995 argument from French intonational yes–no questions, and Koopman's 1996; 1997 IP-pied-piping account of subject-*wh* extraction in English.)

Let us consider first the question of whether VPs undergo pied-piping under *wh*-movement. Notice that under the VP-internal subject hypothesis, the external argument of V originates in the Spec of VP and it undergoes A-movement to Spec of IP (at least in languages like English). This means that the Spec of VP is filled by a trace, hence it cannot be tested for whether a *wh*-element in it could or could not pied-pipe the VP under *wh*-movement. As for other positions in the VP, consider the set of data given below in (38) and (39) (Webelhuth 1992: 123–124); what it demonstrates is that neither a *wh*-complement nor a *wh*-adjunct may induce pied-piping of a VP.

(38) a. *[Read *what*] has John?
b. *[*Was* gelesen] hat Hans?
what read has Hans

(39) a. *[*How* closed the door] has John?
b. *[*Wie* die Tür geschlossen] hat Hans?
how the door closed has Hans

The issue of pied-piping of clauses under *wh*-movement presents a less uniform situation; in the literature there are some well-known, though controversial, claims regarding particular languages, e.g. Basque and German, permitting some varieties of clausal (CP) pied-piping. In this section we will present only the basic cases, focusing on English, and return to discuss some further more controversial, and language-specific cases in the overview of CP-pied-piping in section 4.5.

As noted in Webelhuth (1992: 126) based on examples from English (non-echo) *wh*-questions with a finite CP complement, such as (40) below, pied-piping of CP by a *wh*-element in its IP complement is impossible, irrespective of whether the *wh*-phrase occupies Spec, complement or adjunct position in the IP.

(40) a. *[That *who* met John] did Mary know?
b. *[That John met *who*(*m*)] did Mary know?
c. *[That John left *when*] did Mary know?

Similarly, pied-piping of infinitival CPs by a *wh*-element in IP is also impossible, as shown below by the (non-echo) question in (41). The same is true for standard (not stylistically marked) relative clauses as well. (On the case of non-standard extensive pied-piping in the stylistically marked, literary versions

of relatives in English introduced in section 3.1.1 above, which includes also certain instances of clausal pied-piping, see section 4.3.1.)

(41) *[To meet *who*(*m*)] would Mary be very happy?

Finally, turning to the important issue of whether a *wh*-element occupying the Spec position in CP may or may not act as a pied-piper for the whole CP, consider the following:

(42) **CP-pied-piping by Spec:**
a. *[*Which* boys to invite] did John suggest?
b. *[*Wer* ein Buch gelesen hat] wusste Hans?
who a book read has knew Hans
(from Webelhuth (1992: 127))

This type of data seem to indicate clearly that no CP pied-piping is possible under *wh*-movement, at least in English, and according to Webelhuth's (1992) claim, in the other Germanic languages either (on a controversial case of clausal pied-piping in German by a relative pronoun, see section 4.5). However, it is worth noting here that English still exhibits a construction which at least prima facie suggests that this statement may turn out to be too strong. Thus, although subject to a number of hitherto unexplored limitations, the sentence-type exemplified in (43) below might appear to instantiate CP-pied-piping by a *wh*-specifier in English (this case was originally pointed out by Anna Szabolcsi (p.c.), and was referred to in relation to the analysis of so-called partial *wh*-movement constructions in Horvath (1998, n. 10) and Kayne (2000: ch. 13, n. 107).

(43) a. [*Where* did he go], do you think?
b. [*Who* left last night], do you think?

Whether cases like (43a, b) indeed instantiate CP-pied-piping is however far from unequivocal. The presence of main clause properties in the allegedly pied-piped embedded CP, such as the requirement of being tensed (cf. (42a) and (43)), and most prominently the obligatory application of subject-auxiliary inversion (as in (43a)), suggests an alternative analysis involving no clausal pied-piping (on 'root phenomena' in embedded vs. main clause contexts, see chapter 23). Under the latter alternative, the bracketed clause in (43a, b) is the main clause, and the rest of the sentence (*do you think*) would be taken to be a parenthetical. However, until an in-depth systematic investigation of the topic is undertaken, no firm conclusion can be reached regarding the proper analysis of this curious construction type.

4 Issues and proposed analyses

In this section we will approach the various observations regarding pied-piping effects under *wh*-movement reviewed in section 3 in a systematic theory-bound

manner. The section will present and discuss proposals aimed at developing a comprehensive account that could integrate the descriptive generalizations reached with respect to *wh*-movements, together with other known pied-piping phenomena, into a general theory of pied-piping, possibly involving the interaction of several independent modules of UG. Within the framework of the P&P conception of UG, and in particular, assuming versions of this theory that have emerged since the early 1990s, it is helpful to organize the discussion of the observed pied-piping effects and the proposed accounts around the following two general questions:

(i) Given that by definition, any movement potentially involving pied-piping is (under current assumptions) driven by the need for some element smaller than the pied-piped phrase (e.g., a lexical item, or a formal feature) to be placed in a new position, what are the conditions that enable the pied-piping operation to take place, i.e., what makes movement of the larger constituent containing the element actually driving the movement operation possible in the first place?
(ii) How does the particular structure arising from the application or non-application of a pied-piping operation satisfy or violate assumed general well-formedness conditions on the output of syntactic computations (such as the requirements on operator-variable chains, the Bijection Principle, the theta criterion, or the identification of phonologically null elements)?

The primary focus of our discussion below will be question (i), and aspects of question (ii) will be brought in only to the extent that they directly bear on the particular empirical phenomena under discussion. Otherwise, issues such as for instance what mechanisms are needed for assigning correct interpretations at the LF-interface (with respect to anaphor binding, scope, etc.) to elements within pied-piped structures, and specifically the issue of the need for and the nature of a reconstruction mechanism, will not be addressed (on the latter, see chapter 54).

Based on the facts presented in section 2, it is clear that the answer to question (i) cannot be that pied-piping is free, i.e., that any moving element can pied-pipe any phrase dominating it. But at the outset, it also needs to be noted that the patterns of occurrence of pied-piping do not seem to be adequately accounted for based on the initially appealing idea that it is a default mechanism, namely, that pied-piping applies if and only if extraction of the smaller element driving the movement is prohibited. This type of hypothesis turns out to run into problems when we consider, for instance, cases where either a *wh*-element in Spec position of a phrase or the whole phrase itself may undergo the same movement operation, without resulting in any stylistic markedness; see, e.g., the case of English PPs with a *wh*-specifier as [[*how many* feet] behind *the house*] in example (36) above, or pied-piping options of DPs by *wh*-specifiers in languages such as Russian, where the Left Branch Condition seems not to apply, and extraction of the specifier is permitted. Furthermore, the above idea of 'free pied-piping as

default' is also shown inadequate by cases where, although the *wh*-elements occur within extraction islands such as, e.g., complex-NPs, coordinate structures, adjuncts, etc., yet the dominating large phrase cannot get pied-piped, in spite of the unavailability of *wh*-extraction (see e.g. (44b)):

(44) **Adjunct island:**
  a. *They knew *what* he felt guilty [after saying *t*].
  b. *They knew [after saying *what*] he felt guilty.

Thus, there clearly seem to be some substantive structure-sensitive prerequisites for pied-piping to take place.

4.1 What can pied-pipe a phrase?

A logical starting point for the exploration of the essence of pied-piping, and one that also reflects the main direction of current research on the subject (such as in Webelhuth 1992: ch. 4; Koopman 1996, 1997) is provided by the initial descriptive generalization (see (45)) reached in section 3.2 regarding the structural position of pied-pipers vs. non-pied-pipers within their phrase (manifested most transparently in the case of DPs and APs, as, e.g., (25a, b), (27) vs. (26a, b), (28–30)):

(45) Given a phrase XP,
  a. the head X and the specifier YP are pied-pipers for XP;
  b. complements of X and modifiers (adjuncts) are not pied-pipers for XP.

Some of the empirical phenomena reviewed in section 3 represent apparently major deviations from this primary generalization. Such are, obviously, the stylistically marked heavy pied-piping cases attested in relative clauses in English (shown in section 3.1.1), more importantly, the widely attested case of PP pied-piping by a complement of P, and also the case of CPs (shown in section 3.3), as well as the case of DPs in free relatives (in section 3.1.2), both of which appear not to get pied-piped even by their specifier. Each of these apparent deviations from the generalization in (45) will be reexamined and dealt with in sections 4.3, 4.4, and 4.5.

Further exploration of the statement in (45), reveals that it is not fully adequate in its present form even for the apparently straightforward DP and AP cases that it was primarily motivated by. Beyond examples such as (25a, b) and (27) representing cases of legitimate pied-piping, consider data of the following type, manifesting additional pied-piping options; such data argue for making the statement of (45) somewhat more general.

(46) They wondered [*whose* daughter's teacher] the school had fired.

In the above cases the pied-piped phrase, namely a DP, has a *wh*-word in it (*whose*), however this itself is neither the head nor the specifier of the moved

phrase. In (46), the pied-piper *whose* is the specifier of the specifier of the moved DP. What this suggests is that being a pied-piper for a phrase via the specifier relation, as stated in (45), is a transitive relation, so that also a Spec of a Spec (of a Spec) of a phrase can act as a pied-piper for the phrase. In the following section we will elaborate the core pied-piping generalizations presented above, and discuss proposals for the underlying mechanism from which they may derive.

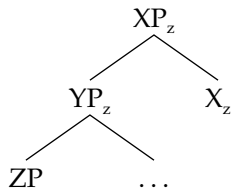
4.2 *The core cases: projection and the Spec–Head relation*

Conceptually, the generalizations summarized in (45) and amended above based on (46) seem reasonable, given what is known about the various structural positions within phrase structure. Heads project their features, thus giving rise to higher (phrasal) categories, and, consequently, phrases by definition exhibit features of their heads. Thus any feature on a head that may be driving a movement operation is available on the phrase projected from that head, hence the particular movement operation may in principle move the phrase itself, resulting in 'pied-piping' of a phrase by (features of) its head. The only other feature-sharing (agreement) relationship permitted in restrictive theories of phrase structure since Chomsky's *Barriers* (1986a) is between the specifier and the head of the phrase. This Spec–Head agreement relation offers an obvious account for pied-piping of a phrase by its Spec, provided the additional assumption that this agreement relation is dynamic in the sense that features of a specifier that the head does not possess may be inherited by this head under the Spec–Head agreement relation. (For some empirical consequences of this latter assumption, see the discussion of operator features and CP-pied-piping by *wh* under Webelhuth's (1992) analysis in section 4.5, as well as Grosu's (1994) 'anti-pied-piping' effects presented in 4.3.2.)

Koopman (1997) explicitly formulates the hypothesis that the pied-piped category inherits the feature relevant for the checking relation driving the movement through projection from the head. Furthermore, according to Koopman's hypothesis, as well as to Koopman and Szabolcsi (2000), a head can acquire such a feature in two ways (or through a combination of these two ways): the feature may originate in Spec position, and a head may inherit it through (a series of) Spec–Head agreement relations, assumed to involve a 'dynamic' type of agreement (as illustrated in (47)); alternatively, the head may inherit a feature through head movement, i.e., through a lower head bearing the feature being raised to it (this latter way will be presented in section 4.4, in the context of PP-pied-piping by a complement of P).

(47) **Pied-piping via Spec–Head agreement:**
XP inherits a feature from its *specifier (where '*specifier' is the transitive closure of the specifier relation).

E.g.:



(Koopman 1997 and Koopman and Szabolcsi 2000: 41)

In this case, ZP, being the specifier of YP, agrees with the head Y; Y's features are the features of its maximal projection YP. YP itself, being the specifier of XP, agrees with the head X, and features of X are features of its maximal projection XP. Hence XP is able to get pied-piped under movement applying to phrases bearing the feature z.

This type of account, based on mechanisms of feature inheritance and projection, is relevant for all movement operations that are driven by the presence of some syntactically active (formal) feature; its consequences extend both to A-bar movement (operator–variable) constructions, like the case of *wh*-movement under discussion, as well as to cases of A-movement, where there is no operator, and the features involved are inflectional ones, such as, e.g., Case and phi-features. What is important to note here though is that the above proposal for deriving the observed core pied-piping generalizations makes sense only if the movements involved are feature driven. If on the other hand, the overt movement of phrases were not driven by needs of feature checking, but rather for instance by an EPP property of some functional heads requiring the merger of a Spec (as proposed in Chomsky's 2000 version of the MP which assumes an operation Agree), then the pattern of pied-piping facts above might not be accounted for by the applicability/inapplicability of the movement operation itself, since the latter would not depend on the moved phrase having acquired any particular feature. Thus it would be unclear why the kind of structural position occupied by the *wh*-morpheme within the moved larger phrase turns out to make a difference for grammaticality. So under the assumption of non-feature-driven movement, the observed differences, such as for instance the well-formedness of a *wh*-element in the Spec but not in the complement position of the phrase moved to Spec of CP, would have to receive an alternative account.

A possible attempt at such an account, namely, an attempt to derive the pied-piper status of the Spec (of Spec) position in phrases without relying on features, may be based on some independent proposals made with respect to the c-command and binding properties of the Spec position by Kayne (1994), and further elaborated by Hornstein (1995). In Kayne's (1994) Antisymmetry theory, specifiers are taken to be an instance of adjunction. This assumption about specifiers, together with a definition of c-command crucially formulated in terms of exclusion (see (48), Kayne (1994: 24), has the consequence that a specifier will c-command out of the phrase it is the specifier of. In contrast a complement, as before, will not c-command out of its phrase.

(48) X c-commands Y iff X and Y are categories and X excludes Y and every category that dominates X dominates Y.

This will immediately account, for example, for the traditionally problematic cases of bound interpretation of the pronouns (discussed by Reinhart 1983a: 177) in examples like *Everyone's mother thinks he's a genius,* or *Nobody's students should respect him,* where the quantifier appears in Spec of the subject DP. It will predict the contrast with the unavailability of a bound interpretation for the pronoun in otherwise similar cases when the quantifier is in complement position within the subject DP, as in cases like *A small part of every article undermined it,* or *The election of no one to the Hall of Fame hindered his career* (from Hornstein 1995: 107). Now notice that the above assumption, namely, that specifiers, and no other positions in the phrase are able to c-command, and hence bind, some element out of that phrase could potentially provide a non-feature-based account for the specifier vs. complement distinction between pied-pipers of *wh*-moved phrases. The reason is that irrespective of the issue of *wh*-feature-checking on C, the *wh*-operator dominated by the phrase moved to Spec of CP position, such as, e.g., *whose* in *Whose article have you read?* needs to bind a variable; it needs to bind a corresponding trace within the IP. Assuming the copy theory of movement, such a 'trace' would indeed be available within the lower copy of the moved phrase. Whether this trace can or cannot be bound by the *wh*-operator dominated by the pied-piped phrase in Spec of CP depends now on whether the position of the *wh*-operator is such that it c-commands out of the Spec of CP, and hence binds the trace within the IP-internal copy. Assuming, crucially, that no additional (covert) raising of the *wh*-operator itself is stipulated, a *wh*-operator appearing in the Spec position of the pied-piped phrase will still be able to bind the corresponding trace in the copy, whereas a *wh*-operator occurring as a complement of the same phrase will clearly fail to satisfy the requirement of binding the trace in IP, due to failure of c-command.

However, some immediate empirical problems arise in relation to this notion of c-command and its use as an alternative to feature-inheritance accounts for the observed distinctions between positions of *wh*-pied-pipers vs. *wh*-non-pied-pipers within phrases. One of these is the fact that, based on Kayne's (1994) notions of specifier and c-command (48), DP specifiers would be expected to give rise to Condition C effects (in the sense of Chomsky's 1981 Binding Theory), namely, disjointness of reference in cases such as (49), and strong crossover, rather than merely mild weak crossover, effects in cases such as (50a). But the (underlined) specifiers of the DPs in (49) and (50a) in fact fail to induce Condition C and strong crossover effects. The absence of strong crossover is demonstrated by the relative acceptability judgment on (50a) contrasting with an uncontroversial strong crossover case (50b) (on the variability and mildness of weak crossover effects manifested by restrictive relative clauses such as (50a), see Lasnik and Stowell 1991).

(49) [His$_i$ mother] thinks that John$_i$ is a genius.

(50) a. ??the girl who$_i$ [[her$_i$ brother] has hit t_i]
b. *the girl [whose$_i$ brother] [she$_i$ has hit [t_i [ ]]]

The facts in (49–50) thus raise serious doubts about these specifiers of DP being able to c-command into the clause, and, more generally, about the claim that specifiers can c-command outside of the maximal XP that they are specifiers of. Incidentally, in contrast to this 'c-command out of Spec' proposal, the feature-inheritance account formulated in (43) for pied-piping may also provide a way to approach the problematic discrepancy noted here between the variable-binding behavior of quantificational specifiers (as in *Everyone's mother thinks that he is a genius*), on the one hand, and the lack of A-binding behavior of non-quantificational specifiers (see (49)), on the other. A potential account reconciling the two structurally parallel cases may be based on the reasonable assumption that while operator features – such as [*wh*] or [Distributive] – can be freely inherited by the dominating XP via the Spec–Head configuration (as in (47)), referential properties of a DP in Spec, such as those relevant for Condition C effects, cannot be inherited since the dominating DP has independent referential properties of its own.

Another empirical problem arising with respect to the purely operator binding-based (i.e., c-command-based) account of the pied-piping generalizations (45) considered above involves the unexpected discrepancy manifested by adjuncts (modifiers) of DP between the possibility of binding a pronoun and being a pied-piper (see (51a, b)); this is in contrast to the parallel we noted in the case of specifiers (being both binders of pronouns outside of DP and pied-pipers of DP) and complements (being neither binders of pronouns outside of DP nor pied-pipers). While in (51a) the adjunct in the DP seems to be able to bind a pronoun outside its phrase, in a parallel configuration in the embedded clause of (51b), pied-piping by the same adjunct in DP is still not acceptable.

(51) a. [Someone from *every small town*] hates *it.* (Hornstein 1995: 107)
b. *We wondered [[someone from *which small town/where*] Bill met].

Some general questions to consider regarding this alternative, non-feature-based, account explored above are these. Is it actually sufficient for a fuller range of pied-piping cases, and, in particular, for *wh*-adjuncts (see the contrast in (51a, b)), which were shown to act systematically as non-pied-pipers? Are the assumptions made earlier regarding the way operator–variable chains are created independently supported? Do they indeed make the feature-inheritance hypothesis of pied-piping redundant, or do these two mechanisms coexist, at least in some of the constructions? Answers to these questions would need to be established based on further investigation and broader theoretical considerations, most of which are beyond the scope of this study.

Returning to the main line of investigation of the core pied-piping generalizations (45), namely, to the one based on the hypothesis of feature-driven movement together with feature 'inheritance' via the Spec–Head relation such as

formulated in (47), let us consider a related empirical issue not addressed so far. Other things being equal, the proposal predicts that all specifiers will be able to pied-pipe the phrase they are specifiers of. However, Webelhuth (1992, p. 133), in his influential work on pied-piping, calls attention to a set of facts that pose a particularly striking problem for this prediction. It involves the pied-piping behavior of English gerundive nominals with a *wh*-element in the Spec of DP position, and their contrast with parallel non-gerundive DPs, such as derived nominals, whose lexical head is N (such data were originally observed by Ross (1986: section 4.4.2)). After presenting the relevant facts (see (52–53)), we will discuss some major aspects of Webelhuth's theory of pied-piping which enabled him to derive this phenomenon, as well as could be extended to some of the other known pied-piping generalizations.

(52) a. The boy [*whose* loud playing of the piano] I disliked was a student.
b. *The boy [*whose* playing the piano loudly] I disliked was a student.

(53) a. I wonder [*whose* harsh attack on Dukakis] the Democratic voters resented most.
b. *I wonder [*whose* harshly attacking Dukakis] the Democratic voters resented most.

As shown by the unacceptability of (52b) and (53b), DPs that contain gerundive nominals cannot get pied-piped by their *wh*-specifier. This is a puzzling phenomenon in light of the fact that specifiers were found to be the prototypical pied-pipers, and the theoretical proposals outlined above had conceptually plausible ways of incorporating this (apparent) generalization. The impossibility of pied-piping manifested by gerundive nominals is more surprising than some other known deviations from the core generalizations given in (45), since unlike, for instance, the case of PPs being pied-piped by complements of P, in cases like (52b–53b) we are dealing with a DP, which is the very category that provided the primary motivation for the pied-piping generalizations. Notice also that their derived nominal counterparts in (52a) and (53a), i.e., parallel DPs but, crucially, exhibiting a lexical N as their head, do get pied-piped by the same *wh*-specifier (*whose*).

In view of these facts, Webelhuth (1992: ch. 4) develops the hypothesis that the crucial distinction between specifiers (of non-clausal categories) that are pied-pipers and those that are non-pied-pipers is a consequence of the theta criterion. In fact, Webelhuth proposes and derives the following broader descriptive generalization within his modular approach to pied-piping.

(54) A theta-marked phrase is not a pied-piper.

This hypothesis has obvious potential consequences also for the (non-)pied-piper status of complements, but here we will concentrate on (a) how (54) itself is claimed to be derived from Webelhuth's feature percolation or projection mechanism in

interaction with principles of the GB theory, and (b) how it is claimed to account for the gerund–non-gerund contrast with respect to pied-piping by specifiers. (We will return to the consequences of (54) for complements in section 4.4.)

Webelhuth's proposed account of pied-piping is presented in the general context of his theory of syntactic saturation, more specifically, of the projection of the complementation, specification, and modification relations. In this broader framework dealing with the projection of syntactic properties in phrase structure, he also postulates conventions of feature percolation or inheritance (similarly to Koopman 1997 and Koopman and Szabolcsi 2000). However, unlike the more restrictive exclusively Spec–Head relation-based mechanism in (47) above, Webelhuth's theory stipulates that (operator) features can be inherited not only from specifiers but also from complements. Notice that since no features are assumed to be inherited under the modification relation in Webelhuth's theory, the fact that modifiers can never be pied-pipers is predicted in this system too. What is relevant for us at this point is that specifiers are assumed to be able to percolate their features to their mother nodes, unless the head projection of the phrase (i.e., X′) has that particular feature (possibly inherited from the complement). Importantly, the descriptive generalization (54) is based on the output representations of this feature-percolation process being 'filtered' by independent principles of UG, and, in particular, the Theta Criterion; Webelhuth's formulation of the relevant principles makes use of the notion of 'syntactic argument', which in turn involves the notion 'operator feature' (crucially, the latter is used also in the definition of 'syntactic operator').

(55) **The Theta Criterion** (Webelhuth 1992: 148)
- (i) Every syntactic argument occurs in exactly one chain that terminates in a theta position.
- (ii) Every theta position terminates a chain that is headed by exactly one syntactic argument.

(56) α is a *syntactic argument* only if
- a. α is a maximal projection
- b. α is not expletive, and
- c. α does not carry any operator features.

(57) α is an operator feature iff $\alpha \in$ {[+WH], [+Rel]}.

Based on the above assumptions, Webelhuth's account for the (alleged) generalization (54) goes as follows. The basic condition for a phrase to get pied-piped (under A-bar movements, like *wh*-movement, which his discussion is concerned with) is that it has to receive an operator feature by percolation from its specifier or complement. So in order to be a pied-piper, a specifier (say the DP *whose*) would need to percolate an operator feature ([+WH]) up to its mother node (e.g., to the nominals in (52–53)). But no specifier or complement that is able to do that, namely, no specifier or complement that carries an operator feature, can be

a member of a theta chain according to Webelhuth's formulation. The reason is that the Theta Criterion (55) requires that heads of theta chains be syntactic arguments, and according to his definition of syntactic argument in (56), a syntactic argument must not carry any operator feature. Thus, he concludes that no phrase that receives a theta role can be a pied-piper (since it cannot bear an operator feature without violating the Theta Criterion).

Given these assumptions, Webelhuth accounts for the observed contrast in the pied-piping options of DPs with gerundives vs. DPs with lexical NPs on the basis of the independently motivated (though not uncontroversial) claim that, while the specifier of a gerundive DP is theta-marked, the specifier of a derived nominal, or any other non-gerundive DP, crucially, is not theta-marked. Webelhuth supports his claim about this theta-marking distinction between gerunds and non-gerunds by observations such as for instance the contrast between *[*yesterday's attacking Dukakis*] and [*yesterday's attack on Dukakis*] (for further relevant discussion of theta-marking in nominals, see, e.g., Abney 1987; Grimshaw 1990; Kratzer 1996). So the unacceptability of the pied-piping of gerunds by a *wh*-Spec illustrated in (52b) and (53b) is attributed by Webelhuth to a violation of the Theta Criterion; the external theta role assigned by the gerund is associated with no well-formed theta chain (due to the lack of a syntactic argument heading the chain).

The way generalization (54) follows in Webelhuth's system is not very natural conceptually; for instance, the reference to "not carrying any operator features" in the definition of "syntactic argument" (see (56c)) is quite ad hoc, since apart from aiming to derive (54), it may just as well be replaced by 'not being a syntactic operator' (being a syntactic operator and being an element carrying an operator feature are crucially kept distinct in the proposed system). If (56c) were restated this way, the Theta Criterion would no longer have the consequence that a theta-marked phrase cannot be a pied-piper. Thus the real issue to consider is whether the generalization in (54) is correct empirically, i.e., whether theta-marked phrases indeed never act as pied-pipers. In section 4.4 we will return to the issue of the putative correlation between theta-marking and being/not being a pied-piper, in the context of a discussion of pied-piping by complements.

Regarding the specific account Webelhuth's hypothesis offers for the contrast between gerundive and non-gerundive nominals, one relevant consideration in favor of finding an alternative, non-theta-theory-based account (see the discussion of (58) below) is that the degree of unacceptability of examples like (52b) and (53b) reported by speakers is very different; it is far less severe than in other cases standardly attributed to violations of the Theta Criterion, specifically, e.g., when a theta chain is headed by an expletive.

Finally, consider an additional set of relevant observations about pied-piping of gerunds, cited in an unrelated context by Culicover (1999: 97); these data represent judgments distinct in a suggestive way from those in (52b–53b):

(58) a. *[*Who* solving the problem] were you thinking about?
Cf. We were thinking about [Mary solving the problem]

b. [*Whose* solving the problem] were you thinking about?
c. [*Whose* solving of the problem] were you thinking about?

The acceptability of pied-piping in (58b) indicated by Culicover contradicts the judgments that Webelhuth cites for parallel gerunds with a possessive (*whose*) as their specifier. What is more revealing is that gerunds do exhibit a prohibition against being pied-piped by a *wh*-specifier in Culicover's dialect too, as shown by (58a). However, this holds only for accusative-marked subjects of gerunds but not for the possessive ones. This difference represented in (58a) vs. (58b, c) suggests that at least in this variety of English, and perhaps more generally, the non-pied-piper behavior of specifiers of gerunds may be related to these specifiers occurring lower in the functional layer of the nominal than the Spec of the top (DP) projection.

Possessive specifiers of non-gerundive nominals occur in all dialects as the Spec of the top functional projection of the nominal (DP), hence their ability to percolate their *wh*-feature to the DP node. In contrast, at least accusative marked, i.e., non-possessive, specifiers of gerunds, and possibly in some dialects also morphologically possessive specifiers of gerunds, would appear as the Spec of a functional projection that is not the topmost one in the nominal. Specifically, either gerunds have an additional outer layer of projection compared to non-gerundive DPs (as suggested in Kayne 1994: 135, n. 18), or the specifier *who/whose* of gerunds is a Spec of some functional complement of D. In either case, the *wh*-feature of such a specifier could not be inherited by the maximal nominal phrase under the restrictive feature inheritance mechanism based on Spec–Head agreement.

4.3 Some other effects

This section will address two types of pied-piping phenomenon, introduced earlier in sections 3.1.1 and 3.1.2, which prima facie constitute major deviations, in two opposing directions, from the core pied-piping generalizations and the corresponding theoretical proposals presented in section 4.2 above. The discussion will demonstrate, however, that, arguably, each of these cases is attributable to the effects of independent factors and does not stem from the pied-piping mechanism itself.

4.3.1 Relative clauses and the topicalization proposal

As shown in section 3.1.1, English (lexically headed) relatives, and in particular non-restrictive relatives, seem to permit a curious, much more extensive pied-piping process than what one finds in other *wh*-constructions and in other Germanic languages. Among the relevant data we find, for instance, complements of DPs and APs that are able to pied-pipe their phrase (see (59), reproduced from section 3.1.1). Such pied-piping is not possible in the rest of *wh*-constructions (*wh*-interrogatives, exclamatives, etc.), and indeed it would be excluded both under the Spec–Head agreement based feature inheritance hypothesis (47) of

Koopman (1997), and also under Webelhuth's (1992) system (in the latter, due to the theta marked nature of these complements).

(59) a. Reports [the height of the lettering on the covers of *which*] the government prescribes should be abolished.
b. He is a linguist [articles by *whom*] the editors always reject.
c. This is the kind of woman [proud of *whom*] I could never be.

In spite of the fact that this type of data include the cases that led Ross (1986) to propose the Pied-Piping Convention in the first place, already as early as Emonds's (1976) it was suggested that these particular instances of apparent pied-piping constitute a special, stylistically marked phenomenon which, contrary to Ross's view, should in fact not be taken to be derived by the same grammatical device as the other cases of *wh*-pied-piping, which occur irrespective of construction type. Specifically, Emonds (1976: 187) claimed that these cases (like (59)) fall outside the domain of grammar proper and proposed that the pied-piping processes involved in them belong to the stylistic component (as defined in Banfield 1973). As a reason for this claim, he points to the "marginal" acceptability status of this particular subtype of pied-piping data. (On the occurrence of such pied-piping in non-restrictive and restrictive relatives, see the discussion of examples (21) in section 3.1.1, and for the proposal of topicalization as the source for these, see Emonds 1979.)

Later, in the context of his general account of pied-piping presented within the framework of the GB theory, Webelhuth (1992) followed a conceptually similar path regarding these stylistically marked pied-piping cases. Recall that pied-piping of a phrase by its theta-marked complement (as, e.g., in (59)) or specifier was hypothesized by Webelhuth to be excluded, as we noted in our discussion of gerunds in section 4.2. Webelhuth's considerations in favor of analyzing cases like (59) as irrelevant for the theory of pied-piping, and hence in favor of maintaining his pied-piping theory excluding them, were the following: (a) the phenomenon is English-particular, i.e., is limited to only one among all the Germanic languages; (b) it is attested in only one construction type, namely, in relative clauses (and for some speakers only in non-restrictive ones); and (c) it belongs to a "literary" style of English and is felt to be "foreign to natural colloquial speech" (pointed out by Webelhuth, citing Jespersen). Given his conclusion that the pied-piping mechanism should not be extended to derive these "unusual" cases, to avoid the obvious overgeneration problem, Webelhuth develops an account for these stylistically marked sentences with apparent pied-piping based on a topicalization analysis, suggested originally by Emonds (1979). According to Webelhuth, these phenomena fall outside the core grammar (in the sense of Chomsky's 1981 core vs. periphery). He claims that the large phrase containing the *wh*-relative pronoun undergoes topicalization, and furthermore that this *wh*-word occurring within this preposed phrase receives interpretation as an indexical pronoun in these "exceptional" constructions. This option is available, he claims, due to the basic similarity in the semantic effects of relative and indexical pronouns (both

may involve the formation of an open sentence and its predication of a referent). Thus the analysis draws a parallel between the relation of the relative pronoun (*whom*) to the head of the relative (*his wife*) in (60a) and that of the personal pronoun (*her*) to its discourse antecedent (*his wife*) in (60b) (see Webelhuth 1992: 131). It should be noted here that Webelhuth's proposal fails to offer an account for the impossibility of using a non-*wh* pronoun (*her*) instead of *whom* in English relative clauses such as (60a), and, even more significantly, the impossibility of using a *wh*-form (*whom*) as an alternative for the definite pronoun (*her*) in cases such as (60b) (the latter option appears to be excluded cross-linguistically). These distributional facts would need to be regarded as manifestations of some hitherto unspecified purely morphological variation in the realization of pronouns.

(60) a. *His wife* [proud of *whom*] he has never been.
b. *His wife* is intelligent. But [proud of *her*] he has never been.

Under this proposal, the reason why such "exceptional" pied-piping may arise in the case of relatives but not, for instance, in interrogatives is that the *wh*-words in the latter are logical operators that restrict the range of a variable, not variables that get bound. Hence they are not able to take on the function of anaphoric pronouns, in contrast to relative pronouns, for which this is more feasible.

As for the observed preference – and, according to Emonds (1979, 1985), the actual limitation – for this kind of pied-piping to occur only in non-restrictive, rather than restrictive, relatives (see (21a, b, c)), there are at least two approaches to be considered. Assuming the topicalization-based account of non-core pied-piping, Emonds (1979) attributes its non-occurrence in restrictive relatives directly to the (alleged) root nature of topicalization (on root transformations, see Emonds (1976) and chapter 23). Since under his approach non-restrictive relatives are root clauses, he predicts that these, but not restrictive relatives, will permit topicalization and hence the occurrence of the above pied-piping phenomenon. Another proposal that can draw the relevant distinction between non-restrictive and restrictive relatives, and moreover, do so without resorting to the problematic claim of topicalization being a root phenomenon, may be based on Lasnik and Stowell's (1991) findings regarding weak crossover effects in various A-bar movement constructions. They observe a contrast between the presence of weak crossover effects – i.e., the unavailability of a bound variable construal for a pronoun – in restrictive relatives (as e.g. in *the/every man*$_i$ *who*$_i$ *his*$_i$ *mother loves* t_i) and the absence of weak crossover in non-restrictive relatives (as, e.g., in *Gerald*$_i$, *who*$_i$ *his*$_i$ *mother loves* t_i). Crucially for us, their study motivates an account for the presence vs. absence of weak crossover effects in different A-bar constructions that is based on the logical status of the local A-bar binder of the pronoun: only a true quantifier (ranging over a possibly non-singleton set) gives rise to weak crossover effects, while non-quantificational A-bar binders do not. Given this, notice first that the observed inability of the *wh*-element of non-restrictive relatives to induce weak crossover effects reinforces Webelhuth's proposal of deriving the non-core pied-piping cases under discussion from the pronoun-like,

i.e., non-quantificational, nature of the *wh*-element involved, though only as far as non-restrictive relatives are concerned. Furthermore, in light of (a) the presence of weak crossover effects in restrictive relatives, indicating under Lasnik and Stowell's theory that the *wh*-element in the latter is in fact quantificational and (b) Webelhuth's topicalization-based analysis for pied-piping cases as in (59–60) above, we can make sense of the contrast observed by Emonds between the availability of non-core pied-piping in non-restrictive relatives and its unavailability in restrictive relatives.

In sum, the proposed analysis derives this exceptional pied-piping construction, not as a true relative clause involving (pied-piping) *wh*-movement, but by the independent operation of topicalization, and, crucially, assigns an interpretation to the resulting structure in analogy to sentences with anaphoric pronouns. As the reason for their stylistically highly marked nature, Webelhuth points to the mismatch that arises between "the form of these structures as relative clauses and their interpretation, which applies a semantic rule of discourse anaphora to relative pronouns that usually exclusively fall into the domain of sentence grammar" (Webelhuth 1992: 132).

As evidence for his topicalization proposal, Webelhuth mentions the prediction that if topicalization of a phrase is impossible in a particular clause, then that phrase will not to be able to undergo stylistically marked pied-piping in the corresponding relative clause. This prediction seems to be borne out indeed, as shown by his data demonstrating the correlation between the unacceptability of topicalization in examples like *[*To leave*] *I want* and the unacceptability of the corresponding relative clause **his wife* [*to leave whom*] *he wanted* (see Webelhuth 1992: 131). However, beyond the above type of correlation that may suggest that topicalization is involved in the appearance of stylistically marked pied-piping in relatives, the proposed account, as it stands, makes some broader, and more problematic predictions as well.

Webelhuth's hypothesis of the interpretation of the relative pronoun in the preposed phrase taking it to be an indexical pronoun with a discourse antecedent suggests that no extra structural or other grammatical constraints will limit its possible positions within the topicalized phrase, and it will occur as freely as an ordinary pronoun would (as, e.g., in (60a) vs. (60b)). Thus, based on the proposal, one would expect that in English any phrase that (a) can undergo topicalization in a clause and (b) contains a relative *wh*-word should be able to undergo the exceptional pied-piping process under discussion, resulting in a well-formed relative clause in the literary style. However, contrary to this expectation, a variety of phenomena have been observed in the literature indicating the existence of further clear and specific restrictions of an obviously grammatical nature that determine the acceptability status of stylistically marked pied-piping. Thus, consider for instance the contrasts between (61a, b) and (62a–d) from Nanni and Stillings (1978), involving pied-piping data of the stylistically marked kind where it is a preposed clausal constituent, such as an infinitival (vs. finite) CP, a gerundive or an absolute, that contains the relative pronoun (the position of the relative pronoun is varied). Incidentally, notice that these data would uniformly

be excluded by Ross's (1986) formulation of the Pied-Piping Convention (given in section 2.1).

(61) a. The elegant parties, [to be invited to one of *which*] was a privilege . . .
b. The strange man [upon seeing *whom*] Mary called the police . . .

(62) a. *The men, [for *whom* to be invited to the elegant parties] was a privilege . . .
b. *The strange man [upon John's seeing *whom*] Mary called the police . . .
c. *The elegant parties, [for us to be admitted to one of *which*] was a privilege . . .
d. *The car [(the idea) that their son might drive *which*] surprised them . . .

The descriptive generalizations that emerge from the above data are that the relative pronoun in the preposed 'pied-piped' constituents cannot be a subject, but seems to have to be a complement, and that the preposed constituent itself cannot have a lexical subject, and possibly in addition it cannot have finite Tense (as suggested by Cinque 1982 and Kayne 1984a: 86).

Such data are not discussed at all in Webelhuth (1992), even though the existence of this type of clausal pied-piping effects are actually predicted in his system, since clausal arguments as well as adjuncts (such as the ones preposed in (61) and (62)) are able to undergo topicalization. He considers only clausal pied-piping outside of the context of stylistically marked relatives, and based on that concludes that it does not exist in Germanic (see our discussion in sections 3.3 and in 4.5). The apparently 'pied-piped' clauses above indeed involve no true instances of pied-piping by *wh*-movement; being stylistically marked and construction specific, they fall under the hypothesis presented above for cases like (59). What is relevant in the present context is that their existence, and, crucially, some specific structural constraints on them (illustrated above) were observed and analyzed in the earlier literature, in particular by Nanni and Stillings (1978), Cinque (1982), Hendrick (1982), Kayne (1984a: 186), and Ishihara (1984). Furthermore, it is worth noting that Italian, a language that has been shown in Cinque (1982) to exhibit pied-piping phenomena in relatives parallel to the stylistically marked cases of English mentioned earlier, also turns out to manifest the structure-based grammaticality contrasts with respect to 'pied-piped' elements in relatives shown above for English.

While the facts in (61–62) demonstrate that the interpretation of the relative pronoun (occurring within a topicalized phrase) in analogy to indexical pronouns proposed by Webelhuth is clearly not sufficient to account for the stylistically marked pied-piping phenomenon, the source of the constraints manifested is not well understood. There have been several attempts in the literature to treat (at least part of) the relevant phenomena, among them Kayne's (1984a: 185) proposal based on defining a '*wh*-phrase' that can occupy the COMP (i.e., [Spec, CP]) of the relative clause in terms of the notion of g-projection set of a *wh*-phrase, Cinque's (1982) anaphor hypothesis, Ishihara's (1984) account based on

LF-raising of the *wh*-word and the ECP, and Safir's (1986) proposal of LF-raising of the relative *wh*-word to satisfy a locality requirement on R-binding by the head of the relative. However, no comprehensive adequate account has emerged so far, and this stylistically marked pied-piping phenomenon with its pattern of robust grammaticality constraints obviously calls for further investigation of the underlying mechanism(s) that may be responsible for it.

4.3.2 Free relatives and the identification of a pro *head*

The *wh*-pied-piping phenomena in (finite) free relatives introduced with respect to English in section 3.1.2 represent another initially surprising case of deviation from the pied-piping generalization stated in (45). This deviation involves the opposite direction from the deviation found in the case of overtly headed stylistically marked relatives (discussed in section 4.3.1): the possible range of pied-piping effects in such free relatives is more restricted than what one would expect of pied-piping by a *wh*-element based on the other *wh*-constructions. Specifically, the latter construction type was claimed in Grosu (1989) not to permit pied-piping even by a *wh*-specifier (of specifier) of a DP, as shown in (24); in contrast, such pied-piping occurs freely both in interrogatives, and overtly headed relatives.

Notice that the unacceptability of cases like (24b, c) cannot be attributed to some limitation on the 'size' of the preposed *wh*-constituent permitted in free relatives, in view of the perfect acceptability of examples such as (63), where the *wh*-element is the head of the preposed 'large' DP:

(63) Mary will buy [[*whichever* portraits of friends of hers] we can find *t* for her].

Neither can we dismiss the observed extra restriction on pied-piping in free relatives by attributing the observed unacceptability simply to a Case mismatch, as, e.g., between the possessive form *whose* in (24b, c) and the free relative itself, the latter needing to be accusative (in (24b)) or nominative (in (24c)). The reason is that the same anti-pied-piping effect shown in (24) is attested also (a) in cases where the Case matching requirement known to hold in free relatives is clearly satisfied (as in the German example (64) cited in Grosu 1994: 30), as well as (b) in free relatives permitting non-matching, which occur in particular positions in languages such as Romanian (see example (65), cited by Grosu 1994: 34).

(64) *Ich bedarf [pro_{Gen} [wessen$_{Gen}$ Bildes]$_{Gen}$ du auch bedarfst]. German
I need whose picture you also need
'I need (the person) whose picture you also need.'

(65) *[Al cui cîine muşcă trecătorii] trebuie amendat. Romanian
whose dog bites the-passers-by must fined
'(The person) whose dog bites those who walk by must be fined.'

According to Grosu (1994: ch. 3), this anti-pied-piping phenomenon is found universally across languages in realis free relatives, and is limited to this construction type. Since it cannot be dismissed as some peripheral idiosyncratic phenomenon, the question arising is, Does this apparent inability of the *wh*-specifier to pied-pipe its phrase (i.e., the DP) indicate a need to revise the general feature-inheritance mechanism based on the Spec–Head relation (see (47)) postulated in Koopman's (1997) and Webelhuth's (1992) system as the central mechanism underlying pied-piping, or, alternatively, is there some independent factor that creates the special limitations on the output of pied-piping in free relatives? In view of the fact that the apparent impossibility of pied-piping of DP by its specifier is limited to a specific subclass of free relatives (in contrast to all other varieties of *wh*-constructions), it seems obvious that the more promising option of the two is the latter one, that is to say, finding an account that can derive the phenomenon from independently motivated properties of realis free relatives and general principles of UG, while leaving the pied-piping mechanism itself unaffected.

This was the kind of approach taken by Grosu (1994: ch. 3). In the context of a comprehensive study of the various subtypes of free relative, Grosu developed an account the essence of which is that the *wh*-element coindexed with the *pro* head of the free relative needs to locally identify this *pro*, but being in the Spec of the pied-piped DP, rather than being the Spec of CP itself, it is unable to do so. Grosu's proposal is based on the widely accepted assumptions that (a) realis, i.e., finite, free relatives have a phonologically null head, *pro,* and (b) the feature-content of *pro* needs to be identified. It is argued in the study that the only possible identifier for this *pro* is internal to the free relative; it is the *wh*-phrase (within the Spec of CP) that serves as its antecedent. Furthermore, the relation between the *pro* and its identifier in the clause is claimed to be subject to a strict locality requirement. Specifically, it is assumed that only the CP, i.e. the free relative itself, is local enough structurally to be able to identify the *pro* head, where identification is assumed to involve the set of phi-features of the *wh*-antecedent being conveyed to *pro*. Given this, the (anti-)pied-piping effects observed in free relatives above can be derived directly from the existence of a *pro* head in these structures in conjunction with the same feature-inheritance mechanism that we presented as the core mechanism underlying pied-piping in section 4.2 (based on Webelhuth 1992 and Koopman 1997).

In order for the identifying features of the *wh*-antecedent to reach the actual local identifier (the CP) according to Grosu's proposal, feature inheritance and/or percolation needs to take place; features of the *wh*-antecedent can be transmitted to C by Spec–Head agreement and from C to CP by percolation. Thus any case where the Spec of CP position is occupied by the *wh*-antecedent itself, as in (63), satisfies the requirement of *pro* identification. But, crucially, *pro* identification seems to fail in cases where the *wh*-antecedent of *pro* occurs in the Spec (of Spec) position of the preposed DP, as in (24b, c). The reason for this under Grosu's proposal is that the phi-features of the *wh*-specifier (*whose*) needed for the identification of *pro* cannot get to the entire DP occupying Spec of CP by Spec–Head agreement because the DP itself has inherent features of the same kind as

the *wh*-specifier, and an arguably independently motivated property of feature inheritance blocks transmission of these features. (A similar convention of priority of feature-percolation from the head over transmission of the same feature from the specifier is postulated in Webelhuth's 1992: 147 system in relation to operator features; this is of empirical significance with respect to his account of CP-pied-piping, to be discussed in section 4.5). Since the phi-features of the *wh*-specifier of DP cannot reach DP nor, consequently, CP, they fail to identify the head *pro*. (It would also need to be the case that C, in contrast to D, has no comparable features that would block transmission of the identifying features from its Spec in cases like (63).)

In sum, it appears that it is not pied-piping of a DP by its *wh*-specifier that is ruled out for some reason in realis free relatives. Rather, the unacceptability of free relatives like (24b, c), (64), and (65) is attributable to the presence of an improperly identified *pro*. Notice that in contrast to the case of phi-feature transmission, *wh*-feature transmission via the Spec–Head relation to DP, as used in the derivation of *wh*-pied-piping itself, would pose no problem of 'blocking' since this feature is not an inherent feature of D in cases such as [*whose* picture]). Supporting evidence for the *pro*-identification account of anti-pied-piping effects in realis free relatives is provided by Grosu's (1994: 142) observation regarding the contrast with irrealis/infinitival free relatives. The latter have various properties indicating that they are bare CPs, i.e., that they have no head *pro*. As expected, based on the above hypothesis for deriving the anti-pied-piping effects, these in realis free relatives turn out to manifest no such effects (see, e.g., (66) from Romanian); they in fact display the same pattern of pied-piping phenomena as infinitival embedded questions do.

(66) Maria nu are [la fotografia cui să se uite]. Romanian
Maria not has at picture-the whose SP self look
'Maria doesn't have (anyone) at whose picture to look.'

4.4 PP pied-piping

The widely attested phenomenon of pied-piping of PPs by their complements (as shown with respect to *wh*-movement in section 3.3) seems to represent a substantive problem for the basic pied-piping generalization stated in (45). Complements of other categories fail to act as pied-pipers while the complements of P can, and in a large number of languages must, pied-pipe the PP. Combined with the fact that this takes place irrespective of construction type, indicates that the phenomenon can potentially have important implications regarding the adequacy of suggested mechanisms of pied-piping (such as the feature percolation mechanism being limited to Spec–Head agreement and projection from the head) and/or regarding constraints affecting its output (such as Webelhuth's 1992 formulation of the Theta Criterion and the notion of syntactic argument).

The question of how the complement of P can act as a pied-piper for the PP has been addressed in the literature by several different proposals, though at this

point none of these seem to be supported by truly compelling empirical evidence. These proposals – to be outlined below – fall into two basic subtypes. One general direction, represented by Webelhuth's (1992: sect. 4.4.3) and Grosu's (1994: sect. 1.4.1) proposals, involves the crucial claim that the category P is not a lexical head at all but is uniformly a non-theta-marking functional category, parallel to inflectional categories and in particular to Case. Such theories also presuppose a somewhat less restrictive version of the feature percolation/inheritance mechanism than the one outlined in (47), assumed for pied-piping in work such as Koopman (1997) and Koopman and Szabolcsi (2000). The other direction of thought, manifested for instance in Kayne's (1994) and Koopman's (1997) work, involves the internal syntax of PPs and in particular the idea that what looks like a complement of P is actually not in complement, but in Spec position, at least in derived structure.

Webelhuth's assumption about operator-feature percolation (see section 4.2) permits features to percolate up to their mother node not only from specifiers, but crucially also from complements. Given this, his system has no problem predicting that *wh*-complements of P will be able to pied-pipe the PP. However it would also predict, other things being equal, that *wh*-complements of other categories, e.g., N, A, or V, will be pied-pipers as well. To avoid this incorrect prediction, Webelhuth proposed to draw the relevant distinction between complements of P and complements of the other (lexical) heads from the conjunction of the following two assumptions: (a) a particular formulation of the Theta Criterion making crucial reference to the head of a theta chain not carrying any operator feature (see (55) and (56) above), from which he derived the generalization (stated as (54)) that no theta-marked phrase can be a pied-piper, and (b) the claim that while N, A, and V theta-mark their complement, the category P is not a theta-marker, i.e., Ps, including the semantically contentful ones, take complements yet do not assign theta roles to them. These assumptions, if tenable, would yield a distinction between P-complements being pied-pipers and complements of theta-marking heads (claimed to be V, N, and A) not being pied-pipers. The operator feature [*wh*] could percolate up from a *wh*-complement in all phrase-types under Webelhuth's theory; however, due to the way the Theta Criterion is stated, all cases of pied-piping by complements that are theta-marked by the head would be ruled out as Theta Criterion violations (similarly to pied-piping by specifiers of gerundive DPs discussed in section 4.2).

Webelhuth's arguments for the claim that the category P is never a theta-marker for its complement – at most it can 'solicit' a theta role from some theta-marking head – are based on observed differences between prepositions and the other lexical heads, and on some parallels between prepositons and (oblique) inflectional Case affixes. He notes, for instance, the functional equivalence between idiosyncratically selected Ps and case affixes in languages like German, both used, according to Webelhuth, as purely formal markers (e.g., the verbs *begegnen* 'meet' and *finden* 'find' require dative or accusative case-marking on their internal argument, and parallel to this, some other verbs, e.g., *hoffen* 'hope' and *abhängen* 'depend', require particular prepositions as formal markers for

their internal argument, namely *auf* 'on' and *von* 'of', respectively). Other properties pointed out by Webelhuth are the tendency of Ps, in contrast to members of other lexical categories, to lose their meaning in the course of diachronic change, and the fact that while the theta-marking heads N, V, and A can all be stranded by their complement across languages (for instance in all the Germanic languages), stranding of prepositions by a (non-pronominal) complement is impossible in many languages, including German. The latter cases are claimed to be due to an ECP violation (Chomsky 1986a) that results from P not being a theta-governing lexical head for a trace in its complement position (on alternative accounts of P-stranding, see chapter 51). Based on these and similar observations, he concludes that prepositions are "syntactic heads with the non-thematic marking function of affixes". (For a detailed study establishing the status of P as a uniformly non-theta-marking functional category, see Botwinik-Rotem 2004.)

Accepting the well-motivated assumption that P is not a theta-assigner, Webelhuth's theory correctly yields the possibility of PP being pied-piped by its complement, while excluding pied-piping by complements of theta-marking V, N, and A heads. However, notice that this approach – in particular the idea of free feature-inheritance from complements, and the filtering of the resulting pied-piping cases only by the Theta Criterion (55–56) – makes a broader, arguably problematic, prediction. Specifically, it predicts (for operator movement cases, such as *wh*-movement) that for any head X, if X fails to theta-mark its complement YP, then YP will be able to pied-pipe XP. But is this prediction empirically justified?

First of all it appears to face some difficulty already in the case of the category P itself, in light of certain colloquial varieties of English. It is noted by Kayne (1994: 25) that for some speakers, in colloquial register, PP-pied-piping is unacceptable (see Kayne's examples (25), including, e.g., **Nobody knows to what school he goes*, **Tell us from where you got that*.) If this indeed is a systematic dialect, Webelhuth's view of pied-piping by complements would not provide a plausible way to account for it. Under Webelhuth's theory, one would have to say either that this colloquial dialect has a different feature-percolation mechanism – i.e., a different projection mechanism for the complement relation – prohibiting feature-inheritance from complements, or that Ps in this variety of English are in fact theta-assigners for their complements. Clearly, neither of these are reasonable claims.

A different, more significant kind of counter-evidence for the above prediction is provided by the case of a subset of N heads, and their minimal contrast with locative Ps. Consider the type of nominals – such as *a picture of John, the legs of the chair, a gift to Mary* – that Grimshaw (1990) refers to as "result" or "simple" nominals. As is argued extensively by Grimshaw, although such Ns are able to take complements, they have no syntactic argument structure, and, crucially for us, are not theta-assigners for their complement. (They contrast with so-called complex event nominals, which are theta-assigners, exhibiting an argument structure similar to Vs.)

Given Grimshaw's (1990) theory, there is no theta-related difference between this set of Ns and Ps to rely on: neither are theta-assigners for their complement. Hence, based on Webelhuth's mechanism of feature percolation, we would expect complements of simple nominals and result nominals to act as pied-pipers for their phrase just like Ps do. As shown by the contrast between (67a, b) and (68a, b), this prediction turns out to be wrong.

(67) a. *I wonder most pictures of whom John liked.
b. *Tell me a leg of which chair we should try to fix.

(68) a. I wonder under whom John put some pillows.
b. Tell me near whom you saw a gun.

It is also worth noting here that the choice of locative Ps – rather than idiosyncratic (inflection-like) Ps considered by Webelhuth – is significant for the comparison (67–68) above, since they constitute a more minimal contrast with the Ns being tested than other kinds of P would. Locative Ps are parallel to the Ns involved in that (a) they clearly have semantic content, and (b) they constitute independent binding domains for Condition B effects, i.e., in terms of Reinhart and Reuland's (1993) Reflexivity framework, they, just like Ns, can form a semantic predicate of their own (see the possibility of a pronoun in (69a, b)).

(69) a. John$_i$ put some pillows under him$_i$/himself.
(Cf. John$_i$ explained Mary to *him$_i$/himself.)
b. John$_i$ liked most pictures of him$_i$/himself.

In view of the pied-piping contrast between complements of result Ns and complements of Ps exhibited by (67) and (68), we can discard the above free feature-percolation approach to pied-piping by complements.

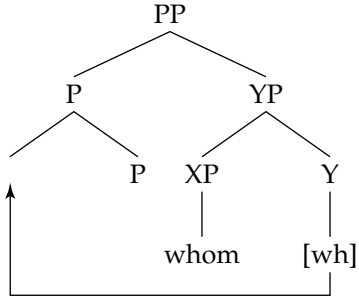
Returning now to Webelhuth's argumentation regarding the parallelism between Ps and inflectional (case-marking) affixes, what it amounts to conceptually comes very close to saying that P is a functional, rather than a lexical, head. Grosu (1994) makes this claim explicitly, and based on it, puts forth an alternative, empirically superior, account of PP-pied-piping by complements. He motivates his conclusion by pointing out various parallelisms between the behavior of Ps and of case affixes, in particular in free relatives in a variety of languages.

Importantly, given his assumption that P is a functional head, i.e., the top layer in the extended projection of N, Grosu's proposed account does not have to rely on the Theta Criterion (as in Webelhuth's version) to exclude feature percolation from complements of V, N, and A, while permitting percolation from complements of P. Instead it utilizes a different feature-percolation mechanism that is more restrictive than the one assumed by Webelhuth. Following Grimshaw (1991), Grosu proposes that aside from Spec–Head agreement, features can percolate up from complements too, but, crucially, only from within the same extended projection, not from outside of it. Hence, no percolation of *wh* or other features is possible from the complements of lexical heads, for instance to NP

(and DP) from the complement of N, or to VP from the complement of V. In contrast, percolation is possible from the NP complement of the functional head D to DP, and, crucially for our case, from the DP-complement of the functional head P to the whole PP, since in these cases, the features involved, namely both the [*wh*] feature (inducing PP pied-piping under *wh*-movement) and the phi-features (needed to identify the *pro* head of free relatives) would be staying within the same single extended projection.

Another type of approach to deriving the pied-piper status of complements of P is proposed in Koopman (1997). This alternative is compatible with an even more restrictive feature-inheritance mechanism, which limits percolation to take place via Spec–Head agreement and only within a single, non-extended, maximal projection, from a head X up to the lowest maximal projection XP (as shown in (47) of section 4.2). Importantly, no feature-percolation from any kind of complement is permitted. Instead, the proposal invokes (strictly local) head movement (see (70)). (Factors like no theta-marking by P, or P having to be a functional rather than a lexical head, play no role in the account).

(70) Head movement (and Spec–Head agreement):



Koopman's claim is essentially that a complement of P is able to pied-pipe the PP, i.e., the whole extended projection of P, due to this *wh*-complement coming to occupy actually the Spec of some head Y, which receives the *wh*-feature from it via Spec–Head agreement; crucially, this head then raises to the head of the extended projection of P, i.e., adjoins to the topmost head (the next head above it), and as a result the latter head, and hence the whole PP, receives the *wh*-feature (which originated in the complement of P). (For more on the specific assumptions regarding the internal structure and syntax of PPs, see Koopman 2000a.)

A variant of this type of movement-based approach to pied-piping by the complement of P that had been proposed occasionally earlier (see, e.g., Kayne 1994: 25) assumed that in languages that permit or require PP-pied-piping by a complement, the *wh*-complement undergoes covert movement to the Spec of the top layer of PP. The overt counterpart of the same movement had been assumed to exist too, as an intermediate step in the derivation of P-stranding, which is, as mentioned earlier, required in some versions of colloquial English. (The idea of the complement of P moving to a Spec-like position in PP when being extracted by *wh*-movement is due originally to Van Riemsdijk's 1978a work on Dutch PPs.)

These movement-based analyses of the pied-piper status of the complement of P do not need to make the problematic connection between the lack of theta-marking and being a pied-piper, as Webelhuth's account does, and, furthermore, they are not forced to claim that P is necessarily a functional head, as under Grosu's proposal. However they would still need to address this question: Are the postulated PP-internal movements unique to this category, and if so, why? If they were not, then one would expect the same option of pied-piping by a complement to arise – as a result of phrase-internal overt/covert movement 'delivering' the operator feature of the complement, as in (70) – also in projections of other lexical categories (V, N, A). This however is not attested, at least not in the well-studied Germanic case. Thus the movement postulated in the account of PP-pied-piping would have to be considered unique to this category-type. But then one is still left with the question, What makes the same movements – specifically, the head movement in (70) – available to projections of P and yet unavailable to projections of V, N, or A? A likely answer to this will presumably lead us back to the functional–lexical distinction between P and the other three heads.

4.5 Clausal pied-piping

The mechanisms proposed to underlie pied-piping considered in the above subsections, namely, versions of a feature-percolation-based account, as well as the proposal based on c-command (binding, therefore) from the Spec of a phrase to outside of that phrase, would lead us to expect that the Spec position of CP could in principle act as a pied-piper for the CP. The questions for empirical study in this respect, then, are (a) whether Spec of CP indeed can pied-pipe the CP and (b) to the extent that it cannot, in particular languages at least, what the reason for this is.

Notice first that the empirical issue of clausal pied-piping was raised and discussed in the early GB framework with respect to English by Nanni and Stillings (1978) and Ishihara (1984). However, the clausal pied-piping cases these studies discussed were of the stylistically marked variety of pied-piping we discussed in section 4.3.1. These cases are limited to relative-clause constructions whose *wh*-element occupied an IP-internal argument position; they are not part of normal colloquial English. This construction arguably involves some mechanism other than pied-piping under *wh*-movement, and is therefore not relevant for the issue of CP-pied-piping (see our discussion in section 4.3.1, based on Webelhuth's (1992) arguments for such cases of apparent pied-piping being derived by topicalization and involving a way of interpreting the *wh*-relative pronoun that falls outside of core grammar).

Regarding English, Webelhuth concludes that it permits no CP pied-piping, based on the ungrammaticality of the following type of data:

(71) a. *[*Who* [John met *t*]] did Mary know *t*?
b. *[Who [to talk to *t*]] did she forget *t*?

(Webelhuth 1992: 152)

This indeed seems to be correct; English embedded CPs with a *wh*-element occupying their Spec cannot get pied-piped to the matrix Spec of CP position under *wh*-movement no matter whether the clause is finite or infinitival. In such cases the *wh*-element in the lower Spec of CP position has only two options: either it is extracted from the embedded clause (successive cyclic movement), resulting in a matrix question, or it may stay and get interpreted in the embedded CP, provided that the selecting predicate permits an embedded question.

The explanation proposed by Webelhuth appears to attribute the ungrammaticality of examples like (71) to a property of feature percolation we already referred to in section 4.3.2 as part of Grosu's (1994) account for why the specifier of a *wh*-moved DP in free relatives cannot identify the head *pro*, in other words, why it cannot percolate its phi-features up to the DP. The relevant assumption is that a particular feature (independently of the value specified for it) that is borne both by a specifier YP and by the head projection X′ of a phrase XP can percolate to XP only from X′; feature percolation from Spec (normally available, via the Spec–Head relation) is blocked in such cases. Thus, according to Webelhuth, pied-piping of a CP by its Spec is excluded whenever the sister node of the Spec, namely C′, is marked for the feature [*wh*], since then the *wh*-element in Spec is unable to percolate its *wh*-operator feature up to the CP, and hence this CP cannot turn into an operator itself; as a result it cannot form a well-formed operator chain with the syntactic variable it binds (i.e., with its own trace) and, consequently, movement of such a CP would be ruled out. The specific stipulation Webelhuth makes in order to account for the (alleged) lack of CP-pied-piping in Germanic languages is that the (embedded) complementizer C is marked [–*wh*], and it is due to this property of C that the [+*wh*] feature of the phrase in Spec of CP cannot reach the CP. But in fact, given his particular definition of the notion 'syntactic operator', even if the [+*wh*] feature of the preposed *wh*-phrase were permitted to percolate up to the CP, the derivation would still fail to result in well-formed CP-pied-piping. As pointed out by Webelhuth (1992: 152), if *who* in a case like (71a), for instance, were to percolate its operator feature to the CP, then it would cease to qualify as a syntactic operator, and consequently, its trace in the clause would constitute a syntactic variable that is not bound by a syntactic operator, thus violating Webelhuth's (p. 143) version of the Bijection Principle (adapted from Koopman and Sportiche 1982).

However, when we go beyond the Germanic languages, Webelhuth's specific assumptions about the role played by the *wh*-feature of C and the reference of the Bijection Principle to syntactic operator preventing CP-pied-piping by its Spec appear to be challenged empirically, for instance, by the case of Basque as reported by in Ortiz de Urbina (1990). (See also Cole 1982a on CP-pied-piping in Imbabura Quechua.) Basque interrogatives exhibit *wh*-movement to the left periphery of the clause to a position that is immediately followed by the finite verbal element (allegedly a V2 phenomenon). Furthermore, Basque has two distinct overt complementizers; one -(*e*)*n* for interrogative, i.e., [+*wh*] complements, and another, -(*e*)*la*, for non-interrogative, i.e., [–*wh*], complements. Consider now the following data suggesting the existence of CP-pied-piping, pointed out by

Ortiz de Urbina with respect to Basque interrogatives (corresponding to his examples (15i) and (17)):

(72) [*Nor* etorriko d-ela bihar] esan diozu Mireni? Basque
who come Aux-that tomorrow said Aux Mary-Dat
'Who have you told Mary will come tomorrow?' (Lit. 'That who will come tomorrow have you told Mary?')

(73) [*Nor* etorriko d-ela] esan du Mirenek *t* uste du-ela Peruk?
who come Aux-that said has Mary think Aux-that Peter
'Who did Mary say that Peter thinks will come?' (Lit. 'That who will come has Mary said (that) Peter thinks?')

Example (72) is taken to demonstrate the option in Basque for the *wh*-element (*nor*) preposed within the embedded clause to pied-pipe the whole embedded CP whose Spec position it came to occupy (the alternative option being to get extracted from it). Notice that the *wh*-phrase in the embedded CP as well as the whole pied-piped complement CP in the main clause occupy a clause-initial and immediately pre-verbal position characteristic of *wh*-moved interrogatives in Basque. Example (73) shows that the pied-piped CP can itself be extracted from the embedded Spec, i.e., move successive cyclically, to form a matrix question, in the same way as nonclausal *wh*-constituents can. Such evidence from Basque leads Ortiz de Urbina to claim that, contrary to Webelhuth's claims, *wh*-operator features can percolate from Spec of CP to the CP itself, and by this turn the CP into a *wh*-operator which after undergoing movement to Spec of CP, is able to bind a syntactic variable from there, just like any other *wh*-phrase would.

Thus, Ortiz de Urbina (1990) proposes a radically different view of the status of CP-pied-piping across languages. Revising Webelhuth's assumption of C being uniformly marked [–*wh*], he assumes – in the spirit of the *wh*-criterion – that only a [+*wh*], i.e., interrogative C, can, and in fact must, have a *wh*-operator in its Spec. Given the option of operator-feature percolation from Spec to CP (ignoring the convention blocking percolation if the head has the relevant feature too), Ortiz de Urbina claims that a *wh*-phrase in Spec either percolates its feature to the CP, which would result in CP pied-piping, and will crucially make this *wh*-phrase lose its operator status, or it fails to percolate its feature to CP, hence it remains an operator itself, and no CP pied-piping will be licensed. From these assumptions he derives the prediction that CPs that are complements to [–*wh*] (i.e., non-interrogative) selecting heads, as well as non-selected (i.e., adjunct) CPs, may be pied-piped by their *wh*-Spec, whereas CP complements of [+*wh*] (i.e., interrogative) selecting heads cannot get pied-piped since they need a *wh*-operator present in their Spec. This appears to work well for Basque (see (74a) and (74b)), at least as far as the data considered by Ortiz de Urbina are concerned (for some further relevant facts, see Echepare's 1997 alternative analysis referred to below).

(74) a. [*Nor* etorriko d-ela bihar] esan diozu Mireni? Basque
who come Aux-that tomorrow said Aux Mary-Dat
'Who have you told Mary will come tomorrow?' (Lit. 'That who will come tomorrow have you told Mary?')

b. *[*Nor* etorriko d-en] galdetu duzu?
who come Aux-comp asked Aux
(Lit. 'Who will come have you asked?')
Cf. the corresponding ungrammatical English *Who have you asked will come?

As for the case of Germanic, such as the examples in (71) from English, Ortiz de Urbina needs to say something additional in order to account for the fact that they are impossible even though the selecting verbs *know* and *forge*t do permit a [–*wh*], i.e., a non-interrogative CP complement. The solution he proposes for this problem relies on the difference between Germanic and Basque with respect to whether C is empty or not. Specifically, he suggests that the Germanic cases of CP-pied-piping are ruled out by the ECP (Chomsky 1981, 1986a) due to the lexically ungoverned nature of their empty C in the output structure, i.e., that the unacceptability of examples like (71) has nothing to do with *wh*-pied-piping per se. While it is clear that some parameter distinguishing Basque and Germanic must be involved, it seems doubtful that it could simply be the emptiness of C in Germanic preposed CPs violating the ECP. If this were so, one would not expect any possibility of a CP in a left-peripheral A-bar or subject position, having a *wh*-element in its specifier and an empty C. But such cases clearly are attested, as shown by fully acceptable topicalized *wh*-CPs, such as *Who Mary invited*, *I would never reveal to you*, or subject clauses, such as *What you got from whom doesn't interest me*. A different approach that can provide a reasonable alternative way to derive the apparent cases of CP-pied-piping in Basque, and can also account for the distinct behavior of the English-type languages, is proposed by Echepare (1997) based on some novel data and generalizations he points out regarding Basque interrogatives.

Echepare's major observations leading to the reassessment of the alleged CP-pied-piping phenomenon of Basque are the following: (a) a pied-piped *wh*-CP cannot satisfy selection for a *wh*-interrogative, i.e., it can occur only in the Spec of a matrix question but not in an embedded one (see (75)) and (b) the set of *wh*-words that can pied-pipe a CP is limited to arguments and referential adjuncts, while non-referential *wh*-adverbials, like 'why' and 'how', are not able to appear in pied-piped CPs, and can take matrix scope only by extraction (see (76)):

(75) *Mikelek galdetu du [$_{CP}$ [*nor* etorriko dela]$_i$ esan Basque
Mikel ask Aux who come Aux-Comp say
duten t_i].
Aux-Comp
'Mikel asked who they said will come.' (Lit. 'Mikel asked who will come said they.')

(76) *[*Zergatik* aspertu zela]$_i$ uste duzu t_i?
why bore Aux-Comp think Aux
'Why do you think she/he got bored?' (Lit. 'Why she/he got bored think you?')

These properties are completely unexpected under a hypothesis of CP-pied-piping by *wh*-movement (as, e.g., Ortiz de Urbina's 1990 *wh*-feature-percolation-based proposal above). Echepare (1997) interprets the property demonstrated by (75) (see generalization (i) above) as indication that in fact the preposing of apparent *wh*-CPs in Basque interrogatives is not due to *wh*-movement at all, and argues that these CPs are not located in Spec of CP, but rather are topicalized phrases appearing in a projection higher than CP. Furthermore, along the same lines, the impossibility of examples like (76), i.e., 'pied-piped' CPs being acceptable only when their wide-scope taking *wh*-element is an argument or referential adjunct, is taken as indication that the *wh*-words of Basque are not operators. Echepare argues that they undergo neither overt nor covert *wh*-movement to Spec of CP; instead, he claims, *wh*-interrogatives in Basque should be analyzed as in situ *wh*-questions of the Chinese type, and receive wide-scope construal via unselective binding, since it is this type of *wh*-construction that is known to exhibit the referentiality restrictions manifested in (76) (see chapter 77). Thus, under Echepare's analysis, Basque would not instantiate *wh*-movement pied-piping a CP. If apparent CP-pied-piping constructions such as (72) and (73) indeed turn out to involve simply a topicalized CP that in these particular cases just happens to contain an in-situ *wh*-phrase, then Basque interrogatives would be consistent with Webelhuth's operator-feature-based theory of pied-piping that systematically excludes the possibility of clausal pied-piping.

Finally, there is one slightly different potential instance of CP-pied-piping by Spec within Germanic not addressed in Webelhuth (1992). This is the somewhat controversial case of pied-piped infinitivals occurring in relative constructions of German (see, e.g., Van Riemsdijk 1985 and Grewendorf 1986). Unlike the clausal pied-piping cases of the English stylistically marked, literary kind discussed in section 4.3.1, these sentences in German (such as in (77)), arguably involve overt movement of the relative pronoun within the pied-piped infinitival, as argued by Van Riemsdijk (1985, 1993), namely, movement to the Spec position of the infinitival CP.

(77) das Buch, [*das* PRO *t* zu lesen] er uns empfohlen hatte
the book which to read he us recommended had
('the book, to read which he had recommended to us')

Apparently, this kind of alleged CP-pied-piping is induced only by the Spec position of the CP, and, consequently, it is a reasonable initial assumption that it involves feature percolation to the CP. Yet it is also possible that this case should be considered nevertheless as a counterpart of the stylistically marked pied-piping cases of English discussed in section 4.3.1; the latter were claimed by

Webelhuth (1992) to involve simply topicalization of the constituent, rather than actual pied-piping by movement of a *wh*-operator. The reason is that it shares two important properties with the latter cases: (a) it is limited to occur only in relative clauses, and is impossible in interrogatives, suggesting that the process actually might not involve quantificational operators, and (b) it is excluded in the case of tensed clauses, which makes it similar to the English clausal-pied-piping cases shown in (61–62) of section 4.3.1. If analyzed in this latter way, one would then need to address the question of what forces the overt preposing of the relative pronoun within the infinitival, and why no such preposing is required (or in fact permitted) within the English cases such as those of Ishihara (1984), shown in section 4.3.1.

On the basis of these observations we can only conclude that no uncontroversial evidence is available in favor of the existence of true CP-pied-piping under *wh*-movement, in the same sense as there is uncontroversial evidence for DP-pied-piping under *wh*-movement. Even the strongest candidate discussed in the literature, namely, the case of Basque interrogatives, raises some serious doubts due to evidence internal to the language. Furthermore, it would leave open the issue of the relevant parametric difference between Basque-type languages and languages where interrogatives do not manifest CP-pied-piping.

*4.6 Pied-piping in non-*wh*-constructions*

So far our discussion has been focusing on *wh*-constructions and specifically, on accounting for the pied-piping ability of *wh*-words occupying various structural positions in their phrases. This reflects the orientation of the pied-piping literature itself, at least until recently. The obvious reason for the predominance of studies on pied-piping by *wh*-morphemes is the overtly detectable nature of this particular morpheme, and the wide range of movement operations it is involved in. Yet an uncontroversial assumption in the literature, shared by all accounts of *wh*-pied-piping reviewed above, is that the mechanisms proposed for *wh*-pied-piping generalize (at least) to the whole set of operator features in UG. Some better known cases of such operator features involved in movement, beyond [+*wh*], are the [+neg] feature of negative morphemes, central to Rizzi's (1991b) Negative Criterion (see also Haegeman and Zanuttini 1991), and within the framework of a systematically checking theory-based account of quantifier scope put forth in Beghelli and Stowell (1997), also quantificational features, such as [+Dist(ributive)], [+Univ(ersal)], and others, corresponding to individual clausal functional heads and QPs. (Another potentially relevant operator feature, namely, the feature [+Focus], proposed in Horvath 1986, and used as a crucial part of Brody's 1990a Focus Criterion, is reexamined and eliminated as such in Horvath 2000, in part based on considerations of pied-piping under overt Focus-movement as manifested in Hungarian.)

These operators are commonly assumed to involve covert (LF) movement, at least in languages like English (however, for an alternative treatment making use only of overt movements, see Kayne 2000: ch. 13). Thus, for instance, QR of the GB

framework, as well as its reanalyzed minimalist versions, such as those proposed by Hornstein (1995), Beghelli and Stowell (1997), or the movement of negative phrases to enter into a Spec–Head relation with the clausal head Neg^0 to satisfy the Negative Criterion (or to check the [+Neg] feature) are assumed to take place after Spell Out in languages such as English and French (the status of pied-piping under covert movement will be addressed in section 5). Here, however, we will consider pied-piping by such non-*wh* operators in languages and constructions where these operators undergo uncontroversially overt movements. Such cases are, for example, QR in Hungarian (Kiss 1992), movement of negative phrases to Spec of NegP in Italian and West Flemish (Haegeman and Zanuttini 1991; Haegeman 1995b), and also the Negative Inversion construction in English.

To demonstrate the ability of non-*wh* operator features to pied-pipe in a way consistent with what we found with respect to *wh*-movement, first consider examples from Hungarian involving overt Quantifier Raising of the universal quantifier *minden* 'every' to the position of Spec of DistP (postulated in Beghelli and Stowell 1997):

(78) a. [*Mindenkinek*] vettünk valamit *t*.
everyone-Dat bought-1Pl something-Acc
'We bought something for everyone.'
b. [*Minden* vendégnek] vettünk valamit *t*.
every guest-Dat bought-1Pl something-Acc
'We bought something for every guest.'
c. [[*Minden* vendég] gyerekének] vettünk valamit *t*.
every guest's child-Dat bought-1Pl something-Acc
'We bought something for every guest's child.'

Similarly, the pied-piping generalizations found in relation to *wh*-movements are attested also in the case of overt movements involving a negative constituent. This can be seen based on the following Negative Inversion examples from English, where, unlike in other instances involving negative phrases in the language, the overt nature of the movement of the [+neg] element (to the Spec of CP) is transparent. (On the question of how to derive their need for aux-inversion, i.e., for I-to-C movement, see Rizzi's 1991b discussion of the Negative Criterion, on a par with his *Wh*-Criterion.) Consider the pied-piped phrases and the [+neg] morpheme within them in (79), as well as the contrasting pairs (80a)–(80b) and (81a)–(81b); examples (80a, b) show the negative morpheme being able to pied-pipe its DP when occurring in Spec but not when occurring in complement position, and the contrast in (81) shows that when the head of a phrase is [+Neg], it can pied-pipe the whole DP, including a complement, but when the [+Neg] feature is on the complement in a DP, the whole phrase cannot be pied-piped by it.

(79) a. [*Never*] have I witnessed such behavior.
b. [Under *no* conditions] will I leave this city.
c. [[*No* student's] thesis] have they read so thoroughly.

(80) a. [[*No* young girl's] participation in the game] can they permit.
b. *[The participation [of *no* young girl] in the game] can they permit.

(81) a. [*No* articles by such a reporter] will they agree to publish.
b. *[Such articles [by *no* reporter]] will they agree to publish.

In some of the recent literature, inspired by Kayne's (1994) Antisymmetry framework, pied-piping of large, clausal and other functional projections (both in the nominal and in the verbal extended projections) is postulated on a much larger scale than in earlier work. The empirical evidence for such analyses often comes from surface discrepancies of word order (e.g., the appearance of head-final phrases in head-initial languages) or from various agreement phenomena, which under the restrictive theoretical assumption that agreement holds only in Spec–Head configurations, imply that large phrasal categories – possibly remnants appearing to be no more than just heads – move to Spec positions, as instances of pied-piping by the relevant agreeing feature(s). The existence of such 'heavy' pied-piping is discussed from a conceptual point of view by Koopman (1996). In addition to giving a general perspective on a theory with heavy pied-piping, Koopman also reviews some supporting empirical evidence from a variety of languages based on earlier studies (e.g., Nkemnji's 1995 analyses of Nweh (Grassfield Bantu)). To the extent that these large-scale movements are indeed driven by the need for feature-checking and/or agreement (which in these analyses is not always obvious), they would constitute true cases of pied-piping and would raise the obvious question of what induces the apparent language-particular variation with respect to this option, or at least what the properties and mechanisms are that make such heavy pied-piping more easily detectable in some languages than in others.

Most of the earlier literature on pied-piping considered cases of operator movement. Yet there is clearly no reason not to expect pied-piping also when the feature/morpheme-triggering movement is inflectional or categorial in nature rather than an operator; in other words, one may in principle expect pied-piping to occur under A-movements as well. Finding appropriate test-cases for A-movement pied-piping, however, is indeed more difficult, at least in the obvious canonical A-movement cases, such as noun phrase movements to A-positions (e.g., to Spec of IP). One factor limiting the range of testable cases is that having no Case, or in MP terms, having an unchecked Case feature, is a necessary condition for a DP to be eligible for A-movement (see Chomsky 1995c, 2000). However, DPs occurring, for instance, within the Spec position of a larger DP such as *some student* in [*some student's parents*] (see (82a)) are already Case-licensed inside the DP; the same is true for complements of N, which bear inherent Case. Thus these DPs cannot undergo A-movement to begin with, hence obviously could not be expected to be potential pied-pipers of their phrase. Another factor that might reduce cases of A-movement pied-piping is that, in contrast to operator movements, the types of features triggering classical A-movements (familiar from Raising or Passive constructions) are precisely those

known independently not to be inheritable via the Spec–Head relation, at least when the head is marked for the same features (see section 4.3.2 on *pro* identification by phi-features inducing an anti-pied-piping effect in free relatives, as well as Webelhuth 1992 on *wh*-feature percolation). So under a feature-percolation-based view of pied-piping, commonly assumed for operator movements, one would not expect a DP in Spec of DP position to be a pied-piper for its phrase under A-movement.

What we find when turning to the assessment of the actual empirical facts is that pied-piping indeed is attested, in the canonical A-movement cases examined, only when the pied-piper is the head of the phrase, as in (82a) and (82b) below. DPs in Spec of DP position can get pied-piped by the head, but they themselves cannot act as pied-pipers (see (82b)). (Feature inheritance from the head, and hence pied-piping of the maximal projection, is unproblematic, as expected.)

(82) a. [Some/no student's [parents]] are waiting in the office.
b. *[Some/no student's [parents]] is waiting in the office.

This is contrary to what we find in the case of operator movements such as *wh*-movement. But as pointed out above, the apparent impossibility of pied-piping by Spec under A-movement in (82b) is in fact independent of the pied-piping mechanism itself, since such DP specifiers cannot undergo A-movement at all as shown in (83) below. (Note that under *wh*-movement, possessive Spec of DPs in English pied-pipe the rest of the DP obligatorily, putatively for PF-related reasons, discussed in section 6.1).)

(83) *Some/no student('s) are [*t* ('s) parents] waiting in the office.

The ungrammaticality of (83) cannot be attributed simply to the lack of phi-feature checking (i.e., lack of appropriate agreement) on the clausal head I and of Case on the DP [. . . parents], since such phi-feature-checking by a Case-bearing DP would be possible without movement, i.e., when the relevant phrase is in post-V rather than in Spec of IP position (see Chomsky 2000 on Agree). This possibility is demonstrated in *there* expletive constructions, such as (84):

(84) There are some student's parents waiting in the office.

Some versions of the earlier GB theory though would indeed have excluded cases such as (83) above by the lack of Case on the post-V DP in (83), while permitting examples like (84) via expletive replacement.

A distinct contrast of interest involving DP-pied-piping (pointed out by an anonymous referee) is provided by the post-nominal possessive construction of English. The construction exemplified in (85) may represent an instance of DP-pied-piping by its Spec under A-movement (a case we failed to find with pre-nominal possessives as in (82–83)).

(85) a. [Some students of John's] are waiting in the office.
b. *[Some students] are [*t* (of) John's] waiting in the office.

Pied-piping here is obligatory – i.e., (*of*) *John's* cannot be left stranded by the preposed phrase (85b). Naturally, if the string *some students* in this construction does not form a constituent, we would not expect it to be able to move independently, and thus strand the rest of the DP. But if Kayne's (1994: 86) analysis of this construction – shown schematically in (86) – is right, then *some students* is clearly a constituent, one that has been preposed to the Spec of the topmost DP in the structure.

(86) [some students$_i$ [[$_D$ of] [John ['s [t_i]]]]]

Thus, assuming the structure (86) motivated by Kayne, pied-piping of *of John's* by the phrase *some students* occupying the Spec position of the highest DP projection is predicted to be possible, and this indeed seems borne out by (85a). Such examples may, under the above analysis, instantiate the case we have been searching for, namely, pied-piping of a DP under A-movement by a phrase in its Spec position. The question remaining under the above analysis is: why is pied-piping obligatory here (see 85b)? The reason for this may have to do with the fact that the preposed phrase in Spec of DP (*some students*) in this construction is arguably not a DP, but rather a QP/NP (see Kayne 1994). If the EPP driving movement to Spec of IP is in fact a requirement of checking an uninterpretable D feature of the head I (as proposed in Chomsky 1995c), then this would automatically explain why the phrase *some students* itself could not satisfy the EPP, and hence could not move by itself, only the whole DP could, as shown in (85a, b). (If so, then, technically, the movement would again be DP-pied-piping by its head D, not by its Spec.) However, according to an alternative, more recent, conception the EPP-requirement is not construed as categorial feature-checking, but as the need of the I (=T) head to have a Spec position realized (see Chomsky 2000). Under this approach, there appears to be no obvious reason for the impossibility of (85b), given that the phrase in Spec of DP is a maximal projection (QP or NP) which is demonstrably able to undergo movement by itself in Kayne's account. Possibly, however, this problematic phenomenon could fall together with some observations made in relation to the notion 'phase' in Chomsky (2000) involving the impossibility of extracting substantive, i.e., 'non-phase', categories from within their functional layer constituting a phase (i.e., from their extended projection). For instance, finite IPs cannot strand their C, and similarly, an NP/QP would not be able to strand its DP layer. (On Spec and obligatory pied-piping, see also section 6.)

A related question of obvious significance is whether A-movement can pied-pipe non-nominal projections, such as VP and various clausal functional projections, by their DP specifier. A case in point would be, for instance, if instead of the subject DP being moved from its VP-internal base position to Spec of IP, as in an English-type SVO language, the same feature-checking and EPP requirement

driving the movement of the DP could be satisfied, at least in some languages, by preposing the whole VP/*v*P or other clausal projection whose Spec position the relevant DP occupies. Notice that being (extended) projections of V, these categories would be less likely to block feature-inheritance from a DP in Spec by their head-projection than nominal projections. (Percolation of non-operator features from the complement would be excluded under (47), just like percolation of operator-features is.) A concrete test case of the above kind from English would be, for instance, the raising construction in (87a, b), where the (bare) IP complement of the raising predicate has a DP in its Spec position. The question is: can this DP pied-pipe the IP, instead of being extracted from it?

(87) a. *[The students to enjoy the lecture] are likely [*t*].
b. The students are likely [*t* to enjoy the lecture].

Pied-piping of IP under A-movement turns out to be clearly impossible in the case of (87). The reason for this again appears to lie in the nature of the category moved (see (87a)). In this case it is a defective IP – i.e., one without a full set of phi-features – in terms of Chomsky (2000). Such IPs, occurring in raising and ECM constructions, are known not to exhibit phonetic autonomy like, e.g., CPs or verb phrases do; specifically, they are unable to move or occur as elliptical answers on their own (e.g., **it's* [t *to enjoy the lecture*] *that John seems*). While English, at least in the above type of case, does not exhibit the relevant pied-piping option, empirical work on a variety of languages has uncovered putative motivation for assuming pied-piping of VPs and various clausal functional projections by their specifiers under A-movements (see, e.g., Koopman and Szabolcsi 2000 for relevant analyses and references).

5 LF-movements and pied-piping

Within the GB model of UG, it was assumed that the same operation Move α involved in mapping D-structures to S-structures also applies to S-structures, and derives from S-structures another level of syntactic representations, namely, LF. These post-S-structure applications of Move α became known as LF-movements, and were also referred to as covert movements, since they had no phonological effects, due to the architecture of the grammar (the T-model). Within such a model, the null hypothesis seems to be that all properties of LF-movement, including in particular the options of pied-piping, will be parallel to those found in the case of overt (i.e., pre-S-structure) movement, apart from any possible properties of overt movement that are imposed by phonological (PF) requirements.

The existence of pied-piping by LF-movements was thus taken for granted in the GB framework. The first actual empirical issue involving pied-piping and LF-movement arose in connection with the assumed LF-movement account of *wh*-in-situ constructions in languages such as Chinese and Japanese, and also of multiple *wh*-questions in English-type languages. Specifically, a problem for the

expected parallelism between overt and LF-movement operations appeared to exist in relation to the application of Subjacency (Huang 1982a). It was observed that in-situ (non-D-linked) *wh*-elements, assumed to undergo covert *wh*-movement, actually permitted certain island violations, and this raised the possibility that LF-movement was not subject to Subjacency. In an attempt to show that LF-*wh*-movement, too, obeys Subjacency, as one would expect, based on the null hypothesis, an interesting type of proposal was made independently in work by Choe and by Nishigauchi (published as Choe 1987 and Nishigauchi 1990); the analysis was further elaborated by Pesetsky (1987a). The proposal was based on the hypothesis of large-scale pied-piping by the LF-*wh*-movement involved, and it claimed that the suspected island violations are only apparent, since although the *wh*-element itself occurs within an island, such as a complex NP or an adjunct, what actually moves at LF is the island itself, in other words, the complex NP or the adjunct gets pied-piped. This movement, unlike extraction of the *wh*-in-situ element itself, would not violate Subjacency. Both Choe and Nishigauchi provided the type of evidence illustrated in (88), involving the felicity of answers to *wh*-questions, in support of their claim (example (88) is adapted from Pesetsky 1987a: 113):

(88) Q: Mary-wa [$_{DP}$ [$_{CP}$ John-ni nani-o ageta] hito-ni] atta-no? Japanese
Mary-Top John-Dat what-Acc gave man-Dat met-Q
'What did Mary meet the man who gave to John?'
A1: */?? Konpyuutaa desu.
computer Cop
'It's a computer.'
A2: [$_{DP}$ [$_{CP}$ Konpyuutaa-o ageta] hito-ni] desu.
computer-Acc gave man Cop
'It's the man who gave a computer (to him).'

As shown in (88), only the whole complex NP can be a felicitous answer to the in-situ *wh*-question. These types of facts are taken to show that the pied-piping of the island by the *wh*-in-situ element is the only possible derivation in the prima facie problematic cases. Hence, the apparent discrepancy between overt and LF movements with respect to the application of Subjacency would be eliminated. It must be noted here that the above covert pied-piping proposal fails to account for the fact that a certain subset of *wh*-elements, in particular non-referential adjuncts such as 'why' (reason) and 'how' (manner), are unable to take wide scope out of islands in such *wh*-in-situ languages as well (see chapter 77).

Apart from several empirical problems involved in the proposed evidence, such as those pointed out, e.g., in Fiengo et al. (1988), the above account is undesirable from the point of view of the assumptions it makes about LF-pied-piping itself. Crucially, notice that, based on what is known about overt pied-piping, the same *wh*-in-situ structures that in the above proposal are assumed to undergo LF-pied-piping would obviously not be able to undergo pied-piping by overt *wh*-movement. Under accounts of overt pied-piping based on variants of a

reasonably restrictive and empirically motivated feature percolation or inheritance mechanism (reviewed in section 4), the relevant [+*wh*] feature would clearly not be able to percolate to the complex NP in cases like (88), and, consequently, pied-piping would be impossible. This problem is best shown by the contrasts in English between overt *wh*-movement and *wh*-in-situ (alleged to involve LF-*wh*-movement) in the case of various islands, such as in (89a, b):

(89) a. *[The man [who bought what]] did Mary know?
b. Who knew [the man [who bought what]]?

LF-pied-piping by *wh*-in-situ, then, as formulated in the Choe–Nishigauchi–Pesetsky analysis, seems to resolve the non-uniformity of overt and covert movement with respect to Subjacency only at the cost of introducing another non-uniformity between overt and covert movements, namely, one with respect to the application of pied-piping. This is a serious problem since there is no plausible reason why covert movement should permit 'heavier' pied-piping than overt movement. Notice that if any needs of PF (relevant for the output of overt but not covert movement) have any impact on pied-piping options at all, these would presumably go in exactly the opposite direction; they would potentially force pied-piping rather than prevent it, e.g., in case the moved element was too 'small' to be pronouncable, such as a feature or a bound morpheme (on such effects of PF, see Chomsky 1995c, discussed in section 6).

Some problems with this LF-pied-piping proposal from the point of view of interpretation were noted by von Stechow (1996) (see also chapter 77). Von Stechow's objections may be resolved under a conception of reconstruction involving the copy theory of movement, combined with appropriate deletion conventions, of the kind suggested in Chomsky (1995c). However, it is important to note at this point that in spite of the inadequacies of this particular account for *wh*-in-situ and Subjacency, the general idea behind the proposal, namely, LF-pied-piping providing the account for what appear to be various potential island violations, is arguably on the right track. This kind of account, in a slightly amended form, in fact received some striking confirmation in the domain of the LF-movement of negative phrases in French, studied in Moritz and Valois (1994). In this work on French sentence negation, LF-pied-piping was shown not only to exist but to obey the familiar configurational requirements attributed to the restrictive feature-percolation mechanism underlying overt pied-piping.

After establishing that French negative phrases (such as *personne*) undergo LF-movement to Spec of NegP (not just chain formation with the head of NegP), Moritz and Valois (1994) proceed to explore cases where *personne* occurs within some larger phrase that can be shown (based on overt *wh*-movement) to constitute an island for extraction. The pattern of grammaticality they find is that the negative element *personne* gives well-formed negative sentences in some of these cases, but results in ungrammaticality in another subset of the cases. The mixed pattern suggests first of all that Subjacency is relevant for the LF-movement of negative phrases, and more importantly, that contrary to assumptions of the

proposal for *wh*-in-situ reviewed above, LF-pied-piping cannot apply freely, making all island effects disappear; rather, only certain kinds of configurations can result in LF-pied-piping.

The crucial claim made by Moritz and Valois on the basis of a variety of arguments is that the particular cases where an island can be pied-piped by *personne*, and thus a Subjacency violation by LF-raising to Spec of NegP can be avoided, are precisely the cases where *personne* contained in the larger phrase (i.e., in the extraction island) is able to move (covertly) to the highest Spec position of that phrase. Consider, for instance, the contrast between (90) and (91), representing one type of evidence used by Moritz and Valois.

(90) a. *l'homme dont$_i$ Lise a vu [$_{DP}$ sa (*agent*) photo t$_i$ (*theme*)]
the-man of-whom Lise has seen his picture
'the man of whom Lise saw his picture'
b. *Lise n'a vu [$_{DP}$ sa (*agent*) photo de *personne* (*theme*)].
Lise Neg-has seen his picture of nobody
'Lise did not see his picture of anybody.'
(Adapted from Moritz and Valois (1994, (49b) and (50b)))

(91) a. *De qui$_i$ Louise est-elle partie [$_{PP}$ avec [$_{DP}$ l'amie t$_i$]]?
of whom Louise is-she left with the-friend
'Whose friend did Louise leave with?'
b. Louise n'est partie [$_{PP}$ avec [$_{DP}$ l'amie de *personne*]].
Louise Neg-is left with the-friend of nobody
'Louise did not leave with anybody's friend.'
(Adapted from Moritz and Valois (1994, (58a, b)))

The (a) sentences demonstrate the impossibility of extraction from the DP in (90) and the PP in (91). Given this, the crucial evidence regarding LF-pied-piping is provided by the contrast between the negative sentences (90b) and (91b), both of which exhibit *personne* in a position prohibiting extraction. Apparently, the island effect in (91) can be voided via LF-pied-piping by *personne* in (91b); since the sentence is well-formed, a [+Neg] phrase must have moved covertly to the Spec of NegP to license the negative head. In contrast, sentence (90b) is ungrammatical, indicating that no movement of a [+Neg] phrase to the Spec of NegP could take place in it. Hence it must be the case that in (90b), not only extraction but crucially, also LF-pied-piping of the whole DP by *personne* is blocked. This fact about examples like (90b) is related by Moritz and Valois to a constraint widely observed in studies of extraction out of DP in Romance; it limits which argument of an N may move to the Spec of DP, and hence get extracted from DP. Crucially, it has the effect that when a noun phrase has both an agent and a theme, only the agent is able to move to the Spec position of the DP, and possibly get extracted further (this effect is shown overtly by the ungrammatical (90a)). The important point of the above argument is then that the impossibility of LF-piped-piping by *personne* (a theme) in (90b) and the contrast with the possibility

of LF-pied-piping by *personne* in (91b) would follow if the LF-pied-piping option were dependent on the ability of *personne* to move to the Spec position of the phrase to be pied-piped (in our cases, the phrase constituting an island for it); in other words, the evidence suggests that *personne* can pied-pipe the DP by LF-movement only if it comes to occupy the Spec of DP position. Notice that this finding of Moritz and Valois (1994) falls in place immediately in light of the two major conclusions we reached earlier on the basis of overt pied-piping: namely, (a) that pied-piping is possible only as a result of the 'pied-piped' phrase acquiring the feature that drives the particular movement (in the above case [+Neg]), and (b) that the feature-percolation mechanism is limited to Spec–Head agreement and to projection from the head of a phrase to the maximal projection (see (47) in section 4.2). Thus, Moritz and Valois's analysis seems to strongly support the assumption that, beyond Move α itself being uniform before and after S-structure/Spell Out, so are the mechanisms that regulate the possibility of pied-piping.

Within some versions of the MP, introducing feature movement to replace the traditional GB conception of Move α, and principles of derivational economy to limit movements strictly to operations necessary to ensure convergence, the very existence of covert phrasal movement was called into question. In particular, Chomsky (1995c) proposed that movement of any material beyond just the formal features themselves is an instance of pied-piping (referred to as "generalized pied-piping") and furthermore, according to an economy condition postulated, it can take place only when forced by needs of the PF interface, i.e., when the output without it would be 'unpronounceable'. (On this conception of pied-piping, see also section 6.) Under this strong hypothesis, all covert movements would necessarily be pure feature movements; only overt movements could be phrasal. In the context of this prediction, the evaluation of empirical evidence apparently pointing to the existence of covert phrasal movement, i.e., to the possibility of pied-piping under LF movement, becomes even more important than it was in earlier frameworks.

A particularly important kind of evidence in favor of LF-pied-piping is provided by the phenomenon of antecedent-contained deletion (ACD). The case of ACD constructions, exemplified in (92), is of special interest because the evidence it provides is very different in nature from the more common kind discussed above. In the above types, LF-pied-piping was inferred based on the observed bypassing of particular island effects. However, in the case of ACD, the evidence for LF-pied-piping involves interpretability, namely the resolution of VP anaphora.

(92) John [$_{VP}$ met [$_{DP}$ everyone that I did [$_{VP}$ e]]].
(Interpreted as *John met everyone that I met* t.)

The essence of the argument from ACD is based on the fact that the elided VP in cases like (92) needs a linguistic antecedent in order to get interpreted, but its antecedent is the matrix VP that the elided VP is contained in. Thus, in the

surface representation given in (92) there is no way to assign an interpretation to this null VP, since the process of VP-anaphora interpretation – the copying of the antecedent (the matrix VP) into the null VP – would reintroduce the VP gap itself, resulting in an infinite regress. This problem of regress can be eliminated, however, if there is some independently motivated process removing the elided VP from within the larger VP before the application of the interpretive (copying) procedure of VP-ellipsis. As was originally proposed by May (1985), and elaborated further, for instance, in Larson and May (1990), Fiengo and May (1994), and Fox (1999), precisely such an independently motivated process is QR, applying to the quantified head of the relative clause containing the elided VP. Thus if QR can move not only the quantifier, or the quantificational feature, but can pied-pipe the whole complex noun phrase, including the relative clause with the elided VP in it, to a position outside of the VP that contained it, then ACD interpretation would automatically become unproblematic. The LF-representation provided by QR under the assumption that it can involve pied-piping is given in (93).

(93) $[_{DP}$ everyone$_i$ that I did $[_{VP}$ e]] [John $[_{VP}$ met t_i]]

This covert pied-piping would leave behind a VP of the form [*met t*] which could now constitute an appropriate antecedent to be copied into the VP gap and provide the proper interpretation for the ACD construction in (92) (on the compatibility of this account with the copy theory of movement in the MP, see Fox 1999):

(94) $[_{DP}$ everyone$_i$ that I $[_{VP}$ *met* t_i]] [John $[_{VP}$ *met* t_i]]

Hornstein (1995) proposes a Case-driven, rather than a quantifier-driven, view of the movement involved, but this account, too, relies on the assumption of covert pied-piping – specifically, on pied-piping under covert A-movement. (For proposals using overt movements in the account of ACD, see Baltin 1987 and Kayne 2000: ch. 13.)

6 The Minimalist Program and further current directions

As reflected in the discussion of the above sections, the status of pied-piping in the theory has undergone substantial changes since its introduction in the late 1960s until current times, in accord with the evolution of the model of UG in general, and with the shifts in the conception of movement operations in particular. Here we will consider briefly the way pied-piping is conceived in current syntactic theorizing and sketch the role it plays and the issues it raises in Chomsky's (1995c, 2000) MP framework and other varieties of contemporary MP-related research.

6.1 Feature movement, economy, and generalized pied-piping

From the perspective of the GB framework, the major issue regarding pied-piping was to determine when it has the option to take place and when it is impossible. This in turn was due to the underlying assumption that, just like movement itself, pied-piping has no cost, and that therefore its application does not need to be (though of course may be) forced by some particular structural or other circumstance. In sharp contrast to this, Chomsky's (1995c) MP conception of pied-piping is based on the view of movement operations as involving, ideally, movement of no more than just the formal features of lexical items needed for the checking of corresponding uninterpretable features on some functional head. As pointed out already in section 5, the need for feature checking itself could not drive movement of any extra material beyond the feature itself. In the spirit of the economy of derivation adopted in the MP framework, this is taken to imply that movement of any lexical material, i.e., any pied-piping of material by the attracted or moved feature, referred to by Chomsky as generalized pied-piping, will be possible only to the extent that it is required for the convergence of the derivation at one of the interfaces. Furthermore, given that the most obvious problem with displacing isolated features seemed to be 'unpronouncability' – namely the lack of proper interpretation at the PF interface – Chomsky (1995c: 262–263) suggested a stronger version of the above hypothesis, according to which it is only PF needs, such as morphological and phonological properties determining PF convergence, that can induce (generalized) pied-piping. On this conception, pied-piping is viewed as a repair strategy imposed on the computational system by factors external to the system itself.

This PF-based hypothesis works adequately in some cases, as exemplified by the way *wh*-feature attraction applies to a *wh*-phrase like *whose book* (where *who* is assumed to be in the Spec of DP and *'s* is a possessive D, heading the DP). The attracted *wh*-feature cannot raise by itself since it would result in a crash at PF. So at least the whole lexical item *who* must be pied-piped; but in the present case, this would leave behind *'s book*, a form that would also cause a crash at PF; furthermore, *whose* (at least in English) cannot raise either, since being made up of the Spec of DP (*who*) and the head D (*'s*) it is a non-constituent, i.e., it is not a syntactic object at all, so it cannot be affected by a movement operation. Consequently, the smallest element that can legitimately be raised by Attract/Move [wh] according to Chomsky's (1995c) hypothesis is predicted to be the phrase *whose book.* It would furthermore be predicted that unless justified by additional PF needs, this would also be the maximal phrase that gets pied-piped; thus, e.g., phrases like *read whose book* and *an article about whose book* cannot get pied-piped under *wh*-feature movement.

Although the PF convergence hypothesis correctly derives pied-piping and, moreover, also the Left Branch Condition effect in the present case, it obviously faces some serious conceptual and empirical challenges. On the conceptual side,

the proposed economy condition involving the PF interface means that the determination of how much material is pied-piped each time when Attract applies to some feature in a derivation would involve significant look-ahead, a property known to result in sharply increased computational complexity. However, it is unlikely that such complexity is indeed inherent in overt movements, which manifest no corresponding special difficulty in production and processing (on the elimination of similar computational complexity with respect to Procrastinate and 'strong' features, see Chomsky 1995c: 228). One obvious empirical challenge for a purely PF-convergence induced view of pied-piping would be the apparent optionality of some cases of pied-piping, i.e., its alternation with extraction. This is the case, for instance, in *wh*-phrases in the Spec of DP in Russian-type languages, which permit Left Branch Condition violations, or in the case of Hungarian DPs with dative-marked possessors in the top Spec position (analyzed in Szabolcsi 1983). It is unclear how the larger phrases would be able to get pied-piped in such cases without violating the economy principle of carrying only the minimal amount of material sufficient for PF convergence.

These problems would not arise in the same way under Chomsky's (2000) version of the MP since it gives up the view of overt movement as generalized pied-piping, treating it as a 'repair strategy' for (pre-Spell Out) feature movement. It reanalyzes feature movement as long-distance agreement via the operation Agree and separates the case of overt movements from this feature-checking process in a way that makes overt movement essentially independent of the need of eliminating uninterpretable features. Instead, all overt movements are viewed as satisfying a further requirement imposed by particular functional heads to have a specifier projected (similarly to early versions of the EPP). Under this view the movement of overt material, namely, of a phrase, would no longer be a case of pied-piping induced by PF convergence. However, the empirical problem of how 'big' the moved phrase can be, i.e., what constituent can be legitimately moved to satisfy these 'EPP' requirements, is still a major issue.

It might be possible to deal with the problems of PF-convergence-induced pied-piping while maintaining the assumptions of feature movement and the economy principle of 'carry as little as possible' in some form. This involves trying to attribute the existence of phrasal movements not exclusively to the needs of PF convergence, but at least in part to the interaction of the above economy principle, requiring movement of the minimal element, with a major independently motivated economy principle of Chomsky (1995c: 297) built into the Attract operation. The latter condition requires Attract to target the closest feature that can enter into a checking relation with a feature of the attracting head (exemplified, e.g., in Superiority effects). Given that a feature (say, [*wh*]) occurring, for instance, on a morpheme in the Spec of a Spec of DP, such as in [*whose friend's mother*], would be further away (under an appropriate definition of 'closeness') from the *wh*-attracting C-head of the clause than the whole large DP itself, the condition 'closest' on Attract would force it to target the large DP, rather than the *wh*-morpheme *who*. This assumes that the *wh*-feature was present not only within the Spec of the Spec of the DP, but – due to feature percolation

(motivated earlier) – also on the large DP itself. Such a proposal would have the further advantage of being able to maintain the desirable empirical results of the earlier feature-percolation based accounts of pied-piping with respect to the possible phrase-internal positions of pied-pipers, as discussed in section 4. In a framework permitting feature-movement, this proposal would of course still need to avoid movement of just the bare *wh*-feature that percolated to the large DP in the case under discussion, and induce raising of that whole DP instead. But this would follow as before; bare feature movement prior to Spell Out would be excluded by the assumption that features displaced from their lexical item cause a PF-crash (Chomsky 1995c). This type of conception of phrasal movement is explored in Pesetsky (2000), where the option of phrasal vs. feature or morpheme movement is seen as moving the closest bearer vs. the smallest bearer of the relevant feature, both being considered ways of satisfying derivational economy.

6.2 *Phrasal movement vs. head movement, large-scale pied-piping, and the elimination of feature movement*

The empirical issue of correctly accounting for how big a constituent bearing the relevant feature ends up moving can be – in other words, what constituent gets pied-piped by the minimal element needed for feature-checking – arises independently of whether the theory postulates feature movement per se and whether one assumes an economy-based preference for moving the smallest element possible (as Chomsky's 1995c version of the MP did). Notice, for instance, that given the well-motivated feature-percolation mechanism underlying pied-piping, the problem of determining the choice between moving a head and moving the whole phrase (both bearing the same features) may arise in any framework in which movement is driven by feature-checking, even in one stipulating that features cannot move, i.e., that movements apply only to categories (as under Move α of the GB framework).

Notice that in GB theory this problem did not seem to arise. In that framework, movements were stipulated to involve requirements of individual Spec positions vs. requirements of particular heads, e.g., in the case of the *Wh*-Criterion, or the affix triggering V-to-I. This property, in conjunction with the structure preservation hypothesis (Emonds 1976; Chomsky 1986a), fully determined which movement will be phrasal movement and which will be head movement. Under the MP checking theory, however, this is no longer true, since the feature in need of checking (attracting to itself an element with a matching feature) always occurs on a functional head; specifiers as such are designated to play a role only in the more recent, EPP-based version of overt movement suggested in Chomsky (2000) (see section 6.1).

Empirically, the issue of head vs. phrasal movement calls for further investigation. Yet, based on the range of cases studied, it appears that feature-checking, if

it induces overt movement at all, induces pied-piping of a phrase rather than just the head (for evidence see, e.g., Koopman and Szabolcsi's 2000 study of verb-raising structures). This may in turn follow automatically if head movement is in fact not an option in the computational system at all, only at PF (a hypothesis suggested recently on the basis of a variety of independent considerations for instance by Chomsky 2000, Boeckx and Stjepanović 2001 and others). If so, head movement could provide no alternative to feature-checking via phrasal movement.

Yet, a similar issue of whether or not a larger constituent XP gets pied-piped in the case of a phrase YP occurring in the Spec of XP remains an empirical problem, as it was for the previous hypotheses. The Spec position has been seen to be a position potentially permitting pied-piping of the phrase (given the Spec–Head agreement based feature percolation or inheritance mechanism). The question of when this option is taken and when the element in Spec extracts rather than pied-pipes the larger phrase would seem *a priori* to be subject to variation both within and across languages. In fact it is precisely this choice between extraction from Spec and pied-piping of the whole phrase by Spec provided by UG that is claimed in Koopman and Szabolcsi (2000) to provide the basis for cross-linguistic as well as language-internal variation observed in the cases they studied.

An alternative, more challenging, hypothesis regarding pied-piping options is proposed in work by Koopman (1996, 1997). In exact opposition to Chomsky's (1995c) economy principle minimizing the amount of pied-piped material, the hypothesis developed in this direction of research, conceptually inspired by Kayne's Antisymmetry framework, is that massive large-scale pied-piping is in fact the core operation by which derivation proceeds. This line of research makes use of no economy principles and stipulates no feature movement; instead it argues that large-scale pied-piping of different projections by feature-driven 'licensing' movements within the functional layers of lexical categories is common, and, possibly, is the only option permitted by UG. Although these may be harder to detect than 'smaller', e.g. DP or PP, pied-piping, they can be argued for on empirical grounds, such as various agreement phenomena (for references, see Koopman 1996). The reason given for why the alleged cases of large-scale heavy pied-piping escaped notice is that in structures with multi-layered functional projections above each lexical head (forming an extended projection in Grimshaw's 1991 terminology) the movement of large constituents (e.g., various clausal projections) to nearby Spec positions is hard to overtly detect, especially when the head of the phrase it lands in is null. In fact, Koopman (1997) suggests that contrary to standard assumptions (see above), extraction from Spec is prohibited, and what appears to be extraction from Spec is actually pied-piping of the whole phrase that happens to be a remnant, containing overt material only corresponding to its Spec. Thus, the multiplicity of a universal set of functional categories generated above each lexical head assumed in current versions of the MP, in conjunction with the extensive use of remnant movement assumed in the above line of research, give a rather different picture of the pied-piping issue than previous theories did. Instead of a limited, relatively insignificant, property

of movements, pied-piping in such a framework of assumptions is a major syntactic device that is a concomitant, essentially, of all movement. What forces such large-scale pied-piping is less clear; it obviously is not an economy condition that serves to maximize pied-piping. It appears that extensive heavy pied-piping is induced in the above version of the theory by directly eliminating potential alternatives from UG, for instance, by stipulating that bare feature-movements and extraction from Spec position do not exist.

In view of the emerging diverse hypotheses and research sketched above, what seems clear at this point is that pied-piping will be an important focus of attention and empirical investigation in the coming years of work in syntactic theory.

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51 Preposition Stranding

PAUL LAW

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1 Introduction

Ross (1986: 138) uses the term 'preposition stranding' (henceforth, P-stranding, to include cases of stranding of postpositions) to refer to cases where a preposition is stranded as a result of its object having been extracted, as illustrated in the English examples in (1) and (2):

(1) a. Which book$_i$ have they talked about t_i?
    b. Which carpet$_i$ did they step on t_i?

(2) a. That book$_i$ has been talked about t_i.
    b. This carpet$_i$ was stepped on t_i.

Extraction of the sort in (1) generally shows different properties than that in (2), and has come to be known as A-bar-movement, in distinction from the latter, which has been given the name A-movement.

From a typological perspective, languages exhibit a range of variation with respect to P-stranding. On the one extreme lie languages like English and Scandinavian, where P-stranding is possible under both A- and A-bar-movement:

(3) a. Vad$_i$ talade du om t_i? Swedish
what talked you about
'What did you talk about?'
b. Denna bok blev talad om t_i
this book become talked about
'This book has been talked about.'

On the other extreme are languages like Romance, where P-stranding is simply impossible in general:[1]

(4) a. *Q$_i$'as-tu parlé de t_i? French
what have-you talked about
b. *Che$_i$ hai parlato di t_i? Italian
what have-you talked about
'What did they talk about?'

(5) a. *Ce livre$_i$ a été parlé de t_i. French
this book has been talked about
'This book has been talked about.'
b. *Questo libro è stato parlato di t_i. Italian
this book has been talked about
'This book has been talked about.'

Somewhere in between these two extremes are Dutch and colloquial German, where movement of an R-pronoun (German *wo* 'where/what' and *da* 'it'; Swiss German *waas* 'what'; Dutch *er* 'there/it', *daar* 'there', *waar* 'where/what', *ergens* 'something', *nergens* 'nothing', and *overal* 'all') stranding P is possible:[2]

(6) a. Wo$_i$/*Was$_i$ redest du von t_i? German
what talk you from
'What are you talking about?'
b. Waar$_i$/*Wat$_i$ heb je op t_i gerekend? Dutch
what have you on counted
'What have you counted on?'

(7) a. Da/*Dieses Buch$_i$ wurde von t_i geredet. German
it/this book became about talked
'It/this book has been talked about.'

b. Daar/*deze man is op t_i gerekend. Dutch
it/this man is on counted
'It/this man has been counted on.'

To my knowledge, there are no languages that allow P-stranding under A-movement, but not under A-bar-movement. At least superficially, then, the four logical possibilities for P-stranding can be summarized in (8):

(8)

P-stranding under A-movement	P-stranding under A-bar-movement	
+	+	English
−	−	Romance
+	−	?
−	+	German/Dutch/Scandinavian

But as we will see, P-stranding under A-movement in German and Dutch and Scandinavian languages is only apparent; there are fairly good reasons to think in fact it falls under A-bar-movement. If this is correct, then languages either allow P-stranding or not, with type of movement being irrelevant.

From the grammatical theory perspective, the patterns of variation with respect to P-stranding in (8) raise a fundamental theoretical question as to what grammatical principles sanction P-stranding. An adequate answer to this question must shed light not only on the empirical question of whether P-stranding correlates with other grammatical properties, but also on the conceptual issue of whether the type of movement should bear on P-stranding.

In what follows I will examine these issues closely and argue that there is no grammatical principle specifically sanctioning P-stranding. Rather, P-stranding is related to the independent grammatical property of D incorporating into P. It thus does not bear on the type of movement, i.e., A- vs. A-bar, but is contingent on D not incorporating into P. The table in (8) thus gives a skewed impression of P-stranding under A-bar-movement being more common than P-stranding under A-movement, but in fact has no independent theoretical significance. It is simply a reflection of the general grammatical principles and other properties in particular languages that make P-stranding possible.

2 Syntactic constraints on extraction and P-stranding

Van Riemsdijk (1978a: 160) suggests that P-stranding as a result of extraction is subject to the same general constraint on extraction in (9):

(9) **The Head Constraint** (HC):
No rule may involve X_i/X_j and Y_i/Y_j in the structure
$\ldots X_i \ldots [_{H^n} \ldots [_{H'} \ldots Y_i \ldots H \ldots Y_j \ldots]_{H'} \ldots]_{H^n} \ldots X_j \ldots$
(where H is the phonologically specified (i.e., non-null) head and H^n is the maximal projection of H (H‴ in our framework))

Thus, movement out of PPs, like out of other categories, must move through the Spec position to avoid a violation of the HC if the head H is non-empty (cf. also Koopman and Sportiche 1991b).

In Dutch, R-pronouns must appear to the left of Ps, while non-R-pronouns like *hem* 'him' *die* 'that one', and *wie* 'who' must appear to the right (Van Riemsdijk 1978a: 37):

(10) a. erop/*oper 'on it'; daarop/*opdaar 'on there'
b. op hem/*hem op 'on him', op wie/*wie op 'on whom'

If we take the left-complement of a P as appearing in the [Spec, PP] position (cf. Van Riemsdijk 1978a; Corver 1990), then we would expect that from the perspective of the HC R-pronouns may be extracted out of PPs, stranding Ps. The expectation is borne out by the facts:

(11) a. Ik had niet [$_{PP}$ er$_i$ [op t_i]] gerekend. Dutch
I had not it on counted
'I had not counted on it.'
b. Ik had er$_i$ niet [$_{PP}$ t_i [op t_i]] gerekend.

Moreover, if movement is further subject to the structure-preserving constraint (SPC, Emonds 1976: 5) restricting movement of a phrase to a position where it can be generated independently, then non-R-pronouns may not use the [Spec, PP] as escape hatch for extraction out of PP, since they cannot be independently generated there:

(12) a. Ik had niet [$_{PP}$ [op hem]] gerekend. Dutch
I had not on him counted
b. *Ik had niet [$_{PP}$ hem$_i$ [op t_i]] gerekend.
c. *Ik had hem$_i$ niet [$_{PP}$ t_i [op t_i]] gerekend.

The same explanation can be given for the lack of P-stranding in Romance. The complement of P never appears to the left of P, i.e., it never shows up in the [Spec, PP], as shown in the ungrammatical contrast in (13):

(13) a. J'ai parlé à Jean. French
I have talked to Jean
'I talked to John.'
b. *J'ai parlé Jean à.

Therefore, movement of the complement of P, stranding P, would violate either the SPC if it moves through [Spec, PP], or the HC if it moves directly out of PP:

(14) a. *Qui$_i$ as-tu parlé [$_{PP}$ [à [t_i]]? French
who have-you talked to
'Who did you talk to?'
b. *Qui$_i$ as-tu parlé [$_{PP}$ t_i [à [t_i]]?

Given these P-stranding facts in Dutch and French, it must be the case that in English when a *wh*-phrase object of a P is extracted, it moves through [Spec, PP] so as not to violate the HC. From the perspective of the SPC, a question that immediately arises is whether there is independent evidence showing that a *wh*-phrase may be independently generated in [Spec, PP]. Van Riemsdijk (1978a: 226ff) argues that Sluicing (Ross 1986) is evidence that a *wh*-phrase may independently appear in [Spec, PP]:

(15) a. John left, but I don't know [$_{PP}$ who$_i$ [with t_i]].
b. Mary bought some apples, but I don't know [$_{PP}$ what$_i$ [for t_i]].

If this is correct, then it is just as expected that a *wh*-phrase may move out of PP using [Spec, PP] as escape hatch. But it is far from obvious that the *wh*-phrase in (15) is in the [Spec, PP] position since it depends very much on the derivation and representation of Sluicing. We need not consider in detail the analysis of Sluicing in order to see that the examples in (15) do not in fact constitute evidence that *wh*-phrases may independently be generated in [Spec, PP].

The verb *know* may take either a DP or a CP complement, but, crucially, not a PP complement:

(16) a. I knew John.
b. I knew when John was in the class.
c. *I knew in the class.

So there is no reason to think that the verb *know* takes a PP complement in (15). It is therefore clear that the syntactic structure of the example in (15) would be either as in (17a) where *who* is in the Spec of the PP headed by *with* in [Spec, CP] or as in (17b) where the PP headed by *with* is in argument position and its argument *who* is extracted to [Spec, CP] (the . . . indicates possible material that is not relevant to our discussion here):

(17) a. John left, but I don't know [$_{CP}$ [$_{PP}$ who$_i$ [with t_i]]$_j$ [[$_{IP}$ . . . t_j]]].
b. John left, but I don't know [$_{CP}$ who$_i$ [[$_{IP}$ . . . [$_{PP}$ with t_i]]]].

The representation in (17b) is not relevant to Van Riemsdijk's claim that *wh*-phrases may be independently generated in [Spec, PP], since the *wh*-phrase is not in [Spec, PP].[3] The relevant structure is the one in (17a). If this representation is the correct structure for the Sluicing construction, then we should expect that PPs with a non-bare *wh*-phrase are possible in the same position and that PPs with a bare *wh*-phrase in its Spec are also possible elsewhere. These expectations are not borne out by the facts, however. As shown in (18), non-bare *wh*-phrases are not possible in the Sluicing context:

(18) a. *John left with some students, but I don't know [$_{PP}$ which ones$_i$ [with [t_i]]].
(cf. John left with some students, but I don't know with which ones)

b. *Mary brought in these books, but I don't know [$_{PP}$ which class$_i$ [for [t_i]]].
(cf. Mary brought in some books, but I don't know for which class)

If a bare *wh*-phrase is possible in [Spec, PP] as in (17a), then it is unclear why a non-bare *wh*-phrase may not occur in the same position. Furthermore, if we take the examples in (18) as evidence that non-bare *wh*-phrases may not be base-generated in [Spec, PP], then a problem arises as to how they may nevertheless be extracted without violating the HC, if they cannot use [Spec, PP] as escape hatch:

(19) a. Which ones/students$_i$ did John leave [$_{PP}$ t_i [with t_i]]?
b. Which class$_i$ did Mary bring in these books [$_{PP}$ t_i [for t_i]]?

The grammatical contrast in (20) shows clearly that a PP with a bare *wh*-phrase in its Spec is not possible elsewhere, casting some doubts on the claim that the *wh*-phrases in (15) occur in [Spec, PP]:

(20) a. *[$_{PP}$ who$_i$ [with t_i]]$_j$ did John go out last night t_j?
b. [$_{PP}$ with whom]$_j$ did John go out last night t_j?

Although the grammatical contrast between (15a) and (20a) does not shed much light on the analysis of Sluicing (cf. also n. 3), it seems clear that the examples in (15) by themselves are not compelling evidence for *wh*-phrases being (possibly) base-generated in [Spec, PP].

A problem of a different sort also arises in Dutch, where a non-R-pronoun appearing to the left of a P may sometimes be extracted:

(21) a. Je zei dat hij [$_{PP}$ de boom in] geklommen is. Dutch
you said that he the tree in climbed is
'You said that he climbed into that tree.'
b. Welke boom$_k$ zei je dat hij [$_{PP}$ t_k in] geklommen is?
which tree said you that he in climbed is
'Which tree did you say that he climbed into?'

There is an issue as to where the complement *de boom* occurs, specifically, whether it appears in the complement position of the P *in* 'in', i.e., a postposition, or it occurs in the [Spec, PP] position, having moved leftward from the complement position, i.e., *in* 'in' is a preposition:

(22) a. . . . [$_{PP}$ [[$_{DP}$ de boom] in]] . . .
b. . . . [$_{PP}$ [$_{DP}$ de boom]$_i$ [in t_i]] . . .

But from the perspective of the HC it does not matter whether *in* is a preposition or a postposition; extraction out of the PP is subject to the HC.

From the perspective of the HC, the *wh*-phrase *welke boom* 'which tree' in (21b) must be extracted through the [Spec, PP], either as in (23a) or as in (23b):

(23) a. $[_{DP}$ welke boom$]_i \ldots [_{PP}\ t_i\ [t_i$ in$]] \ldots$
b. $[_{DP}$ welke boom$]_i \ldots [_{PP}\ t_i$ [in t_i]$] \ldots$

But we see in (10) that non-R pronouns generally appear to the right of P, and are therefore not in [Spec, PP]. So non-R-pronoun *wh*-phrases may not be extracted through [Spec, PP], and extraction of the sort in (23) should be impossible. Van Riemsdijk (1978a) thus argues that in cases like (21) the P incorporates into V (Evers 1975b), as in (24):

(24) a. Je zei dat hij $[_{PP}\ t_j$ de boom] [in$_j$+geklommen] is.
b. Welke boom$_k$ zei je dat hij $[_{PP}\ t_j\ t_k]$ [in$_j$+geklommen] is?

As a result, the head position of the PP is empty and the HC no longer applies; the *wh*-phrase in a PP whose head position is empty can now be extracted, observing the HC, as in (24b).

The idea that the P *in* in (21) incorporates into V apparently explains two facts. First, it explains why the complement of the P ends up being to the left of P, P having moved rightward as indicated in (24a). Second, it explains why the P may (optionally) raise together with V to the right of the auxiliary:

(25) a. Je zei dat hij $[_{PP}$ de boom $t_j]\ t_i$ is [in$_j$+geklommen]$_i$.
'You said that he climbed into that tree.'
b. Welke boom$_k$ zei je dat hij $[_{PP}\ t_k\ t_j]\ t_i$ is [in$_j$+geklommen]$_i$?
'Which tree did you say that he climbed into?'

But there are some facts that do not fall under this account. As shown in (26), the P is clearly not incorporated into V; yet, the *wh*-phrase may be extracted:

(26) a. Welke boom$_k$ klom Jan $[_{PP}$ in $t_k]$?
which tree climbed Jan into
'Which tree did Jan climb into?'
b. Ik geloof dat Jan de boom$_k$ gisteren $[_{PP}$ in $t_k]\ t_i$ is geklommen$_i$.
I think that Jan the tree yesterday in is climbed
'I think that Jan climbed into that tree yesterday.'
c. Welke boom$_k$ zei je dat hij $[_{PP}$ in $t_k]\ t_i$ is geklommen$_i$?
which tree said you that he in is climbed
'Which tree did you say that he climbed into?'

Here, the head of the PP is not empty. In addition, as non-R-pronouns may not be independently base-generated in the [Spec, PP], the *wh*-phrase may not be extracted via [Spec, PP] to get around the HC.[4] So movement out of the PP in (26) should violate the HC, contrary to facts.

3 A syntactic reanalysis account for P-stranding

Hornstein and Weinberg (1981: 60–61) propose a Case-theoretic approach to P-stranding. Specifically, they claim that languages may resort to a syntactic rule of reanalysis applying to VP, and that there is a universal filter against traces with oblique Case:

(27) a. **Syntactic rule of Reanalysis:**
V → V* (where V c-commands all elements in V*)
b. **Oblique Case Filter:**
*[$_{NP}$ e]
oblique

They further assume a Case-marking rule that marks an NP with a [+oblique] Case if it is governed by P (cf. Chomsky 1980a; Rouveret and Vergnaud 1980); crucially, the Case-marking rule must apply after reanalysis. Along these lines, the syntactic rule of reanalysis would apply to the VP in (15a) to produce a complex verb like that in (28b) or (28c):

(28) a. John [$_{VP}$ [$_{V}$ talked [$_{PP}$ to Harry] [$_{PP}$ about Fred]]].
b. John [$_{VP}$ [$_{V}$ talked to] Harry [$_{PP}$ about Fred]].
c. John [$_{VP}$ [$_{V}$ talked to Harry about] Fred].

The (apparent) object of the preposition (*to* or *about*) is in fact an object of the reanalyzed verb, and the *wh*-phrase object of these reanalyzed verbs may now be extracted since it is no longer governed and Case-marked with a [+oblique] Case by P after reanalysis:

(29) a. Who$_i$ did John [$_{VP}$ [$_{V}$ talk to] t_i [$_{PP}$ about Fred]]?
b. Who$_i$ did John [$_{VP}$ [$_{V}$ talk to Harry about] t_i]?

The reanalysis rule in (27) has certain intuitive appeal since the structural relation between the trace of the extracted *wh*-phrase and the V+P complex predicate is exactly like that between the trace of the extracted object and a simple verb. The reanalysis account of P-stranding correctly predicts that P may not be stranded if it heads a PP that is not part of a VP, since the syntactic rule of reanalysis applies only to elements attaching to VP. Thus, P-heads of sentential PPs, PPs in COMP, or extraposed PPs cannot be stranded, these PPs not being (locally) c-commanded by V (Postal 1972: 213, 216):[5]

(30) a. *What time$_i$ did John arrive [$_{PP}$ at t_i]?
b. What conclusion$_i$ did John arrive [$_{PP}$ at t_i]?

(31) a. *Who(m)$_j$ do you believe Fred thinks [$_{PP}$ to t_j]$_i$ Joan talked t_i?
b. *Who(m)$_j$ do you believe [$_{PP}$ to t_j]$_i$ Fred thinks Joan talked t_i?

(32) a. Who$_i$ did John [$_V$ talk to t_i] about Harry yesterday?
b. ??Who$_j$ did John talk t_i about Harry [$_{PP}$ to t_j]$_i$ yesterday?

The grammatical contrast in (33) also follows since the reanalysis rule in (27) presumably fails to apply to V and P when the two are separated by an adverbial, the PP plausibly appearing in an adjunct position and the head P no longer being c-commanded by V:[6]

(33) a. They stepped repeatedly on the carpet.
b. *The carpet was stepped repeatedly on.

An implication of the reanalysis rule in (27a) is that the elements and the V with which they are reanalyzed must be adjacent (Hornstein and Weinberg 1981: 67), so that the rule can apply to cases like (25a), repeated in (34a), where P and V are adjacent, turning it into the structure in (34b):

(34) a. Je zei dat hij [$_{VP}$ [$_{PP}$ de boom in] geklommen] is. Dutch
you said that he the tree in climbed is
'You said that he climbed into that tree.'
b. Je zei dat hij [$_{VP}$ [$_{DP}$ de boom] [$_V$ in geklommen]] is.
c. Welke boom$_k$ zei je dat hij [$_{VP}$ t_k [$_V$ in geklommen]] is?
which tree say you that he in climbed is
'Which tree did you say that he climbed into?'

A *wh*-phrase object of the reanalyzed verb can now extract, as in (34c). The same account would work in German as well:

(35) a. . . . weil man nie [$_{VP}$ [$_{PP}$ davon [$_V$ hörte]]] German
because one never it-of heard
'. . . because one never heard of it.'
b. . . . weil man nie [$_{VP}$ da [$_V$ von hörte]]
c. . . . weil man da$_i$ nie [$_{VP}$ t_i [$_V$ von hörte]]

There are several empirical and conceptual problems with the reanalysis account of P-stranding. Empirically, if extraction of the sort in (28) is the result of P being reanalyzed with V so that the object of P would become the object of the reanalyzed V+P, then we should expect P and V to behave as a syntactic unit. The expectation is not borne out, however:

(36) a. *[$_V$ in klom]$_i$ Jan de boom niet t_i? Dutch
in climbed Jan the tree not
'Did Jan not climb into the tree?'
b. *[$_V$ von hörte]$_i$ man da nie t_i? German
of heard one it not
'Did one never hear of it?'

In addition, in cases like those in (37) where the P is clearly not adjacent to V and cannot be reanalyzed with it, the reanalysis account of P-stranding would lead us to expect that the object of P may not be extracted:[7]

(37) a. Wo$_i$ hörte man nie [$_{PP}$ t_i von]? German
what heard one never of
'What did one never hear of?'
b. Welke boom$_i$ klom Jan [$_{PP}$ t_i in]? Dutch
which tree climbed Jan in
'Which tree did Jan climb into?'

The fact that it may be extracted shows that there is an empirical problem with this account, the same problem we saw in (26).

Conceptually, insofar as the examples in (30–32) can be excluded on independent grounds, the ungrammaticality of these examples may turn out to have no bearing on the filter ruling out traces marked with oblique Case. The sentential PP in (30), the preposed PP in (31) (it is unclear, however, whether these are in COMP, i.e., [Spec, CP]) and the extraposed PP in (32) are evidently in adjoined positions, and extraction out of adjuncts is independently excluded by Huang's (1982a) Condition on Extraction Domain (CED). Therefore, to the extent that the examples in (38) do not bear on reanalysis as they obviously do not involve P-stranding, there is no reason to suppose that those in (30–32) are not ruled out by the CED, but by the filter in (27b):

(38) a. *What$_i$ did John read the newspaper [before Bill wrote t_i]?
b. *Which book$_i$ did Fred met the man [who bought t_i].
c. *About who(m)$_j$ did John claim (that) [books t_j]$_i$ many people will buy t_i?

We can conclude that the ungrammaticality of the examples in (30–32) is no evidence for the filter in (27).

The reanalysis-account of P-stranding is also inadequate from a cross-linguistic point of view. As Hornstein and Weinberg (1981: 68) note, one must assume that languages like Romance, which do not allow P-stranding at all, have no syntactic rule of reanalysis. But if no other property is brought to bear on the lack of P-stranding, then the assumption is simply a conceptually unsatisfying stipulation.

4 Government-theoretic accounts of P-stranding

We will now look at two government-theoretic accounts of P-stranding. One is related to the government and Case property of a lexical head, and the other to the direction of government.

4.1 The government and Case property of lexical heads

Kayne (1984a: 114ff) accepts the existence of a reanalysis rule in English, but what is involved is not so much reanalysis qua constituent as suggested by Hornstein and Weinberg (1981) as reanalysis in terms of government (Rouveret and Vergnaud 1980). In fact, French causatives (Rouveret and Vergnaud 1980) and complex predicates involving Ns and Vs (Pollock 1979) are two cases of reanalysis:

(39) a. faire lire 'to cause to read', laisser partir 'to let go'
b. mettre fin à 'to put an end to'

Kayne proposes a constraint on reanalysis to the effect that elements undergoing the reanalysis rule must be governed in the same way. He argues that Vs and Ps govern in the same way in English in assigning structural case, whereas in French Ps do not govern and assign Case structurally like Vs. Consequently, Vs and Ps may be reanalyzed in English, but not in French.

Kayne (1984a) points out three differences between English and French, claiming that they bear on government. First, the English prepositional complementizer (P-complementizer) *for* allows an overt subject in the embedded clause, but the French P-complementizer *de* (or *à*) does not:

(40) a. It would be a pity for something to happen to him.
b. For there to be riot would be catastrophic.

(41) a. *Ce serait dommage de quelque chose lui arriver. French
it would be pity to some thing to him arrive
'It would be a pity for something to happen to him.'
b. *D'il y avoir une émeute serait catastrophal.
to-it there have a riot would be catastrophic
'For there to be a riot would be catastrophic.'

Second, French *de* permits a phonetically empty pronominal in the embedded [Spec, IP] position, while English *for* does not:

(42) a. Ce serait dommage de PRO partir maintenant. French
it would be pity to leave now
'It would be a pity to leave now.'
b. *Ce serait dommage de Jean partir maintenant.
it would be pity to John leave now
'It would be a pity for John to leave now.'

(43) a. It would be a pity for John to leave now.
b. *It would be a pity for PRO to leave now.

Third, English generally allows a lexical subject in an infinitival complement to Exceptional Case-marking (ECM) verbs, but French permits it only to the extent that the lexical subject undergoes *wh*-movement:

(44) a. I believe John to be the most intelligent of all.
b. John considers there to be a problem.

(45) a. *Je crois Jean être le plus intelligent de tous. French
I believe John be the most intelligent of all
'I believe John to be the most intelligent of all.'
b. Quel garçon crois-tu être le plus intelligent de tous?
which boy believe-you be the most intelligent of all
'Which boy do you believe to be the most intelligent of all?'

Kayne claims that these three differences between English and French would have a unified account if in French Vs govern structurally, but Ps govern NP only in the sense of subcategorization, while in English both Vs and Ps govern structurally. That is, whereas V in the position X may govern P in both configurations in (46), but P, unlike V, does not necessarily do so, depending on the language:

(46) a. . . . [$_{XP}$ X YP] . . .
b. . . . [$_{XP}$ X [$_{ZP}$ YP [Z . . .

Specifically, P governs P from the position X in the configuration in (46b) in English, but not in French.

The assumption that French Ps do not govern structurally explains why French *de* allows a phonetically null pronominal PRO in the YP position in (46b) but not a lexical one, the position not being governed (cf. the PRO theorem, Chomsky 1981). Kayne further suggests that ECM-complements are headed by a phonetically empty P-complementizer Φ in the C position, which assigns Case to the embedded subject position by transmitting the Case it receives from V:

(47) a. I believe [$_{CP}$ [Φ [$_{IP}$ John [to be the most intelligent of all]]]].
b. *Je crois [$_{CP}$ [Φ [$_{IP}$ Jean [être le plus intelligent de tous]]]]. French

The grammatical contrast in (47) is then due to the different government property of the P-complementizer in the two languages. In English, it governs the embedded subject position and hence may assign Case to the embedded subject. In French it does not govern the embedded subject position, and hence cannot assign Case to it. An overt argument in the embedded subject position of an ECM-complement would then fail to be assigned Case, violating the Case Filter. Although the facts in (40–42) clearly indicate that English and French P-complementizers have different properties, the difference concerns only P-complementizers, not Ps in general. For Ps in PPs, French is pretty much the same as English; French Ps in PPs assign or check Case of their objects, and hence govern them, just like their English counterparts:

(48) a. J'ai voté [$_{PP}$ pour Jean].
I-have voted for John
'I voted for Jean.'
b. J'ai parlé [$_{PP}$ avec Jean].
I-have talked with John
'I talked with John.'
c. J'ai [$_{VP}$ vu Jean].
I-have seen John
'I saw John.'

At least for Ps in PPs, then, they assign or check Case of their objects the same way as Vs. Now, if Case-assignment or checking requires government, a standard assumption in the framework at the time, and Ps govern the same way as Vs, contrary to Kayne's claim, then we should expect that V and P in (49a) and (49b) may be reanalyzed as one complex verb, and that the object of P may be extracted; but the fact is that it may not:

(49) a. *Quel candidat$_i$ as-tu voté [$_{PP}$ pour t_i]?
which candidate have-you voted for
'Which candidate did you vote for?'
b. *Qui$_i$ as-tu parlé [$_{PP}$ avec t_i]?
who have-you talked with
'Who did you talk with?'
c. Qui$_i$ as-tu [$_{VP}$ vu t_i]?
who have-you seen
'Who did you see?'

It thus seems that the difference between English and French P-complementizers does not tell us much about the government property of Ps in general, and much less so whether P-stranding is related to government.

Kayne's government-theoretic account for the grammatical contrast in (45) is not without problems. If V may govern across one clausal boundary, but P may not, then a question arises as to how the trace of the embedded subject in (45b) would be (properly) governed when it is extracted, given the Empty Category Principle (Chomsky 1981):

(50) Quel garçon$_i$ crois-tu [$_{CP}$ t_i [Φ [$_{IP}$ t_i [être le plus intelligent de tous]]]]?
which boy believe-you be the most intelligent of all
'Which boy do you believe to be the most intelligent?'

Although some alternative explanation for the contrast in (45) may be provided for,[8] it seems clear that there is no good reason to suppose that the empty complementizer does not govern the embedded subject position.

From the cross-linguistic perspective, Kayne's government account of P-stranding would not work for the limited cases of P-stranding in German and

Dutch. The examples in (51) are a minimal pair, differing only with respect to whether the object of the P is an R-pronoun or not:

(51) a. Ik had er$_i$ niet [$_{PP}$ t_i op] gerekend. Dutch
I had it not on counted
'I had not counted on it.'
b. *Ik had hem$_i$ niet [$_{PP}$ op t_i] gerekend.
I had him not on counted
'I had not counted on him.'

There is no reason to think that the P *op* 'on' has different government properties in (51), as both the R- and non-R pronoun objects are assigned or check the Case of P. In fact, Kayne (1984a: 116) noted that P-stranding in these languages might not involve reanalysis, but did not elaborate on why the distinction between R- and non-R pronoun bears on P-stranding. Thus, to the extent that the grammatical difference in (51) is left unaccounted for, the empirical coverage of the reanalysis account based on government seems to be confined to English and Romance.

4.2 Directionality of government and P-stranding

Bennis and Hoekstra (1984) suggest a government-theoretic account of P-stranding, crucially without reanalysis. Essentially following Kayne (1984a), they posit the gap condition in (52) for the relation between a gap and its antecedent (Bennis and Hoekstra 1984: 34):

(52) **Gap Condition:**
A gap Z in a tree P is linked to its antecedent by a connected subtree of P which constitues a g-projection.
XP is a g-projection of the structural governor W of Z iff the head of XP c-governs Z or a g-projection of W.
X c(anonically)-governs Y iff X precedes Y in a VO language and follows Y in an OV language.

Koster's (1987) account is also along these lines, except the link between the gap and the antecedent is constrained by government harmony, requiring that the structural governors in the link between the antecedent and the gap govern in the same direction, similar to Kayne's suggestion that government in the same way is required for reanalysis.

With the Gap Condition in (52), the grammatical contrast in (51) is accounted for as follows. In the structure in (53a) for the example in (51a), the trace is linked to its antecedent by a connected subtree, the VP, which constitutes a g-projection of the structural governor *op* 'on' of the trace t_i:

(53) a. Ik had [$_{VP}$ er$_i$ [$_{VP}$ niet [$_{VP}$ [$_{PP}$ t_i op] gerekend]]]]
'I had not counted on it.'

b. *Ik had [$_{VP}$ hem$_i$ [$_{VP}$ niet [$_{VP}$ [$_{PP}$ op t_i] gerekend]]]
'I had not counted on him.'

The head *gerekend* of the VP c-governs the PP projection of *op*, and the PP in turn is a g-projection of the structural governor *op* of the trace which is c-governed by *op*.[9] By contrast, the gap in (53b) is not linked to its antecedent by a connected g-projection, the P *op* not c-governing the gap.

A major problem with these government-theoretic accounts is that they give no genuine explanation as to why P-stranding is possible in English and Scandinavian languages, while it is impossible in Romance, even though they are all VO languages, a problem also acknowledged in Bayer's (1996: 93, n. 7) account of P-stranding based on the canonical direction of government. In the English examples in (1a) and (2a), repeated in (54), the gap is linked to its antecedent by a connected g-projection:

(54) a. Which book$_i$ have they [$_{VP}$ talked [$_{PP}$ about t_i]]?
b. That book$_i$ has been [$_{VP}$ talked [$_{PP}$ about t_i]].

In the French counterparts of the examples in (54), given in (55), the gap is also linked to its antecedent by a connected g-projection:

(55) a. *Quel livre$_i$ as-tu [$_{VP}$ parlé [$_{PP}$ de t_i]]? French
which book have-you talked about
'Which book have you talked about?'
b. *Ce livre$_i$ a été [$_{VP}$ parlé [$_{PP}$ de t_i]]?
this book have been talked about
'This book has been talked about.'

But the problem remains as so why there should be a sharp grammatical difference between (54) and (55) with respect to P-stranding. Bennis and Hoekstra (1984: 35, 41) note this problem, but simply say that whether or not a specific category is a structural governor appears to some extent to be a language particular matter. This is at best a restatement of the facts.

There is also a conceptual problem with the formulation of canonical government in (52). It is not defined in terms of government, so a category may in principle be a canonical governor without being a governor, or vice versa. This problem is a technical one, and can easily be rectified with no serious consequences for the Gap Condition. A more significant conceptual problem is the notion of canonical government. To the extent that it has no bearing on other facts, it remains to be seen whether the notion of canonical government is warranted.

5 P-stranding and syntactic D-to-P-incorporation

It is a noticeable fact about Romance and German that P sometimes coalesces with the following D into a suppletive form, as illustrated in (56–58):[10]

(56) a. Jean a parlé du sujet le plus difficile. French
has talked about-the subject the most difficult
'John talked about the most difficult subject.'
b. Suppletive forms:
au=à le, aux=à les, 'to the'; auquel=à lequel, auxquels=à lesquels 'to the which'
du=de le, des=de les 'of the'; duquel=de lequel, desquels=de lesquels 'of the which'

(57) a. Gianni ha parlato del soggetto più difficile. Italian
has talked about-the subject most difficult
'Gianni talked about the most difficult subject.'
b. Suppletive forms:
al=a il, alla=a la, alle=a le, allo=a lo 'to the';
coi=con i, cogli=con gli, col=con il, colla=con la, colle=con le, collo=con lo 'with the';
dal=da il, dalla=da la, dalle=dal le, dallo=da lo 'from the';
dei=di i, degli=di gli, del=di il, della=di la, delle=di le, dello=di lo 'of the';
nei=in i, negli=in gli, nel=in il, nella=in la, nelle=in le, nello=in lo 'in the';
sul=su il, sulla=su la, sulle=su le, sullo=su lo 'on the'

(58) a. Hans war am Schalter. German
was at-the counter
'Hans was by the counter.'
b. Im Hause war keiner da.
in-the house was nobody there
'Nobody was there in the house.'
c. Suppletive forms:
am=an dem 'at/by the.MASC/NEUTER.DAT'; ans=an das 'at/by the.NEUTER.ACC';
aufs=auf das 'on the.NEUTER.ACC'; auf'n=auf den 'on the.ACC';
auf'm=auf dem 'on the.DAT'; aus'm=aus dem 'out of the.DAT';
beim=bei dem 'at the.DAT'; durchs=durch das 'through the.NEUTER.ACC';
durch'n=durch den 'through the.MASC.ACC';
für'n=für den 'for the.MASC.ACC'; fürs=für das 'for the.NEUTER.ACC';
im=in dem 'in the.DAT', ins=in das 'in the.NEUTER.ACC';
mit'm=mit einem/dem 'with a/the.DAT'; seit'm=seit dem 'since the.DAT';
übers=über das 'about the.NEUTER.ACC';
vom=von dem 'from the.DAT'; vorm=vor dem 'before the.DAT';
zu der=zur 'to the.FEM.DAT'; zum=zu dem 'to the.MASC/NEUTER.DAT'.

Intuitively, a suppletive form may be taken to indicate that two elements the suppletive form represents are no longer separable. Moreover, as P-stranding is

the result of moving the DP object of the P, the lack of P-stranding may be considered to be a consequence of P not being separable from the following D. What we need is some theoretical rationale for this intuition. But the conceptual approach should be clear. Given the independent property of having suppletive forms for the sequence P+D that Romance and Germanic share, it is natural to bring it to bear on the lack of P-stranding in these languages.

5.1 A syntax–morphology-interface condition on P-stranding

Suppose the mapping between syntax and morphology is subject to the syntax–morphology-interface condition in (59) (cf. Law 1998; Van Riemsdijk 1998b):

(59) **Syntactic constraint on suppletion:**
Elements that undergo suppletive rules must form a syntactic unit X^0.

From this perspective, then, the suppletion facts in (56–58) can be taken to be evidence that D incorporates into P in overt syntax, resulting in the configuration in (60), so that the P+D as a syntactic unit X^0 may undergo a suppletive rule:

(60) $[_{PP}\ [P^0{+}D^0_i\ [_{DP}\ [t_i\ [_{NP}\ [N^0]]]]]]$

It is now easy to see why D+NP may not be extracted in the structure in (60). Here, the incorporated D and the following NP (or DP) do not form a syntactic constituent. Consequently, P cannot be stranded by moving D+NP (or D+DP) (cf. Schwartz 1972 on constraints against moving non-constituents).

Notice that the condition in (59) does not require that elements forming a syntactic X^0 necessarily undergo suppletion. Thus, a verb with agreement and tense morphologies need not have suppletive forms, even though they sometimes do.[11] So there is no requirement that a suppletive form exist whenever D incorporates into P. Unless there is evidence to the contrary (cf. section 6), the null hypothesis is that all Ds incorporate into Ps in Romance and Germanic except English.[12]

Further facts about P-complementizers in Romance support the claim that suppletion rules may apply only to elements forming a syntactic X^0. As shown in (61), the French P-complementizers *de* and *à* (Huot 1977) do not coalesce with the following clitic pronoun *le* (homophonous with the determiner *le*), in contrast with the Ps in PPs:

(61) a. Je lui ai demandé [de le/*du lire]. French
I him have asked to it/to-it read
'I asked him to read it.'
b. Nous sommes prêts [à le/*au faire].
we are ready to it/to-it do
'We are ready to do it.'

From the perspective of the constraint in (59), the impossible suppletions in (61) have a very simple explanation: the object pronominal clitics and the P-complementizers do not form an X^0. The positioning of the clitics shows that this is correct.

In finite clauses, an object pronominal clitic occurs between the subject and the finite verb, i.e., below [Spec, IP]:

(62) a. Jean le lit. French
John it read
'John is reading it.'
b. *le Jean lit.
c. $[_{IP}$ Jean [le lit]].

Hence, there is little reason to think that in infinitivals the object pronominal clitic appears in a position higher than [Spec, IP]. If this is correct, then the object clitic, occurring below [Spec, IP], would not be in a position to incorporate into the P-complementizer to form a syntactic X^0 with it:[13]

(63) a. . . . $[_{CP}$ de $[_{IP}$ [le lire . . .
b. . . . $[_{CP}$ à $[_{IP}$ [le faire . . .

So the suppletive forms *du* and *au* cannot arise since they do not meet the required syntactic condition for suppletion in (59).

If P-stranding correlates with (the lack of) D-to-P incorporation, then we should expect that P may be stranded when D does not incorporate into P, regardless of whether the complement of P is extracted under A-bar-movement, as we have been discussing so far, or under A-movement (prepositional passive, henceforth P-passive). As we will see, the prediction is largely borne out, subject to independent constraints on A-movement.

5.2 Lack of P-stranding in Romance

If noun phrases are projections of Ds, then *wh*-items like *que* 'what' *qui* 'who' and *quel* 'which' in French or *che* 'what' *cui* 'who' and *qual* 'which' in Italian are plausibly Ds. French *que* 'what' and *qui* 'who' as well as Itatian *che* 'what' *cui* 'who' may appear by themselves:

(64) a. Que vois-tu? French
what see-you
'What do you see?'
b. Qui vient?
who come
'Who is coming?'

(65) a. Che vedi? Italian
what see.2SG
'What do you see?'

b. Chi viene?
who come
'Who is coming?'

Given that noun phrases are projections of Ds, the sole appearance of *que* 'what', *qui* 'who', *che* 'what', and *cui* 'who' implies that they must be Ds. Furthermore, as the determiner is almost always obligatory in noun phrases in Romance, the fact that a determiner does not appear (in fact, it may not) when French *quel* 'which' or Italian *qual* 'which' appears shows that *quel* and *qual* are probably Ds:

(66) a. Quel livre as-tu lu? French
which book have-you read
'Which book did you read?'
b. Quale piazza visitiamo? Italian
which square visit.1PL
'Which square are we visiting?'

French *quel* and Italian *qual* also inflect for number, just like the determiners, showing further that they are probably of the same category:[14]

(67) a. Quels/*quel enfants as-tu vu? French
which.PL/*which.SG children have-you seen
'Which children did you see?'
b. Quali/*quale monumenti visitiamo? Italian
which.PL/*which.SG monuments visit.1PL
'Which momuments are we visiting?'

If other Ds incorporate into Ps as the suppletion facts in (56–57) show, then there is no reason why the same does not hold of *que*, *qui*, *quel*, *che*, *cui*, or *qual* 'which' when they are complements to a P.

We can now understand why P-stranding under A-bar-movement of the sort in (68) is impossible:

(68) a. *Quel sujet$_i$ as-tu parlé de t_i? French
which subject have-you talked about
'Which subject did you talk about?'
b. . . . [$_{PP}$ [[de+quel$_i$] [$_{DP}$ t_i [$_{NP}$ sujet]]]]
c. Qui a parlé duquel sujet?
who have talked about-the subject
'Who talked about which subject?'
d. Duquel sujet$_i$ as-tu parlé
about-which subject have-you talked
'About which subject did you talk?'

In the structure in (68b), the head D *quel* incorporates into the P *de*, most evident in (68c) and (68d) with the suppletive form *duquel*, and hence can no longer

A-bar-move with its NP-complement, the two no longer forming a syntactic constituent. The same argument applies to cases of A-movement. As is well known, Romance is unlike English in not having P-passive, as shown in (69):

(69) a. *Le sujet a été parlé de. French
the subject have been talked about
'The subject was talked about.'
b. . . . [$_{PP}$ [[de+le$_i$] [$_{DP}$ t_i [$_{NP}$ sujet]]]]
c. Ils ont parlé du sujet.
they have talked about-the subject
'They talked about the subject.'

The ungrammaticality of the example in (69a) has exactly the same explanation. The determiner *le* incorporates into the P *de*, most evident in (69c), and hence cannot move with P as a syntactic unit to derive the example in (69a), the two no longer forming a syntactic constituent. It thus seems that relating D-to-P incorporation, as evidenced independently in the suppletive forms, we can explain in a principled way why Romance languages generally do not allow P-stranding.

5.3 P-stranding under A-bar-movement in German and Dutch

For German and Dutch, the lack of P-stranding under A-bar-movement has the same account as that for Romance. Like French *que* and *qui* and Italian *che* and *chi*, German *wer* and *was* 'what' and Dutch *wie* and *wat* may occur by themselves. On the assumption that noun phrases are headed by Ds, it must be the case that *wer* and *was* in German and *wie* and *wat* in Dutch in *wh*-phrases containing them as the sole constituent are of the category D (the example in (71a) sounds more natural with *er* 'there' in the end, a point irrelevant here):

(70) a. Wer kommt? German
who comes
'Who is coming?'
b. Was hast du gekauft?
what have you bought
'What did you buy?'

(71) a. Wie komt? Dutch
who comes
'Who is coming?'
b. Wat heb je gekocht?
what have you bought
'What did you buy?'

Moreover, as German *welche* 'which' and Dutch *welke* 'which' inflect for gender, number, and, in German, for Case as well (just like the determiner), they are plausibly of the category D (cf. n. 14):

(72) a. Ich habe dem/*den Mann geholfen. German
I have the.DAT/the.ACC man helped
'I helped the man.'
b. Welchem/*welchen Mann hast du geholfen?
which.DAT/which.ACC man have you helped
'Which man have you helped?'

(73) a. Welk/*welke boek heb je gelezen Dutch
which book have you read
'Which book did you read?'
b. Welke/*welk film heb je gezien?
which film have you seen
'Which film did you see?'

So if other Ds incorporate into P as the suppletion facts in (57) show, then there is no reason why the same does not apply to *wer*, *was*, *welche* or *wie wat*, and *welke* when they are complements to a P. We can now understand why P may not be stranded under A-bar-movement. In the example in (74a), the D *welchem* incorporates into the P, as shown in the structure in (74b); it therefore cannot move with its NP complement, since the two do not form a syntactic constituent:

(74) a. *Welchem Kerl hast du mit gerechnet? German
which guy have you with counted
'Which guy have you counted on?'
b. . . . [$_{PP}$ [[mit+welchem$_i$] [$_{DP}$ [t_i Kerl]]]] . . .

What we need to explain is why P-stranding, albeit limited, is sometimes possible with R-pronouns, as shown in the example in (6), repeated in (75):[15]

(75) a. Wo$_i$/*Was$_i$ redest du von t_i? German
what talk you.NOM from
'What are you talking about?'
b. Waar$_i$/*Wat$_i$ heb je op t_i gerekend? Dutch
what have you on counted
'What have you counted on?'

The obvious difference between *wo* and *was* and between *waar* and *wat* is that *wo* or *waar* must appear to the left of the P taking it as argument, while *was* and *wat* must occur to its right.

If we take R-pronouns appearing to the left of P to be in [Spec, PP] (cf. Van Riemsdijk 1978a and Corver 1990), from where it cannot incorporate into P (cf.

Travis's 1984 Head Movement Constraint), it then follows immediately that they may move out of PP, stranding P:[16]

(76) a. Wo$_i$ hast du [$_{PP}$ t_i [mit]] gerechnet? German
what have you with counted
'What have you counted on?'
b. Waar$_i$ heb je [$_{PP}$ t_i [op]] gerekend? Dutch
what have you on counted
'What have you counted on?'

Examples like those in (77) independently show that Dutch R-pronouns are not incorporated into P. Here, an R-pronoun is separated by an adverbial from the P taking it as argument (cf. Van Riemsdijk 1978a: 87) as in (77a),[17] and it may move together with both the adverb and the P as in (77b), or by itself, stranding P, as in (77c) and (77d):[18]

(77) a. Vlak er achter vs. er vlak achter. Dutch
right it after
'right after it'
b. [$_{PP}$ er vlak achter]$_i$ geloof ik dat Jan toen t_i stond.
it right after believe I that then stood
'I believe that Jan then stood right behind it.'
c. Ik geloof dat Jan er$_i$ toen [$_{PP}$ t_i vlak achter] stond.
d. Waar$_i$ denk je dat Jan [$_{PP}$ t_i vlak achter] stond?
where think you that Jan right after stood
'Where do you think that Jan stood right behind?'

Exactly the same account can be given to cases like (26), repeated in (78), where P is stranded as a result of extracting a non-R-pronoun:

(78) a. Welke boom$_k$ klom Jan [$_{PP}$ t_k in]? Dutch
which tree climbed Jan into
'Which tree did Jan climb into?'
b. Ik geloof dat Jan de boom$_k$ gisteren [$_{PP}$ t_k in] t_i is geklommen$_i$.
I think that Jan the tree yesterday in is climbed
'I think that Jan climbed into the tree yesterday.'
c. Welke boom$_k$ zei je dat hij [$_{PP}$ t_k in] t_i is geklommen$_i$?
which tree say you that he in is climbed
'Which tree did you say that he climbed into?'

Since the D head of the DP complement of the P *in* 'in' does not incorporate into P, as evidenced independently in (79) where it clearly is in [Spec, PP]:

(79) a. Hij klom [$_{PP}$ de boom in]. Dutch
he climbed the tree in
'He climbed into the tree.'

b. Wie klom [$_{PP}$ welke boom in]?
who climbed which tree in
'Who climbed into which tree?'

The DP complement of P can then be extracted from [Spec, PP], stranding P. The lack of P-stranding under A-bar-movement in German and Dutch thus has exactly the same account as that for Romance, P being no longer separable from D as a result of D incorporating into P. In the few cases where P-stranding is possible, it is due to the head D of the DP complement of P not incorporating into P.

5.4 P-stranding under A-movement in Germanic

If the lack of P-stranding correlates with D-to-P incorporation, then we would expect P-stranding to be possible precisely when D does not incorporate into P. We saw in the last section that the expectation is largely borne out under A-bar-movement. The question that naturally arises is whether we can reasonably expect that P-stranding under A-movement is also possible when D does not incorporate into P. The null hypothesis is that it should be, but there is a complication; as we will see presently, some general conditions may exclude A-movement. Thus, cases where P may not be stranded under A-movement may turn out to fall under the same conditions.

As we discussed in section 5.2, when D incorporates into P, the object of the P may not extract, stranding P. The ungrammaticality of the example in (80b) is thus just as expected, if D incorporates into P as in (80c):

(80) a. Es wurde völlig mit dem Kerl gerechnet. German
it became fully with the guy counted
'The guy have been fully counted on.'
b *Dem Kerl$_i$ wurde völlig mit t_i gerechnet.
the.dat guy became fully with counted
'The guy has been fully counted on.'
c. . . . [$_{PP}$ [[in+dem$_i$] [$_{DP}$ t_i Kerl]]]

As R-pronouns do not incorporate into P, they may move out of PP and thereby strand P. In this light, the facts in (81) are unsurprising:

(81) a. Es wurde völlig [$_{PP}$ da [mit]] gerechnet. German
it became fully it on counted
'It has been fully counted on.'
b. Es wurde da$_i$ völlig [$_{PP}$ t_i [mit]] gerechnet.
c. Da$_i$ wurde völlig [$_{PP}$ t_i [mit]] gerechnet.

The examples in (81) evidently do not involve movement of a *wh*-phrase, typical of A-bar-movement. One might thus be lead to suppose that movement of the

sort in (80b) and (81b) are instances of A-movement. However, for virtually all analyses of verb-second root clauses, a non-subject appearing before the verb in second position is in [Spec, CP], an A-bar position on standard assumptions (Travis 1984; Haider and Prinzhorn 1986). If this is correct there might not be any structure resulting from P-stranding under A-movement in Germanic languages other than English at all. As it turns out, English systematically differs from other Germanic languages with respect to Case and agreement in a class of constructions including the impersonal passive construction with an overt expletive. As we will see presently, in English, when the participle carries passive morphology, the logical object, which otherwise receives accusative case, generally appears in subject position with nominative Case and agrees with the finite verb in number and person. This is not necessarily so in other Germanic languages. Since P-stranding under A-movement involves passive, we may naturally wonder whether the difference between English and other Germanic languages with respect to Case and agreement in passive bears on P-passive, the result of stranding P under A-movement.

As is familiar since Aoun (1979) and Chomsky (1981), the passive morpheme on the passive participle (mostly *-ed* or *-en* in English) is commonly taken to absorb accusative Case for the object, which then has to move to a Case position, e.g., the subject position of a finite verb, where it may be assigned (or check) nominative Case:

(82) a. John and Mary$_i$ were/*was killed t_i.
b. *It/there were/was killed John and Mary.

If the object of a verb with passive morphology does not move, as in (82b), then the structure would be excluded by the Case Filter (Rouveret and Vergnaud 1980), barring overt noun phrases without Case. A distinct feature of the passive construction is that the finite verb agrees in number with the (logical) object in subject position, as shown in the contrast in (82a). The same agreement fact holds of German passives as well:[19]

(83) . . . , dass Hans und Maria getötet wurden/*wurde. German
that Hans and Maria killed became.PL/*became.SG
'. . . , that Hans and Maria were killed.'

However, there is a class of examples in which the apparent subject systematically does not agree with the finite verb. With verbs assigning non-accusative Case to the object, the finite verb in the passive shows no agreement with the (logical) object appearing in a preverbal position, as illustrated by the examples in (84) for Icelandic (Levin and Simpson 1981) and German in (85):

(84) a. Þeim var hjálpað. Icelandic
them.DAT was helped
'They were helped.'

b. Mig þyrstir.
me.ACC thirsts
'I am thirsty.'

(85) a. Ihnen wurde/*wurden geholfen. German
them.DAT became.SG/became.PL helped
'They have been helped.'
b. Mir ist kalt.
me.DAT is cold
'I'm cold.'

Agreement with the finite verb in the example in (81) turns out to pattern like that in (86). The German pronoun *da* may have a plural antecedent (cf. *einer davon* 'one of them'), and yet it may not agree with a finite verb, as shown in (86a).[20] In the Icelandic example in (86b), the (logical) object of a P assigning accusative Case appears before the finite verb, but it does not agree with it:

(86) a. Da$_i$ wurde/*wurden völlig [$_{PP}$ t_i mit] gerechnet. German
they became.SG/became.PL fully with counted
'They are counted on.'
b. Krakkana$_i$ er/*eru oftast talað vel [$_{PP}$ um t_i] Icelandic
the kids.ACC is/are usually spoken well of
'The kids are usually well spoken of.'

With respect to agreement, then, English differs from other Germanic languages in that the (logical) object (of V or of P) agrees with the finite verb when it appears preverbally in passive:

(87) a. The carpet$_i$ has/*have been stepped [$_{PP}$ on t_i].
b. The carpets$_i$ have/*has been stepped [$_{PP}$ on t_i].
c. The carpet$_i$ has/*have been sold t_i.
d. The carpets$_i$ have/*has been sold t_i.

We will later see the significance of the agreement facts, but for now let us see whether we should consider P-stranding of the sort in (84–85) on a par with P-stranding under A-bar-movement (cf. section 5.3).

Maling and Zaenen (1985) argue that Icelandic examples comparable to those in (84a) are not genuine P-passives but involve topicalization of the object of the P, i.e., *wh*-movement. They give the Icelandic examples in (88) as evidence that the fronted objects of Ps are not in subject position, since they retain the Case assigned to them in-situ:[21]

(88) a. Þessa kona$_i$ er oftast talað vel [$_{PP}$ um t_i]. Icelandic
that woman.ACC is usually spoken well of
'The woman is usually spoken well of.'

b. Þennan ref$_i$ hefur aldrei verið skotið [$_{PP}$ á t_i].
that fox.ACC has never been shot at
'That fox has never been shot at.'

Furthermore, the extracted objects of the stranded Ps exhibit no subject properties like undergoing raising, binding of a reflexive, and being subject to locality for topicalization. The dative object of a verb may appear preverbally in a complement of an ECM verb, but the object of a stranded P may not do so:[22]

(89) a. Ég tel honum hafa verið hjálpað í prófinu. Icelandic
I believe him.DAT to-have been helped in the-exam
'I believe him to have been helped in the exam.'
b. *Ég tel Vigdísi vera oftast talað vel um.
I believe Vigdis to-be most-often spoken well of
'I believe Vigdis to be most often well spoken of.'

The dative object of a verb appearing preverbally may bind a reflexive, but the object of a stranded P may not:

(90) a. Honum var oft hjálpað af foreldrum sínum/*hans.
him.DAT was often helped by parents his[+refl]/*[–refl]
'He was often helped by his parents.'
b. Hana er talað vel um í hennar eigin landu/í landi ?*sínu.
she.ACC is spoken well of in her own land/in land her[+refl]
'She is well spoken of in her own land.'

Many speakers allow topicalization in embedded *að* 'that'-clauses but not in binding domains like indirect questions, comparatives, and relatives, i.e., syntactic islands. They crucially distinguish objects of verbs and objects of Ps:

(91) a. Hann spurði, hvenær henni hefði verið hjálpað.
he.NOM asked when she.DAT had been helped
'He asked when she had been helped.'
b. *Hann spurði, hvort Vigdísi væri talað vel um.
he.NOM asked whether Vigdis was spoken well of
'He asked whether Vigdis was well spoken of.'

Maling and Zaenen thus conclude that P-stranding is not a unified phenomenon, and suggest that P-passive is possible only when there is some independent lexical process reanalyzing V and P, which turns the object of P into the direct object of the reanalyzed V+P. The difference between English and Icelandic with respect to P-passive is that English has a rule of lexical reanalysis but Icelandic does not.

They argue that prenominal modifiers of the sort in (92) constitute independent evidence for a reanalysis rule in English, and the lack thereof in Icelandic as

in (93) and (94) shows that V cannot be reanalyzed with P, even though the language allows prenominal modifiers that are related to verbs:

(92) a. a much talked about subject
b. an often alluded to problem
c. a well spoken of young lady

(93) a. **Þettaer [vel töluð um] kona. Icelandic
'This is a well spoken of woman.'
b. *þettaer [vel umtöluð] kona.

(94) a. Nýfallinn snjór.
'new snow'
b. Sokkna skipið.
'the sunken ship'
c. Mikið lesin bók.
'a much read book'

The grammatical contrasts in (92–94), and, by the same token, those in (89–91) as well, certainly call for an explanation, but it is not quite clear whether they are due to the lack of a lexical rule reanalyzing V and P in Icelandic.

In fact, if P-stranding is possible only if P is reanalyzed with V,[23] then it must be that P is reanalyzed with V in cases like (95) (Maling and Zaenen 1985: 199):

(95) Hann spurði hvern ég hefði talað við. Icelandic
he asked whom I had talked to
'He asked whom I had talked to.'

We can surely distinguish the example in (95), a result of A-bar-movement, from those in (89b) and (91b), results of A-movement, and argue as Maling and Zaenen do that the grammatical examples in (86b), (88), and (90b) are the results of A-bar-movement. What this amounts to is that P-stranding under A-movement, i.e., P-passive, requires lexical reanalysis of V and P, but P-stranding under A-bar-movement does not. Maling and Zaenen (1985: 205) attribute the requirement to the assumption that only arguments bearing the grammatical function OBJ may passivize (Zaenen and Maling 1983). Thus, unless it comes to bear the grammatical function OBJ, object of P cannot passivize, i.e., P may not be stranded under A-movement. The requirement does not hold of arguments undergoing A-bar-movement, since syntactic binding, i.e., *wh*-movement, is not restricted to arguments bearing the grammatical function OBJ.

There are three major problems with this account, however. First, there is little, if any, independent morphological evidence for P being reanalyzed with V. Morphologically, the participial suffix *-ed* occurs on V regardless of whether it is reanalyzed with P. If V is reanalyzed with P, we could reasonably expect the participial morphology to appear on the whole reanalyzed unit (e.g., [*talk about*]-*ed*).

The fact that it does not shows that there is no morphological evidence for P being reanalyzed with V. Second, there is no independent motivation for assuming that object of P may bear the OBJ grammatical function. Third, the assumption that the process of lexical reanalysis may vary from language to language is at best a restatement of the cross-linguistic variations with respect to P-passive, if the process is not shown to be related to any other processes or principles of grammar.

Questions of this kind would cease to arise if there is in fact no condition on P-stranding specific to A-movement, and the more limited possibilities of P-stranding in structures without *wh*-movement are in fact related to independent properties. I would like to suggest that the possibility of stranding P under A-movement, as observed for English, is related to Case.

The standard assumption about agreement with a finite verb is that the verb is in I^0 and the argument agreeing with it in [Spec, IP]. Along these lines, then, what the lack of agreement in (84–85) – examples without P-stranding – and in (86) – examples with P-stranding – suggests is that the preverbal argument in all these cases is not in [Spec, IP]. These examples are thus in sharp contrast with the English example in (87) where the preverbal argument appears in [Spec, IP] and agrees with the finite verb. There are two related questions that we need to address. First, why should it be that the preverbal argument in German and Icelandic is not in [Spec, IP]? Second, why should it be that the preverbal argument in English is in [Spec, IP]? These two questions lead to a third, more general, question: is there some other difference between English and other Germanic languages that bears on the anwers to the first two questions? Before considering these questions, let us note that these issues are quite independent of P-stranding; the same questions arise for the examples in (84–85) and (87c) where there is no P-stranding.

I would like to first discuss some facts related to the third, more general question, as the answers to the first two questions hinge on it. As it turns out, Germanic languages exhibit a sharp division with respect to the impersonal passive construction. All Germanic languages have it, except English (Vikner 1995: 209):

(96) a. . . . daß *pro* getanzt worden ist. German
that danced became is
'. . . that there was dancing.'
b. . . . að Það hefur verið dansað. Icelandic
that there has been danced
'. . . that there was dancing.'
c. . . . at der er blevet danset. Danish
that it there became danced
'. . . that there was dancing.'
d. *. . . that there/it has been danced.

The issue that arises for the grammatical contrast in (96) is why it is that English does not allow the impersonal passive construction, while all other

Germanic languages do. Moreover, as the same sharp division, all Germanic languages on the one hand and English on the other, also holds of agreement with a preverbal argument (as discussed above), it seems quite natural to relate these two differences.

The (abstract) passive morpheme is commonly taken to absorb Case, which explains why the object of a passivized verb in English must move to a Case position. As for German, and by extension all other Germanic languages as well, the accusative Case for the object seems to be absorbed by the passive morpheme, as evidenced in (83), where the object is in subject position where it is assigned (or checks) nominative Case and agrees with the finite verb; but the passive morpheme in these other Germanic languages need not absorb any Case if the verb itself does not assign accusative Case to the object, as in (84) and (85). Suppose the Case-absorption property of the passive morpheme varies from language to language (Baker 1988a: 345ff., refining the Case-theoretic accounts of NP movement by Chomsky 1980a and Jaeggli 1982) in that it must absorb accusative Case in some languages, e.g., English, but it does not necessarily do so in some others, e.g., other Germanic languages. Specifically, the passive morpheme must absorb the accusative Case of the verb, if there is any, but particular languages may vary, as a parametric choice, as to whether the passive morpheme must absorb Case at all. It must in English, but need not do so in other Germanic languages, which explains why a verb assigning no accusative Case in these latter languages may bear passive morphology, but not in English.

The variations with respect to impersonal passives can now be related to the Case-absorption property of the passive morpheme. Thus, the example in (96d) is excluded since the passive morpheme in English must absorb Case, and there is none for it to absorb. In the examples in (87c) and (87d), the passive morpheme absorbs the accusative Case for the object, the object must therefore move to [Spec, IP] of a finite clause where nominative Case is assigned (or checked), and where it agrees with the finite verb. This answers the second question above. By contrast, the impersonal passive construction in (96a–c) is possible in Germanic languages other than English, since the passive morpheme in these languages need not absorb Case. The same account can be given to explain why in the examples in (84) in Icelandic and those in (85) in German the object retains its (non-accusative) Case.[24] As movement to [Spec, IP] is motivated by Case, the object with Case cannot move to [Spec, IP], explaining why the preverbal object in (84) and (85) does not agree with the finite verb.[25] This answers the first question above. Thus, the answer to the third, more general, question is that P-stranding under A-movement is related to the Case absorption property of the passive morphology, which manifests itself independently in the impersonal passive construction. If a language allows the impersonal construction, i.e., the passive morpheme need not absorb Case, then it will not allow an object with Case to move to [Spec, IP], there being no motivation for movement to [Spec, IP] for Case. P-stranding under A-movement in these languages is therefore only apparent, P being stranded not by A-movement of the object of P to [Spec, IP], a Case position, but by A-bar-movement to a non-Case position.

It bears pointing out that since there is very little, if at all, Case and agreement morphology in Swedish, Danish, and Norwegian. Therefore, there are no Case and agreement facts showing that the apparent P-passive is the the result of P-stranding under A-movement. Nevertheless, as these languages allow the impersonal passive construction, just like Icelandic, it thus seems reasonable to conclude that the passive morphology in these languages has the same Case absorption property as that in Icelandic, namely, it does not necessarily absorb Case. This is what makes the impersonal passive construction possible.

Now, if the English passive morpheme must absorb Case, then one might wonder how it absorbs Case in P-passive. In an example like that in (97a), the object *the carpet* of the P *on* plausibly receives Case from the P, and it is not obvious that the verb *step* has any Case feature:

(97) a. They stepped on the carpet.
b. The carpet$_i$ has been stepped on t_i

If this is correct, then how would the Case absorption property of the passive morpheme in English be satisfied in (97b), repeated from (87a)?

Law (1998) suggests that in P-passive the Case feature of P, which is otherwise checked by its argument, moves to the verb on which the passive morpheme appears (cf. Move-F, Chomsky 1995c: 261–271), so as to satisfy the Case absorption property of the passive morpheme. As a result, the object of the P must move to the subject position where it is assigned nominative Case, and agrees with the finite verb, just like other cases of passive. On this view, the example in (97b) would have the derivation as in (98):

(98) The carpet$_i$ has been stepped [$_{pp}$ on t_i]
[Case] ←┘

If the Case feature of P must move to the participle, then we would expect it to be subject to constraints on movement. The expectation is borne out. In the example in (33b), repeated in (99a), an adverb intervenes between V and P, an indication that the PP is in an adjoined position:

(99) a. *The carpet$_j$ was stepped t_i repeatedly [on t_j]$_i$.
[Case] ←┘
b. ?*Which carpet$_j$ did they step t_i repeatedly [on t_j]$_i$?

P may not be stranded in (99a), since movement of the object of P to subject position as well as movement of the Case feature of P to the participle violate Huang's CED barring extraction out of adjuncts. It is noteworthy that the example in (99b) is slightly better than that in (99a), perhaps due to there being only one CED violation by the extraction of the *wh*-phrase. As the passive morpheme need not absorb Case in other Germanic languages, the Case feature of the P does not move to the verb that carries the passive morpheme, accounting for why the

object of the P retains the Case assigned to it by the P, and why it cannot move to [Spec, IP], a Case position.[26] In this way, with the parametric choice of Case absorption, we can relate the retention of non-accusative Case and the impersonal passive construction with an overt expletive.

6 Some remaining problems and issues

The foregoing discussion emcompasses only facts in some standard varieties of Romance and Germanic languages. The question that naturally arises is whether the analysis can be extended to other varieties. I would like to discuss two cases that appear to raise some problems for the D-to-P incorporation analysis of P-stranding. The first case concerns the lack of D-to-P incorporation, as observed in cases where an adverb intervenes between P and D, in syntactic environments where movement is possible in principle. The second case concerns D-to-P incorporation, as manifested in the D+P suppletive forms, in syntactic environments where movement is generally impossible.

6.1 Lack of D-to-P incorporation

An apparent problem for the D-to-P-incorporation analysis of P-stranding is the impossible D-to-P incorporation in examples like (100–110) across all German dialects (Van Riemsdijk 1998b: 662–663):

(100) a. von genau dem Gegenteil — German
from exactly the.DAT opposite
'from exactly the opposite'
b. *von dem genau Gegenteil
c. *vom genau Gegenteil

(101) a. zu knapp der Hälfte
to nearly the half
'to nearly half'
b. *zu der knapp Hälfte
c. *zur knapp Hälfte

Given that what follows P in (100–101) is a constituent, most clearly in verb-second main clauses, as shown in (102), the structures in (103a) and (103b) for (100a) and (100a), respectively, are perfectly reasonable:

(102) a. [Genau das Gegenteil] hat er gesagt. — German
exactly the.ACC opposite has he said
'He said the exact opposite.'
b. [Knapp die Hälfte] sind meine Freunde.
nearly the.NOM half be my friends
'Nearly half are my friends.'

(103) a. von [genau dem Gegenteil]
b. zu [knapp der Hälfte]

Conceptually, then, the problem is why D in (103) may not incorporate into P as in (104), the structures for (100b) and (101b):

(104) a. *von+dem$_i$ [genau t_i Gegenteil]
b. *zu+der$_i$ [knapp t_i Hälfte]

The impossibility of P-to-D incorporation in (104) would follow immediately if the complement of P in these cases is in fact headed by *genau* 'exactly' or *knapp* 'nearly', as movement of D to P would violate Travis's HMC. But there seems to be little independent evidence for the complement of P in (103) being headed by *genau* or *knapp*.[27] Van Riemsdijk (1998b: 654–656) suggests that contraction of P and D is a result of head adjunction of D to P. As an instance of head movement, it is subject to the head-adjacency principle in (105) (Van Riemsdijk 1998b: 644–645), particularly relevant to the D-to-P incorporation is the condition on head adjunction:

(105) **The Head Adjacency Principle** (HAP):
A transformational process that affects two head positions must be either Head Adjunction or Head Substitution.
Head Adjunction (HA):
Two phonetically identified heads are joined, yielding an adjunction structure, in which case the two heads must be strictly linearly adjacent at the moment of application of the rule.

Thus, the reason why D cannot move to P in (104) is that the two are not adjacent, there being an element intervening between them.

As it turns out, there seems to be some constraint in German barring stranding a left-modifier independently of P-stranding. As shown in (106), the R-pronoun *da* may move to [Spec, PP] or to a still higher position (cf. section 5.3). But it may not do so when a left-modifier like the adverbial *genau* 'exactly' is stranded as shown in (107) (the surface forms of the examples in (107b) and (107c) are good with the adverbial *genau* 'exactly' modifying the verb, i.e., it is not part of the PP headed by *von* 'of'. Cf. the discussion of the examples in (109–110) below):

(106) a. Hans hat [da$_i$ [von t_i]] geredet.
Hans has it of talked
'Hans talked of it.'
b. Da$_i$ hat Hans [t_i [von t_i]] geredet.

(107) a. Hans hat [von [genau diesem Thema]] geredet.
Hans has of exactly this topic talked
'Hans talked of exactly this topic.'

b. *Hans hat [da$_i$ [von [genau t_i]]] geredet.
Hans has it of exactly talked
c. *Da$_i$ hat Hans [t_i [von [genau t_i]]] geredet.

Notice that there is nothing wrong, semantically, with the adverbial *genau* appearing with the R-pronoun *da*; the position of the adverbial is crucial:

(108) a. Hans hat [genau [von [diesem Thema]]] geredet.
Hans has exactly of this topic talked
'Hans talked of exactly this topic.'
b. Hans hat [genau [da$_i$ [von t_i]]] geredet.
Hans has exactly it of talked
'Hans talked of exactly it.'
c. Da$_i$ hat Hans [genau [t_i [von t_i]]] geredet.
d. [genau [da$_i$ [von t_i]]] hat Hans geredet.

There is a complication with *genau*, however. As it may modify the verb, it is not straightforward to construct examples where it unambiguously modifies the verb or the DP that superfically follows it:

(109) a. Hans hat genau erklärt, wer dafür zuständig ist.
Hans has exactly said, who it-for responsible is
'Hans said exactly who is responsible for it.'
b. Die Details hat Hans nicht genau präzisiert.
the details has Hans not exactly specified
'Hans did not exactly specify the details.'

That is, there are alternative structures for the same surface forms of the examples in (108a–c) where *genau* is not part of the PP, but modifies the verb:

(110) a. Hans hat genau [von [diesem Thema]] geredet.
Hans has exactly of this topic talked
'Hans talked exactly of this topic.'
b. Hans hat genau [da$_i$ [von t_i]] geredet.
Hans has exactly it of talked
'Hans talked exactly of it.'
c. Da$_i$ hat Hans genau [t_i [von t_i]] geredet.

The modifier *all* 'all' is a better choice. Although it is like *genau* in that it is formally invariant and can precede a DP with different number, gender, and Case forms:

(111) a. [All der gute Wein] steht auf dem Regal.
all the.SG.NOM good.SG.NOM wine.SG stands on the shelf
'All the good wine is on the shelf.'

b. Auf dem Regal stehen [all die guten Weine]
on the shelf stand all the.PL.NOM good.PL.NOM wine.PL
'On the shelf is all the good wine.'
c. Hans hat [all den guten Wein] getrunken.
Hans has all the.SG.ACC good.SG.ACC wine.SG drunk
'Hans drank all the good wine.'
d. Hans hat [von all dem guten Wein] getrunken.
Hans has of all the.SG.DAT good.SG.DAT wine.SG drunk
'Hans drank from all the good wine.'

The modifier *all* differs from *genau* in not being able to modify a verb:

(112) a. Hans hat all sein Geld verloren.
Hans has all his money lost
'Hans lost all his money.'
b. *Hans hat all es verloren.
Hans has all it lost
'Hans lost it all.'
c. Die Politiker haben alle/*all gelogen.
the politicians have all/all lied
'The politicians have all lied.'

As shown in (113), the phrase left-modified by *all* may not be moved, leaving behind the modifier *all*:

(113) a. *[Die guten Weine] stehen [all t_i] auf dem Regal
the.PL.NOM good.PL.NOM wine.PL stand all on the shelf
'On the shelf is all the good wine.'
b. *[Den guten Wein]$_i$ hat Hans [all t_i] getrunken.
the.SG.ACC good.SG.ACC wine.SG has Hans all drunk
'Hans drank all the good wine.'

Suppose for some reason a modifier may not be left-adjoined to a category whose head is phonetically empty. The examples in (113) would then be straightforwardly excluded. So are those in (104) and (114):

(114) *von+dem [all [t_i guten Wein]]

In other words, the examples in (104) and (114) are ruled out not because P may not incorporate into D, but precisely because incorporation of D into P would give rise to structures in which a modifier is left-adjoined to a category whose head is devoid of phonetic content. This is exactly the reason why the examples in (113), which have no D-to-P incorporation, are excluded. What remains to be explained, however, is why D may have the option of not incorporating into P in (103).

There is some indication that there is a constraint that specifically bars stranding of a left-modifier. As shown in (115), a right-modifier may be stranded in German:[28]

(115) a. Hans hat [da$_i$ [von t_i [was uns übrigens auch interessiert]]]
Hans has it of what us by the way also interested
geredet.
talked
'Hans talked of it, which also interests us.'
b. [da$_i$ [von t_i [was uns übrigens auch interessiert]]] hat Hans geredet.

Notice that the examples in (115) have a non-restrictive relative clause made explicit by the expression *übrigens* 'by the way'; it is most plausibly adjoined to the DP-complement of P headed by the R-pronoun *da*. The examples in (113) show that the quantifier *all* is not part of the projection that moves leftward. The leftward movement of the R-pronoun in (115) essentially shows the same point. The bracketed phrase in (115) is thus structurally parallel to that in (113) in that the position of the relative clause in (115) is structurally comparable to that of the quantifier *all* in (113). The grammatical contrast between them shows that a left-modifier may not be stranded, while a right-modifier may. The ungrammaticality of the examples in (107b) and (107c), further instantiations of the structure in (104a), now follows since a left-modifier is stranded.

The HA clause of the HAP cannot explain why the examples in (107b) and (107c) are ungrammatical, since movement of the R-pronoun *da* is phrasal. The same also holds of the examples in (113). The constraint against stranding left-modifiers in German thus seems to have some empirical support, although it is conceptually unclear why there should be such a constraint.

The lack of D-to-P incorporation in Italian in cases like in (116) (Van Riemsdijk 1998b: 664) apparently raises a problem for the D-to-P analysis of P-stranding, as the explanation for the lack of P-to-D incorporation in German in cases like (100) and (101) cannot be carried over to Italian:[29]

(116) a. con tutta la famiglia. Italian
with whole.FEM the.FEM family.FEM
'with the whole family'
b. *con+la$_i$ [tutta [t_i famiglia]] (**colla=con la*)

As shown in (117), if the pronominal *la* 'her/it.FEM' orignates in the position to the right of the quantifier *tutta* 'all, whole' and then moves to the verb (Kayne 1975), then the resulting structure would be comparable to that in (116b), which are just like the structures in (113) in German (the combination *la ho* is phonologically [lo], orthographically *l'ho*):

(117) a. La$_i$ ho vista [tutta t_i] Italian
it.FEM have.1SG seen all
'I saw it all.'

b. Quale famiglia hai vista [tutta t_i]?
which family have.2sg seen all
'Which family have you seen all?'

The fact that the structures in (117) are possible, but those in (113) and (116b) are not calls for an explanation. To approach the solution to the problem in (116b), we need to find out what the category of the quantifier *tutta* is, what relationship it bears with the following DP, and what the head of the DP *tutta la famiglia* 'the whole family' is. These questions are largely independent from one another. Let us first discuss the issue of the category of the quantifier *tutta*.

The examples in (118) show that the quantifier *tutta* is plausibly of the category determiner; it may appear by itself, without being followed by a DP (Schwarze 1988: 29):

(118) a. Tutti sanno leggere. Italian
all can.3PL read
'All can read.'
b. Avete capito tutto?
have.2PL understand all
'Have you understood everything?'

Now, if arguments are DPs, it then follows that the quantifier *tutta* is a determiner.

Let us now turn to the issue of the internal structure of the DP consisting solely of the quantifier *tutta*. Although it is clear that the quantifier is the head, we may wonder whether it takes a null DP complement as represented in (119), or simply takes no complement, as in (120), i.e., the quantifier *tutta* is an intransitive determiner in this case:

(119) a. [$_{DP}$ tutti *pro*] sanno leggere. (=118a)
b. Avete capito [$_{DP}$ tutti *pro*]? (=118b)

(120) a. [$_{DP}$ tutti] sanno leggere. (=118a)
b. Avete capito [$_{DP}$ tutti]? (=118b)

The representation where the DP appears in subject position in (119a) is plausible, as Italian allows null subject *pro*. That in (119b) is much less so, since null object pronouns, in contrast with null subject pronoun, are restricted to having a plural, human antecedent in generic contexts (Rizzi 1986a). The context in the example in (119b) is clearly not generic, and the object need not have a human antecedent; it may refer to books. Hence, there cannot be an object *pro* in (118b). If this is correct, then the example in (118b) most naturally has the structure in (120b). (118a) can have the structure in (120a) as well.

If an appositive relative clause may appear as DP-adjunct, and a restrictive one as NP-adjunct (cf. Browning 1991; Law 1991b), then the fact that the quantifier

tutto may co-occur with an appositive, but not with a restrictive relative clause (Cinque 1995b: 479) shows that the quantifier *tutto* heads the DP, i.e., it is an intransitive determiner in this case:

(121) a. Ho preso tutto, che non era poi molto, e me
have.1SG take everything which not be that much and myself
ne sono andato, . . .
of-it am go
'I took everything, which was not that much, and I left.'
b. *Ho preso tutto che mi piaceva.
have.1SG take everything that me please
'I took everything I liked.'

The conclusion is further supported by facts about the French counterpart of *tutto*; French does not allow null arguments. As shown in (122), the quantifier *tout/toutes/tous* 'all' may appear without being followed by a DP (Grevisse 1986: 1157):

(122) a. On peut s'attendre à tout. French
one can expect to all
'One can expect everything.'
b. M. Gaston Deferre qui serre les mains de toutes et de
Mr. Gaston Deferre who shake the hands of everyone.FEM and of
tous.
everyone.MASC
'Mr. Gaston Deferre who shakes hands with everyone.'

Clearly, there is no reason to think that the DP consisting solely of the quantifier *tout/toutes/tous* 'all' takes a null pronoun as complement.

If the quantifier *tutta* in Italian and its counterpart in French are Ds, then we should expect them to be able to take an NP complement. The expectation is only partially borne out. French *tout/toute/tous/toutes* may take an NP complement, so may Italian *mezza* 'half', but *tutta* and *entrambi/ambidue/ambo/ambe* 'both' may not (Giorgi 1995: 300, Renzi 1995: 358):

(123) Toute personne; toutes les personnes; tous (les) deux. French
all person all the persons all the two
'All persons; all the people; both of them.'

(124) a. mezza (la) faccia Italian
half the face
'half (of) the face'
b. tutti *(i) ragazzi; tutta *(la) torta
all the boys all the tart
'all the boys; all the tart'

c. entrambi *(i/quei) bambini; ambo/ambe *(le) mani
both the/those children both the hand
'both children; both hands'

It is not clear why Italian *tutta* and *entrambi/ambo/ambe* differ from their French counterparts in obligatorily taking a DP-complement.

As for the structural relation between the quantifier and the following DP, there are a priori three possibilities. If the quantifier *tutta* heads the DP *tutta la famiglia* 'the whole family', then it either selects the following DP as complement as in (125a), or it projects a DP and the following DP adjoins to it, as in (125b):

(125) a. $[_{DP}$ [tutta $[_{DP}$ la famiglia]]]
b. $[_{DP}$ $[_{DP}$ tutta] $[_{DP}$ la famiglia]]

Alternatively, the DP *tutta la famiglia* is headed by the determiner *la*, and the quantifier *tutta* itself projects a DP and adjoins to the DP *la famiglia*. The representation for this last case would be just like (125b).

The structure in (125b) does not seem to be attested elsewhere, regardless of whether the first DP joins to the second, or the other way round. If it were possible, then we should expect DPs of the sort in (126) to be possible, contrary to fact:

(126) a. *[[la famiglia] [la riunione]]
the family the reunion
'the family reunion'
b. *[[il corso] [il texto]]
the course the text
'the course text'

This leaves (125a) as the only possible structure for the DP *tutta la famiglia* where the quantifier *tutta* heads the whole DP. The lack of D-to-P incorporation in (116b) is now straightforward. Movement of the determiner *la* to P in the structure in (127) violates the HMC:

(127) *P+la$_i$ $[_{DP}$ [tutta $[_{DP}$ t_i N]]]

It should be pointed out that although the example in (117a) does not bear on the account for (127) directly, there being no P-stranding, it is legitimate to ask why the structures and derivations given in (117), if they are correct, are possible at all; in particular, we may ask whether movement of the pronominal clitic in (117a) also violates the HMC, just like movement of the determiner in (127). The question is an important one, but is independent of P-stranding, as the same question also arises when the quantifier *tutta* is absent, i.e., the example in (117a) is grammatical without the quantifier. The pronominal clitic apparently moves across two lexical heads, and should violate the HMC, if it indeed undergoes

head movement. The movement of the pronominal clitic in (117a) is then clearly related to a more general pattern, quite independently of the presence of the quantifier *tutta*. What needs to be explained is, although it remains unclear, why the structure in (117a) in Italian does not obey the constraint against stranding a left-modifier in German.

6.2 D-to-P incorporation from the specifier position

Van Riemsdijk (1998b: 659) points out that in some southern German varieties, a possessive pronoun may be preceded by a full DP in the dative Case, as in (128a) and (129a), whose head D may contract with a preceding preposition, as in (128b) and (128b):

(128) a. von [[dem Bürgermeister] [seinem Gehalt]] German
of the.DAT mayor his.DAT salary
'of the mayor's salary'
b. vom Bürgermeister seinem Gehalt

(129) a. zu [[der Prinzessin] [ihrem Palais]]
to the.DAT princess her.DAT palace
'to the princess's palace'
b. zur Prinzessin ihrem Palais

Although it is not immediately obvious what structure the DP-complement of P has in these cases, it seems clear that the possessive pronoun is the head of the DP-complement of P, most evident in the Case form of the possessive pronoun when the DP complement appears as complement of verbs assigning different Cases (cf. the examples in (135) below). Now, if forming an X^0 is a necessary condition for contraction, then the head D of the DP in the specifier must move to P, in violation of Ross's (1986) Left Branch Condition (LBC) barring movement of DP from the specifier position of a DP.

The problem is even more acute for the D-to-P incorporation analysis of P-stranding in cases like (130–131), where the D contracting with P is further embedded (Van Riemsdijk 1998b: 659):

(130) a. von [[[dem Hans] seiner Mutter] ihrem Geld] German
of the Hans his.DAT mother her.DAT money
'of Hans's mother's money'
b. vom Hans seiner Mutter ihrem Geld

(131) a. von [[[[dem Hans] seiner Mutter] ihrem Freund] seinem Geld]
of the.DAT Hans his.DAT mother her.DAT friend his.DAT money
'of Hans's mother's friend's money'
b. vom Hans seiner Mutter ihrem Freund seinem Geld

The contraction facts in (128–131) thus seem to suggest that the condition for contraction is purely phonological. That is, contraction of D and P is possible as long as they are adjacent. However, there is evidence showing that syntactic structure is relevant to contraction. As shown in (132–133), P and D may not contract, even though they are adjacent (Van Riemsdijk 1998b: 655):

(132) a. von [$_{DP}$ [$_{D}$ e] [$_{AP}$ dem König treu ergebenen] [$_{N}$ Dienern]]
of the.DAT king faithfully devoted servants
'of the servants faithfully devoted to the king'
b. *vom König treu ergebenen Dienern

(133) a. zu [$_{DP}$ [$_{D}$ e] [$_{AP}$ der Direktion zur Verfügung stellenden]
to the.DAT board to availability put
[$_{N}$ Zimmern]]
rooms
'to the rooms made available to the board'
b. *zur Direktion zur Verfügung stellenden Zimmern

The obvious structural difference between (128–131) and (132–133) can be schematically represented as in (134a) and (134b) respectively (the DP in (134a) may be further embedded in the specifier of X):

(134) a. P [$_{XP}$ [$_{DP}$ . . . D . . .] [X . . .]] (D-to-P incorporation possible)
b. P [$_{XP}$ [X [$_{DP}$ . . . D . . .] . . .]] (D-to-P incorporation impossible)

In terms of government, then, D is conceivably governed by P in (134a), but certainly not in (134b) where a head X intervenes between D and P (Chomsky 1986a; Rizzi 1990b). Van Riemsdijk (1998b: 660) suggests that accessibility for government is recursively defined to the effect that a lexical head may govern the specifier position of a complement, or a specifier position of a category further embedded in the specifier of the complement. Along these lines, then, the D head of the DP in the specifier in (134a) may move to P, but that in (134b) may not. In the latter case, the D is found inside a category that is too far to be governed by P.

While the D-to-P incorporation analysis of P-stranding is entirely compatible with such a view of government, there are certain empirical predictions that I cannot verify for lack of access to speakers and detailed descriptions of these varieties of German. If government is recursively defined across all lexical categories, then V in particular in the position of P in (134a) can govern D as well, just like P. V should also be able to govern the DP projection of D, and extraction of a DP from a specifier position of a DP should be possible, in violation of Ross's LBC:

(135) a. Ich habe [[dem Hans] [seinen [Vater]]] gesehen. German
I have the.DAT Hans his.ACC father seen
'I saw Hans's father.'

b. [[Dem Hans] [seinen [Vater]]]$_i$ habe$_j$ ich t_j t_i gesehen.
c. [Dem Hans]$_i$ habe$_j$ ich t_j [t_i [seinen [Vater]]] gesehen.

(136) a. Ich habe [[[dem Hans] [seinem [Vater]]] [seinen [Chef]]] gesehen.
I have the.DAT Hans his.DAT father his.ACC boss seen
'I saw Hans's father's boss.'
b. [[Dem Hans] [seinem [Vater]] [seinen [Chef]]]$_i$ habe$_j$ ich t_j t_i gesehen.
c. [Dem Hans]$_i$ habe$_j$ ich t_j [t_i [seinem [Vater]] [seinen [Chef]]] gesehen.

The structural relation between (the trace of) the finite verb and the DP in the specifier of the object in (135–136) is exactly the same as that between P and DP in (134a). Thus, the examples in (135c) and (136c) are very crucial to the theory of recursive government.

Unfortunately, I am not able to find speakers of the dialects allowing a full DP in the dative Case preceeding the possessive pronoun as in (128a) and (129a) to check whether the examples in (135c) and (136c) are possible.[30]

7 Conclusion

I suggest to consider the suppletion facts involving Ps and Ds as evidence for Ds incorporating into Ps. A direct consequence of incorporation is that the incorporated head no longer forms a syntactic constituent with its complement, and hence may not move together with it. On this view, P-stranding does not depend on any specific assumption, such as canonical government or a reanalysis rule for V and P. Intuitively, then, P-stranding is simply the result of movement of the DP object of P. So if P and its DP object are not separable for some independent reason, then the lack of P-stranding follows immediately.

As P-stranding is simply the result of movement, it is irrelevant whether the movement is to an argument position, A-movement, or to a non-argument position, A-bar-movement. The difference between English on the one hand and other Germanic languages on the other with respect to P-passive does not warrant treating P-stranding differently in terms of A- vs. A-bar-movement. The difference can readily be accounted for by the independent Case-absorption property of the passive morpheme, which manifests itself in the impersonal passive construction independently from P-stranding.

Quite obviously, the accounts discussed above are adequate only to the extent that the empirical facts they bring to bear are correctly captured. It is almost certain that they will need to be revised when we consider languages with radically different grammatical properties. For instance, many Slavic and Asian languages have no determiner; yet, they disallow P-stranding. In fact, P-stranding is rather uncommon cross-linguistically, a fact that no theory of P-stranding to date is able to explain. To achieve explanatory adequacy, linguistic theory must capture this fact.

NOTES

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1 According to King and Roberge (1990), Acadian French spoken in Prince Edward Island, Canada, allows relatively free stranding of Ps:

(i) a. Quoi-ce que tu as parlé hier à Jean de? Acadian French
what-it that you have talked yesterday to John about
'What did you talk to John about yesterday?'
b. Robert a été parlé beaucoup de au meeting.
Robert has been talked a lot of at the meeting
'Robert was talked about a lot at the meeting.'

Remarkably, it seems to allow P to be stranded in an adjunct domain sometimes, impossible in English:

(ii) a. Quelle heure qu'elle a arrivé à?
what time that-she has arrived at
'What time did she arrive?'
b *Qui-ce que tu as parti après avoir vu?
who that you have left after to-have seen
'Who did you leave after having seen?'

Lack of access to more detailed description of the language prevents me from further discussing this dialect of French. I will also not discuss cases like (iii), which Zribi-Hertz (1984) argued involve a null pronoun rather than movement of the complement of P, as the apparently stranded P is in a syntactic island for extraction:

(iii) a. Je connais bien cette valise, car je voyage avec. Colloquial French
I know well this suitcase because I travel with
'I know this suitcase well, for I always travel with it.'
b. Ce banc, savez-vous qui doit sauter par-dessus.
this bench, know-you who must jump over
'This bench, do you know who must jump over?'

2 Frisian apparently permits extraction of non-R-pronouns under A- and A-bar-movement, impossible in German and Dutch (Hoekstra 1995: 97):

(i) a. Wa hast mei pratt? Frisian
who have.2SG with talk
'Who have you talked with?'

b. Hokker kandidaat stimme jimme op?
which candidate vote you for?
'Which candidate are you voting for?'

(ii) a. De bern wurdt net nei harke.
the children is not to listen
'The children were not listened to.'
b. Elkenien hat er in foto fan makke.
everyone has he a picture of make
'Has he made a picture of everyone?'

However, Hoekstra argues that the complements of P in (i) and (ii) are not extracted out of PP, but are base-generated in [Spec, CP], with the object of P being a phonetically empty resumptive pronoun, which may be overt when it and its antecedent are not in the same clause (Hoekstra 1995: 116):

(iii) Hokker famke$_i$ miendest dat er sei
which girl thought-you that he said
dat er mei har$_i$/der$_i$ met praat hie?
that he with her/there with talked had
'Which girl did you think that he said that he had talked with?'

Hoekstra's analysis predicts that the stranded P may not lie in a syntactic island, e.g., an adjunct, as the object of P is not moved out of PP. Lack of access to Frisian speakers prevents me from verifying this prediction.

3 The example in (17b) may be derived from (ia) by deleting the portion of the sentence lying between the *wh*-phrase and the P taking it as its argument, i.e., deleting the material inside the parentheses, a non-constituent (Ross 1969b):

(i) a. John left, but I don't who know (he went out) with.
b. *John left, but I don't who know with (he went out).

Notice that (ia) is independently possible with the material inside the parentheses present, so the structure in (17b) does not seem implausible, apart from the issue of deleting a non-constituent. The problem is the structure in (17a), since it would have to be derived, implausibly, from the ungrammatical example in (ib). An additional problem for the deletion account of Sluicing is that it does not explain why non-bare *wh*-phrases are impossible in the Sluice, as the examples in (18) show.

4 A similar problem arises in French for the HC as well. If the I position is filled with the verb in embedded clauses, then extraction of the object in (i) should be impossible, according to the HC, since the head of the VP is not empty:

(i) Je me demande [$_{CP}$ qui$_i$ [[$_{IP}$ tu [as [$_{VP}$ vu t_i]]]]. French
I myself ask who you have seen
'I wonder who you saw.'

One way to get around this problem would be to allow adjunction to the intervening maximal projections (Chomsky 1986a). But new problems arise. One needs to

independently justify the landing sites, given the SPC, and explain why such adjunction is not available for extraction out of PPs.

5 A reviewer points out that some speakers accept Hornstein and Weinberg's example (30a). It is not clear, however, whether there are other dialectal differences bearing on this example.

6 Anderson (1977: 373) argues that passives of apparent objects of Ps are possible just when the object in question has been affected by the action or has acquired some characteristics as a result of it. The grammatical contrast in (i) is thus presumbly due to the bed in (ia) but not New York in (ib) being affected by the act of sleeping or having acquired some characteristics as a result of sleeping, as noted by Hornstein and Weinberg (1981: 88) (see also Baltin and Postal 1996):

(i) a. The bed was slept in.
b. *New York was slept in.

But the grammatical contrast between in (ii) and (33b) clearly does not fall under this account:

(ii) The carpet was repeatedly stepped on.

The only difference between them is the position of the adverb, and there is no reason to think that *the carpet* in the two examples has different properties in terms of affectedness.

7 H. van Riemdijk (p.c.) points out that extraction of the sort in (37) may be consistent with the excorporation analysis of Roberts (1991a) in that V first incorporates into P and then V excorporates from the V+P complex to the second position. But this does not explain why V and P fail to behave like a syntactic unit.

8 One may conceivably argue that the subject trace is antecedent-governed by the trace in [Spec, CP], but this does not seem to be a possible solution in Kayne's analysis, as he explicitly states that movement into COMP is necessary in French to bring the embedded subject NP into a position close enough to V that V can govern it (Kayne 1984a: 112), apparently implying that head-government (Rizzi 1990b; Law 1991a) is required for traces. A possible solution of the government problem in (50) is to assume that French P-complementizers have no Case property, explaining why the embedded subject in (42) may not be overt, but nevertheless govern the embedded subject position, given that in (50) is grammatical. It may also be that the *wh*-phase in (50) moves through a Case position in the matrix clause, e.g., [Spec, AgrO] (cf. Chomsky 1991).

9 I assume here that negation is a VP-adjunct and that the R-pronoun *er* and the non-R-pronoun *hem* in (53) adjoin to the VP as well. The discussion in the text requires no changes if these assumptions turn out to be incorrect, e.g., negation heads a functional projection (cf. Laka 1990). The point here is that R-pronouns may move out of PP, but non-R-pronouns may not. The landing site of the R-pronoun is an independent issue (cf. Kayne 1991).

10 Schaub (1979) gives an extensive list of the *Verschmelzungsformen* 'fused forms' for P+D in German (cf. also Van Riemsdijk 1998b: 653). For cases like (i), where Ps begin with a vowel, the leftmost R-pronouns are doubled with what looks like a pronoun *da* followed by a semivowel *r* (*dar* is preferably reduced to *dr*), the same phonological reduction seen in pairs like *heraus* vs. *raus* 'from here'):

(i) a. Wo besteht er dar-auf? German
what insists he it-on
'What is he insisting on?'
b. Da habe ich dar-an gedacht.
it have I it-of thought
'I have thought of it.'

The apparent doubling of the R-pronouns may suggest that both of them are base-generated in place, but as far as I can tell, the examples in (i) arguably involve movement of the R-pronoun *wo* or *da*, since the P may not lie inside a syntactic island. Wunderlich (1984: 96, n. 21) claims that the consonant *d* to the left of a preposition is the spell-out of the trace of the R-pronoun *da* (cf. Oppenrieder 1991a for an alternative view, however). It is unclear whether the doubling of the R-pronouns has significant syntactic consequences.

11 A clear case in point is the English verbs in the present tense; most of them have the ending *-s* suffixed to the verb stem in third person singular (cf. *work* vs. *works*), while the rest have the same form as the verb stem. The remarkable exception is the copular verb *be*, which has several suppletive forms: *am*, *is*, *are*. There seems to be no generalization as to what kind of verbs undergo suppletion.

12 This assumption might seem unmotivated for Dutch, which has no D+P suppletive forms. As Dutch shares with German a large number of syntactic properties (syntax of verbs, scrambling, impersonal passives, etc.), it does not appear implausible that Dutch Ps may have the same properties as German Ps. The lack of suppletive forms for D+P in Dutch is not too surprising given the little morphology it has for other categories, e.g., Case morphologies on nouns, adjectives, and determiners.

13 In Italian (and Spanish) object pronominal clitics follow the non-finite verb or occur above the complementizer in cases of clitic climbing (cf. Rizzi 1982: 3–5):

(i) a. Piero affermava di conoscer-*la* molto bene. Italian
Peter stated of know-her very well
'Peter stated that he knew her very well.'
b. Piero *li* venne a chiamare stazione.
Peter them came to call station
'Peter came to call them at the station.'

However, they never appear in a position from which it can incorporate into the P-complementizer.

14 As a reviewer points out, a category inflected for number and gender is not necessarily of the category determiner, e.g., adjectives. But as the determiner is usually obligatory in Romance, the exceptions being cases like *prend contact avec* 'to have contact with' where the noun is a complement to a verb, it is quite plausible that French *quel* 'which' and Italian *qual* 'which' are determiners.

15 Müller (1991) argues that all XPs are barriers for extraction of the complement of X, but the barrierhood of XP can be voided if X incorporates into a higher head. P-stranding is thus possible if P incorporates into V abstractly, with the consequence that the Case-assigning capability (of the trace) if P is lost, and V with the incorporated P cannot take over the Case of P and assign it structurally to the object of P (Müller 1991: 191). As the formally invariant R-pronouns do not need Case, it follows that only these can be extracted out of PP when P incorporates abstractly into V.

Several problems arise in this analysis, however. First, there is no obvious reason for abstract incorporation of P into V. Second, to distinguish P incorporating into V with the subsequent loss of the Case assignment property and V incorporating into I without loss of the Case assignment property, Müller (1991: 180) assumes that lexical categories are opaque in that the Case property of the incorporated head is lost, while functional categories are transparent in that the incorporated head can still assign Case when it incorporates into a functional category. There is clearly no independent evidence for the lexical vs. functional category distinction regarding the Case property of the incorporated head. Third, intuitively, if a predicate assigns Case, then there must be a category that takes its Case (cf. Chomsky's 1995c feature-checking theory). In order to bring about the result that P cannot assign Case to its object when it incorporates into V, it must be assumed that V takes or checks the Case of P, for which there is apparently no independent motivation. Fourth, in a case like (i) where the PP moves to [Spec, CP] in main clause, P presumably cannot incorporate into V, because abstract (head) incorporation is subject to constraints on (head) movement:

(i) Davon hat er geredet. German
it-from has he talked
'He talked of it.'

The problem here is that the Case of the preposition *von* cannot be assigned or checked, the R-pronoun needing no Case. Fifth, as Müller (1991: 192, n. 26) notes, it must be assumed that as a parametric choice the trace of a P incorporated into V in English in p-passive can assign Case to its object, as full DPs needing Case may be extracted, stranding P. It is not clear whether this parametric choice is related to any other grammatical property.

16 It is an independent issue whether R-pronouns originate in the Spec position or move from the complement position. On conceptual grounds, one might assume the latter so that all complements originate from the same position, despite there being no empirical evidence for R-pronouns originating in a position to the right of P.

17 Note that the examples in (77) by themselves do not show that the R-pronoun *er* is in [Spec, PP]; it might very well be in an adjoined position. What these examples do show, however, is that the R-pronoun does not incorporate into P. My analysis of P-stranding needs no modification if it turns out to be adjoined to PP.

18 A reviewer points out that the temporal P *na* 'after' may not be stranded, in contrast with the locative P *achter* 'after':

(i) Ik heb (*er) Jan (??er) vlak (er) na bezocht. Dutch
I have it Jan it right it after visited
'I have visited Jan right after it.'

The PP *erna* in (i) seems to be an adjunct. Therefore, that *er* may not move out of the PP stranding P *na* (i) is plausibly due to Huang's CED, cf. the discussion of (38).

19 The reason why an embedded clause is chosen in (83) is to abstract away from the verb-second effect. The example in (i) with a matrix clause obscures the position of the logical object of the verb *Hans und Maria* 'Hans and Maria'. It is not immediately obvious that it is in subject position, i.e., [Spec, IP], even though it agrees with the finite verb:

(i) Es wurden/*wurde Hans und Maria getötet. German
it became.PL/*SG Hans and Maria killed
'Hans and Maria were killed.'

In most analyses, subject–finite verb agreement involves the configuration in which the finite verb is in I^0, and the agreeing argument is in [Spec, IP]. It then follows that the expletive *es* (phonetically identical with the third person singular neutral nominative or accusative argument pronoun) is not in subject position. Moreover, the expletive *es* cannot appear in an embedded clause with an overt complementizer, indicating that the expletive *es* in (i) is most probably not in subject position:

(ii) . . . , dass (*es) Hans und Maria getötet *wurde/wurden.
that it Hans and Maria
'. . . that Hans and Maria were killed.'

20 There is a complication with the example in (86a). The German third person pronoun *da* is formally invariant, regardless of the number, gender, and Case features. It is therefore not immediately clear that the grammatical version of (86a) with the verb in the singular shows that it really agrees with a singular *da*. The crucial point is that it cannot have the plural form, even when *da* has a plural antecedent, showing that the singular form of the verb is most likely the default form when it does not agree with an argument. Cf. the examples in (85).

21 The structures in (82) would be more closely parallel to those with *wh*-movement if they are represented as in (i), a kind of topicalization structure (Koster 1978d), where *O* is a phonetically null counterpart of an overt *wh*-phrase, known as the null operator (Chomsky 1982; Browning 1991):

(i) a. Þessa kona [O_i [er oftast talað vel [$_{PP}$ um t_i]]]. Icelandic
that woman.acc is usually spoken well of
'The woman is usually spoken well of.'
b. Þennan ref [O_i [hefur aldrei verið skotið [$_{PP}$ á t_i]]].
that fox.ACC has never been shot at
'That fox has never been shot at.'

It is not clear, however, why in structures in (i) the topicalized object has the Case assigned to the operator by P, even though it does not originate from the trace position.

22 The term raising applying to both English and Icelandic here is unfortunate. A-movement is commonly taken to be Case-motivated, which is clearly true of English, but not of Icelandic (cf. the DPs with quirky Case that retain their Case even when they do not appear in the base-position).

23 As Baltin and Postal (1996: 142) point out, it is not always possible to have the P+V combinations in P-passive as prenominal modifiers (adding an adverbial like *often* or *repeatedly* in (ib) does not seem to improve grammaticality):

(i) a. The table was jumped/leaned/sat on.
b. *Jumped/leaned/sat on tables.

What needs to be explained is why the examples in (92) are possible, but those in (ib) are not, an issue that is independent of whether the P+V combinations are the results of reanalysis.

24 Vikner (1995: 209–210) attributes the difference between English and other Germanic languages with respect to the impersonal passive construction to the different structural conditions under which Case is assigned in these languages. More specifically, he suggests that chains consisting of an expletive and a passive morpheme are subject to a condition according to which a chain not receiving a theta-role under government must receive Case under government. In his view, the passive morpheme in English is assigned a theta-role, but not under government, and the subject is assigned Case under Spec-I^0 agreement. Thus, a chain consisting of the expletive and the passive morpheme in English is impossible, since the expletive in subject position is not assigned Case under government. By contrast, Case is assigned under government from C^0 in verb-second languages; thus, a chain consisting of an expletive and a passive morpheme in the impersonal passive construction is always possible in these languages.

There are two problems with his analysis. First, it does not explain why an overt expletive is impossible in cases like (i):

(i) a. Ist (*es) getanzt worden? German
is it danced become
'Has there been dancing?'
b. *Hafur (*Það) verið dansað. Icelandic
has it been danced
'Has there been dancing?'

Second, as Vikner also notes, his account does not explain why it is also impossible to embed the impersonal passive construction under an ECM verb in English, when the expletive is assigned Case under government.

(ii) a. *I believe there to have been danced.
b. *Do you believe there to be have slept anybody here?

25 There is an independent issue as to why an argument with Case moves, if movement must be motivated. I leave this issue open here.

26 The same conclusion holds of the examples in (i) (Maling and Zaenen 1985: 207):

(i) a. Henne$_i$/*hon$_i$ skrattades det [$_{PP}$ åt t_i]. Swedish
her.ACC/she.NOM was-laughed it at
'She was laughed at.'
b. Ham$_i$/*han$_i$ blev der leet [$_{PP}$ ad t_i]. Danish
her.ACC/she.NOM was it smiled at
'She was smiled at.'

Many speakers prefer to retain the expletives *det* and *der* in (i) (Christer Platzack, p.c. and Allan et al. 1995: 161). Thus, the ungrammaticality of the examples in (ii) might very well be due to the absence of the expletive, rather than to lack of P-passive in these languages:

(ii) a. *Hon$_i$ skrattades [$_{PP}$ at t_i]. Swedish
she.NOM was-laughed at
'She was laughed at.'

b. *Han$_i$ blev leet [$_{PP}$ ad t_i]. Danish
she.NOM was smiled at
'She was smiled at.'

27 Van Riemsdijk (1998b: 662, n. 40) notes that *genau* 'exactly' in (100) and *knapp* 'nearly' (101) are really adjectives, used adverbially. They are uninflected in this use, but must be inflected when used as adjectives. The form of the adjectival inflection depends on the number, gender and Case features of the modified noun (cf. the schwa on *genau* in *das genaue Gegenteil* 'the exact opposite'). However, many, if not most, adjectives do not have the syntax of *genau* or *knapp*. As shown in (i), adjectives like *klug* 'clever', *dumm* 'dumb', *ehrlich* 'frank', and *schön* 'nice' may be used adverbially, but they cannot intervene between P and its DP-complement (note that *klug* in (id) modifies *geredet* 'talk', not *Mann* 'man', and that in (iid) *schön* modifies *geantwortet* 'answer', not *Frage* 'question'):

(i) a. Hans hat klug geredet. German
Hans has cleverly talked
'Hans talked cleverly.'
b. Hans hat von dem klugen Mann geredet.
Hans has of the.DAT clever man talked
'Hans talked of the clever man.'
c. *Hans hat von klug/klugen dem Mann geredet.
d. Hans hat klug/*klugen von dem Mann geredet.
'Hans talked of the man cleverly.'

(ii) a. Hans hat schön geantwortet.
Hans has nice answered
'Hans answered nicely.'
b. Hans hat zu der schönen Frage geantwortet.
Hans has to the.DAT nice.DAT question answered
'Hans answered the nice question.'
c. *Hans hat zu schön/schönen der Frage geantwortet.
d. Hans hat schön/*schönen zu der Frage geantwortet.
'Hans answered the question nicely.'

It is not clear why adjectives like *genau* and *knapp* may have adverbial use but many others do not.

28 Note that the degraded status of the example in (ia) is most probably due to independent factors, having to do with P being separated too far from the verb taking it as complement. The example becomes perfect if the relative clause occurs at the end of the sentence as in (ib) so that P and the verb are close together:

(i) a. ??Da$_i$ hat Hans [t_i [von t_i [was uns übrigens auch German
it has Hans of what us by the way also
interessiert]]] geredet.
interest talked
'Hans talked of it, which by the way we are also interested in.'
b. Da$_i$ hat Hans [t_i [von t_i] t_j] geredet [was uns übrigens auch interessiert]$_j$.

A similar grammatical contrast holds of the examples in (ii) where there is no P-stranding:

(ii) a. ?Da hat Hans von diesem Thema, was/das uns übrigens auch interessiert, geredet. German
there has Hans of this topic what/that us by the way also interest talked
'There Hans talked of this topic, which we are by the way also interested in.'
b. Da hat Hans von diesem Thema geredet, was/das uns übrigens auch interessiert.

The slight grammatical difference between (ia) and (iia) is perhaps due to the already (slightly) marginal status of P-stranding.

29 It is worth noting that according to Rizzi (1995: 515) contraction with *con* 'with' is optional, in contrast with the pair in (i) given by Van Riemsdijk (1998b: 663):

(i) *con la famiglia vs. colla famiglia. Italian
with the family

Renzi (1995: 410) also gives the example in (ii) where *con* is not contracted with the following determiner:

(ii) Ho comprato un quadro con la cornice. Italian
have bought a picture with the frame
'I bought a picture with the frame.'

The problem remains as to why the example in (116b) is ungrammatical.

30 In (European) Portuguese, a prepositional complementizer may contract with the D of the following subject (Van Riemsdijk 1998b: 660–661):

(i) a. Eu entrei depois do/*de o meu pai chagar do escritorio. Portuguese
I entered after of-the/of the my father arrive from-the office
b. Antes da/*de a chuvada estalar no pavimento, entrou pela vila [. . .] uma charrete.
before of-the/of the downpour to-rattle in-the soil there-entered in-the village a barrow

As subject it can at least sometimes be extracted (Zubizarreta 1982b: 82):

(ii) a. Que rapazes$_i$ acreditas que t_i tenham gasto esse dinheiro?
which children believe.2SG that have spent that money
'Which children do you believe spent that money?'
b. Que rapazes$_i$ desconfia a policia que t_i tenham roubado aquela loja?
which children suspect the police that have broken into-that house
'Which children does the police suspect broke into that house?'

The D-to-P incorporation as indicated by the P+D contraction in (i) is not totally surprising since the subject in (i) is governed in whatever way the subject in (ii) is.

Subject extraction out of an inflected infinitival, of which the examples in (i) are instances, are not always possible, however. In particular, the subject of an inflected factive infinitival complement may not be extracted (Zubizarreta 1982b: 82):

(iii) a. *Quem$_i$ preocupa-te t_i terem gasto esse dinheiro?
who worries-you have.INF.3.PL spent that money
'Who worries you in having spent that money?'

b. *Que meninos$_i$ é que tu lamentas t_i terem roubado aquela loja?
which children be that you regret have.INF.3.PL broken into that house
'Which children is it that you regret to have broken into that house?'

At first glance, the ungrammaticality of the examples in (iii) is quite unexpected. If P may govern D in (i), allowing D to move to P, then there is no reason why the matrix V in (iii) may not. The problem is aggravated by the fact that object may be extracted out of an inflected factive infinitival complement. The example in (iv) is only slightly degraded (Zubizarreta 1982b: 82):

(iv) ?Que loja$_i$ é que tu lamentas os meninos terem roubado t_i?
which house be that you regret the children have.INF.3.PL break
'Which house is it that you regret the children broke into?'

Zubizarreta (1982b: 88) suggests that movement to the Comp (=[Spec, CP]) of a factive complement is not possible, as a factive clause projects a nominal Comp (not represented in (iii)). Being governed by the verb, the object may move directly to the matrix clause, an option that is not available to the subject, since the verb does not govern it. But a subject can move out of a non-factive complement since its Comp is available as an escape hatch. The trace of the extracted phrase in subject position is presumably governed by the trace in Comp (Lasnik and Saito 1984).

Nevertheless, the government-based account for P-stranding in (i) cannot rely on Zubizarreta's analysis since there is no trace in Comp to govern the DP in subject position out of which D moves to P. It must be assumed that it is P that governs the subject. Notice that the examples in (iii) lack a complementizer, their ungrammaticality is thus expected under this account.

It should be emphasized that P does not always contract with the D head of a DP subject of an infinitive (cf. Longa 1994, cited in Van Riemsdijk 1998b: 660, n. 38). In fact, Caetano et al. (1986: 113) give some examples where P does not contract with D, in contrast with (i):

(v) a. Não há perigo de as crianças se perderem. Portuguese
not have danger of the children self lose
'There is no danger of the children getting lost.'

b. Não pude sair, por o tempo estar mau.
not could go out because the weather be bad
'I couldn't go out, because the weather is bad.'

They mention explicitly that P does not contract with a following article that is part of a subject.

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52 Properties of VOS Languages

SANDRA CHUNG

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1 Introduction

The notion of VOS language originates in Joseph H. Greenberg's work on linguistic universals and word order typology. Greenberg (1963: 76–77) observed that languages can be typologized according to what he called their dominant order: the relative surface order of subject (S), verb (V), and direct object (O) in unmarked or pragmatically neutral clauses (see also Jakobson 1963: 268–269). Greenberg claimed that almost all languages have a dominant order in which the subject precedes the direct object: SVO, SOV, or – less commonly – VSO. But even as he proposed this statistical universal, he noted the existence of languages with

a dominant order in which the direct object, exceptionally, precedes the subject (1963: 105, notes 5 and 110). Later research has established that virtually all such languages have VOS as their dominant order: the verb precedes the direct object, which in turn precedes the subject, in pragmatically neutral clauses (Dryer 1995).

For word-order typologists in Greenberg's tradition, VOS languages raise two issues. Why is VOS possible, if uncommon, as a dominant order, whereas OVS and OSV are rare or non-existent? And why do VOS languages pattern with VSO and SVO languages, as opposed to SOV languages, for the purposes of the word-order correlations uncovered by Greenberg?

Crucial information bearing on the first issue was supplied by Steele (1978), who noticed that languages whose dominant order is VSO or VOS very commonly allow the other order, VOS or VSO, as an option (see also Keenan 1978). Building on this observation, many typologists have replaced Greenberg's third dominant order with the more inclusive 'verb-initial', which is intended to encompass VOS as well as VSO (see Dryer 1992; Nichols 1999: 65; and others). As for the second issue, a goal of word-order typology since Lehmann (1973) and Vennemann (1973) has been to derive Greenberg's word-order correlations from some single, more fundamental principle (but compare Hawkins 1980 for a different approach). This effort has met with mixed success; see Dryer (1995) for a useful survey.

The issues raised by VOS languages within generative grammar are remarkably similar to those that have preoccupied word-order typologists, once two differences are taken into account. First, generative syntacticians are concerned not so much with VOS as a language type as with VOS as a clause type. Second, the generative approach to clause types represents them two-dimensionally, in terms of the interaction of hierarchical relations (dominance) and left-to-right order (precedence) in constituent structure. Within this overall framework, questions like the following arise. What are the phrase structure and derivation of VOS clauses? Why is it cross-linguistically uncommon for such clauses to be pragmatically neutral? And how is the structure of VOS clauses related to that of VSO clauses or SVO clauses?

These questions bear ultimately on the theory of phrase structure and the extent to which the theory imposes universal constraints on left-to-right order. Since Chomsky (1986a: 3), it has been standard to assume that clauses conform to X'-Theory in that they are projected from a clausal head, such as T(ense) or I(nflection), whose complement is the predicate phrase or VP and whose specifier is the subject. Kayne (1994) has developed a theory of the interaction of dominance and precedence in phrase structure in which complements are universally projected to the right, and specifiers to the left, of their heads. If Kayne's theory is adopted, then the simplest possible clause structure would be an SVO structure in which VP is projected to the right of the clausal head but the subject is projected to the left – a structure in which the subject precedes VP. Clauses with any other word order, including VOS or VSO, would have to be derived from this minimal SVO structure via movement.

On the other hand, if Kayne's theory is not adopted, then there is no need to view VOS clauses as derivationally more complex than (the simplest) SVO clauses, and a wider range of analytic possibilities opens up. One could treat

VOS clauses as clauses whose specifier is simply projected to the right rather than to the left. On this view, VOS clauses would differ from SVO clauses merely in the setting of a directionality parameter. Or one could assume that all clause types, whatever their surface word order, originate as unordered hierarchical structures which are linearized relatively late, after the derivation has left the syntax proper. (For different incarnations of the idea, see, e.g., McCawley 1968a; Bresnan 1982c; Dowty 1982a; Perlmutter and Postal 1983c; Gazdar et al. 1985; Halle and Marantz 1993; and Chomsky 1995c.) If so, VOS clauses would not differ from SVO clauses in any syntactically interesting way.

Section 2 gives an overview of the languages in which the syntax of VOS clauses has been investigated. These include languages whose dominant order is frequently or exclusively VOS (e.g., Palauan, Tzotzil), as well as languages which have VOS clauses, but not as the dominant order (e.g., Italian). Section 3 surveys the kinds of evidence that have been advanced to support the claim that VOS clauses are derived by leftward movement of VP, or some larger constituent, to a higher specifier position. Section 4 raises the issue of the motivation for this movement. Section 5 examines other evidence that suggests that not all VOS clauses are derived via leftward movement of VP. The overall picture that emerges is consistent with the idea that there are multiple syntactic routes to VOS-hood. Section 6 takes a brief look at the proposal that VOS clauses are base-generated as clauses whose specifier is projected to the right. The conclusion reached is that almost no evidence distinguishes this proposal from an approach in which precedence is simply not represented in the syntax and all clausal word orders, including VOS, are derived from unordered hierarchical structures via late linearization.

2 Some languages with VOS clauses

2.1 Overview

As Greenberg noticed, there are remarkably few languages with fixed VOS order – languages whose pragmatically neutral clauses must be VOS. It is far more common for languages to have verb-initial order, that is, to allow pragmatically neutral clauses to be VOS or VSO. Fixed VOS languages and verb-initial languages have been documented in many areas of the Pacific and in parts of North America, Central America, and South America (Keenan 1978). Although such languages have various genetic affiliations, almost all that have been studied from a generative perspective happen to come from just two families: the vast Austronesian family and the much smaller Mayan family.

Very few Austronesian languages have fixed VOS order. Among them are Malagasy (Keenan 1976b, 1978; Pearson 1998, 2000a; Paul 2000), Toba Batak (Keenan 1978; Schachter 1984), and Formosan languages such as Atayal, Seediq (Aldridge 2002), and Tsou (Chang 1998). Significantly more Austronesian languages have verb-initial order: for instance, Tagalog (Schachter 1976b, 1996; Kroeger 1993) and other Philippine languages; Standard Fijian and other Fijian languages (Dixon 1988; Kikusawa 2001); Maori (Bauer et al. 1993, 1997) and other Polynesian

languages; Palauan (Georgopoulos 1985, 1991a); and Chamorro (Gibson 1980; Chung 1990). The Malagasy examples below are representative:

(1) a. Manolotra ny vary ny vahiny aho.
offer.AT the rice the guests I
'I offer the rice to the guests.' (Keenan 1976b: 257)

b. Avy ny orana.
come the rain
'The rain is coming.' (Keenan 1976b: 254)

c. Mihevitra Rabe fa handeha ho any Antsirabe rehampitso.
thinks.AT Rabe that will.go Fut there Antsirabe tomorrow.
'Rabe thinks that he will go to Antsirabe tomorrow.'
(Keenan 1976b: 276)

Roughly as many Mayan languages have fixed VOS order as have verb-initial order. The fixed VOS languages include Tzotzil (Aissen 1987), Yukateko (Durbin and Ojeda 1978), and some dialects of Tz'utujil; the verb-initial languages include Kaqchikel, K'iche', and other dialects of Tz'utujil (England 1991). Consider these examples from Tzotzil:

(2) a. 7i-s-pet lok'el 7antz ti t'ul-e.
cp-A3-carry away woman the rabbit-cl
'The rabbit carried away the woman.' (Aissen 1987: 1)

b. 7i-bat xchi7uk s-malal li Maruch-e.
cp-go with A3-husband the Maruch-cl
'Maruch went with her husband.' (Aissen 1987: 11)

c. Ta la x-lok' ta k'ux-7ak'al ti 7antz-e jujun 7ak'ubal.
icp cl nt-leave to crunch-charcoal the woman-cl every night
'The woman went out to crunch charcoal every night.'
(Aissen 1987: 12)

In addition, there are languages whose dominant order is not fixed VOS or verb-initial by any stretch of the imagination, but which nonetheless have clauses that are verb-initial. Included here are languages that impose few if any word-order restrictions on pragmatically neutral clauses, such as Warlpiri (Hale 1983), as well as certain SVO languages, such as Spanish and Italian. Some Italian examples follow:

(3) a. Esamineranno il caso molti esperti.
will.examine the case many experts
'Many experts will examine the case.' (Burzio 1986: 21)

b. Ha parlato Giovanni.
has spoken Giovanni
'Giovanni has spoken.' (Burzio 1986: 85)

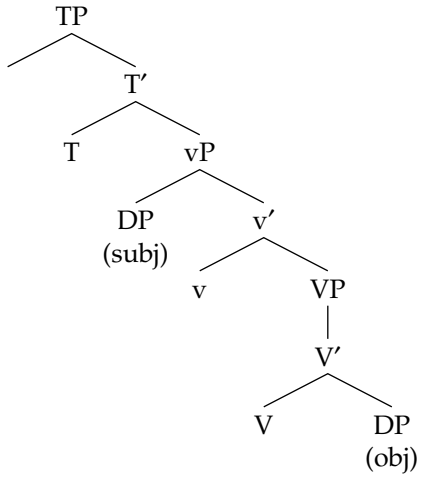
The analysis of verb-initial clauses in Spanish and Italian is discussed further in sections 3.3 and 5.4.

2.2 VOS and ergativity

Whether a transitive clause is characterized as VOS or VSO depends on which of its argument noun phrases is identified as the (surface) subject. In quite a few of the languages just mentioned, a transparent identification of the subject is complicated by morphological ergativity, and this complication should be acknowledged here. Many Mayan languages have an ergative-absolutive system of verb agreement, and many Austronesian languages have, or could be analyzed as having, an ergative-absolutive system of case marking. If the ergative noun phrase is identified as the subject of a transitive clause, then Tzotzil has fixed VOS order (Aissen 1987) and Niuean has fixed VSO order (Seiter 1980; Massam 2000). But had the absolutive noun phrase been identified as the subject, these classifications would be reversed. The issue is further clouded in some Western Austronesian languages, such as Malagasy and Tagalog, for which it remains controversial whether the noun phrase analyzed as the surface subject by Keenan (1976b), Kroeger (1993), and Guilfoyle et al. (1992) might instead be a topic (Pearson 2000a; Richards 2000), an absolutive (Aldridge 2002), or "none of the above" (Schachter 1976b; 1996).

An internally articulated phrase structure for the clause provides a way of navigating around these issues. Following Aissen (1992), Campana (1992), and many others (cf. Woolford 1991; Bittner and Hale 1996a), the discussion here adopts a view of the clause structure of ergative languages in which the ergative noun phrase originates as a predicate-internal subject – more precisely, as the specifier of v, an abstract verbal head that selects VP as its complement (Chomsky 1995c) – but does not raise in overt syntax to the highest specifier of the clause. On this view, the question of whether VOS clauses are derived via leftward movement of VP can be posed in essentially the same way for the ergative language Tzotzil as for a language like Italian. The principal difference lies in whether the subject is assumed to raise in overt syntax to the specifier of the clausal head: in Tzotzil it does not, whereas in Italian, depending on other assumptions, it might or might not (see section 3.3). See (4):

(4)



The situation is a bit different for Western Austronesian languages such as Malagasy and Tagalog. Though the clausal syntax of these languages has generated considerable debate since the mid-1970s, most of the generative analyses proposed are agreed in assuming that at some point in the derivation, the noun phrase argued by Keenan (1972) and Kroeger (1993) to be the surface subject raises to a specifier position located very high within the clause. Assuming this but remaining agnostic on all other details, the question of interest becomes whether the VOS clauses of such languages are derived via leftward movement of VP, or some maximal projection dominating VP.

It is important that there are languages in which VOS is a dominant order but none of these special considerations arise. For instance, the Fijian languages and Palauan are Austronesian languages in which the identification of the (surface) subject is completely transparent. These languages have verb-initial order: their pragmatically neutral clauses are realized as VOS or VSO. Some examples from Boumaa Fijian are given in (5):

(5) a. E rai-ca a gone a qase.
3sg see-Tr Art child Art old.person
'The old person saw the child/The child saw the old person.'
(Dixon 1988: 243)

b. Sa+na qali i Toga o Viti.
Asp+Fut subservient to Tonga Art Fiji
'Fiji would then have been subservient to Tonga.' (Dixon 1988: 41)

c. E tu'u-na mai o Tui Waini'eli ni o ira sa+na mai
3sg tell-Tr here Art Title that Art 3pl Asp+Fut come
'aba-ti Boumaa.
invade-Tr Place
'Tui Waini'eli said that they would come and invade Boumaa.'
(Dixon 1988: 243)

3 VOS as a derived clause type

3.1 Theoretical background

VOS clauses pose a challenge for versions of the theory of phrase structure in which the subject is universally projected to the left of VP. Consider, for instance, what is probably the first such theory – Emonds's (1976) attempt to impose universal restrictions on base rules. Emonds's proposal included the tentative restriction that at deep structure, a clause must either be subjectless or else have a subject NP that is a left sister of VP (1976: 18). The only way that a VOS clause could satisfy such a restriction would be for VOS word order to be derived by movement – either movement of VP or its subconstituents to the left of the subject, or else movement of the subject to the right of VP.

In the 1970s, most generative syntacticians assumed that clauses were members of an exocentric category, S, which consisted of the subject plus the predicate

phrase or VP. But since Chomsky (1986a), that assumption has been superseded by the view that clauses conform to X′ principles: they are projected from a clausal head, T(ense) or I(nflection), whose specifier is the subject and whose complement is VP. Such a view makes it possible to see Emonds's restriction as one instance of a more general requirement that specifiers must be projected to the left.

One theory that appeals crucially to this set of ideas is Kayne's (1994) theory of antisymmetry. The core of antisymmetry is the proposal that the observed order of elements in constituent structure is determined rigidly by hierarchical relations. Kayne fleshes out this proposal as follows. First, he shows that it is workable to claim that whenever a syntactic category X asymmetrically c-commands a syntactic category Y, the words dominated by X will have a single, universally fixed order with respect to the words dominated by Y. He then observes that given this claim, a head will always have its specifier, which asymmetrically c-commands it, on the opposite side from its complement, which it asymmetrically c-commands. Finally, assuming that the subject is a specifier and VP, a complement, he uses Greenberg's statistical universal concerning dominant order (see section 1) as evidence that 'specifier–head–complement, and not the reverse, is the only order available to the subcomponents of a phrase' (1994: 36).[1] His conclusion is that whenever a category X asymmetrically c-commands a category Y, the words dominated by X must *precede* the words dominated by Y.

The theory of antisymmetry has radical consequences for the analysis of VOS clauses, as Kayne's exceedingly brief discussion makes clear. He says: "From the present perspective, . . . VOS must not have S in a final specifier position, but must instead either have . . . VO moving as a unit leftward past S, or else V and O moving separately leftward past S, with the expectation, then, that such languages should show . . . VOSX orders." (1994: 36). This, then, is another theory in which VOS order would have to be derived by movement – specifically, leftward movement, since if antisymmetry is assumed, any movement to a c-commanding position must necessarily be to the left (Kayne 1994: 47).

Suppose Kayne's theory is adopted and VOS clauses are indeed derived by leftward movement. Then one question that immediately arises is whether V and the object are moved across the subject separately or as a single phrasal constituent, say, VP.

Some relevant evidence is supplied by the possibility of VP coordination. In various languages with VOS clauses, the subject can be preceded by what is evidently a coordinate VP – a phrasal constituent consisting of multiple verbs, each accompanied by its own complement and modifiers (see Keenan 1978: 319–321). Such coordinate VPs are found in fixed VOS languages, such as Malagasy, as well as verb-initial languages, such as Chamorro:[2]

(6) Malagasy:
  a. [Misotro toaka] sy [mihinam-bary] Rabe.
     drink alcohol and eat-rice Rabe
     'Rabe is drinking alcohol and eating rice.' (Keenan 1978: 320)

b. [Henon-dRabe] sy [najeren-dRakoto] ny mpihira gasy.
heard.TT-Rabe and watched.TT-Rakoto Det folk singer
'The folk singer was heard by Rabe and watched by Rakoto.'
(Pearson 1996: 119)

(7) Chamorro:
a. [Ma-yíluluk i mata-nñiha] yan [man-haha] i famagu'un.
agr-rub the eye-agr and agr-yawn the children
'The children rubbed their eyes and yawned.' (Chung 1990: 591)
b. esta ki [mam-ara mañalik] pat [mam-ara mañätfinu'] i sindalu
until agr-stop Infin.laugh or agr-stop Infin.swear the soldier
'until the soldiers stopped laughing or stopped swearing'
(Chung 1990: 592)

In languages that permit predicate phrases other than VPs, these too can precede the subject even when they are coordinate. Consider the following examples from Maori, another verb-initial language. In (8a), the subject is preceded by a coordinate DP predicate; in (8b), by a coordinate PP predicate:[3]

(8) Maori:
a. [He mahi roa], [he mahi manawanui] te whakapiata pounamu.
Pred.a work long Pred.a work patient the shine greenstone
'Working with greenstone is a long and patient enterprise.'
(Ngata 1994: 346; s.v. *polish*)
b. [Kai roto], [kai waho] rānei te tāke hokohoko i tēnei kaute?
T.at inside T.at outside Q the tax trade in this account
'Is this account G.S.T. inclusive or exclusive?'
(Ngata 1994: 137; s.v. *exclusive*)

In clauses of these types, any attempt to derive the surface word order by moving V – more generally, the predicate X^0 – separately from its dependents would violate Ross's (1986) Coordinate Structure Constraint. Therefore, if VOS order is derived by leftward movement, the entire VP must be allowed to move across the subject as a unit.

The rest of this section adopts the simplifying assumption that VOS order is *always* derived by leftward movement of the entire VP or equivalent, where 'equivalent' refers to a predicate XP or some even more inclusive category. In other words, what moves to the left is always a single maximal projection. For most practitioners of Principles and Parameters Theory (though not Carnie 1995), it follows that this VP must either raise to a higher specifier or else adjoin to a maximal projection – no other types of phrasal movement are allowed.

The analytic possibilities can be narrowed even further. It is standardly assumed in Principles and Parameters Theory that adjunction to a maximal projection is a completely free option, whereas raising to a specifier is sometimes forced – by Case, the Extended Projection Principle, and the like. As a matter of

fact, in most languages whose dominant order is VOS or verb-initial, leftward movement of VP would have to be forced. In such languages, pragmatically neutral clauses must begin with V: they are not in free variation with SVO clauses, contrary to what Greenberg (1963: 79) originally claimed (see Keenan 1978). The observation suggests that for these languages at least, VP raises to a higher specifier (see Carnie and Guilfoyle 2000).

In sum, if specifiers are universally projected to the left, then VOS clauses are derived by raising of VP to a specifier position. The precise identity of the specifier and the motivation for this movement are discussed further in section 4.

3.2 *Evidence for VP raising*

Several kinds of evidence have been advanced to support the hypothesis that VOS clauses – more generally, verb-initial clauses – are derived by VP raising. Some of the most convincing evidence involves language-specific patterns of *wh*-movement and their interaction with clausal word order. The basic form of the evidence is discussed in section 3.2.1. After a brief excursus into remnant movement (section 3.2.2), further refinements of the evidence are presented in section 3.2.3. Some additional arguments that have been offered for VP raising are surveyed in section 3.3.

3.2.1 VP raising and extraction

In Principles and Parameters Theory, every maximal projection that undergoes movement must move to a specifier or to an adjoined position. Now, adjuncts are generally assumed to be islands to extraction. So are specifiers, unless they are specifiers of complements to lexical heads (passim, but especially Chomsky 1986a). These observations create an expectation. If VOS clauses are derived by leftward movement of VP or equivalent, then the moved VP should constitute an island, and its subconstituents should be inaccessible to *wh*-movement. The subject, however, should be accessible, since any subject that originated within VP will, by hypothesis, have raised out of it before leftward movement of VP occurs.

Keenan (1972) was the first to observe that there are languages in which this expectation is realized. In many Western Austronesian and Formosan languages with VOS clauses, subjects are accessible to *wh*-movement but non-subject arguments are not. This extraction pattern is precisely what one would expect if VOS clauses are derived from an SVO structure by VP raising.

Consider, for instance, Malagasy and Seediq, both languages with fixed VOS order. (Both are also languages in which the surface subject has sometimes been analyzed as an absolutive or a topic; see section 2.2.) The examples in (9) illustrate the Malagasy clause types viewed by Keenan (1972) and others as active (9a) and one type of passive (9b). Notice that the VP is enclosed in brackets:

(9) a. [Manasa ny lamba] ny zazavavy.
wash.AT the clothes the girl
'The girl is washing the clothes.' (Keenan 1976b: 265)

b. [Sasan'ny zazavavy] ny lamba.
wash.TT.the girl the clothes
'The clothes are washed by the girl.' (Keenan 1976b: 265)

The examples in (10) illustrate analogous clause types in Seediq, a language that Aldridge (2002) treats as ergative. For her, (10a) is antipassive and (10b) transitive:

(10) a. Wada [m-ari hulama laqi] ka Ape.
Perf AP-buy treat child Abs Ape
'Ape bought the child a treat.' (Aldridge 2002: 10)
b. Wada [s-bari hulama na Ape] ka laqi.
Perf Appl-buy treat Erg Ape Abs child
'Ape bought the child a treat.' (Aldridge 2002: 6–7)

In both languages, the surface subject – more accurately, the syntactically most prominent DP, however analyzed – occurs at the right edge of the clause, outside VP. What is important is that this DP is the only argument of the clause that is accessible to *wh*-movement.

To see this, consider first relative clauses in Malagasy (Keenan 1972, 1976b, and many others), which can be assumed to involve *wh*-movement of a null operator from some clause-internal position to the specifier of C. Surface subjects can be relativized in Malagasy, whether the clause is active (11a) or passive (11b). This amounts to saying that subjects in this language can undergo *wh*-movement. (In (11) and subsequent examples, the origin site of the null operator is indicated by an underline but the moved operator itself is not represented explicitly.)

(11) a. ny zazavavy izay [manasa ny lamba] ___
the girl that wash.AT the clothes
'the girl that washed the clothes' (Keenan 1976b: 265)
b. ny lamba izay [sasan'ny zazavavy] ___
the clothes that wash.TT.the girl
'the clothes that are washed by the girl' (Keenan 1976b: 265)

Non-subjects cannot be relativized, whether they are direct objects (12a), benefactives (12b), or some other grammatical function. More generally, arguments that would normally have surfaced within VP are inaccessible to extraction:

(12) Malagasy:
a. *ny lamba izay [manasa ___] ny zazavavy
the clothes that wash.AT the girl
'the clothes that the girl washed' (Keenan 1976b: 265)
b. *ny ankizy izay [nividy ny vary (ho an) ___] ny vehivavy
the children that bought.AT the rice for the woman
'the children that the woman bought rice for' (Keenan 1972: 174)

Rackowski and Travis (2000: 124) observe that if Malagasy clauses are derived by VP raising and the moved VP is an island, this pattern follows immediately.

Essentially the same extraction pattern occurs in Seediq, although to appreciate this, it is necessary to achieve some distance from the issue of ergativity. According to Aldridge (2002), constituent questions in Seediq are clefts in which the interrogative phrase is a higher predicate and the rest of the construction is a headless relative clause. The headless relative can be assumed to involve *wh*-movement of a null operator from some clause-internal position to the specifier of C – this is the movement relevant here. Now, surface subjects (which Aldridge analyzes as absolutives) can undergo *wh*-movement within the headless relative. Such subjects can be relativized whether the clause in which they originate is active (in her terms, antipassive; see (13a)) or passive (in her terms, transitive; see (13b)):

(13) Seediq:
a. Ima ka wada [m-ari patis-ni] ___ ?
who? Abs Perf AP-buy book-Def
'Who bought this book?' (Aldridge 2002: 1)
b. Maanu ka wada [burig-un na Ape] ___ ?
what? Abs Perf buy-Tr Erg Ape
'What did Ape buy?' (Aldridge 2002: 1)

But non-subjects are inaccessible to *wh*-movement. It is impossible for the null operator within the headless relative to be the agent of a passive (in Aldridge's terms, an ergative) or any other grammatical function that would normally have surfaced within VP:

(14) Seediq:
*Ima ka wada [burig-un ___] patis-ni?
who? Abs Perf buy-Tr book-Def
'Who bought this book?' (Aldridge 2002: 1)

Ergativity aside, the point is that the null operator must be outside VP when it is targeted by *wh*-movement. (Compare the origin sites underlined in the examples above and their locations with respect to the bracketed VPs.) Aldridge (2002: 2–3) points out that this is the expected pattern if Seediq clauses have undergone VP raising and the moved VP is an island.

The absence of overt adjunct extraction in Seediq is highly compatible with this line of thought. As Aldridge shows, locative interrogative phrases in Seediq must surface in situ, within VP. Compare (15a) with the ungrammatical (15b), which can be analyzed two ways: either as a simplex sentence in which the locative has undergone *wh*-movement or as a cleft in which the moved constituent is a null locative operator within the headless relative. Either way, (15b) is ill-formed, presumably because locatives and other adverbials are inaccessible to *wh*-movement:

(15) Seediq:
a. [M-n-ari inu patis] Ape?
AP-Perf-buy where? book Ape
'Where did Ape buy books?' (Aldridge 2002: 2)
b. *Inu [m-n-ari patis ___] Ape?
where? AP-Perf-buy book Ape
'Where did Ape buy books?' (Aldridge 2002: 2)

These facts fall into place if adverbials are assumed to adjoin to VP or equivalent and, further, the VP constituent that raises in Seediq is always as inclusive as possible. More generally, the full extraction pattern of this language offers striking empirical support for the claim that VOS clauses are derived by VP raising.

The facts of adjunct extraction in Malagasy are more equivocal. Keenan (1976b: 250) observes that under certain circumstances, locative and temporal phrases in Malagasy can surface to the right of the subject, outside VP (see (16a)). This positioning is consistent with the observation that these adverbials can be clefted (16b):

(16) Malagasy:
a. [Nividy mofo ho an'ny ankizy] aho tamin'ny asabotsy.
bought.AT bread for.the children I on.the Saturday
'I bought bread for the children on Saturday.' (Keenan 1976b: 250)
b. Amin'ny Talata no [manasa lamba] Rakoto ___.
P.Gen.Det Tuesday Foc wash.AT cloth Rakoto
'It is on Tuesday that Rakoto washes clothes.' (Paul 2000: 37)

On the other hand, instrumental phrases can also be clefted (see Keenan 1976b: 268–269; Paul 2000: 37–38)), despite the fact that they evidently must surface to the left of the subject, within VP:

(17) Malagasy:
a. [Manasa ny lamba amin'ity savony ity] Rasoa.
wash.AT the clothes with.this soap this Rasoa
'Rasoa is washing clothes with this soap.' (Keenan 1976b: 268)
b. Amin'ity savony ity no [manasa lamba ___] Rasoa.
with.this soap this Foc wash.AT clothes Rasoa
'It is with this soap that Rasoa is washing clothes.'
(Keenan 1976b: 269)

How is this asymmetry in the overall pattern to be understood? Clefts such as (16b) and (17b) are analyzed by Paul (2000: 167–184) as biclausal constructions in which the focus is a higher predicate and the rest of the sentence is an event nominal, meaning roughly 'the event of Rasoa's washing clothes'. If this approach is correct, then (16b) and (17b) would not involve *wh*-movement at all, and no violence would be done to the evidence from argument extraction that

VPs in Malagasy are islands. On the other hand, if clefts are analyzed as biclausal constructions in which the focus is a higher predicate and the rest of the sentence is a headless relative, then (17b) would involve *wh*-movement of a null operator corresponding to the instrumental phrase, suggesting that VPs are not islands in this language after all. Which of these approaches is superior remains to be determined.

Finally, it is appropriate to step back and ask how strong the extraction evidence is for the VP raising analysis of VOS clauses. As mentioned earlier, many Western Austronesian and Formosan languages have an extraction pattern consistent with the VP raising analysis. For the evidence to be compelling, one would hope to find similar extraction patterns outside the Austronesian family – for instance, in Mayan languages, or in other VOS languages that have not yet been documented extensively. Investigation is needed to determine whether such patterns do, in fact, occur.

3.2.2 *Raising of remnant VPs*

Further evidence for VP raising can be found in languages whose clauses begin with V but are not rigidly subject-final. Crucial to an understanding of this evidence is the notion of remnant movement.

In theories such as antisymmetry, in which all movement is to the left, the appearance of rightward movement is achieved through multiple leftward movements. Suppose an element *X* surfaces to the right of some constituent *Y* from which it has been extracted. The relevant surface order can be derived by two leftward movements: first *X* raises out of *Y* and then the rest of *Y* raises over *X*. The key assumption is that *X* has already been extracted from *Y* at the point when *Y* raises. Movement of a constituent that some element has already been extracted from is known as remnant movement (see, e.g., Den Besten and Webelhuth 1990, the references cited below, and – for a formalization – Stabler 1999).[4]

In a series of papers, Massam (2000, 2001a, 2001b) has proposed that clauses in Niuean, a VSO language, are derived by raising of a remnant VP to a higher specifier. (See Lee 2000 for a similar proposal for Quiavini Zapotec.) Although Massam's hypothesis deals specifically with Niuean, it clearly has the potential to generalize to other languages whose clauses begin with V. The observation raises the possibility that there might be a single, universally valid derivation of VSO order, one involving raising of a remnant VP. If so, VP raising might succeed in explaining the typological links between VOS and VSO languages and their perceived similarities to SVO languages (see section 1). Pragmatically neutral clauses in all three language types would originate as SVO; then VP would move leftward, either intact or as a remnant, to produce clauses that would be VOS or VSO.

Niuean is an ergative Polynesian language. This language resembles some other VSO languages in exhibiting VSO order only in clauses containing verbs (see Chung 1990 on Chamorro, and Carnie 1995 and Doherty 1996 on Irish). Clauses with non-verbal predicate phrases – DP or PP – have a word order in

which the entire predicate XP precedes the subject. In other words, these clauses have XOS order, where X represents the predicate head:

(18) Niuean:
a. Ko e kamuta a au.
Pred Abs carpenter Abs I
'I'm a carpenter.' (Seiter 1980: 53)
b. Hā he fale a ia.
Pred in house Abs she
'She is in the house.' (Massam 2000: 105)

Like other Polynesian languages, Niuean has a construction traditionally known as noun incorporation. Massam (2001b) demonstrates that the bare object nominal in this construction is not just N, but rather a maximal projection with the internal structure of NP as opposed to DP (see also Seiter 1980: 69–71). Importantly, this object NP forms a constituent with the verb and that constituent (bracketed in the examples below) precedes the subject. The word order of so-called noun incorporation clauses, therefore, is VOS:

(19) Niuean:
a. Ne [inu kofe kono] a Mele.
Past drink coffee bitter Abs Mele
'Mary drank bitter coffee.' (Massam 2001b: 158)
b. Kua [kai ika mo e taloa] a mautolu he mogonei.
Perf eat fish with Abs taro Abs we.pl.ex at now
'We are eating fish and taro right now.' (Seiter 1980: 70)

All other Niuean clauses have fixed VSO order. Predicates that are verbs or adjectives must be separated from their complements by the subject, as (20) shows:

(20) Niuean:
a. Ko e tele e Sione a Sefa.
Pres kick Erg Sione Abs Sefa
'Sione's kicking Sefa.' (Seiter 1980: 29)
b. Iloilo lahi a ia he vagahau Niuē.
clever very Abs she at language Niuean
'She's very good at Niuean.' (Seiter 1980: 3)

Massam's account of these facts runs as follows. Because so-called incorporated nouns are NPs as opposed to Ns, they cannot incorporate via head-to-head-adjunction (see Baker 1988a, 1996) and therefore surface as free-standing complements of V. These NP complements have no Case feature and so need not raise out of VP for Case-checking purposes. DP complements of N or P check their Case feature in situ, but DP complements of V must raise out of VP to check their Case in the specifier of a functional head. Finally, every Niuean clause originates

as SVO and then undergoes raising of the predicate XP, either intact or as a remnant. These assumptions combine to derive the word-order patterns just surveyed. Examples (18–19) are produced by raising the intact predicate XP, which is a DP in (18a), a PP in (18b), and a VP in (19). Example (20a) is produced by first raising the direct object out of VP for Case-checking purposes and then raising the remnant VP around it.

Can this sort of approach be extended to other languages whose clauses begin with V? A key component of Massam's account of Niuean is the assumption that remnant VPs are created for theoretically motivated reasons (see also Lee 2000). For instance, the reason why DP complements must exit from VP is so that their Case feature can be checked. The observation suggests that in order for the remnant VP analysis to generalize to other clause types, the raising of other complements out of VP would have to be given a theoretical rationale. It is a completely open question whether this can be done. To get some sense of the issues, consider the following.

(i) In many languages whose clauses begin with V, including Quiavini Zapotec, Niuean, and Malagasy, CP complements of V must surface at the right edge of the clause, following the subject. In a remnant VP analysis, these CPs (bracketed in the examples below) would presumably have exited from VP before VP was moved leftward:

(21) Quiavini Zapotec:
B-quilly Lieeb Gyeeihlly [y-to'oh Gyeeihlly ca'rr].
Perf-persuade Felipe Mike Irr-sell Mike car
'Felipe persuaded Mike to sell the car.' (Lee 2000: 156)

(22) Niuean:
Pehe mai a lautolu [ne kaihā e koe e moa].
say Dir1 Abs they Past steal Erg you Abs chicken
'They say that you stole the chicken.' (Seiter 1980: 125)

(23) Malagasy:
Mihevitra Rabe [fa mitady ny zaza Rasoa].
think.AT Rabe that look.for the child Rasoa
'Rabe thinks that Rasoa is looking for the child.' (Keenan 1976b: 276)

What could motivate this sort of CP raising? Lee (2000: 156–158) suggests that in Quiavini Zapotec, CPs must raise out of VP in order to be licensed in the specifier of a higher functional head L(icensing). While such a suggestion leads to the desired result, its theoretical rationale is rather cloudy. Licensing in the specifier of L looks suspiciously like Case licensing – a sort of licensing that CPs are widely assumed not to need, and even to resist (see Stowell 1981; a different view is offered by Chung 1991). But if L is not a Case licenser, what exactly is it, and what other evidence supports its existence?

(ii) In fixed VSO languages such as Irish and – arguably – Niuean, PP complements of V must surface to the right of the subject. In a remnant VP analysis, these complements too would presumably have exited from VP prior to VP raising:

(24) Irish:
Rinne leannán dínn.
made lovers of-us
'We became lovers (lit. Lovers made of us).' (McCloskey 2001a: 170)

(25) Niuean:
To fanogonogo a au ki a koe.
Fut listen Abs I to Pers you
'I'll listen to you.' (Seiter 1980: 147)

Massam's (2001b) proposal with regard to examples like (25) is that Niuean simply has no complement PPs. Instead, the goal PP in (25) is an adjunct that can be stranded when the lower VP to which it is adjoined undergoes VP raising. It is not immediately obvious that such a proposal is tenable. If there were no complement PPs at all in Niuean, what could explain their systematic absence? At the same time, one would not want to claim that the PPs in (24–25) must raise out of VP for Case-checking purposes, since PPs are standardly assumed not to have Case features.

(iii) In certain verb-initial languages, such as Chamorro (Chung 1998) and Maori (Bauer et al. 1997), all complements of V – whatever their category type – are freely ordered with respect to the subject. The Chamorro examples below illustrate this for complements that are DPs (26), CPs (27), and PPs (28):

(26) a. Ha-bäba i petta si Antonio.
agr-open the door Antonio
'Antonio opened the door.'
b. Ha-bäba si Antonio i petta.
agr-open Antonio the door
'Antonio opened the door.'

(27) a. Mungnga gui' [na u-maigu' än taluani] i neni.
refuse himself Comp agr-sleep when afternoon the baby
'The baby refuses to sleep in the afternoons.'
b. Mungnga gui' i neni [na pära u-maigu' än taluani].
refuse himself the baby Comp Fut agr-sleep when afternoon
'The baby refuses to sleep in the afternoons.'

(28) a. Mamahlao nu hämi si Dolores.
agr.ashamed Obl us Dolores
'Dolores is ashamed of us.'

b. Mamahlao si Dolores nu hämi.
agr.ashamed Dolores Obl us
'Dolores is ashamed of us.'

Whether this word order could be explained in terms of remnant movement is an extremely interesting question. Suppose one were to infer from the (b) examples above that all types of Chamorro complements must exit from VP in order to be licensed. Then it would seem to follow that the predicative constituent that raises in the (a) examples is not VP but (the remnant of) some substantially larger constituent – AgrOP, LP, or even TP.[5] If so, some explanation must be found for the fact that this substantially larger constituent can undergo raising in Chamorro but not, say, Niuean. What could the explanation be?

It may well be that an overall theory of remnant movement would successfully resolve all these issues. Until such a theory is developed, it remains unsettled exactly what range of clause types beginning with V can be derived by raising of (a remnant) VP.

3.2.3 *More on VP raising and extraction*

Regardless of how the issue of theoretical motivation is resolved, a clear empirical prediction is made by the hypothesis that all verb-initial clauses are derived, one way or another, by raising of VP or equivalent: non-subject arguments that can surface outside VP, to the right of the subject, should be accessible to *wh*-movement (see Rackowski and Travis 2000: 129).[6]

The Austronesian languages with VOS clauses provide an instructive testing ground for this prediction. It has already been shown (in section 3.2.1) that two fixed VOS languages, Seediq and Malagasy, conform completely to expectations as far as extraction of arguments is concerned. In these languages, non-subject arguments must surface inside VP and are completely inaccessible to *wh*-movement. Toba Batak is another fixed VOS language that behaves as predicted (see Clark 1984; Schachter 1984). In this language, indirect objects are evidently freely ordered with respect to the subject, but direct objects must surface to the immediate right of the verb, within VP (see (29)). Therefore, both subjects and indirect objects should be eligible for *wh*-movement, but direct objects should not be. That this is so can be seen from the constituent questions in (30).

(29) Toba Batak:
a. [Mangalean missel i tu soridadu i] jeneral i.
AT.give missile Det to soldier Det general Det
'The general gave the missile to the soldier.' (Clark 1984: 12)
b. [Mangalean biang] si Torus tu si Ria.
AT.give dog PM Torus to PM Ria
'Torus is giving a dog to Ria.' (Schachter 1984: 137)
c. [Mangida si Ria] si Torus.
AT.see PM Ria PM Torus
'Torus sees Ria.' (Schachter 1984: 123)

(30) Toba Batak:
a. Isa [mangida turiturian] ___ ?
who? AT.see play
'Who is seeing a play?' (Schachter 1984: 126)
b. Tu ise [mangalean missel i] jeneral i ___ ?
to who? AT.give missile Det general Det
'To whom did the general give the missile?' (Clark 1984: 12)
c. *Aha [mangida ___] si John?
what? AT.see PM John
'What is John seeing?' (Schachter 1984: 126)

The extraction pattern is not as well-behaved in Austronesian languages with verb-initial order – languages that allow both VOS and VSO clauses. The prediction is that subjects and direct objects in these languages should be able to undergo *wh*-movement, since both can surface outside VP. Boumaa Fijian conforms to this prediction. Clauses in this language are VOS or VSO depending on context, although VOS is evidently more frequent in elicitation (see (31) and Dixon 1988: 243). Consistent with this profile, interrogative phrases can optionally undergo *wh*-movement whether they are subjects or direct objects. When the subject has been extracted, the verb continues to exhibit a proclitic subject pronoun (see chapter 14) which is probably a form of subject–verb agreement (see Dixon 1988: 33).[7] When the direct object has been extracted, the verb exhibits the form of the transitive suffix appropriate for direct objects that are common nouns as opposed to pronouns. This inflection suggests that the gap left by *wh*-movement is a trace, not a resumptive pronoun (see Dixon 1988: 170; and chapter 55). See (32):

(31) Boumaa Fijian:
a. [E rai-ca a gone] a qase.
3sg see-Tr Art child Art old.person
'The old person saw the child.' (Dixon 1988: 243)
b. [E rai-ca] a gone a qase.
3sg see-Tr Art child Art old.person
'The child saw the old person.' (Dixon 1988: 243)

(32) Boumaa Fijian:
a. O cei [e sabi-ci i'o] ___ ?
Proper who? 3sg hit-Tr you
'Who hit you?' (Dixon 1988: 170)
b. O cei [o aa rai-ca] ___ ?
Proper who? 2sg Past see-Tr
'Who did you see?' (Dixon 1988: 170)

On the other hand, Tagalog does not behave as predicted. Even though the direct object in this language is freely ordered with respect to the subject (see (33)), it is – as numerous authors have observed – completely inaccessible to extraction

(see, e.g., Schachter 1976b: 500; Kroeger 1993: 23–24). Consider the relative clauses in (34), which can be assumed to involve *wh*-movement of a null operator. Although the subject can be relativized, as (34a) shows, the direct object cannot be (34b):

(33) Tagalog:
a. [Nagbigay ng libro sa babae] ang lalaki.
AT.gave Gen book Dat woman Nom man
'The man gave the woman a book.' (Kroeger 1993: 111)
b. [Bumasa] ang lalaki ng diyaryo.
AT.read Nom man Gen newspaper
'The man read a newspaper.' (Schachter 1976b: 500)

(34) Tagalog:
a. lalaki-ng [bumasa ng diyaryo] ___
man-Linker AT.read Gen newspaper
'the man who read a newspaper' (Schachter 1976b: 500)
b. *diyaryo-ng [bumasa] ang lalaki ___
newspaper-Linker AT.read Nom man
'the newspaper that the man read' (Schachter 1976b: 500)

Other Philippine languages resemble Tagalog in permitting VSO clauses but restricting *wh*-movement to subject arguments; see Keenan (1972: 180–181).

If one steps back and reviews the Austronesian evidence just surveyed, two conclusions suggest themselves. First, there is considerable empirical support for the claim that VOS clauses in some languages – Seediq, Malagasy, Toba Batak – are derived by raising of VP or equivalent. Second, it would be far more difficult to maintain the more general hypothesis that verb-initial clauses are always derived by (remnant) VP raising. For further commentary, see section 5.

3.3 *Other evidence*

Three additional kinds of evidence that have been offered for the VP raising hypothesis are summarized below.

Lee (2000) argues that in Quiavini Zapotec, a fixed VSO language, verbs pattern with maximal projections (DPs and PPs) in their ability to be modified by modal and adverbial clitics and to serve as the target of constituent negation. She concludes that the V that surfaces at the left edge of the clause is actually a remnant VP that has raised to the specifier of T.

Rackowski and Travis (2000) use the left-to-right order of adverbials in Malagasy and Niuean to argue for iterative raising of VP. Their argument relies on Cinque's (1999) theory of adverbial placement (see chapter 4), a theory constructed to account for his claim that there is a universal left-to-right order of linguistic expressions with adverbial meaning. Cinque's theory holds that adverbials are specifiers of functional heads whose hierarchical arrangement is invariant across

languages. Rackowski and Travis observe that in Malagasy (a fixed VOS language) and Niuean (a fixed VSO language), the surface order of adverbials is roughly the mirror image of what Cinque's theory predicts. Their account of this mirror-image effect assumes that (i) adverbials in Malagasy and Niuean are heads, not specifiers, and (ii) VP raises iteratively through the specifiers of these heads, pied-piping ever larger amounts of functional structure, to produce the observed surface order. Although iterative VP raising could indeed achieve this result, it is by no means the only analytic possibility. Massam (2002) points out some difficulties with such an account of Niuean. She then advances the proposal that the surface order of Niuean adverbials is produced not by VP raising, but instead by iterative adjunction of the abstract verbal head v to higher adverbial heads.

Finally, Longobardi (2000a) uses the interpretation of unmodified bare nouns in Italian to argue that postverbal subjects in this language originate as the subjects of SVO clauses in which VP then raises leftward. The argument relies on two observations: first, bare noun subjects in SVO clauses have a generic interpretation only when they have a modifier, and second, bare nouns that serve as postverbal subjects in VOS clauses display exactly the same restriction. From this, Longobardi (2000a: 695) concludes, "Applying Occam's razor to the set of lexically ungoverned positions, . . . superficially postverbal generic subjects actually occur in the independently best known of all such positions, precisely that of preverbal subjects." The conclusion does not seem fully convincing, given that no account is offered of the restriction on bare nouns, which remains essentially unanalyzed, and given that the same restriction is evidently exhibited by bare nouns that are direct objects (Longobardi 2000a: 700–701).

4 The motivation for VP raising

What might motivate VP raising? It was observed in section 3.1 that if specifiers are universally projected to the left, then VOS clauses would have to be derived from SVO clauses by leftward movement of VP or equivalent. In the Minimalist framework (see Chomsky 1995c), overt syntactic movement is forced by a head's need to check some strong feature against a comparable feature of the category in its specifier. The natural assumption within this framework is that VP raises to the highest specifier of the clause in order to check some strong feature of the clausal head. The characterization immediately suggests the Extended Projection Principle (EPP). Originally stated as the principle that clauses must have subjects (Chomsky 1982: 9–10), the EPP has come to be understood as the requirement that the subject DP raise out of predicate-internal position to check a strong feature of T, usually identified as [D] (see Chomsky 1995c: 232) or, more simply, EPP (see Chomsky 2001b: 8–9). And indeed, several researchers have independently proposed that VP raising is driven by the need to check a strong feature of T that is, in some sense, the EPP-feature.

These proposals build on Alexiadou and Anagnostopoulou's (1998) hypothesis that in certain null subject languages with VSO clauses (such as Greek and Irish),

the EPP is satisfied by head-movement of V to the clausal head. More precisely, Alexiadou and Anagnostopoulou claim that V raises so that its agreement morphology, which is pronominal and therefore [D], can check the clausal head's strong [D] feature. In the proposals of interest here, this core intuition is recast so that the moved constituent is (a remnant) VP rather than V, and the feature to be checked is not [D] but some feature more characteristic of predicates.

For instance, Massam (2000, 2001a, 2001b) claims that the VSO clauses of Niuean arise when (a remnant) VP raises to check the [Pred] feature of the clausal head. Aldridge (2002) makes a similar proposal for the VOS clauses of Seediq.

Pearson (2000a) claims that the VOS clauses of Malagasy are produced when a maximal projection considerably more inclusive than VP (i.e., TP) raises to check the [T] feature of a higher clausal head. His proposal recalls Massam and Smallwood's (1997) earlier claim that VSO clauses in Niuean are derived by head-movement of V to T, a movement driven by V's need to check its [T] feature.

More generally, Massam and Smallwood (1997) hypothesize that the inflectional feature essential to the formation of clauses is [D] in languages like English, but [T] in languages like Niuean. This idea is taken up by Davies and Dubinsky (2001b), who propose that the EPP is parameterized to be D-prominent or V-prominent. Languages in which the EPP is D-prominent demand that a DP raise to the specifier of T; languages in which the EPP is V-prominent demand that (some projection of) V raise to T (or, presumably, to T's specifier; but see Carnie 1995).

The proposals differ in the identity of the strong feature claimed to motivate VP raising: [Pred], [T], or [V]. Although these features are all intended to pick out the predicate as opposed to the subject, they are not equivalent, empirically or theoretically. Here are some relevant considerations.

Suppose one assumes (uncontroversially) that for the strong feature to be more than a diacritic for VP raising, it must have some independent syntactic rationale. Following the example set by the original EPP-feature, [D], one might imagine that the strong feature should be a category feature of the raised VP or equivalent that can be annotated on the clausal head.

For [V], the difficulty with such a scenario is empirical. It has already been mentioned that the clauses of some languages have predicate-first order whether the predicate head is verbal or non-verbal (see section 3.2.2). Niuean is such a language; so are the other Polynesian languages and Chamorro. Assuming that clauses in these languages are derived by raising of the predicate XP, that raising could not be driven by the need to check a [V] feature of the clausal head, since predicate DPs and PPs must be forced to raise even though they are not [V].

For [Pred] and [T], the issues seem more theoretical. In most Minimalist conceptions of the clause, [Pred] is not a category feature, although such a category could certainly be given independent existence in a more finely articulated structure for the clause. As for [T], it is usually assumed to be the defining category feature of the clausal head, not a feature of VP (or, more generally, of the predicate XP). Hence, if [T] is chosen to be the strong feature, two sorts of readjustments

must be made. The raised VP or predicate phrase must have the feature [T] as well (see Massam and Smallwood 1997; Pearson 2000a), and matters must be arranged so that VP raising is not an inevitable, universal consequence of the fact that T is the head of the clause. In other words, it must remain possible for the EPP-feature on the clausal head to be [D] *or* [T].

In sum, while VP raising might well be motivated by the need to check an EPP-feature, the precise identity of that feature remains unclear.

If VP raising is motivated by the EPP, what empirical evidence could reveal that this is so? One potential line of investigation is suggested by Miyagawa's (2001) discussion of the EPP and scrambling in Japanese. Miyagawa shows that when the subject of a Japanese clause is the universal quantifier *zen'in* 'all', it must have wide scope with respect to sentential negation (see chapter 53). But, surprisingly, such a subject can have narrow scope just in case an object has been scrambled to the left. His account of this pattern runs as follows. First, in order for an element to have narrow scope with respect to negation, it must be c-commanded by Neg, a functional head located below T but above the abstract verbal head v in the structure of the clause. Second, all of the predicate's arguments originate within vP: the subject originates as the specifier of v, the object originates within the VP complement of v, and so on. Third, some DP must raise to the specifier of T to check T's EPP-feature. Miyagawa claims that when the subject raises, the result is an unmarked (SOV) clause in which the subject must have wide scope with respect to negation. But, crucially, it is also possible for the object to raise to check T's EPP-feature – a movement characterized as A-scrambling in other work. When the object raises, the result is an OSV clause in which the subject remains within vP, in a position where it can have narrow scope with respect to negation.

Two aspects of Miyagawa's account are useful here: first, the claim that maximal projections besides the subject can raise to satisfy the EPP; and second, the insight that in such cases, the subject remains within vP for scope and specificity purposes (see Diesing 1992b).[8] Generalizing these ideas to VP raising, one would expect that if this movement does satisfy the EPP, the subject should remain in situ, within vP, where it should be able to have narrow scope with respect to sentential operators such as negation or existential closure. It should therefore not exhibit the necessarily wide scope or specificity which Keenan (1976c) claims are characteristic of subjects and which Diesing (1992b) associates with higher syntactic positions in the clause (notably, the specifier of T).

It is well known that in Malagasy, the DP identified in this chapter as the surface subject exhibits some semantic characteristics of traditional subjects after all: it must be specific – in fact, definite (see Keenan 1976b: 252–254 and many others). If one assumes that VP raising in this language satisfies the EPP, the pattern seems contrary to expectations. But, given the controversy over whether so-called subjects in Malagasy should be analyzed instead as topics, and given that topics are often associated with definiteness (see section 2.2), it is difficult to know what, if anything, to conclude.

A more promising array of facts is presented by Tongan, a Polynesian language closely related to Niuean. Tongan is a morphologically ergative language. Like Niuean, it exhibits XOS order in clauses with non-verbal predicates and has object incorporation; unlike Niuean, it allows VOS as well as VSO order in clauses containing verbs. The point of interest is that subjects in Tongan need not have wide scope or be specific. (This holds true whether the absolutive or the ergative noun phrase is identified as the subject of a transitive clause.) The subject can, for instance, be a non-specific DP headed by the non-specific article *ha*, which generally has narrow scope with respect to sentential operators (see Churchward 1953).[9] Consider the following examples:

(35) Tongan:

a. ʻOku tapu ke hū ha sela tangata ki he ʼapi pōpula . . .
T forbidden T enter a warder male to the prison
'It is unlawful for a male warder to enter a prison . . .'
(Churchward 1953: 59)

b. Naʻa ku faʻo ia ki ha puha.
T I put it at a box
'I put it into a box (some box or other).' (Churchward 1953: 271)

c. He ʼikai lakasi ʼe ha taha au.
T not surpass Erg a one me
'No one can beat me.'

d. Naʻe ʼikai ke kai ʼe he tangata ha ika.
T not T eat Erg the man a fish
'The man didn't eat any fish.'

These facts are expected if Tongan clauses are derived by raising of VP, either intact or as a remnant, and VP raising satisfies the EPP.

It might be appropriate at this point to raise the possibility of a deeper connection between VP raising and ergativity. As was observed earlier, quite a few languages with VOS clauses are morphologically ergative (see section 2.2 and the references cited there). One popular approach to ergativity within Principles and Parameters Theory holds that in ergative languages, the predicate's arguments originate within vP and remain there throughout overt syntax: no DP raises to satisfy the EPP. Within the strand of research explored here, that could well be because the EPP in these languages forces raising of VP instead. Morphological ergativity might, in other words, emerge as an indirect consequence of VP raising and therefore of the EPP. The mechanisms that would achieve such a result have yet to be worked out.

Further research is needed to determine whether the subject remains within vP for scope and specificity purposes in the languages for which VP raising appears to be well-motivated – Malagasy, Seediq, Toba Batak, and Niuean. If the results are as predicted, there would be good reason to believe that VP raising is forced by some version of the EPP.

5 Are all VOS clauses derived by VP raising?

5.1 Overview

The preceding discussion leads one to expect that if a language's verb-initial clauses are derived by VP raising, it should have the syntactic profile outlined in (36):

(36) **The profile of languages whose verb-initial clauses are derived by VP raising:**
   a. VP coordination is allowed.
   b. The subject is accessible to extraction. So are other constituents which originate outside VP or which can be shown to have raised out of VP. All other subconstituents of VP are inaccessible to extraction.
   c. The subject can have narrow scope with respect to sentential operators such as negation and existential closure.

Although complete evidence is lacking for many of the languages surveyed in section 2.1, initial indications are that Malagasy, Seediq, Toba Batak, and Niuean conform quite closely to this profile (for details, see sections 3 and 4).

In view of this, one might be tempted to go further and conjecture that all VOS clauses – perhaps even all verb-initial clauses – are derived from an SVO structure by raising of (a remnant) VP or equivalent to the specifier of the clausal head. Part of the appeal of such a conjecture is its compatibility with Kayne's theory of antisymmetry and, more generally, with the proposal that specifiers are universally projected to the left (see section 3.1). So it is of some theoretical interest that the conjecture is probably not correct. There are languages whose syntactic profile deviates from (36) in ways that argue that VP raising could not be responsible for their VOS clauses. Among these languages are Tzotzil and Chamorro.

5.2 Tzotzil

Tzotzil is a Mayan language with null arguments and an ergative-absolutive system of agreement. Pragmatically neutral clauses in this language are rigidly VOS: the direct object always follows the verb and precedes the subject. PPs display a wider range of word-order possibilities, evidently being able to occur after V or any constituent further to the right (Aissen 1987: 12). Consider the following examples (more are cited in section 2.1):

(37) a. 7i-yal la ta te7 ti vinik-e.
   cp-descend cl from tree the man-cl
   'The man climbed down from the tree.' (Aissen 1987: 12)
   b. Ch-ba s-man chitom li Xun-e.
   icp-go A3-buy pig the Xun-cl
   'Xun will go to buy pigs.' (Aissen 1987: 16)

The fact that Tzotzil has fixed VOS order leads one to expect that if this word order is produced by VP raising, direct objects should be inaccessible to extraction (see (36b)). Any PPs that must surface to the left of the subject, within VP, should be inaccessible as well. However, in a detailed study, Aissen (1996) shows that subjects, direct objects, and PPs in Tzotzil are all eligible for *wh*-movement. In the constituent questions below, the interrogative phrases that have been extracted include a subject (in (38a)), a direct object (38b), and a goal PP (38c):

(38) a. Buch'u s-pas mantal ___ ?
who? A3-do order
'Who's giving the orders?' (Aissen 1996: 451)

b. K'usi av-il ___ ?
what cp.A2-see
'What did you see?' (Aissen 1996: 451)

c. [Buch'u ta s-na] ch-a-bat ___ ?
who? P A3-house icp-B2-go
'To whose house are you going?' (Aissen 1996: 470)

The significance of this extraction pattern is increased by the fact that it is clearly produced by movement as opposed to resumption (see chapter 55). Aissen (1996) establishes that when an interrogative phrase is the possessor of a DP that is a prepositional object or the subject of a transitive verb, *wh*-movement is not legal unless the interrogative phrase raises to the specifier of the PP or subject DP and the entire PP or DP is pied-piped (see chapter 50). For instance, in the examples surrounding this paragraph, the interrogative phrase has visibly moved to the left edge of the pied-piped constituent (enclosed in brackets), which is a PP in (38c) and (39a) and the subject DP in (39b):

(39) a. [Buch'u ta s-na] av-ik'ta komel l-a-bolsa-e ___ ?
who? P A3-house A2-leave Dir the-A2-bag-cl
'In whose house did you leave your bag?' (Aissen 1996: 470)

b. [Buch'u x-ch'amal] y-elk'an chij ___ ?
who A3-child A3-steal sheep
'Whose child stole sheep?' (Aissen 1996: 460)

Compare the ungrammatical examples below, in which pied-piping has not occurred:

(40) a. *Buch'u cha-b-at [ta s-na ___]?
who? icp-B2-go P A3-house
'Whose house are you going to?' (Aissen 1996: 469)

b. *Buch'u av-ik'ta komel a-bolsa [ta sn-a ___]?
who? A2-leave Dir A2-bag P A3-house
'Whose house did you leave your bag at?' (Aissen 1996: 469)

c. *Buch'u y-elk'an chij [x-ch'amal ___]?
who? A3-steal sheep A3-child
'Whose child stole sheep?' (Aissen 1996: 460)

Aissen's account of these patterns is phrased in terms of some central ideas of Principles and Parameters Theory: the Empty Category Principle, the *wh*-criterion, and abstract Agreement. For present purposes, the details of her account are less important than the observation that certain kinds of constituent questions are ungrammatical unless pied-piping has occurred. That fact reveals that constituent questions in Tzotzil do not have an interrogative phrase that is base-generated in the specifier of C and co-indexed with a null resumptive pronoun. The reason is this: were such a resumption strategy available, the questions in (40) should be grammatical. There is no reason to expect them not to be, given that comparable non-questions with null pronouns are well-formed:

(41) I-kom [ta s-na *pro*].
cp-remain P A3-house
'He remained at his house.' (Aissen 1996: 468)

Given all this, the strong ungrammaticality of (40) argues that a resumption strategy must be simply unavailable. The corresponding questions in (39) must therefore be derived via movement.

In short, direct objects in Tzotzil are accessible to *wh*-movement, even though they surface to the left of the subject, within VP. From this it follows that VPs in Tzotzil are not islands, and so could have not undergone leftward movement, contrary to what one might have assumed. The conclusion we are led to is that VOS clauses in this language are not derived by VP raising after all.

5.3 Chamorro

Chamorro is an Austronesian language with null arguments and verb-initial order. In this language, clauses with non-verbal predicates have the entire predicate phrase preceding the subject; clauses containing verbs, which are the focus of interest here, can be VSO or VOS. Consider the following examples:

(42) a. Ha-pula' i näna i patgon-ña.
agr-undress the mother the child-agr
'The mother undressed her child.' (Chung 1998: 150)
b. Ha-pula' i patgon-ña i näna.
agr-undress the child-agr the mother
'The mother undressed her child.' (Chung 1998: 151)

Now, if Chamorro's verb-initial order were produced by raising of (a remnant) VP, one would expect VP coordination to be allowed (see (36a)). This expectation

is realized: clauses can routinely have a coordinate VP preceding the subject. See section 3.1 and the examples below:

(43) a. [Mu-ma'a'ñao] ya [ha-yuti' i salappi'] i säkki.
agr-afraid and.then agr-drop the money the thief
'The thief got scared and dropped the money.' (Chung 1998: 133)
b. [Ha-dandan i gitala] ya [k*um*anta] si Juan.
agr-play the guitar and.then agr.sing Juan
'Juan played the guitar and sang.'

But implicit in the VP raising hypothesis is a further prediction: it should be impossible for a coordinate VP which is incomplete – which lacks some subconstituent of one of its conjuncts – to occur to the left of the subject. This is because the extraction that would have created such a remnant VP would violate Ross's (1986) Coordinate Structure Constraint.

Surprisingly, this further prediction is not realized. Chung (1990) shows that in clauses such as (44), the subject can be preceded by a coordinate VP that appears to be incomplete. In (44a), for instance, the right conjunct VP is missing its direct object, which surfaces after the subject. In (44b), the right conjunct VP is missing a PP complement:

(44) a. [Mu-ma'a'ñao] ya [ha-yuti'] i säkki i salappi'.
agr-afraid and.then agr-drop the thief the money.
'The thief got scared and dropped the money.' (Chung 1998: 134)
b. kao [ligát] yan [ti kontra] un lai yan Konstitusión Marianas
Q agr.legal and not agr.opposed a law with Constitution Marianas
'whether a law is legal and not in conflict with the Constitution of the Marianas' (Chung 1998: 135)

What is important is that not all types of apparently incomplete coordinate VPs are permitted. For instance, when it is the *left* conjunct VP whose direct object surfaces after the subject, the result is ungrammatical, as (45) shows:[10]

(45) *[Ha-dandan] ya [k*um*anta] si Juan i gitala.
agr-play and.then agr.sing Juan the guitar
'Juan played the guitar and sang.'

Chung's account of these facts rests on the claim that in (44), there is no remnant VP whose creation would have violated the Coordinate Structure Constraint. Instead, the coordinate VP is intact and the subject simply surfaces within its right conjunct. As before, the exact details of the analysis are irrelevant. What matters is that if Chamorro clauses were derived by leftward movement of (a remnant) VP, (44) should be ill-formed. The fact that (44) is grammatical argues that the verb-initial order of this language is not produced by VP raising, contrary to what one might have initially supposed.

Further evidence against a VP raising analysis of Chamorro clauses is provided by the semantic characteristics of surface subjects. Recall that if Chamorro had VP raising and that movement were forced by the EPP, the subject should surface in situ, within vP, where it should be able to have narrow scope with respect to sentential operators such as negation and existential closure (see (36c)). But, contrary to expectations, there are circumstances under which the subject cannot have narrow scope. Chung (1998: 102–107, 112–117) shows that Chamorro subjects which are external arguments must be specific. This amounts to saying that any subject that originates in the specifier of v must surface outside vP, the domain of existential closure. Chung (1998: 92–99) also shows that Chamorro subjects differ from non-subjects in being unable to be negative concord items (see chapter 45). Assuming that negative concord items are interpreted as narrow-scope indefinites, this distribution strongly suggests that subjects cannot have narrow scope with respect to negation.

In short, Chamorro seems to be another language whose verb-initial clauses are not derived by VP raising.

5.4 Verb-initial clauses that are only apparent

The discussion of this chapter has so far proceeded as if the identification of VOS clauses is a straightforward matter. It should be acknowledged here that this is not always so. In some languages, clauses that appear to be verb-initial may in fact be SVO clauses in which the subject is null.

Spanish could well be a language of this type. Although Spanish is traditionally viewed as an SVO language with some verb-initial clauses (see section 2.1), some recent research has suggested that this language might not have a classical version of the EPP – a requirement forcing some DP to raise to the specifier of the clausal head. In a thoughtful study, Goodall (2001) argues that Spanish does indeed have a classical EPP requirement, one satisfied in SVO clauses by raising of the subject DP. He goes on to propose that in verb-initial clauses, the EPP is satisfied by raising of a null adverbial. In other words, these apparently verb-initial clauses have an element occupying the specifier of the clausal head, and in this sense are actually SVO. Notice that if this is so, Spanish is simply irrelevant to the issue of whether verb-initial clauses are universally derived from an SVO structure by leftward movement of VP.

Could this sort of approach to verb-initial order be used to defuse the evidence just presented (in sections 5.2 and 5.3) that VOS clauses in Tzotzil and Chamorro do not involve VP raising? Conceivably. It should be reiterated, though, that both Tzotzil and Chamorro are languages in which no pragmatically neutral clauses are overtly SVO. Consequently, in order for such an approach to get off the ground, one would need to maintain that every pragmatically neutral clause has an SVO structure in which the highest specifier is not visibly occupied. Whether evidence could be found to support such an analytic move remains to be seen.

6 Conclusion: VOS, directionality, and late linearization

The conclusion that emerges from section 5 is that not all VOS clauses are derived from an SVO structure by VP raising. Rather, it seems likely that there are multiple syntactic routes to VOS-hood: the VOS order of some clauses (e.g., in Seediq) is derived by VP raising, but the VOS order of other clauses (e.g., in Tzotzil) is not. Such a result falls in line with other research that suggests that there is no single, universally valid derivation of any given word-order type (see, e.g., Chung 1998 on VSO).

Suppose all this is accepted. Then the next question to address is how VOS order arises when no VP raising is involved.

Within some versions of Principles and Parameters Theory, the most straightforward way of answering this question is to appeal to the parametric setting of some universal principle. For instance, Georgopoulos (1991a) proposes that the X′ principle responsible for projecting the specifier has a directionality parameter associated with it. Setting that parameter to project T's specifier to the right leads to VOS order; setting it to project to the left leads to SVO order.

A directionality approach of this sort puts VOS clauses and SVO clauses on an equal footing for most syntactic purposes. Both clause types have the same hierarchical structure, neither is derivationally more complex than the other, and their linear order differences are traceable to a single parameter. The approach does not, of course, address the markedness issue of why SVO is a cross-linguistically common type of word order, whereas VOS is quite uncommon. But in this respect it does not differ much from a VP raising approach. The VP raising approach examined in section 4 claims that both VOS clauses and SVO clauses arise from a minimal SVO structure when some constituent raises to satisfy the EPP. When VP raises, the resulting word order is VOS; when the subject DP raises, the result is SVO. The initial structure of the two clause types is the same, and their derivational complexity seems equivalent. As before, the linear order differences are traceable to just one parameter – the content of the EPP-feature.

Word order is conceptualized differently in other versions of Principles and Parameters Theory and in Minimalist syntax (see, e.g., Halle and Marantz 1993; Chomsky 1995c; and others). Following a strand of thinking that goes back at least to McCawley (1968a), these frameworks assume that precedence relations are simply not represented in the syntax: clauses are unordered hierarchical structures that are linearized relatively late, after the derivation has left the syntax proper. (See the references cited in section 1.) Such an approach claims that SVO clauses and VOS clauses are syntactically identical (as long as no VP raising is involved). The two clause types are differentiated only when linear order is established, on the way to the phonology.

What matters here is that there are few if any empirical differences between a directionality approach to VOS and a late linearization approach. The two are

indistinguishable for almost all practical purposes. Consequently, much of the evidence that VOS clauses have their specifiers projected to the right need not bear on the syntax per se, since it can be recast in terms of late linearization.

For instance, Chung (1990, 1998) uses some intricate word-order evidence from Chamorro to argue that the specifiers of Chamorro clauses are projected to the right and the subject then lowers, optionally, to adjoin to some projection of [V]. In fact, many of the patterns she describes could equally well be produced via linearization – an alternative that fits more comfortably into Principles and Parameters Theory, given that lowering is not a standard type of movement. Chung does offer some evidence that the syntactic position of the lowered subject must be visible in Logical Form. It is not obvious how a late linearization approach would handle this evidence, which involves the interaction of quantification with the VP coordination pattern illustrated above in (44) (see section 5.3).

Georgopoulos (1991a) argues on the basis of cross-linguistic evidence that weak crossover effects arise in languages in which specifiers and complements are governed from different directions. Among other things, her proposal is intended to account for the absence of weak crossover effects in Palauan and other VOS languages. These languages, she claims, have no weak crossover because their specifiers and complements are both projected to the right (and, therefore, governed from the left). Crucial to the proposal is the assumption that bound pronouns observe the head government requirement of the Empty Category Principle. One current approach to the head government requirement is to relegate it to the phonology, broadly construed. If such an approach is tenable, one could conceivably restate Georgopoulos's proposal in PF terms as well.

Finally, Freeze and Georgopoulos (2000) contend that a directionality approach to word order accounts for certain differences in the expression of location, existence, and possession (see chapter 24) in languages of different word-order types. Their proposal aims to explain two descriptive generalizations. First, no verb-initial language has a lexical verb meaning 'have'; and second, no SOV language has a locative proform in existential sentences. What is of interest is that both generalizations actually concern the lexicon, not the syntax. Recent work in morphological theory (e.g., Anderson 1992; Halle and Marantz 1993) suggests that lexical insertion, like linearization, occurs late – after the derivation has branched to the phonology. If so, Freeze and Georgopoulos's account could conceivably be recreated outside the syntax proper. It should be noted, though, that the descriptive generalizations which are their point of departure might not be completely accurate. For instance, Chamorro is a verb-initial language but nonetheless has a lexical verb meaning 'have'. For discussion of the syntax and semantics of this verb, see Chung and Ladusaw (2004).

In conclusion, the VOS clauses that do not involve VP raising could be assumed to be VOS in the syntax. But most of the evidence is also compatible with the idea that the word order of these clauses – in fact, all word order – is the product of late linearization and therefore syntactically insignificant. Importantly, the two approaches that have been taken to (these) VOS clauses assume that they have the same hierarchical structure as SVO clauses.

NOTES

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1 This conclusion extends to morphologically ergative languages if they are assumed to have the phrase structure described earlier in section 2.2.

2 Examples like (i) suggest that Tagalog has a pattern of VP coordination similar to that of Chamorro. See Kroeger (1993: 34–36) for discussion and a different analysis:

(i) [Huhugasan ko] at [pupunasan mo] ang mga pinggan.
Fut.wash.DV me.Gen and Fut.dry.DV you.Gen Nom Pl dish
'I will wash and you dry the dishes.' (Kroeger 1993: 34)

3 In (8a), *he* can be analyzed as an indefinite determiner or as the content of T. If the former, then each conjunct in this example is a predicate DP; if the latter, then each conjunct is T′. See Chung and Ladusaw (2004).

4 If the VP-internal subject hypothesis is adopted in one of its original forms and subjects are assumed to raise out of VP for Case or EPP reasons, then leftward movement of VP will always be an instance of remnant movement. The assumption in the text is, instead, that the subject originates within the maximal projection of v, an abstract verbal head that takes VP as its complement (Chomsky 1995c).

5 This is, in fact, the style of analysis proposed by Pearson (2000a) for Malagasy and by Aldridge (2002) for Seediq.
Examples (26–28) were provided by Chamorro consultants in Sunnyvale, California, and Saipan.

6 PP complements and adjuncts in Niuean must also surface to the right of the subject and are therefore predicted to be accessible to extraction. In fact, most of these PPs can be extracted only via a resumption strategy. See Seiter (1980).

7 Dixon (1988: 170) states that when the subject has been extracted, "the subject pronoun . . . is retained in the predicate." Since this pronoun routinely co-occurs with full DP subjects that surface to the right of VP (Dixon 1988: 33), it is arguably a form of subject agreement, not a resumptive pronoun.

8 Diesing (1992b) proposes that VP is the domain of existential closure, where the subject is assumed to originate as the specifier of V. In a theory in which the subject originates as the specifier of the abstract verbal head v, the obvious restatement of her proposal is that the domain of existential closure is vP.

An approach to scope and specificity effects different from Miyagawa's is suggested by the work of Alexiadou and Anagnostopoulou (1998). As mentioned earlier, Alexiadou and Anagnostopoulou claim that the word order of some VSO languages arises when V undergoes head-movement to the clausal head to satisfy the EPP. Their investigation leads them to recognize two subclasses of such languages: in one subclass, the subject remains within VP, while in the other, it raises to a specifier above VP but below the clausal head. If this further parameterization is adopted, the result would be that subjects could exhibit wide scope and specificity without actually having raised all the way to the specifier of the clausal head. All that would be necessary

would be for them to have raised out of VP. For various reasons, such an approach is not pursued here. The position taken in the text is essentially Miyagawa's position.

9 The Tongan negative *'ikai* in (35) is a syntactic verb that takes the negated clause as its complement (see, e.g., Churchward 1953: 62). Examples (35c–d) were provided by Tongan consultants in Los Angeles in the 1970s.

10 Examples (43b) and (45) were provided by Chamorro consultants in Sunnyvale, California, and Saipan. Thanks to David Adger for pointing out the significance of examples of type (45).

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"When I first started studying linguistics in 1960 it was possible for an assiduous student to read almost everything in the field. The success of the discipline has meant that those happy days are, happily, gone forever. Syntax is now so big that no one can read even a fraction of what is on offer. There have been two unfortunate results: first, today's syntacticians keep rediscovering old facts, often reinventing eccentric wheels; second, they keep complaining that other linguists ignore their work. The usual excuses are that the material we ought to have referred to is distributed, seemingly at random, among hundreds of books and articles; life is finite; institutional pressures are unrelenting; and it is hard enough keeping up with work done in one's own framework on one's own area of special interest, without trying to see what rival theorists in adjacent areas might have had to say on the matter at hand, however relevant in the long term their contribution might be.

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Volume IV

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Preface

Generative grammar has always set its aims high. From its inception in the 1950s, the ambition has been to go beyond observational and descriptive adequacy to reach explanatory bliss. Important work would be about 'conditions on transformations' rather than on 'some properties of *wh*-movement in English', about the 'transformational cycle' rather than on verb clusters.[1] This is what science should be like. And while earlier attempts at achieving a semblance of an explanatory theory were often clumsy and inadequate, these past forty or so years have shown that truly fundamental questions can now be asked and addressed.[2] This emphasis on theory has not, of course, altered the fact that linguistics is a thoroughly empirical science, but data and analyses are seen as what they are: tools to help us understand the structure and properties of the human language faculty. It is the fate of tools that when the product is finished they are put away. When some (as it turns out controversial) data from Italian had suggested that the notion of bounding node should be parameterized, we then forgot about the Italian data and happily proceeded with the idea of parameters.[3] Numerous other examples could be added.

More generally, the data and analyses that at some point in the history of generative grammar played an important, sometimes even a crucial, role have a tendency to fade into the background rather quickly.[4] This effect is particularly strong when the piece of theorizing they helped to establish becomes obsolete, but it is even true when the theoretical insight persists over time. As time went on, and as generative grammar (using the term in the broad sense, including all its theoretical diversity), in its explosive success, expanded to dozens of countries, hundreds of universities and colleges, and many hundreds of researchers, the muckheap of once useful but then discarded empirical material continued to grow. Old hands in the field may still be served by a good memory, helping them to dig out some of these rejects if they seem useful at some later stage, but successive new generations of young linguists simply don't have access to the wealth of data, generalizations, and analyses that might be terribly important to their research if only they knew about them.

But it is not only a problem for younger generations. Researchers who like to keep track of developments, particularly (but not only) in those subfields that are not directly related to their own research, or who work in closely related disciplines such as, for instance, psycholinguistics or sociolinguistics, find it increasingly difficult to keep track. Current handbooks are often concerned with current theorizing, but only marginally with the history of the various versions of the theory and even less with the empirical generalizations underlying those theories. As a consequence, an ever smaller percentage of the potentially useful empirical material is treated in standard textbooks, and hence the rest is not part of the knowledge that researchers and students in the field may be expected to possess.

It might be objected that the articles in which all this wisdom is stored are, after all, still around in the journals, in the books, in the libraries. But given their theoretical focus, the titles are often unrevealing as far as the empirical domain is concerned, keywords are notoriously absent or unreliable, relevant data are scattered over several articles, and, most importantly, the presentation of the data in these articles is subservient to the theoretical claims that are made and hence not presented in succinct, didactically useful ways.[5] So searching for the relevant materials, even if you know what to look for, is often hard. For young researchers, such a search task is doubly difficult because very often the descriptive generalizations are presented in a jargon and formalism that were characteristic of the theoretical framework at the time, sometimes decades ago. Who thinks to look up the term 'backward equi' when looking for data relevant to what we now call exceptional case marking (ECM)?[6]

Having a good, theoretically oriented mind is not enough. You cannot gain an understanding of the abstract properties of Universal Grammar without having any ideas about interesting empirical areas that might provide the crucial evidence (or counter-evidence) for your claims. But these flashes of empirical insight can only come if you have enough knowledge in your head to start the neurons firing away. And you can only have that knowledge if you have been taught about a certain range of phenomena in a variety of languages, or if you have had access to a repository of such materials to work through by yourself. The problem is that such courses are rarely taught, the reason being more often than not that the relevant data are not available in a form that is didactically usable.

This is the lacuna that we are hoping to fill with *The Blackwell Companion to Syntax*. In these five volumes, we offer you 77 case studies of syntactic phenomena that should, at least partly, fill the gap and constitute an important research tool for the working linguist and for teachers and students of syntax (and its interfaces). In bringing these chapters together, we were guided by a working definition of what a syntactic case study was supposed to be. The following properties were thought to be central: *a well-delimited empirical area (both as to the construction(s) involved and as to the languages in which the phenomena are found) whose analysis has, at one time or another in the history of generative grammar, played an important role in the theoretical debates at that time*. More often than not, we will find that such results are relatively robust in the sense that they will stand and

be interpretable regardless of various innovations or adaptations of the version of the theory in which they first saw the light.

The so-called 'verb-raising' construction in Continental-West Germanic languages (chapter 75) will serve as an example. Much has been published on this subject, a reasonable degree of consensus exists about the most important properties of the construction, its analyses have been frequently used to support theoretical proposals, etc. Nevertheless, the existence of this complex of facts is hardly known outside the small group of specialists in this field, the main properties cannot be presupposed as common knowledge, and no one in the field can be properly held responsible for ignoring the verb-raising construction. In a situation like that, the chapter's presentation will be oriented toward combining views and formulating them in such a way that they will be accessible to researchers from various approaches to the theory of grammar.

In addition, of course, the delimitation had to be such that the empirical subdomain in question could be treated in manageable chapters. It would have been unthinkable to include a case about relative clauses: even a thick monograph would not do such a topic justice. But the subtopic of free (headless) relative clauses (chapter 27), a topic that in the late 1970s and the 1980s generated a considerable literature, is a typical example of what we had in mind.

What about the theory? We wanted to make the empirical generalizations, the insights into the properties of constructions, the main focus of each chapter. But wherever useful and possible, of course, reference can be and is made to the theoretical issues that the phenomena in question were or even are relevant to. This introduces a certain bandwidth, and indeed some of our authors stress the empirical side more strongly while others swerve more easily into theoretical discussions. With a project this size it has been impractical to impose more uniformity than we have achieved here. It was, frankly, not always easy to convince our authors to take time away from their primary theoretical research to write the chapters we asked them to. And it was also on occasion hard to curb the attention that they tended to give to theoretical issues and their own role in those theoretical developments. More generally, wherever possible we suggested that theoretical issues be addressed in robust, sustainable ways, not in terms that would reflect the fads and the terminological peculiarities typical of a specific brief period in the short history of generative grammar.

It does not take a great deal of knowledge of the field to realize that an enterprise such as the present one is a highly open-ended affair. Even if we had achieved complete coverage at the time of appearance, new cases would soon present themselves. But complete coverage is unattainable in the first place. It is always possible to come up with other potential cases, not represented in the present work. Even now we already have a number of ideas about cases that might be added and which may at some point be added to the present collection. Nevertheless, we believe that the coverage that the present collection achieves is very considerable. So much ground is covered that already it seems doubtful that future graduate students of linguistics could be expected to work through all of this material. If a student manages part of it and has the rest at his or her disposal

as an encyclopedia of linguistic phenomena, we feel certain that his or her research will greatly benefit. As teachers we are frequently confronted by a big question mark in the faces of students or even fellow faculty members when we use terms like 'contraction', 'subdeletion', or 'freezing effect'. And when asked "Where can I read up on this?" we are often faced with our own bad memory and the virtual impossibility of pointing toward one representative text that will concisely and competently explain what kind of phenomena are hiding behind these terms. This, we feel sure, is now a problem of the past.

If, as we are convinced, this *Companion* will become an important research tool in linguistics, a pressing need will also be felt for additional case studies to be added. While it may well be possible to project further volumes in the future, or an updated or extended version of the present publication, it has been clear to us from the start that the best way to make this an incremental enterprise is to publish these cases electronically. This would allow the possibility of reviewing cases now published, adding new cases relatively easily, and allowing discussion fora, etc. When that happens, the way to expanded coverage of the field will be paved. For the moment we refer you to www.syntaxcompanion.org to keep you informed on developments in this area.

One point to make about the references: every individual chapter has a reference section; the consolidated reference list is in volume V, and in the XML CD version the links are to the consolidated list rather than to the end-of-chapter lists. So in the chapter references you may find entries with a, b, etc. after the date even if there is only entry with that author and date in that chapter, because there is more than one entry in the whole five volumes with the same author and date. For example, even if there's only one Chomsky 1995 cited in any one chapter, it will appear as Chomsky 1995a or 1995b or 1995c, because there are three Chomsky 1995 entries in the consolidated references for the whole five volumes, identified as a, b, and c.

As editors of this encyclopedia of case studies, we have had to make many choices. In doing so we were greatly helped by the project group at NIAS, the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, at Wassenaar, in the dunes lining the Dutch coast, in 1996/1997. The definition of what we would consider a typical case study was intensively discussed and ultimately fixed by that group: Reineke Bok-Bennema, Norbert Corver, Denis Delfitto, Joe Emonds, Martin Haiden, Itziar Laka, Eric Reuland, Tim Stowell, Sten Vikner, and, to some extent, Ian Roberts. We were also fortunate to have good input and feedback from Hagit Borer, Jan Koster, and Edwin Williams, our special outside consultants. The original list of cases was also compiled by that group. First sample chapters were produced during that year. And we brainstormed a lot about who would be the ideal author for which chapter. Nevertheless, we accept full responsibility for all the choices that were made.

We do wish to emphasize, however, that it has never been our intention to suggest that the present collection could be interpreted as a kind of canon, in the literary sense of the word (to the extent that literary scholars are still prepared to advocate such a notion). What we say above about the open-ended character of

an enterprise such as this should underline the fact that nobody could pretend that it is at all possible to establish such a canon, even if one tried to.

The first plans for this project were made in 1993. That is when we decided to apply to NIAS to see if we could get together a team of colleagues with whom to discuss the scope, the objectives, and the realization of the present work. The application was approved. We gratefully acknowledge the generous support, financial, logistic, and otherwise, of NIAS and, in particular, Dick van de Kaa and Wouter Hugenholtz, respectively the rector and the director of the institute. The group convened in the splendid isolation of NIAS in the academic year 1996/1997. There, we were happy to be able to work together with the colleagues mentioned above. Ilke van den Ende joined us as a student trainee. We were also happy to be able to organize two workshops at NIAS during that year. A third was held in Los Angeles at USC with the help and support of Hagit Borer and Tim Stowell in 2001. We wish to thank the participants at these workshops for their contributions, and LOT (the Dutch National Graduate School of Linguistics) as well as NWO and KNAW (the Netherlands Organization for Scientific Research and the Dutch Royal Academy of Sciences respectively) for financial support for these workshops. We also wish to thank the BSGM Foundation for an additional grant to the NIAS group. Last but not least we wish to thank those who have assisted us with the administration and correspondence, with the copy-editing and the HTML-conversion and the maintenance of the website: Jenny Doetjes, Bart Hollebrandse, Rob Goedemans, and Hannah de Mulder. Without them we literally and figuratively could not have managed. Thanks are due to NWO and the Utrecht Institute of Linguistics OTS (Language in Use project) for grants that made this assistance possible.

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Utrecht and Tilburg
Martin Everaert and Henk van Riemsdijk

NOTES

1 Cf. Chomsky (1973); Evers (1975b).
2 See, for example, Chomsky (2004).
3 Cf. Rizzi (1982b).
4 The reverse also holds true. Certain empirical domains have never figured prominently in theoretical debates, and remain, thus, uncharted territory from a descriptive point of view.
5 We should add that publications like *Linguistics Abstracts Online* will, in future, solve part of the problem we note.
6 Cf. Postal (1974).

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53 Quantifier Scope Ambiguities

KATALIN É. KISS

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1 Introduction

Sentences containing quantifiers, especially those containing two or more of them, like (1), are often ambiguous:

(1) Every man danced with some woman.

(1) has the two readings paraphrased under (2a) and (2b), among others:

(2) a. 'For every man in a given domain, there is at least one (possibly different) woman with whom he danced.'
b. 'There is at least one woman among the women in a given domain with whom every man danced.'

The meaning difference between (2a) and (2b) can be characterized in different terms. In (2a), in which the interpretation of the prepositional object quantifier is

dependent on the interpretation of the subject quantifier, the subject quantifier is said to have scope over the object quantifier (or to have wider/broader scope than the object quantifier). The fact that the interpretation of the object may covary with the different individuals in the domain of the subject quantifier is a consequence of the fact that the object is distributed over the subject. In the case of (2b), the relative scope of the quantifiers is the opposite of that in (2a): the object quantifier has the wider/broader scope; the subject quantifier is in the scope of the object.

A further way of interpreting (1) is to interpret the two quantifiers independently of each other, i.e., to assume that the value of neither quantifier is a function of the other.

Quantifiers enter into – possibly ambiguous – scope relations not only with quantifiers but also with other types of sentential operators, among them *wh*-operators (3a), negation (3b), and intensional predicates (3c). A quantifier can sometimes take either embedded scope or matrix scope – as happens both in (3c) and in (3d):

(3) a. Who did everybody meet?
'Which is the person that everybody met?'
'(Tell me) for everybody, which (possibly different) person he met.'
b. John didn't meet two celebrities.
'It is not the case that John met two celebrities.'
'There are two celebrities who John did not meet.'
c. John wanted to meet two celebrities.
'It was John's desire that he meet two celebrities.'
'There were two celebrities that John wanted to meet.'
d. Someone seems to deserve credit for that.
'There is someone who seems to deserve credit for that.'
'It seems that someone deserves credit for that.'

In the framework of generative grammar, where semantic interpretation is basically determined by syntactic structure, sentences displaying scopal ambiguity are believed to be structurally ambiguous. Unlike in other cases of ambiguity, however, intuition gives no clue as to how sentences like those in (1), (3a), or (3b) can be mapped on two alternative structures; at which level of representation the two alternative structures should be constructed and by what means.

Furthermore, the ambiguity expected in the case of sentences containing two scope-bearing operators is not always present. Thus the following set of examples, though parallel with those in (3a–d) in several respects, lack one of the two readings that their counterparts in (3a–d) have:

(4) a. Who met everybody?
b. Two celebrities didn't meet John.
c. John wanted to meet more than two celebrities.
d. Someone seems to himself to deserve credit for that.

(4a, b) do not have the inverse scope readings that (3a, b) have (i.e., the scope order of the two quantifiers cannot be the opposite of their surface order). In (4c) the quantifier can only have embedded scope, whereas in (4d) it can only have matrix scope. An adequate analysis of scope ambiguities should be able to predict two readings for (3a–d), and should block one of them in the case of (4a–d) in a principled way.

2 The treatment of scope ambiguities in early generative grammar

The Standard Theory of Generative Grammar, in which the deep structure of the sentence was subject to semantic interpretation, provided limited means of assigning two deep structures to a quantified sentence. What it could handle was the scopal ambiguity of sentences with negative quantifiers like *no one* (cf. Klima 1964). *No one*, e.g., that in (5a), was claimed to be the output of a *neg*-transportation transformation merging *not* with *anyone*. It was assumed that the negative particle was adjoined as a modifier to the constituent that it had scope over; hence the ambiguity in (5a) was derived from whether in deep structure the negative particle was adjoined to the matrix VP, as in (5b), or to the embedded VP, as in (5c):

(5) a. I demand that you marry no one.
    b. I not demand that you marry anyone.
    c. I demand that you not marry anyone.

As pointed out by Kayne (1998: 128), this approach cannot predict the subject–object asymmetry attested in *neg*-transportation. It remains unclear why (6a) is not ambiguous, i.e., what prevents *neg*-transportation from deriving (6a) from (6b):

(6) a. I demand that no one marry you.
    b. I not demand that anyone marry you.

In the Extended Standard Theory, and then in its Revised version, scope interpretation was referred to surface structure, which led to a theory in which the relative scope of quantifiers was determined by surface c-command (see Reinhart 1976). This approach predicted a scope ambiguity only among quantifiers mutually c-commanding each other; hence it could not handle such obvious cases of scope ambiguity as transitive clauses with a subject quantifier and an object quantifier, e.g.:

(7) In this office somebody speaks every official language of the UNO.

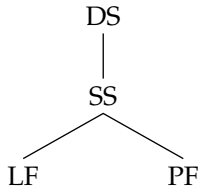
Reinhart's theory also wrongly predicts the scope interpretation of NPs containing a quantified head and a quantified PP, such as the subject of (8):

(8) Many children in every city are waiting for Santa Claus.

In the case of (8) the predicted scope order is the opposite of the attested scope order: the quantifier embedded in the PP adjunct has wider scope than the matrix quantifier c-commanding it.

Fundamental problems of these types have led to the conclusion that quantifier scope cannot be disambiguated either in D-structure or in S-structure. Logical operators should be assigned scope on a further level of representation, called Logical Form, which is to be derived from S-structure by rules not affecting phonological interpretation – see Chomsky (1975c) and May (1977). In the so-called T-model of grammar there is no direct mapping between LF and PF; their relation is mediated by S-structure, as follows:

(9)



May (1977) claims that the rule deriving quantifier scope, called Quantifier Raising (Q-Raising), applied in the course of mapping SS on LF, adjoins a quantifier to S (IP). Q-Raising is subject to the same conditions, particularly to the same island constraints, as the rules mapping DS on SS. It leaves a trace which acts as a variable. Q-Raising is triggered by the Condition on Quantifier Binding in (10), and its output is subject to the Condition on Proper Binding in (11):

(10) **Condition on Quantifier Binding:**
Every quantified phrase must properly bind a variable.

(11) **Condition on Proper Binding:**
Every variable in an argument position must be properly bound [c-commanded by a binding phrase].

The scope of a quantifier is everything which it c-commands at LF.

In sentences with multiple quantifiers, adjunction to S is iterated, and the adjunction operations are allowed to cross. Scope ambiguity arises from the fact that the quantifiers of a sentence can be subject to Q-Raising in any order, as a consequence of which an S-structure can be mapped on more than one LF. Consider the two LFs derivable from (12a):

(12) a. Some man loves every woman.
b. $[_S$ [some man]$_i$ $[_S$ [every woman]$_j$ $[_S$ t_i loves t_j]]]
c. $[_S$ [every woman]$_j$ $[_S$ [some man]$_i$ $[_S$ t_i loves t_j]]]

May's framework correctly predicts that in complex NPs containing a quantified head and a quantified NP embedded in a PP, the scope order of quantifiers is the

opposite of their surface order. Consider an instance of this construction, and the LF derived from it, displaying 'inverse linking'. (May calls pairs of quantifiers linked if one of the quantified NPs includes the other. Quantifiers binding sister variables are non-linked.)

(13) a. Everybody in an Italian city met John.
b. $[_S$ an Italian city$_i$ $[_S$ [everybody in $t_i]_j$ $[_S$ t_j met John]]]

If the quantifiers were adjoined to S in the opposite order, as in (14), then the trace of the PP-internal NP, t_i, would not be properly bound, in violation of the Condition on Proper Binding:

(14) *$[_S$ [everybody in $t_i]_j$ $[_S$ [an Italian city]$_i$ $[_S$ t_j . . .

If the quantified NP containing the PP adjunct is in object position, then, naturally, we also obtain two non-linked readings, because the PP can also be interpreted as an immediate constituent of the matrix VP:

(15) John $[_{VP}$ $[_{VP}$ met $[_{NP}$ everybody]] $[_{PP}$ in some Italian city]]

This S-structure is predicted to be ambiguous: the two quantifiers can undergo Q-Raising in any order.

Interestingly, the inverse scope attested in the case of quantified NPs containing a quantified PP is missing if the noun phrase has a *wh*-feature; such NPs are ungrammatical:

(16) a. *Which man in some city did you meet?
cf. b. Which man in Cleveland did you meet?

The ungrammaticality of (16a) is derived from the assumption that, with the *wh*-phrase moved to S', and the quantifier adjoined to S, the Condition on Proper Binding is not satisfied (the trace of *some city* is not bound):

(17) $[_{S'}$ [Which man in $t_i]_j$ $[_S$ [some city]$_i$ $[_S$ did you meet t_j]]]

In some idiosyncratic cases, quantified NPs with a quantified PP adjunct are scopally ambiguous: they can be understood to involve inverse linking, or they can be assigned direct (or natural) scope, interpreted from left to right. E.g.:

(18) Every senator on a key congressional committee voted for the amendment.

(19) a. Inverse linking:
$[_S$ a key congressional committee$_i$ $[_S$ [every senator on $t_i]_j$ $[_S$ t_j voted for the amendment]]]
b. Natural scope:
every senator > on a key congressional committee

Whether or not the natural scope reading also exists in addition to the regular inverse scope depends on several factors, among them the lexical selection of the preposition. For instance, a quantifier complementing the preposition *in* only allows inverse linking. The lexical selection of the quantifier also plays a role. Compare (18), which is ambiguous, with (20a, b), which only have an inversely linked reading:

(20) a. Each (of the) senator(s) on a key congressional committee voted for the amendment.
b. All senators on a key congressional committee voted for the amendment.

The depth of embedding of PPs also affects the scope reading. Thus, whereas (21a) is ambiguous, (21b) is disambiguated by the embedding of an additional PP under the lower quantifier:

(21) a. Every exit from a freeway is badly constructed.
b. Every exit from a freeway to some California city is badly constructed.

The idiosyncrasy of these factors is regarded by May (1977) as evidence indicating that the natural, non-inversely linked reading is not derived by the rules of sentence grammar.

In possessive constructions with a quantified genitive and a quantified complement or adjunct, e.g., in those under (22–23), the two quantifiers are not linked. They undergo Q-Raising, i.e., adjunction to S, separately, in an optional order, which yields two readings:

(22) Some company's refusal of every merger offer began a panic.

(23) Every city's destruction by some pestilence was assured by their misdeeds.

A *wh*-phrase, moved to S', on the other hand, necessarily has wider scope than a clause-mate quantifier. Thus, whereas (24), containing two clause-mate quantifiers, is ambiguous, (25a, b), containing a quantifier and a *wh*-phrase, are not:

(24) John recorded one song on every album.

(25) a. Which song did John record on every album?
b. Which album did John record one song on?

In some cases the *wh*-operator can also have narrow scope with respect to a clause-mate quantifier, e.g.:

(26) a. What did everyone order?
b. Where did everybody go?

May (1977) dismissed the unpredicted wide-scope reading of the quantifier in (26a, b) as a marked, idiosyncratic case which need not be accounted for in sentence grammar. However, it soon became clear that the phenomenon is not idiosyncratic but displays a subject–object asymmetry characteristic of sentence grammar; namely, whereas object quantifiers can have wide scope with respect to a *wh*-phrase, subject quantifiers, e.g., those in (27a, b), cannot:

(27) a. Who ordered everything?
b. Who went everywhere?

Q-Raising is a clause-bound process (as predicted by Subjacency); hence embedded quantifiers have clause-bounded scope – in the unmarked case. In certain instances, however, the quantifier can scope out of the embedded clause. For example, in (28a) *someone* can have scope over the verb *believe*, and in (28b) *too many people* can have scope over the verb *want*, as is clear from the paraphrases of the relevant readings:

(28) a. Ralph believes that someone is a spy.
'There is someone who Ralph believes to be a spy.'
b. Harry wanted us to invite too many people.
'It was too many people that Harry wanted us to invite.'

The marked readings are, again, excluded from the realm of sentence grammar by May (1977).

Raising subjects (e.g., that in (29a)) – as opposed to control subjects (e.g., that in (29b)) – can have narrow scope with respect to the matrix predicate, and even with respect to the embedded object:

(29) a. Some politician is likely to address every rally in John's district.
b. Some politician wants to address every rally in John's district.

May's theory accounts for the additional narrow scope of the subject in (29a) by allowing Q-Lowering in Raising constructions.

3 Logical Form in Government and Binding Theory

The emergence of the Empty Category Principle made May's (1977) explanation of the scope ambiguity of sentences containing both a subject quantifier and an object quantifier obsolete. It was no longer possible to Q-Raise the subject and the object quantifiers in any order. The subject trace needed a local antecedent, hence the Q-Raising of the subject had to precede the Q-Raising of the object. Furthermore, the asymmetry noticed between the scope possibilities of subject

and object quantifiers (cf. (26–27) above) also required an explanation. These problems lead to the formulation of a more sophisticated theory of Logical Form in May (1985).

In May (1985) the scope of a constituent is still identical with its c-command domain; however, the definition of c-command is modified, as follows:

(30) **C-command:**
a c-commands *b* iff every maximal projection dominating *a* dominates *b*, and *a* does not dominate *b*.

In the LF under (31b), derived from (31a), the quantifiers mutually c-command each other (the first maximal projection dominating each one is S'), so they have identical scopes, i.e., they can be interpreted in either scope order. (31c), on the other hand, is ruled out by the ECP:

(31) a. Every student admires some professor.
b. $[_S$ some professor$_i$ $[_S$ every student$_j$ $[_S$ t_j admires $t_i]]]$
c. *$[_S$ every student$_j$ $[_S$ some professor$_i$ $[_S$ t_j admires $t_i]]]$

The subject–object asymmetry attested in the scope relation of *wh*-phrases and quantifiers also falls out in the framework of May (1985). Consider again the relevant cases:

(32) a. What did everyone buy for Max?
b. Who t bought everything for Max?

The ambiguity of (32a) is unproblematic, as the Q-Raising of the subject and the *wh*-movement of the object result in an LF in which the quantifier and the *wh*-phrase mutually c-command each other:

(33) $[_{S'}$ What$_i$ $[_S$ everyone$_j$ $[_S$ t_j buy t_i for Max]]]

Owing to a technical innovation of May (1985), the explanation also carries over to the post-*Barriers* (Chomsky 1986a) framework of generative syntax, in which S is also analyzed as a maximal projection (IP); namely, a node created by adjunction to a maximal projection is not a maximal projection, but merely a segment of a maximal projection. The phrase providing the adjunction site, and the node created by adjunction to it, make up a maximal projection together. Hence the quantifier and the *wh*-phrase in (32a) will continue to c-command each other, given that the first maximal projection dominating each of them is CP.

As for (32b), neither quantifier adjunction to S nor quantifier adjunction to S' yields a grammatical output. Cf.:

(34) a. *Who$_j$ $[_S$ everything$_i$ $[_S$ t_j buy t_i for Max]]
b. *everything$_i$ $[_{S'}$ who$_j$ $[_S$ t_j buy t_i for Max]]

(34a) is out because it violates the (standard version of the) ECP, whereas (34b) is illegitimate because S' is not a possible adjunction site. However, adjunction to other maximal projections, among them the VP, is possible; hence (32b) can be assigned the following LF:

(35) Who_j [$_S$ t_j [$_{VP}$ everything_i [$_{VP}$ buy t_i for Max]]]

Assuming that S = IP is maximal, *who* in (35) asymmetrically c-commands *everything* (S, the first maximal projection dominating *everything*, does not also dominate *who*); hence (35) is not ambiguous.

Evidence for the possibility of the VP-adjunction of object quantifiers is provided by the pair of examples in (36) (cf. Sag 1980). Whereas (36a) is ambiguous, the ambiguity disappears in (36b), in which the sentence is followed by a parallel sentence involving ellipsis. In (36a) the object quantifier is bound to have narrow scope:

(36) a. Some student admires every professor.
b. Some student admires every professor, but John doesn't.

The narrow scope of the object quantifier in (36b) falls out if we assume that the elided VP is reconstructed at LF, and a reconstructed VP must not contain a free variable. Then the reconstructed VP must have the *every* phrase adjoined to it, as in (37); that is why it will necessarily have narrower scope than the subject quantifier, adjoined to S:

(37) [$_S$ some student_2 [$_S$ e_2 [$_{VP}$ every professor_3 [$_{VP}$ admires e_3]]]], but John doesn't [$_{VP}$ every professor_3 [$_{VP}$ admire e_3]]

The way May (1985) defines c-command enables a quantifier adjoined to a subject or object NP to have sentential scope (given that the quantifier adjoined to the NP will only be dominated by a segment of NP). Observe how the two readings of a quantified NP containing a quantified PP are derived. The matrix quantified NP (NP3) is adjoined to S, whereas the embedded quantified NP (NP2) is adjoined to the matrix NP. Hence both have sentential scope, and the sentence is ambiguous:

(38) a. Every exit from a freeway is badly constructed.
b. [$_S$ [$_{NP3}$ [$_{NP2}$ a freeway] [$_{NP3}$ every exit from e_2]] [$_S$ e_3 is badly constructed]]

4 Scope ambiguity or lexical ambiguity?

As discussed in detail in chapter 74, Fodor and Sag (1982) raised the possibility that the ambiguity attested in the case of indefinites like that in (39) is not scopal in nature but is a lexical ambiguity:

(39) Every professor met a student in the syntax class.

That is, the indefinite has both a quantifier interpretation, meaning that the set of students meeting every professor is not empty, and a referential interpretation. Under its quantifier interpretation the indefinite enters into a scopal relation with its clause-mate quantifiers. Thus the indefinite of (39) as a quantifier can either have narrow scope with respect to the universal quantifier ('Each professor met a possibly different student . . .'), or it can have a wide-scope interpretation ('The set of students in the syntax class that every professor met is not empty'). However, the sentence also has a third meaning, with the indefinite understood as referential: 'There was a particular student in the syntax class who every professor met.'

Fodor and Sag have the following evidence for the referential reading of indefinites:

(i) An indefinite can scope out of an island. Thus the indefinite in the complex NP in (40) and that in the *if*-clause in (41) can both refer to an individual that does not merely exist in the hypothetical world of the complex NP or the *if*-clause:

(40) John overheard the rumor that a student of mine had been called before the dean.

(41) If a friend of mine from Texas had died in the fire, I would have inherited a fortune.

If the scope of the indefinite transgresses an island, the indefinite is claimed by Fodor and Sag always to have maximal scope (a claim not generally accepted). Thus, if the indefinite in (42) has matrix scope, it is also claimed to have scope over the universal quantifier – which is only possible if it is a referential expression with a maximally wide scope existential quantifier:

(42) Each teacher overheard the rumor that a student of mine had been called before the dean.

(ii) As was discussed in connection with (36), VP deletion is blocked if the deleted VP contains a quantifier whose scope is larger than the VP. Whichever quantifier is assigned wider scope in (43a), neither quantifier will scope out of the deleted VP, hence both readings are licensed. (43b), on the other hand, has only one reading: the universal quantifier has narrow scope – or else it would have a scope wider than the deleted VP:

(43) a. Sandy thinks that someone loves each of my friends.
Chris does, too.
b. Sandy thinks that someone loves each of my friends.
Chris thinks that someone does, too.

This constraint apparently does not hold in the case of a deleted indefinite:

(44) a. Sandy thinks that every student in our class plays chess better than a guy I beat this morning.
Chris does, too.

b. Sandy thinks that every student in our class plays chess better than a guy I beat this morning.
Chris thinks that every student does, too.

The elliptical sentence (44b) is just as ambiguous as that in (44a), also meaning 'There is a guy I beat this morning such that Sandy thinks that every student in our class plays chess better than he.' This is only possible if *a guy* is a referring expression.

Fodor and Sag (1982) conclude that indefinites are lexically ambiguous. They are either quantifiers, binding a variable, entering into a scope relation with other quantifiers; or they are referring expressions which have no scope, but which presuppose, or infer, existential quantification of maximal scope. Under the latter interpretation they refer to an unidentified but identifiable individual. The initial sentences of the following dialogues illustrate this ambiguity. Whereas that in (45a) involves a referential indefinite, that in (45b) is an instance of a wide-scope existential quantifier:

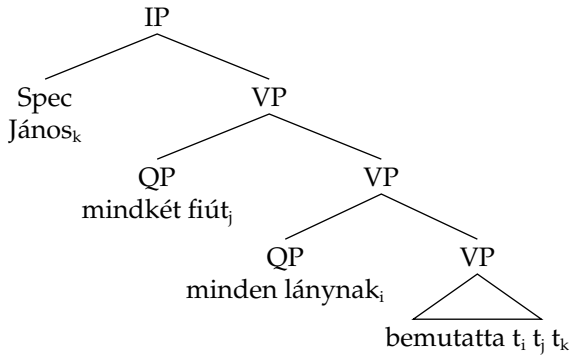
(45) a. A student in syntax 1 cheated on the exam. His name is John.
b. A student in syntax 1 cheated on the exam. We are all trying to figure out who it was.

5 Visible LF in Hungarian

In Hungarian (see Kiss 1991) – as well as in the Bantu KiLega (Kinyalolo 1990), Palestinian Arabic (Khalaily 1995), and Chinese (Bartos 2000) – quantifiers occupy a designated A-bar position in the left periphery of the sentence, after the topic but before the focus and the VP. That is, Quantifier-Raising is a visible operation: it is adjunction to the left edge of the predicate phrase. Here is a Hungarian example containing two quantifiers, and a slightly updated version of the structure assigned to it in Kiss (1991):

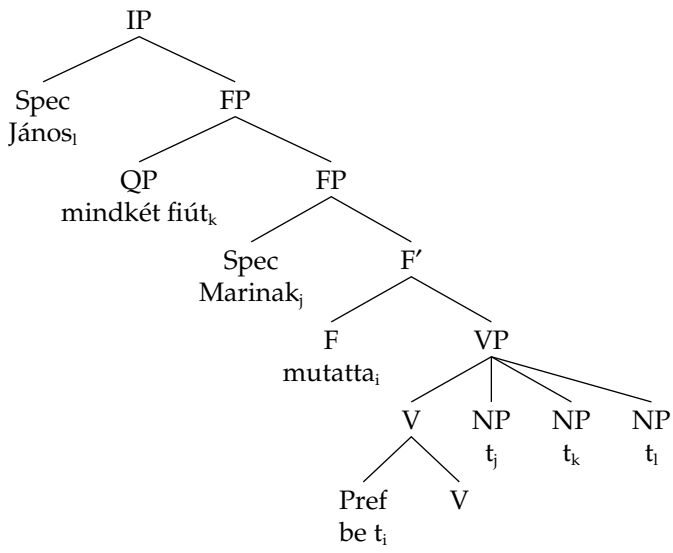
(46) a. János mindkét fiút minden lánynak bemutatta.
John both boy.acc every girl.dat introduced
'John introduced both boys to every girl.'

b.



If the sentence also contains a focus, Q-Raising is adjunction to the Focus Phrase:

(47)



Quantifiers and the focus are analyzed differently, the former adjoined to the predicate phrase (VP or FP), the latter substituted into Spec, FP so as to account for an empirical difference between their syntactic behaviors: whereas Focus Movement triggers V-to-F movement across the verbal prefix, Quantifier-Raising does not do so.

Owing to the fact that quantifiers are moved to scope positions at S-structure, Hungarian sentences with two or more quantifiers are not ambiguous; surface c-command relations, and surface order even, disambiguate them. Compare the word order and the meaning difference of the following pair of sentences:

(48) a. Jánost mindenkét lány többször is meghívta.
John.acc both girls several times invited
'It is stated about John that each of the two girls invited him on several occasions.'

b. Jánost többször is mindkét lány meghívta.
John.acc several times both girls invited
'It is stated about John that on several occasions, both girls invited him.'

In both sentences the first quantifier, asymmetrically c-commanding the second one, has scope over it, but not vice versa.

In a language like Hungarian, where scope relations are determined by surface c-command and surface precedence, the following generalizations are expected to hold: (i) a QP in the specifier position of a noun phrase cannot have narrower scope than the quantifier associated with the head; and (ii) a QP in the complement position of a noun phrase cannot have wider scope than the quantifier

associated with the head. Both predictions are borne out. The first one will be demonstrated by the examples in (49) and (50):

(49) [Minden családtag [két fényképe]] jól sikerült.
every family-member's two photos well came-out
'Two photos of each family-member came out well.'

As predicted, (49) cannot mean that 'two photos showing all the family members came out well'. The slightly marginal (49) also has a fully grammatical version, in which the possessor is case marked and extraposed, and then undergoes Q-Raising on its own. The remnant noun phrase occupies the focus slot in Spec, FP:

(50) [$_{FP}$ Minden családtagnak [$_{FP}$ két fényképe sikerült jól]]
every family-member.dat two photos came-out well

The second generalization is illustrated under (51a). The pragmatically possible scope reading, with the complement taking scope over the quantified head, cannot be derived because the complement does not c-command the quantifier of the head. The intended reading can only be achieved if the complement is realized as a genitive specifier (see (51b)), or, still better, if it is realized as a case-marked possessor extraposed and then Q-raised (see (51c)). To demonstrate that the possessor has undergone Q-Raising independently, I will supply it with the (usually optional) formative appearing on the right-hand side of distributive quantifiers:

(51) a. *[Minden [bejárat [több boltba]]] megrongálódott.
every entrance several store-to was-damaged
'Every entrance to several stores was damaged.'
b. [Több bolt [minden bejárata]] megrongálódott.
several store's every entrance was-damaged
c. [$_{VP}$ Több boltnak is [$_{VP}$ minden bejárata [$_{VP}$ megrongálódott]]]
several store.dat even every entrance was-damaged

Hungarian facts have been used as evidence in arguing for LF Q-Raising (if Q-Raising is visible in some languages, it must be covertly present in other languages, as well). At the same time, they have also been regarded as evidence for a grammatical model without LF, in which scope relations can be read off S-structure – as in Williams (1986).

6 A chain binding theory of quantifier scope

It had already been observed in May (1977), and particularly in May (1985), that the movement of a quantifier, or the movement of another operator across a quantifier, may result in ambiguity. Thus a raised quantified subject may have either embedded or matrix scope:

(52) a. A hippogryph is likely to be apprehended.
b. 'There is a hippogryph which is likely . . .'
c. 'It is likely that a hippogryph . . .'

May (1985) could only account for the narrow-scope reading of the raised quantifier by assuming Q-lowering at LF, with the output in (53):

(53) e_i is likely a hippogryph$_i$ [e_i to be apprehended]

A *wh*-phrase raised across a quantifier into a higher clause may also have either wide scope or narrow scope with respect to the quantifier:

(54) Who do you think that everyone saw at the rally?

It appeared that the wide-scope reading of the subject quantifier in (54) can only be derived at the cost of giving up the assumption that Q-Raising observes the ECP. At the same time, the ECP did not prove to be completely irrelevant; e.g., the embedded subject quantifier, capable of taking scope over the matrix *wh*-phrase in (54), cannot take scope over a matrix subject quantifier. Cf.:

(55) Some men think that everyone saw Mary at the rally.

Aoun and Li (1989) approached these problems by replacing the notion of variable binding by the notion of chain binding in quantifier scope interpretation. They sought to account for a complex set of English and Chinese data which display some unexpected differences; namely, whereas an English transitive sentence containing two quantifiers is ambiguous, its Chinese counterpart is not (as was observed by Huang 1982a) – see (56a–b). On the other hand, a Chinese passive sentence with two quantifiers is ambiguous, whereas an English double object construction is not – cf. (57a, b):

(56) a. Someone tried every dish.
b. Yaoshi liangge ren zhaodao meige xiansuo
if two men found every clue

(57) a. Yaoshi liangge xiansuo bei meigeren zhaodao
if two clues by everyone found
b. John assigned someone every problem.

Aoun and Li propose the following scope principle:

(58) **Scope Principle:**
A quantifier A has scope over a quantifier B if A c-commands a member of the chain containing B.

Q-Raising is claimed to be constrained by the Minimal Binding Requirement, which forbids stacked quantifiers, i.e., structures of the type Q_i Q_j [t . . . t], whether the quantifier-variable relations are nested or crossing:

(59) **Minimal Binding Requirement:**
Variables must be bound by the most local potential A' binder.

As a consequence of (58) and (59), LF representations of multiple quantifier constructions can be of two basic types:

(60) a. Q_i [. . . t_i . . . Q_j [. . . t_j . . .]
b. Q_i [. . . t_i . . . Q_j [. . . t_i . . . t_j . . .]

The lower t_i in (60b) does not violate the Minimal Binding Requirement because it is an NP trace, not a variable. Whereas (60a) is disambiguated, (60b) is ambiguous: both Q_i and Q_j have scope over the other, because each c-commands a trace of the chain containing the other. According to Aoun and Li (1989), a Chinese transitive sentence with a subject and an object quantifier has structure (60a). In English, on the other hand, the subject is generated inside the VP; hence an English sentence like (56a) is to be mapped on the LF in (60b). (Chinese Infl, unlike English Infl, is not lexical, and the non-L-marked VP blocks subject raising to Spec, IP.) In a Chinese passive sentence, however, the subject quantifier does bind a VP-internal trace; that is why it is scopally ambiguous. (As Hornstein 1995: 39 notes, it is unclear, though, why the non-L-marked Chinese VP does not block NP-movement in this case.) The English double object construction is claimed to be similar to the Chinese active transitive sentence in the respect that the indirect object and the direct object are claimed to form a small clause, in which the VP-external constituent has no trace in the VP.

This is the relevant section of the LF that Aoun and Li (1989) would assign to (54), given again as (61a):

(61) a. Who do you think that everyone saw at the rally?
b. Q_i [. . . [$_{CP}$ t_i [$_{IP}$ Q_j [t_j [$_{VP}$ t_j t_i]]]]]

The sentence is correctly predicted to be ambiguous: Q_i, the *wh*-operator, c-commands every member of the chain headed by Q_j, and Q_j, the embedded subject operator, also c-commands the root of the chain headed by Q_i.

(55), given again as (62a), on the other hand, is correctly predicted to be non-ambiguous, given that the lower quantifier does not c-command a member of the chain headed by the higher quantifier:

(62) a. Some men think that everyone saw Mary at the rally.
b. Q_i [$_{VP}$ t_i . . . [$_{CP}$ [$_{IP}$ Q_j [$_{IP}$ t_j [$_{VP}$ t_j]]]]]

(32a, b) appear, at first sight, to violate the Minimal Binding Requirement. These are the chains they involve:

(63) a. What did everyone buy for Max?
$Q_j\, Q_i\, [_{IP}\, t_i\, [_{VP}\, t_i\, t_j]]$
b. Who bought everything for Max?
$Q_j\, [_{IP}\, t_j\, Q_i\, [_{VP}\, t_j\, t_i]]$

Actually, the problem with the Minimal Binding Requirement is eliminated by a qualification added to the requirement, according to which *a* only qualifies as a potential A-bar binder for *b* iff *a* c-commands *b*, *a* is in an A-bar position, and co-indexing of (*a*, *b*) would not violate any grammatical principle. Auon and Li argue that the co-indexing of the *wh*-phrase (Q_j) with t_i would be a Principle C violation, hence Q_j is not a potential binder for t_i. The real problem, pointed out by Ruys (1992), is that (63b), with Q_i binding both t_j and t_i, is predicted to be just as ambiguous as (63a), contrary to fact.

In this framework, the scopal ambiguity attested in Raising structures can be accounted for without lowering. Observe the LF assigned to an English Raising structure:

(64) a. Someone seems to have attended every rally.
b. $someone_i\ [t_i$ seems $[every\ rally_j\ [t_i$ to have attended $t_j]]]$

Every rally can have scope over *someone* because it c-commands a trace of the chain containing *someone*. This approach, however, cannot solve a problem first noticed by Aoun (1981); namely, in (65a) the matrix reflexive forces the existential quantifier binding it to have matrix scope. Nevertheless, the LF assigned to (65a) by Aoun and Li, represented in (65b), is as ambiguous as any Raising structure:

(65) a. Someone seems to himself to have attended every rally.
b. $someone_i\ [t_i$ seems to himself $[every\ rally_j\ [t_i$ to have attended $t_j]]]$

A further problem is that Chinese Raising structures, e.g., that in (66), are not ambiguous:

(66) Yaoshi liangge ren keneng kandao meigeren
if two men likely see everyone

Aoun and Li explain the lack of narrow scope of the raised subject in (66) by claiming that in Chinese the raising predicate and the embedded predicate are restructured to form a single complex predicate (because otherwise the non-L-marked matrix VP, a barrier, would not let the embedded subject through).

In a revised version of the scope interpretation theory of Aoun and Li (1993b), only the bare quantifiers are Q-raised out of the quantified NPs. Hence the new theory does not refer to NP-traces any longer; the Scope Principle interprets only non-NP links of chains. That is:

(67) **The Scope Principle:**
X takes scope over Y just in case some part of X's A'-chain c-commands some part of Y's A'-chain.

Aoun and Li assume the following Generalized Binding Condition:

(68) An A'-binder B is a potential antecedent for a variable V iff indexing B and V does not violate any grammatical principle, e.g., principle C, the theta-criterion, etc.

Adopting the adjunction theory of *Barriers* (Chomsky 1986a), Aoun and Li only allow adjunction to XPs in non-theta-positions. That is, whereas the subject NP is a potential adjunction site, the object NP is not. A subject quantifier assumes wide scope by being adjoined to IP, and it assumes narrow scope by being adjoined to the subject NP, which dominated it originally. (In Aoun and Li's framework, a Q adjoined to NP does not c-command outside the NP; hence the Minimal Binding Requirement is not violated.) An object quantifier, on the other hand, takes wide scope by being adjoined to IP, and narrow scope by being adjoined to VP. Cf.:

(69) a. Some student attended every class.
b. $[_{IP}$ Every$_i$ $[_{IP}$ $[_{NP}$ some$_j$ $[_{NP}$ t_j student]] attended $[_{NP}$ t_i class]]]
c. $[_{IP}$ Some$_j$ $[_{IP}$ $[_{NP}$ t_j student] $[_{VP}$ every$_i$ $[_{VP}$ attended $[_{NP}$ t_i class]]]]]

In Chinese active sentences Spec, IP is a theta-position, hence structure (69b), in which the subject has narrow scope with respect to the object, is illicit. In Chinese passive sentences, on the other hand, Spec, IP is not a theta-position, allowing adjunction.

In Raising constructions the subject can be lowered into the embedded subject position in both languages. In English, the lowered subject can have its quantifier adjoined locally to the subject NP, which is a non-theta-position – see (70). In Chinese, where the embedded subject position is a theta-position, this move is impossible; hence the lowered subject cannot assume narrow scope with respect to the embedded object:

(70) $[_{IP}$ t_i . . . $[_{IP}$ Q_j $[_{IP}$ $[_{NP}$ Q_i $[_{NP}$ t_i N']] . . . $[_{NP}$ t_j N']]]]

The optional lowering does not take place in (71) because it would leave an unbound anaphor:

(71) Someone seemed to himself to have attended every rally.

The appeal of this approach is somewhat diminished by the fact that the Q-Raising rule it assumes is not identical any more with the visible Q-Raising of, e.g., Hungarian, which involves quantified NPs.

7 A Minimalist approach to scope ambiguities

In the Minimalist framework, the Q-Raising transformation is problematic for at least two reasons. Phrasal adjunction, in general, is an atypical operation in Minimalism. Phrasal movement should be substitution, and, furthermore, it should be motivated by the need of morphological feature checking. Quantifiers actually do bear morphological markers; so if they had an invariant landing site, it would not be inconceivable to analyze their landing site as the specifier of an abstract quantifier head with a quantifier feature to check. However, May (1985), Aoun and Li (1993), and others have convincingly shown that the English scope facts cannot be accounted for unless Q-Raising is allowed a variable landing site.

These considerations have led to new approaches to quantifier scope interpretation. Hornstein's solution is the simplest (cf. Hornstein 1995: ch. 8); he eliminates Q-Raising, and derives its effects from regular A-movement to Spec, AgrS and Spec, AgrO. His theory is based on the standard Minimalist premises that the subject moves to Spec, AgrS, whereas the object moves to Spec, AgrO, and movement is copying and deletion. He also makes the following specific assumptions:

(i) At the CI interface an A-chain has at most one and at least one lexical link (the rest of them are deleted).
(ii) A definite argument must be outside the VP shell at the CI interface (as required, e.g., by the Mapping Principle of Diesing 1992b).

In Hornstein's theory, quantifiers are moved via A-movement – which explains why quantifier scope normally cannot transgress a sentence boundary. Wide-scope quantifiers are interpreted in the head positions of their chains, whereas narrow-scope quantifiers are interpreted in the root positions of their chains. A transitive sentence with two quantifiers, like that in (72a), can be associated with four possible CI interface representations, spelled out in (72b–e). The chain links to be deleted are put into brackets:

(72) a. Someone attended every seminar.
b. $[_{AgrS}$ Someone $[_{TP}$ Tns $[_{AgrO}$ every seminar $[_{VP}$ (someone) $[_{VP}$ attended (every seminar)]]]]]
c. *$[_{AgrS}$ Someone $[_{TP}$ Tns $[_{AgrO}$ (every seminar) $[_{VP}$ (someone) $[_{VP}$ attended every seminar]]]]]
d. *$[_{AgrS}$ (Someone) $[_{TP}$ Tns $[_{AgrO}$ (every seminar) $[_{VP}$ someone $[_{VP}$ attended every seminar]]]]]
e. $[_{AgrS}$ (Someone) $[_{TP}$ Tns $[_{AgrO}$ every seminar $[_{VP}$ someone $[_{VP}$ attended (every seminar)]]]]]

(72c, d) are illegitimate representations, because they contain a definite argument (the *every* phrase) in the VP, and thereby violate the Mapping Principle of Diesing

(1992b). (72b) is the representation yielding direct scope, whereas (72e) is the representation yielding inverse scope.

In this model, a subject universal quantifier, e.g., that in (73), is bound to have wide scope, as the Mapping Principle does not allow it to be interpreted inside the VP:

(73) Every man kissed a woman.

The women kissed may be different for each man or may be the same, which looks like a difference in relative scope. Hornstein, however, is forced to deny the ambiguity, and to call the sentence vague instead.

Hornstein's theory correctly predicts the ambiguity of raising structures of the following type:

(74) a. Someone seemed to attend every class.
b. [$_{AgrS}$ Someone seemed [$_{AgrS}$ someone to [$_{AgrO}$ every class [$_{VP}$ someone attend (every class)]]]]

Since the chain headed by *someone* has members both above and below the universal quantifier in Spec, AgrO, any of which is legitimate at the CI interface, *someone* can have either wide scope or narrow scope with respect to the universal quantifier.

Hornstein's theory is successful in treating cases in which one of the scope possibilities is excluded because it does not meet some independent binding requirement. For example, the usual ambiguity of transitive sentences with two quantifiers disappears in (75a) because only the higher subject chain link, c-commanding Spec, AgrO, binds the pronoun embedded under the object:

(75) a. Someone$_i$ played every piece of music he$_i$ knew.
b. [$_{AgrS}$ Someone [$_{Tns}$ [$_{AgrO}$ every piece of music he knew [$_{VP}$ (someone) [$_{VP}$ played (every piece of music he knew)]]]]]

Raising structures in which only one of the scope possibilities meets a binding requirement are analyzed similarly:

(76) a. Every picture of his$_i$ dog seemed to someone$_i$ to be out of focus.
b. [$_{AgrS}$ (every picture of his dog) [$_{VP}$ seemed to someone$_i$ [$_{AgrS}$ every picture of his$_i$ dog to be out of focus]]]

(77) a. Someone$_i$ seemed to himself$_i$ to be reviewing every report.
b. [$_{AgrS}$ someone$_i$ [$_{VP}$ seemed to himself$_i$ [$_{AgrS}$ (someone) to be [$_{AgrO}$ every report [$_{VP}$ (someone) [reviewing (every report)]]]]]]

In (76) the matrix prepositional object can bind the pronoun only in the subject link occupying the embedded AgrS. The link in the higher Spec, AgrS is not in

its c-command domain. The link in the lower VP, on the other hand, is ruled out by Diesing's Mapping Principle (it is a definite NP, which must leave the VP). Hence the raised subject has narrow scope with respect to the matrix prepositional object. In (77), on the other hand, the matrix subject can only have wide scope because only the highest chain link c-commands the matrix anaphor.

The Chinese facts also fall out if we assume that in Chinese the subject chain has no VP-internal chain link except in passive sentences.

8 Scope interpretation constrained by economy

The approach of Fox (1995b) maintains the Quantifier Raising and Quantifier Lowering rules of May (1985), and argues that they are restricted by economy considerations. This theory is built on the insight that shorter derivations are less costly; hence, among derivations with the same semantic interpretation, that involving the least moving is the optimal one. In other words, a quantifier moves only to establish a semantically significant scopal relation. Compare the possible derivations of (78a) and (79a):

(78) a. A boy loves every girl.
b. $[_{IP}$ a $boy_1 \ldots [_{VP}$ every $girl_2$ $[_{VP}$ t_1 loves $t_2]]]$
c. $[_{IP}$ every $girl_2$ $[_{IP}$ a $boy_1 \ldots [_{VP}$ t_1 loves $t_2]]]$

(79) a. John loves every girl.
b. $[_{IP}$ $John_1 \ldots [_{VP}$ every $girl_2$ $[_{VP}$ t_1 loves $t_2]]]$
c. $*[_{IP}$ every $girl_2$ $[_{IP}$ $John_1 \ldots [_{VP}$ t_1 loves $t_2]]]$

Although the derivation in (78c) is longer than that in (78b), the two derivations have different interpretations; hence they do not belong to the same reference set, and need not be compared with respect to economy. In the case of (79), on the other hand, the additional layer in (c) does not yield a further interpretation; hence the (c) variant is less optimal than the shorter (79b).

Fox's theory provides a natural account of a wide range of problematic scope interactions. Consider first the interaction of scope and VP ellipsis, discussed above in connection with (36). Recall that the problem is represented by the lack of ambiguity in (80b), as opposed to (80a):

(80) a. Some boy admires every teacher.
b. Some boy admires every teacher and Mary does too.

The explanation quoted in connection with (36) is based on the assumption that VP reconstruction at LF requires the elided VP to contain the operator binding the VP-internal variable. This explanation, however, only works if VP reconstruction is ordered after QR in LF. What is worse, VP ellipsis does not always eliminate ambiguity. In (81) the elided object quantifier can have scope over the subject:

(81) Some boy admires every teacher and some girl does too.

That is, whereas (82a) is an impossible LF for (80b), (82b) is a possible LF for (81):

(82) a. *every teacher$_1$ [some boy admires t_1] and
every teacher$_2$ [Mary admires t_2]
b. every teacher$_1$ [some boy admires t_1] and
every teacher$_2$ [some girl admires t_2]

In the case of (80a)/(82) the derivation is interpretively identical with the derivation involving no adjunction to IP; hence, as the less econominal variant, it is discarded. In the case of (80b)/(82b) adjunction to IP elicits a meaning which is otherwise not available; hence economy considerations are irrelevant. The requirement of parallelism between elided material and its antecedent coupled with the economy principle in question yields the following generalization:

(83) **Ellipsis scope generalization:**
The relative scope of two quantifiers, one of which is in an antecedent VP of an ellipsis construction, may differ from the surface c-command relation only if the parallel difference will have semantic effects in the elided VP.

Extraction out of coordinate structures is also known to limit scope interpretation possibilities. Compare the ambiguous (84a) with (84b), in which across-the-board quantifier lowering eliminates one of the scope readings: the object quantifier within the coordinated VP cannot take scope over the subject:

(84) a. A different student likes every professor.
b. A different student [[likes every professor] and [hates the dean]].

This fact has led May (1985) and Ruys (1992) to the conclusion that QR obeys the Coordinate Structure Constraint. However, this explanation cannot be extended to cases like (85):

(85) A guard is standing in front of every church and sitting at the side of every mosque.

This sentence is understood to describe a situation in which the guard varies with the churches and the mosques. This reading can be represented by an LF involving VP-level QR in both conjunctions, and across-the-board lowering of the subject to the two coordinate VPs, as follows:

(86) – is [$_{VP}$ every church$_1$ [$_{VP}$ [a guard] standing in front of t_1]] and
[$_{VP}$ every mosque$_1$ [$_{VP}$ [a guard] standing at the side of t_1]]

The question is why the proposed derivation, i.e., across-the-board lowering, is not allowed in the case of (84b). The answer is provided by the economy principle in question, together with the following independently motivated assumptions:

(87) a. Extraction is possible out of a coordinate structure only if there are two independent structures, each composed of one of the coordinates together with material above it up to the antecedent.
b. Grammatical constraints are checked independently in the two derivative structures.

It follows from (87) that lowering is only possible if it is across the board. Furthermore, as required by economy, lowering must yield a distinct interpretation in both derivative structure. This is satisfied in (86a, b), but would not be satisfied in (84b). Consider its LF:

(88) [$_{VP}$ every professor [$_{VP}$ a different student likes]] and
[$_{VP}$ the dean [$_{VP}$ a different student likes]]

Fox's approach can also explain why Quantifier Raising is clause-bounded in most cases: because QR takes place successive-cyclically, and each step must be motivated by a shift in semantic interpretation. Compare the following minimal pair:

(89) a. One girl knows that every boy bought a present for Mary.
b. One girl knows what every boy bought for Mary.

In (89a) the universal quantifier cannot take scope over the matrix existential quantifier. The reason is that there is no motivation for the first step of successive-cyclic Q-Raising to take place. Movement in one swoop across the clausal boundary, on the other hand, would violate regular constraints of A-bar movement – hence the quantifier is stuck. In (89b), on the other hand, the movement of the universal quantifier over the *wh*-operator is semantically motivated (it provides a pair-list reading). The quantifier raised that high is available for Q-Raising into the matrix sentence.

9 The theory of relativized scope

Liu's dissertation (1990) initiated an important new line of research in the area of scope ambiguities, which has culminated so far in a volume of papers edited by Anna Szabolcsi (1997c), among them Beghelli and Stowell (1997).

Liu (1990) was among the first to point out that the scope possibilities of a quantifier also depend on its type (see also Ioup 1975a). She divided quantified NPs into two types (generalized-specific (g-specific) and non-specific NPs), but Beghelli and Stowell (1997) have argued for the necessity of a more sophisticated classification. They distinguish five types of quantified phrases:

(90) a. Interrogative QPs: *what*, *which man*.
b. Negative QPs: *nobody, no man*.

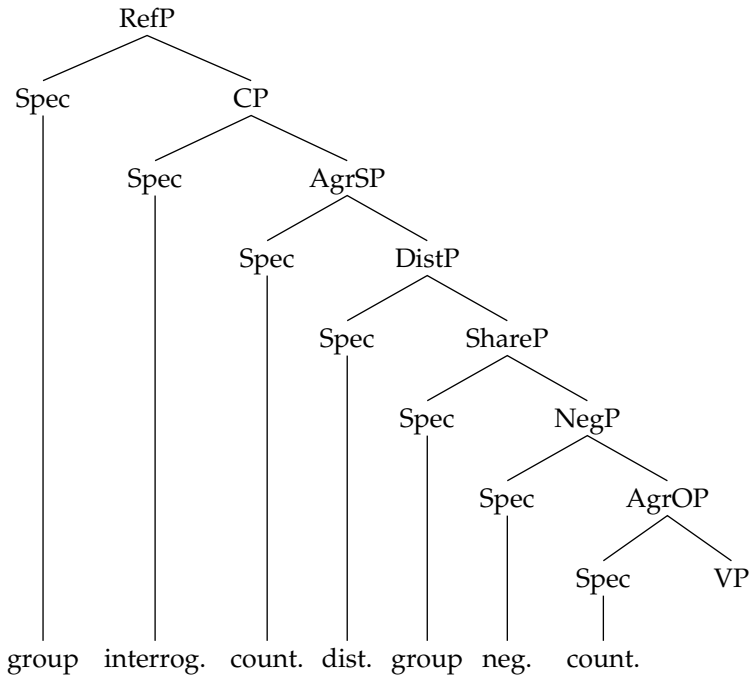
c. Distributive-universal QPs: *every/each man*.
d. Counting QPs: *few girls*, *at most three students*.
e. Group-denoting QPs: *one man*, *three men*, *a man*, *the men*.

They claim that these types of quantified phrases have their own designated landing sites in sentence structure, where they participate in feature checking. Their scope extends over the domain they c-command at LF; hence the fact that they can occupy only certain positions imposes indirectly constraints on their scope possibilities, and on their relative scope, as well.

Beghelli and Stowell argue for a much more articulated left periphery for the English sentence than was previously assumed. Although they base their claim on evidence internal to English, facts from languages with visible quantifier movement, primarily Hungarian, also support their proposal.

The structure they assign to the English sentence is represented under (91). Different types of quantifiers move to the specifiers of different projections in order to have their particular feature checked. The diagram indicates what type of quantifier each position can be filled with:

(91)



Simple indefinites of the type *a man*, *men*, can also remain in the VP as bound variables. Beghelli and Stowell are forced to analyze also *every* phrases that are in the scope of, e.g., negation (see (92)) as VP-internal bound variables:

(92) The students could not answer every question.

The proposed structure leaves room only for a few types of scope ambiguity. Thus a group-denoting QP, e.g., *two books* in (93), can have either wider or narrower scope than a distributive QP – given that it can occupy either Spec, RefP above DistP, or Spec, ShareP below DistP at LF:

(93) Each student read two books.

The system correctly predicts the lack of scope ambiguity in a wide range of cases, which remained a mystery for all previous approaches. For example, it falls out that a counting QP of object function, e.g., that in (94a, b), can never take inverse scope over a group denoting QP or distributive QP in subject position:

(94) a. Some/one of the students visited more than two girls.
b. Every student visited fewer than three girls.

An interrogative QP is predicted to take wide scope with respect to any other QP in its clause, other than a group denoting QP in Spec, RefP – which is borne out in most cases, though it is not borne out in the type illustrated in (32a) above.

Beghelli and Stowell claim that they can predict that of the seemingly similar constructions in (95a, b) and (96a, b), only the former have inverse scope:

(95) a. An American flag was hanging in front of two buildings.
b. Blossoms sprang out of two rosebushes.

(96) a. Five guards stood in front of two buildings.
b. Three blossoms sprang out of two rosebushes.

Simple indefinites (those supplied with *a/an*, and bare plurals), like *an American flag*, and *blossoms* in (95), have the possibility of a VP-internal bound variable interpretation; hence they can have narrow scope with respect to a group-denoting QP occupying ShareP. In (96a, b), however, the group-denoting subject QP will stand in Spec, RefP and the other one in Spec, ShareP; therefore inverse scope is impossible. (It is not quite clear, though, why it could not be the other way round, with the locative taking scope in Spec, RefP and the subject in Spec, ShareP.)

It also falls out from structure (91) that negation can have scope only over an object-counting QP, occupying Spec, AgrOP – see (97a) – but not over a subject-counting QP, occupying Spec, AgrSP – see (97b):

(97) a. The students didn't read two books.
b. Two students didn't read this book.

The scope of negation cannot extend over a group-denoting QP, either, unless it is a bare indefinite or an *every* phrase acting as a VP-internal bound variable, as in (98a, b):

(98) a. A student didn't write this book.
b. Every student didn't write an essay.

(91) also accounts for why an *each* QP more often takes wide scope than, e.g., an *every* QP: an *each* QP can only sit in Spec, DistP. That is why an *each* QP in the scope of negation is marginal, at best – cf.:

(99) a. John didn't read every book.
b. ??John didn't read each book.

Compare also the minimal pair in (100):

(100) a. One boy didn't read every book.
b. One boy didn't read each book.

In the case of (100a) the scope order *one>not>every* is perfectly possible, with *every* interpreted as a VP-internal bound variable. In (100b), on the other hand, the *each* QP must be raised to Spec, DistP; hence only the opposite scope order (*each>one>not*) exists.

It still remains a question why (101) is marginal:

(101) ??Every boy didn't leave.

Beghelli and Stowell claim that only *each* QPs are endowed with a [+Distributive] feature that must be checked in Spec, DistP; *every* QPs are underspecified for [Distributive]. Accordingly, *every* QPs only move to Spec, DistP if they are not bound as variables by a closer binder such as negation.

Szabolcsi (1997b) argues against semantically blind scope-assigning rules like that in (102) on a semantic basis:

(102) a $[_D \ldots b \ldots] \rightarrow$ (a scopes over b)

She provides further minimal pairs in the case of which a semantically blind rule would yield a wrong result. E.g., not all direct-object QPs can scope over the subject (cf. 103a, b), and not all direct-object QPs can scope over negation (cf. 104a, b):

(103) a. Three referees read every abstract.
every N > three N
b. Three referees read few abstracts.
*few N > three N

(104) a. John didn't read many abstracts.
many N > not
b. John didn't read few abstracts.
*few N > not

As she points out, it is not the case that the missing readings are incoherent – because they can be expressed by different constructions, such as those in (105):

(105) a. Few abstracts were read by three referees.
few N > three N
b. Few abstracts were not read by John.
few N > not

Szabolcsi claims that quantification involves a variety of distinct, semantically conditioned processes. She distinguishes two basic types of scope-taking mechanisms:

(i) The noun phrase introduces a logical subject of predication (i.e., basically a discourse referent).
(ii) The noun phrase performs a counting operation on an independently defined predicate denotation.

The two mechanisms, associated with different left-peripheral positions, result in different interpretations. These can be observed particularly clearly in Hungarian, where the left-peripheral positions in question (those identified by Beghelli and Stowell 1997) are filled visibly, at S-structure. Compare, for example, the following Hungarian examples:

(106) a. Tegnap sok diákunk meg betegedett.
yesterday many student-our PREFIX got-sick
b. Tegnap sok diákunk betegedett meg.
yesterday many student-our got-sick PREFIX

(106a), with the quantified phrase in Spec, DistP, involves a 'subject of predication' mode of operation, i.e., we take a set of students and claim that each of them fell ill. (106b), with the quantified phrase in Spec, AgrP, on the other hand, involves a counting operation: we take those who fell ill, and count our students among them.

10 The theory of overt quantifier movement

Kayne (1998) adopts Beghelli and Stowell's claim that quantified phrases occupy various designated landing sites in the left periphery of the sentence. What is new in his approach is the claim that movement to scope position invariably takes place in visible syntax; i.e., it always means the movement of phonologically realized phrases. Constructions in which an operator nevertheless does not c-command its scope at S-structure involve the subsequent movement of the phrase c-commanded by the operator into a position above the operator.

Kayne's starting point is the Norwegian construction in (107a, b), in which the negative object is assumed to occupy the specifier of NegP, a projection above VP and below CP. As shown by (107c, d), the preposing of a negative object into Spec, NegP is obligatory, and movement to Spec, NegP is restricted to negative objects:

(107) a. [$_{CP}$ Jon [$_{C'}$ leser [$_{NegP}$ ingen romaner]]]
John reads no novels

b. [$_{CP}$ Jon [$_{C'}$ har [$_{NegP}$ ingen romaner lest]]]
John has no novels read.

c. *Jon har lest inger romaner.
John has read no novels.

d. [$_{CP}$ Jon har [$_{NegP}$ ikke [$_{VP}$ lest noen romaner]]]
John has not read any novels.

Kayne claims that the movement of *no*-phrases to Spec, NegP takes place in English, as well – see (108); however, in sentences containing a lexical verb its effect is covered by subsequent VP movement into a higher specifier position – see the derivation in (109):

(108) a. [$_{CP}$ John [$_{C'}$ is [$_{NegP}$ no Einstein]]]
b. [$_{CP}$ John [$_{C'}$ has [$_{NegP}$ no car]]]

(109) John reads no novels → (neg phrase preposing)
John no novels$_i$ reads t_i → (VP preposing)
John [reads t_i]$_j$ no novels$_i$ t_j

Nobody and *somebody* do not occupy the same positions in this framework, which is also clear from the following minimal pair:

(110) a. Nobody is bound to be there.
b. Somebody is bound to be there.

Whereas (110a) cannot be assigned the interpretation in (111a), with *nobody* having narrow scope, (110b) can be assigned the interpretation in (111b), with *somebody* having wide scope:

(111) a. *'There is bound to be nobody there.'
b. 'There is bound to be somebody there.'

Nobody could only assume narrow scope in the Spec, NegP of the embedded clause. Its movement from there to the matrix subject position, however, would be improper (A'-to-A) movement; that is why its narrow-scope reading is impossible.

The asymmetrical scope possibilities of subjects and objects fall out in this theory for free. Consider again the minimal pair quoted above under (5a) and (6a), repeated here as (112):

(112) a. I demand that you marry no one.
b. I demand that no one marry you.

The negative object of (112a) assumes wide scope through the following series of movements:

(113) a. I demand that you marry no one → (neg preposing)
b. I no one$_i$ demand that you marry t$_i$ → (VP preposing)
c. I [demand that you marry t$_i$]$_j$ no one$_i$ t$_j$

The subject of (112b) cannot assume wide scope simply because a subject cannot be moved across a filled complementizer into a matrix A'-position (a constraint traditionally derived from the ECP).

A similar analysis is applied to *only* and *even* phrases, as well. The fact that these phrases follow their operator head *only* or *even* instead of appearing in its specifier position is derived by the further movement of the head to a higher W position, where it has its +w [word order] feature checked. That is:

(114) a. . . . only criticized Bill → (movement to Spec, *only*)
b. . . . Bill$_i$ only criticized t$_i$ → (raising of *only* to W)
c. . . . only$_j$ Bill$_i$ t$_j$ criticized t$_i$ → (VP preposing)
d. . . . [criticized t$_i$]$_k$ only$_j$ Bill$_i$ t$_j$ t$_k$

The theory does not appear to be particularly suitable for the handling of scope ambiguity; Kayne has to assume – in a way contradicting his program – that scope ambiguity arises from the possibility of reconstruction. Consider the following German example:

(115) weil irgendjemand auf jeden gespannt ist
because someone for everyone anxious is

Irgendjemand originates in a position below *auf jeden*, into which it can be reconstructed. (As suggested in Kayne 1998: fn. 110, the verb-final order may be the result of V movement to I, and the preposing of the verbless VP to Spec, IP. *Auf jeden* is in the specifier of a Distributive Phrase.) In (116) below, in which the universal quantifier is in an infinitival object presumably left in situ, on the other hand, *jemand*, the matrix subject, does not originate in a position below that of *jeden* – that is why *jeden* cannot have wide scope:

(116) weil jemand versucht hat jeden reinzulegen
because someone tried has everyone to-cheat

The question remains why the English equivalent of (116) is ambiguous:

(117) (since) someone has tried to cheat everyone

Cf. also:

(118) At least one student has tried to fool every professor.

In these English examples the *every* phrase is claimed to have been raised overtly into the matrix clause, followed by VP preposing. Cf.:

(119) a. Someone has tried to cheat everyone. → (distributive phrase preposing into Spec, DistP)
b. Someone everyone$_i$ has tried to cheat t_i → (VP movement to Spec, W)
c. Someone [has tried to cheat t_i]$_j$ everyone$_i$ t_j.

Kayne claims that in German, VP movement is systematically absent.

Kayne's theory of scope interpretation, eliminating post-Spell-Out A'-movement, simplifies grammar at the cost of deriving extremely complex sentence structures with projections of no independent motivation (e.g., WPs). Erteschik-Shir (1997) pursues the opposite strategy: her theory enriches grammar by introducing a level of representation marking topic-focus structure, but employs no empirically unmotivated transformations (whether quantifier movement or remnant movement).

11 Scope determined by f-structure

In Erteschik-Shir's theory of f(ocus) structure, scope is determined – and disambiguated – in the so-called f(ocus)-structure of sentences, which is an annotated S-structure with the topic and focus constituents marked (cf. Erteschik-Shir 1997: ch. 5). Topic and focus are discourse notions interpreted in the framework of a dynamic semantic model employing the file metafor. The TOPIC rule instructs the hearer to locate on the top of this file an existing card, whereas the FOCUS rule instructs the hearer either to open a new card (in the case of an indefinite) or to locate an existing card (in the case of a definite), and to put it on the top of the file.

Erteschik-Shir's premises for the derivation of scope are extremely simple. First, the topic by definition takes scope over the rest of the sentence. Sentences with an implicit stage topic (an invisible spatio-temporal argument referring to a particular location in space and time) have 'unscoped' interpretations (i.e., interpretations without any scope dependencies), in which the quantifiers are interpreted independently of each other, neither quantifier being a function of the other.

The topic of a sentence is selected from among the constituents identifying a discourse referent (i.e., basically from among the specific/generic noun phrases) by means of the following constraints:

(120) **Topic Constraints:**
a. If both the subject and another argument qualify as topics, the subject is picked as the main topic (unless discourse pushes heavily for the other f-structure).

b. A stage topic (represented by an explicit or implicit locative or temporal expression) or a subject topic is less marked than an object topic.

Sentences with two quantifiers such as (121) have two unmarked readings and a marked one. One of the unmarked options is to analyze the subject quantifier (Q1) as the topic (as in 122a); the other one is to assume a stage topic, with both quantifiers in focus (as in 122c). The marked solution is to pick the VP-internal quantifier as the topic (see 122b):

(121) Two girls arrested three boys.

(122) a. $[Q_1]_{TOP}\ [V\ Q_2]_{FOC} \rightarrow (Q_1 > Q_2)$
b. $TOP_2\ [Q_1\ V\ Q_2]_{FOC} \rightarrow (Q_2 > Q_1)$
c. $sTOP_t\ [Q_1\ V\ Q_2]_{FOC} \rightarrow$ (non-scoped reading)

Under any scope relation, both *two girls* and *three boys* allow both a D(istributive) reading and a C(ollective)/sum reading, i.e., they can be taken to denote either a set of individuals, or a single multitude: the sum (marked by the symbol +) of its members.

In the case of a stage topic, the truth of the predicate is evaluated with respect to a given time and place – that is, a single event is involved, which yields unscoped readings. (122c) actually has four unscoped readings, depending on whether the two quantifiers are assigned a D(istributive) set reading or a C(ollective) (sum) reading. The four possibilities are represented by Erteschik-Shir as follows (the symbols *s* and *o* mean 'subject' and 'object'):

(123) a. Cs Co {+(a, b)} → {+(1, 2, 3)}
b. Cs Do {+(a, b)} → 1
→ 2
→ 3
c. Ds Co a → {+(1, 2, 3)}
b →
d. Ds Do a → 1
b → 2
→ 3

In the reading under (123a) both the girls (a, b) and the boys (1, 2, 3) are looked upon collectively, as groups/sums. (123b) says that a group of two girls arrested three individual boys; (123c) says that two individual girls arrested a group of three boys; in (123d) both the boys and the girls are taken to be individuals.

The scoped readings are represented under (124):

(124) a. Ds (Co) a → [1, 2, 3]
b → [4, 5, 6]

b. Ds (Do) a $\rightarrow$ 1 b $\rightarrow$ 4
$\rightarrow$ 2 $\rightarrow$ 5
$\rightarrow$ 3 $\rightarrow$ 6

c. Do (Cs) [a, b] $\rightarrow$ 1
[c, d] $\rightarrow$ 2
[e, f] $\rightarrow$ 3

e. Do (Ds) a $\rightarrow$ 1 c $\rightarrow$ 2 e $\rightarrow$ 3
b $\rightarrow$ d $\rightarrow$ f $\rightarrow$

In the two unmarked cases (corresponding to (120a)) the subject quantifier functions as topic, and has wide scope. Depending on whether the object cardinal is looked upon collectively or distributively, the sentence means (124a) or (124b). In the case of (124a) the two girls each arrested a group of three boys, whereas in the case of (124b) the two girls each arrested three individual boys.

(124c, d), with the object quantifiers having wide scope, represent two marked readings. In the case of (124c) a possibly different group of two girls arrested each of the three boys, whereas in the case of (124d) a possibly different set of two individual girls arrested each of them.

Stage topics are ruled out for individual-level predicates; hence sentences with individual-level predicates such as (125) are predicted to have no unscoped readings:

(125) Two students speak three languages.

Indeed, (125) does not express that a group or set of two students speaks a group or set of three languages. Either each of the students speaks three languages (irrespective of whether their languages are the same or different), or each of the languages is spoken by two students (irrespective of whether the speakers of the different languages coincide or not).

Certain individual-level predicates block a reading in which the object is interpreted as the topic. E.g.:

(126) a. Two boxes contain three books.
b. Two lakes are close to three houses.
c. Two women have three husbands.
d. Two dogs require three caretakers.

Such sentences are predicted not to allow their object to take wide scope, and, as their predicates are individual-level, they cannot have a stage topic, either. Indeed, they can only be assigned the following readings:

(127) a. Ds (Co) a $\rightarrow$ [1, 2, 3]
b $\rightarrow$ [4, 5, 6]

b. Ds (Do) a $\rightarrow$ 1 b $\rightarrow$ 4
$\rightarrow$ 2 $\rightarrow$ 5
$\rightarrow$ 3 $\rightarrow$ 6

Consider also the relative scope possibilities of *some* and *every*, e.g., in (128):

(128) Everyone arrested someone.

Someone cannot be the main topic; furthermore, it is singular, hence the distributive/collective distinction is irrelevant. This leaves three readings, namely:

(129) a. sTOP_i [everyone$_D$ arrested someone]$_{FOC}$
b. sTOP_i [everyone$_C$ arrested someone]$_{FOC}$
c. Everyone$_{TOP}$ [arrested someone]$_{FOC}$

The unmarked reading that can be derived from (128a) is that in (129c). *Everyone* is nearly always understood to denote a specific set already present in the domain of discourse, and hence to bear a topic role. In this case, represented in (129c), the predicate is assessed for each individual member of this set, with the denotation of *someone* co-varying with them. In the unlikely interpretation under (129a) the sentence is assigned a stage topic; hence it describes a single event in which one person gets arrested by each member of the set defined by *everyone*. (129b) means the same except that *everyone* is viewed collectively. In Erteschik-Shir's theory the focus of a sentence can be further divided into a subordinate topic and focus, which allows for the topic to distribute over the object also in the case of a stage topic.

Each differs from *every* in that it has only a distributive reading; no collective reading is available in its case.

A scope theory based on a somewhat similar insight is that of Hunyadi (2002), who argues that relative scope is universally expressed by sentence prosody. In the type of language represented by, e.g., Hungarian, an operator has scope over the intonational phrase that it is the head of. The head of an intonational phrase is the constituent bearing primary stress; hence a stressed quantifier has scope over the unstressed quantifiers of the same intonational phrase. Operators heading separate intonational phrases are ambiguous scopally (unless they are inherently ranked, occupying different positions in a stipulated hierarchy of operators, in which the focus is preceded by quantifiers, and quantifiers are preceded by so-called sentence operators).

12 Scope and lexical semantics

Farkas (1997) claims that structural considerations underdetermine scope; they determine a necessary condition of an expression taking scope over another one, which, however, is not a sufficient condition.

Here is a case illustrating Farkas's point. The scope of universal quantifiers is usually-clause bound (unlike the scope of existentials, which is unbounded). E.g.:

(130) a. A politician said that every city should be the capital.
b. A politician said that the President lives in every city.

In these sentences, the universal cannot have 'extra-wide scope', extending over the existential in the main clause, by any means. On the other hand, its extra-wide scope is perfectly possible in the following sentences:

(131) A student made sure that every invited speaker had a ride.

The structural conditions are identical in (130) and (131); what is different is the lexical semantics of the main predicates. This is the generalization that accounts for the possibility of the wide-scope reading of the universal in (131):

(132) Extra-wide scope of a distributive universal over an indefinite is possible iff the two arguments are co-participants in some eventuality *e* in virtue of the lexical semantics of the predicates involved. In this case the two arguments are related in some relation *R*.

13 Conclusion

Questions of operator scope have been in the focus of interest in generative linguistics for at least 25 years; still, presumably not even the English facts to be accounted for are fully known yet (as recent papers such as Beghelli and Stowell 1997 and Szabolcsi 1997b revealed important new constraints on possible scope relations). Analyses of the quantifier scope phenomena of languages other than English hardly exist at all, and cross-linguistic studies are also very rare; hence very little is known of the parametric variation licensed in Universal Grammar. Hungarian, as well as Palestinian Arabic and Kinyarwanda, have been reported to display transparent, disambiguated quantifier scope relations; but it is not known how wide-spread this type of language is. In the case of languages like English the disambiguation of scope – i.e., the mapping of the non-bi-unique relation between form and interpretation on bi-unique relations – requires creative technical solutions. These are particularly sensitive to changes of linguistic theory and hence to obsolescence – so the problem of scope ambiguities is likely to stay with us also in the years to come.

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54 Reconstruction, Binding, and Scope

DOMINIQUE SPORTICHE

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1 Introduction

1.1 An informal introduction

Condition C of the Binding Theory, or some equivalent formulation, prohibits coreference between a non-pronoun (names, descriptions, etc.) and a pronoun under certain structural conditions. This prohibition is illustrated in the paradigm in (1) (underlined elements are supposed to corefer or to enter into a binding relationship):

(1) a. John said he was running for office.
b. *He said that John was running for office.
c. The office that John is running for will make him influential.
d. The office that he is running for will make John influential.

The pronoun may refer to the person designated by the name *John* in a, c, and d but not in b. This pattern shows that linear order is not at stake, or least not alone. The relevant notion involves c-command, leading to the informal formulation of Condition C in (2):

(2) **Condition C:**
A pronoun cannot corefer with a non-pronoun that it c-commands.

Only in (1b) is this principle violated under the relevant reading. In this context, (3) is surprising:

(3) a. *Whose examination of John did he fear?
b. *He feared Mary's examination of John.

In (3a), the pronoun does not c-command the *wh*-phrase, yet this sentence is deviant. This means that some modification of Condition C is needed.

A priori we may think that there are two distinct approaches to explaining this deviance: either modify the way Condition C is formulated, or keep it constant and modify how we define the kind of input that is used to evaluate whether it is satisfied or not. This is a subtle distinction. For the distinction to be real we must make sure that the two approaches are not mutually interchangeable. If we build into the formulation of Condition C a rule for evaluating the input that duplicates what we would do if we modify the input to Condition C without changing its formulation, the proposals are identical on these data and will have to be evaluated on something they truly do differently. This does not mean there is no issue, but the issue will not be relevant to the data we will look at, nor will it modify the logical structure of what ultimately needs to be said.

The second approach has always looked quite plausible, given that the deviance of (3a) seems related to the deviance of (3b): in both, the offending description is contained in the direct object of the verb *fear*, and the canonical[1] position of the direct object of *fear* is the postverbal position, a position c-commanded by the pronoun. If the direct object is treated as if it were in this canonical object position, we would have essentially manipulated the input to Condition C without reformulating it. Again, there are many different notations that can be used to construe this idea, and justifying which one should be used is a rather complex issue related to the choice of approaches discussed above, and not discussed here.[2]

Since (3a) involves a movement dependency between the clause-initial *wh*-phrase and one argument of the verb – a non-controversial claim when properly understood – we will use one current notation for this dependency in terms of traces. Accordingly, it can be represented as a binding relationship between this preposed phrase and the direct object position of this verb:

(4) [Whose examination of John]$_j$ did he fear t_j?

with t_j the trace of the *wh*-phrase. The pronoun *he* c-commands this trace t_j. If we suppose that this preposed phrase is, for the purpose of Condition C, in its trace position t_j or behaves as if it were in its trace position, the problem this sentence raises is accommodated, as it now has a structure similar to that of (3b).

Since the preposed phrase is moved, but behaves as if it had not, i.e., as if it were in the position it moved from, this process is, using the spatial movement metaphor, called reconstruction: the preposed phrase is reconstructed into its trace.

The kind of questions we will ask are: when does reconstruction take place? Is it always possible? Is it sometimes obligatory? Is it sensitive to the type of movement constructions involved? For example, we may ask of A-movement constructions whether they exhibit reconstruction effects at all (researchers are historically divided on this question) and, if they do, whether they do so in the same way as A-bar constructions.

These, however, are a small corner of a bigger problem. To provide a broader perspective, we note that the investigation of reconstruction effects is part of

increasingly larger questions, which are important but will essentially be left unaddressed here.

We may first ask whether reconstruction effects function the same way in all movement constructions. Second, we may ask a set of more general descriptive questions. Reconstruction effects can be viewed as special cases of the more general category of connectivity effects. Connectivity effects are cases in which a phrase seems to behave as if it occupied a position different from its 'surface' position, i.e., the position that it seems to be occupying in the spoken string. Such effects are found in a great variety of constructions, in particular constructions involving movement but also in constructions for which movement is not clearly or perhaps not plausibly involved.

As descriptive questions we can ask:

- Under what conditions are connectivity effects found?
- Are connectivity effects and reconstruction effects the same?
- Are connectivity effects always and only found in movement constructions?

Connectivity effects have been extensively investigated and there have been many proposals to achieve a principled understanding of their existence and their properties, with repercussions affecting core aspects of the architecture of syntactic theory. One type of construction in particular stands out as significant: (specificational) pseudocleft constructions. They exhibit connectivity effects and it is far from obvious that they involve movement (of the relevant kind). They may instead involve deletion or special interpretive rules. Recent work dealing with these questions includes Heycock and Kroch (1999); Sharvit (1999); Den Dikken et al. (2000); and Schlenker (2003b).

Finally, we ought to raise theoretical questions, i.e., questions of explanatory adequacy:

- Why do we find the answers that we do to the descriptive questions?
- How is linguistic theory organized so that connectivity effects, or the relationship between connectivity and reconstruction, fall out from the very architecture of the theory?

For example, given the current state of the research, it may well be true that connectivity effects are found only in cases of movement (reconstruction effects) or deletion (under some kind of identity). If such is the case, the existence of connectivity is related to the presence of the 'connected' phrases in positions other than where they overtly occur, at the right level of analysis. If it were otherwise, the existence of connectivity would appear more mysterious. Similarly, differences in reconstruction properties in A- and A-bar-movement constructions should follow directly from the differences between these movements, in much the same way as different projectiles (in a vacuum) follow different paths due to some difference in their initial velocity and nothing else.

Finally, before proceeding, it is worth noting that the data on reconstruction will mostly come from English, the language for which there is a systematic and deep and wide enough body of technical literature. The data are complex and non-uniform across speakers. The root of these dialectal differences is not understood. What will be presented here is what, in the author's judgment, the technical literature takes more or less to be the standard dialect. The text will contain scattered, non-systematic remarks about such variations (see Kuno 1997 and Safir 1999 for some discussion).

1.2 A more systematic introduction

1.2.1 Relevant principles

We define connectivity effects as cases in which a phrase superficially in a certain position P behaves as if it were in position Q.[3] In principle, such effects could arise and mostly do arise with respect to any principle appealing to the syntactic position of particular phrases (e.g., what it means to be interpreted as an argument of some predicate, to be inflected for a particular Case, or to show a certain kind of agreement morphology).

For the most part, we will focus on reconstruction or connectivity effects involving a few interpretive principles of binding and scope, that is, generalizations about structure-sensitive referential dependencies between phrases. The term 'reconstruction' is customarily reserved for such cases of connectivity.

For each of these interpretive principles, we provide in (5) a rough approximation of its formulation below, sufficient to illustrate the problems relating to connectivity:

(5) a. **Binding principles** (see chapter 9):
Condition A: anaphors must have a local antecedent (more or less a c-commanding antecedent in the same clause no further than the first c-commanding subject).
Condition B: pronouns cannot have a local antecedent (more or less a c-commanding antecedent in the same clause).
Condition C: pronouns cannot corefer with non-pronouns they c-command.

b. **Scope principles:**
If *X* superficially c-commands *Y*, *Y* can be interpreted in the scope of *X*. *X* and *Y* can outscope each other only if *X* and *Y* are clause mates.

c. **Pronominal binding principle** (a principle of both binding and scope):
A pronoun can behave as a variable bound by *X* only if it can be interpreted in the scope of *X*.

As we have seen above in the case of Condition C, in order to understand reconstruction effects, and beyond, connectivity effects, we need to concurrently develop first how exactly Condition C should be formulated, and second what

kind of manipulation (syntactic processes, rules of semantic interpretation, etc.) surface syntactic structures have to be subjected to in order to provide the right kind of input for the application of this principle.

The same questions arise for each of the principles above. This makes the potential complexity of the resulting system we will need to postulate increase exponentially. Thus it is conceivable that each properly formulated principle requires a different kind of manipulation of the strings we are studying. On the other hand, it is also conceivable that a unique input in conjunction with principles (not covertly encoding in their formulation any manipulation of the surface syntactic string) is sufficient. This would, for example, justify a level of Logical Form representations, that is, manipulated surface structures, which all the principles under consideration would take as input. Regardless of what the correct answer is, it is clear that it will have a fundamental bearing on the internal organization of syntactic theory and its interface with semantic theory.

We will now adopt a certain vocabulary to talk about syntactic dependencies, which is standard in the Principles and Parameters family of theoretical models and encodes various assumptions. It is important to keep in mind that this does not affect the essence of the limited data discussed here, but does affect the form in which they are presented.[4] One such assumption is the representation of predicate–argument relations as structurally local underlying relations modified by movement dependencies. Another is the representation of movement dependencies as trace-binding relations. Finally we talk about movement derivationally, mostly because standard vocabulary – invented with a derivational perspective in mind – sounds more intuitive this way.

1.2.2 Movement and pied-piping

To talk meaningfully about connectivity and reconstruction, we need basic characterizations of movement and pied-piping. This is what this section provides.

Natural languages exhibit movement dependencies. The existence of such dependencies can be simply illustrated by the distributional differences between the DPs *the boy* and *which boy* in (6) and (7):

(6) a. Jones met the boy.
    b. Who met the boy?
    c. *The boy did Jones meet.

(7) a. *Jones met which boy?
    b. Who met which boy?
    c. Which boy did Jones meet?

We want to say that regardless of the choice of determiner D in $[_{DP}$ D boy], this DP behaves as a direct object of *met* in the sense that whatever kind of semantic object this DP stands for, it is understood as bearing the same semantic relation – call it its thematic property – to the predicate *meet* in all these sentences. The

fact that D = *which* induces different distributional properties than D = *the* means that these determiners have different licensing requirements. These licensing requirements – call them quantificational in the present case – sometimes force a *wh*-D (*which*), but not a definite D (*the*), to appear sentence-initially, as in (7c).

A minimal description of these observations could take the following form: a DP – say *which boy* – encodes two set of properties (to simplify say only two, even though it may be two among others): thematic properties and quantificational properties. Its thematic properties require it to be paired to some predicate (here, *meet*). Its quantificational properties require it to be paired with some quantificational position (i.e., to be assigned scope: here the clause-initial position). The movement dependency is the dependency between the quantificational position of this DP and the predicate.

As mentioned above, we use a standard notation to express this dependency, assuming as correct the consequences that this choice carries (even though almost everything discussed here could be recast in some alternative notation). In these terms, the thematic properties of the 'object' DP in (7c) are expressed by the direct object position this DP occupies in underlying structure, or, to put it representationally, by the position of its most deeply embedded trace. Its quantificational properties are derived from the position it occupies in overt structure, i.e., by the position in which the DP is 'pronounced', namely [spec, CP]. The movement dependency is then a dependency between [spec, CP] and the direct object position. A fuller picture would take into account the fact that DPs need (and in many cases morphologically encode) Case. Current theories postulate that all DPs will also involve movement to a Case position to license their Case property.

In (8):

(8) Bill wonders $[_{CP}\ e_0\ [_{C'}\ [_{IP}\ [e_1]$ will be $[_{VP}$ sold $[e_2]]]]$
|
[which pictures]

we get three positions (e_0, e_1, e_2) where e_0 = [spec, CP] is the quantificational position, e_1 = [spec, IP] is the nominative position, and e_2 is the thematic position of the phrase [which pictures]. In this example, the *wh*-DPs must participate in a movement dependency between the thematic position and the quantificational position. What is remarkable is that the need for this movement is a property of the determiner *which*, not of the noun *pictures*. This is made clear by (6) and (7), which involve the same object noun, different determiners, and different movement possibilities. The fact that the noun *pictures* in (8) is pronounced at the front of the embedded clause is no doubt because (i) *which* needs to be linked to this clause-initial position, and (ii) *which* and *pictures* need to be closely associated. Generalizing on standard use, let us call this property pied-piping:[5] the NP *pictures* has pied-piped in the sense that it appears where it does, not by virtue of what it is intrinsically but rather because it must be closely associated with an element, *which*, which has this distributional requirement.

Now suppose that a moved XP (e.g., a DP linked to several positions) contains moved material sensitive to the position in which this DP occurs. For a given property, which one(s) of these positions is this sensitive material evaluated in? Because a given DP is only pronounced once but is associated with several positions (e.g., thematic, Case, quantificational, etc.), the overt position in which it appears is not necessarily the one in which it is evaluated. Answering these questions means answering the descriptive questions we listed about reconstruction.

More generally, suppose we have a phrase P linked by movement to several positions ordered from highest to lowest (e_1, e_2, . . . , e_n). By convention here (we only consider overt movement for the moment), this phrase is pronounced in position e_1. If this phrase P contains material that appears to behave with respect to some principle (e.g., Binding Theoretic principles) in a position, say e_{n-1}, lower than that in which it is pronounced, we say that we are observing a 'reconstruction effect'. We also say that the material 'reconstructs' into e_{n-1}.[6] As mentioned earlier, the term 'reconstruction' is customarily reserved for cases in which the principles in question are interpretive principles of binding and scope.

It is worth remarking that there is no reason to think that this is a scientifically well-founded decision: it may well be that the right approach treats in a uniform way reconstruction effects involving thematic roles (something that actually systematically takes place), morphological properties such as Case or Agreement, and every other reconstruction effect. Nevertheless it is reasonable to try to understand how reconstruction for scope and binding works before worrying about whether all reconstruction effects should be treated uniformly. In what follows, I will thus use the term 'reconstruction' to mean reconstruction for scope and/or binding.

It is in this context that the following specific questions arise immediately:

- How does the reconstruction property arise?
- What properties does it have? Is it always possible? Is it sometimes obligatory?
- Do the possibilities of reconstruction depend on the overt distribution of P (i.e., on the position in which P is pronounced?

One question we may ask that we will not investigate in detail here is the following: when a phrase is moved, can we in principle find reconstruction effects with any part of this moved phrase? The answer seems to be mostly yes, with perhaps one exception: pied-piped material clearly shows reconstruction effects, but it is less clear whether, and perhaps unlikely that, the portion of the moved phrase that induces the movement is allowed to reconstruct. In the *wh*-movement example above, a negative answer would mean that the *wh*-determiner itself does not reconstruct. We will not discuss this question here.

We will restrict our discussion throughout to the reconstruction of pied-piped material in the sense of pied-piping adopted earlier. It should be noted that it is sometimes hard to tell what is the trigger for movement and what is pied-piped, e.g., in the case of topicalization of DPs and VPs, or in the case of A-movement. With this proviso, the reconstruction problem is nearly the mirror-image of the

pied-piping problem: the pied-piping problem is the problem of how much bigger a phrase can move than seems strictly necessary, while the reconstruction problem asks how big a portion of a moved phrase can behave as if it had not moved.

The very existence of reconstruction effects may appear somewhat surprising: why should languages bother to move a phrase to some position, only to interpret a portion of this phrase in a position it has been moved from? This may be taken as a reason to reject a 'literal' reconstruction mechanism process in favor of an alternative account without any 'moving back'. But this would be an illusion, for there seems to be no account available at the moment – and perhaps in principle – which does not construe the relevant reconstructed readings differently from that gotten from a structure in which movement of the reconstructed portions would not have taken place at all. And this is precisely what needs to be explained, regardless of the notations used to do it.

By definition, pied-piped material is moved for reasons extrinsic to the movement trigger. It is thus not so surprising that this material might behave as if it had not moved. Perhaps what is really surprising is that pied-piping exists at all. So far as is presently known, it is an unexplained property of language.[7]

2 Basic reconstruction effects

We begin by illustrating reconstruction effects with each of the interpretive principles we are focusing on. In each case, the examples will show that a (portion of a) moved phrase behaves from the point of this principle as if it had not moved.

2.1 Pronominal binding

Consider (9) (where the underlined quantifier is meant to bind the underlined pronoun):

(9) a. No politician ignores many of his collaborators.
b. *Many of his collaborators ignores no politician?

(Note that (9b) shows a weak crossover effect.) The judgments are preserved under movement:

(10) a. Which of his collaborators does no politician ignore t?
(Intended answer: His main pollster.)
b. *Which of his collaborators t ignores no politician?
(Intended answer: His main pollster.)

The pronoun *his* can only be bound by the quantifier *no politician* if the trace of the *wh*-phrase containing it is c-commanded by this quantifier, i.e., if the condition on pronominal binding is satisfied if we treat the moved phrase as unmoved.

2.2 Scope

Reconstruction effects for scope can be illustrated in a variety of ways. We illustrate cases of scopal interactions between two DPs, and cases of scopal interaction between a DP and a predicate.

2.2.1 DP–DP interactions

DP–DP scopal reconstruction can be illustrated by such examples as (11):

(11) Visit some girl, Bill says every boy did t.

Such a sentence may be interpreted with the DP *some girl* in the scope of the DP *every boy,* i.e., as meaning that Bill says that each boy visited a girl different from the one the other boys visited. If this were the interpreted form, we would not expect *every boy* to be able to outscope *some girl*, since these expressions are not clause mates. This is of course a reading that is available in the unmoved counterpart of this example:

(12) Bill says every boy visited some girl.

Examples illustrating the same effect but involving *wh*-movement are given below. First consider (13):

(13) a. You convinced three friends of a friend that every member should co-opt Bill.
b. You convinced Bill that every member should co-opt three friends of a friend.

Only in (13b) is it possible to understand the phrase *a friend* as being in the scope of *every member*. In other words, in (13b), Joe should co-opt a certain number of friends of a friend of Joe's, Mary should co-opt a certain number of friends of a friend of Mary's, etc. This reading is unavailable in (13a).

These judgments are preserved under *wh*-movement:

(14) a. How many friends of a friend did you convince t that every member should co-opt you?
b. How many friends of a friend did you convince Bill that every member should co-opt t?

Only in (14b), in which the trace t of the preposed *wh*-phrase is a clause mate of the quantifier *every member*, is it possible to understand the phrase *a friend* as being in the scope of *every member*. This is consistent with the idea that the pied-piped material in the preposed phrase can be interpreted as if it were in a position (it occupies overtly or in a position) it has been moved from.[8]

2.2.2 DP–predicate interactions

Consider (15):

(15) a. How many songs will you compose?
b. How many songs will you perform?

Thinking for illustrative purposes of the meaning of the verb *compose* as *cause to be in existence*, and *perform* as *cause to be performed*, we can paraphrase (15a) by (16a), and (15b) by either (16b) or (16c):

(16) a. For what number x, you will cause there to be x many songs in existence?
b. For what number x, you will cause there to be x many songs performed?
c. For what number x, there are x many songs you will cause to be performed?
= How many songs are there that you will perform?

The difference lies in the scope of the existential quantification rendered here by *there are . . .* with respect to the expression *will cause*. The reading in (16c) is less natural in the case of (15a): we cannot assert the existence of a set of objects with certain properties if these objects do not yet exist (presuming that if the songs are not composed yet, they do not exist in the relevant sense). For ease of reference, let us call the readings in (16a) and (16b) the narrow-scope or narrow readings (since *there* has narrower scope than *will cause*). We will call the reading in (16c) the wide-scope or wide reading.

The crucial ingredient here is this: one cannot plausibly be asserting the existence of songs in (15a) because the preposed phrase is an argument of a verb of creation, namely *compose*. Thus, these two sentences behave like their unmoved counterparts in (17) and illustrate a reconstruction effect:

(17) a. You will compose three songs?
b. You will perform three songs?

2.3 Condition C

We have already illustrated Condition C effects in (3). We repeat these examples here as (18):

(18) a. *Whose examination of John did he fear?
b. *He feared Mary's examination of John.

(18b), without *wh*-movement, behaves like (18a), illustrating a reconstruction effect.

2.4 Condition A

Reconstruction for Condition A of the Binding Theory can seemingly be illustrated by cases such as the following involving the reciprocal anaphor *each other*. Consider first the paradigm in (19) without *wh*-movement:

(19) a. *She reminded each other's friends that they saw Bill.
b. They reminded each other's friends that she saw Bill.
c. She reminded Bill that they saw each other's friends.

The pattern in (20) with *wh*-movement exactly mirrors this paradigm:

(20) a. *Which of each other's friends did she remind **t** that they saw Bill?
b. Which of each other's friends did they remind **t** that she saw Bill?
c. Which of each other's friends did she remind Bill that they saw **t**?

Unless some trace of the moved phrase is c-commanded by a potential antecedent, the sentence is ill-formed: these sentences behave from the point of view of anaphor binding as if movement had not taken place. However, the anaphor *each other* is a bound variable and thus falls under the principle of pronominal binding. As a result, we need to proceed differently to illustrate a pure Condition A reconstruction effect.

Either we illustrate a Condition A reconstruction effect with an anaphor that is not a bound variable, or we check that the locality condition that Condition A imposes on the antecedent anaphor relation must be satisfied under reconstruction. It turns out not to be straightforward to perform either of these tests in a simple way. It is possible that reflexives qualify as non-bound-variable anaphors in certain conditions (with non-quantificational antecedents), but showing that this is the case is at best complicated and perhaps not really possible. Checking the locality condition may be possible in cases involving intermediate traces (that we will discuss later, in section 3.1.2) but also involves complications. We thus leave this open at this point.

2.5 Condition B

Showing that Condition B effects are found under reconstruction also requires some analysis. (21–2) show a case in which a pronoun shows disjoint reference effects in its original position and under movement (topicalization), i.e., under reconstruction:

(21) a. *Mary says he saw him.
b. He says Mary saw him.

(22) a. *Him, Mary says he saw t.
b. Him, he says Mary saw t.

Of course, we should make sure that (22a) is not independently excluded. It may be, if all traces of A-bar-moved DPs (e.g., Topicalized DPs) behave like descriptions with respect to Condition C (*wh*-traces are R-expressions subject to Condition C): t would have to be disjoint from *he* because of Condition C without reconstruction. The acceptability of (22b), however, suggests that the traces of preposed pronouns are not subject to Condition C. If they were, the object t of *saw* would have to be disjoint from *he* (a Condition C effect). We conclude that the parallelism between (21) and (22) does illustrate a reconstruction effect.

2.6 Idioms and theta-roles

It is not customary to include the checking of predicate–argument relations in a discussion of reconstruction effects, even though predicate–argument relations (theta-role assignment) are interpretive relations. We have already seen in the case of verbs of creation that it is necessary to include such checking in the description of reconstruction effects. Once this is done, we can recast trace theory (in part) as encoding the fact that reconstruction for thematic role assignment systematically takes place.

For example, in (23):

(23) a. You think I like John.
b. John, you think I like t.

the presence of the trace t encodes the observation that from a thematic point of view, *John* in (23b) behaves exactly like *John* in (23a): this is a reconstruction effect. Although it is not fundamentally conceptually different from the general case, one special subcase of this is particularly useful, namely the case of (non-compositional) idiom chunks:

(24) a. You think Mary took much care of Bill.
b. How much care do you think Mary took t of Bill?

Unlike what happens with a preposed name or description, a preposed idiom chunk receives no relevant interpretation independently of the rest of the idiom. As a consequence, it must be understood exactly as if it was reconstructed.

3 Some basic generalizations

This section is a short overview of some basic generalizations regarding reconstruction in A-bar-movement cases, which form the basis of many discussions. They will be discussed in turn. We have seen that there are reconstruction effects with respect to every principle listed in (5). Recall that a reconstruction effect is an 'as if' effect: a moved item I behaves as if it were in a different position Q from the position P in which it is 'pronounced'.

The first generalization is that Q is a position from which I has moved, and no other position: reconstruction in movement cases is into traces, including intermediate traces, and nowhere else. The second generalization is that there are reconstruction effects in every type of phrasal movement: all varieties of A-bar-movement constructions and A-movement constructions (we leave aside non-phrasal movement cases).

3.1 Reconstruction: where to?

3.1.1 No reconstruction into non-traces

Naturally, it is not possible to prove that reconstruction is possible only into traces. However, individual examples can be (and have been) provided showing that other options are unavailable. We repeat below a few such examples, making the relevant point explicit.

Consider the contrasts in (25a), in which the pronoun *he* may or may not corefer with the phrase *the typical male viewer*:

(25) a. [Whose characterization of him] does the typical male viewer like t?
b. *[Whose characterization of the typical male viewer] does he like t?

We construe this as indicating that the preposed phrase (*wh*-moved) is reconstructed in the t position. That it is the position of this trace that matters rather than the mere fact that some movement has taken place is demonstrated by the contrast in (26):

(26) a. Which examiner of a good student you know did you tell **t** that he knew the dean?
b. *Which examiner of a good student you know did he tell the dean that you knew **t**?
c. *Which examiner of a good student you know did you tell the dean that he knew **t**?

It is only when the trace t of the preposed *wh*-phrase is c-commanded by the pronoun *he* that deviance ensues. Thus, it is the position from which movement originates that is important.

The same conclusion can be reached for other principles. We can illustrate it in the case of the reciprocal anaphor *each other*. (27) shows that unless some trace of the moved phrase is c-commanded by a potential antecedent, the sentence is ill-formed:

(27) a. *Which of each other's friends did he remind **t** that they saw Bill?
b. Which of each other's friends did they remind **t** that he saw Bill?
c. Which of each other's friends did he remind her that they saw **t**?

This shows again that we are dealing with a reconstruction effect and not the effect of some movement having taken place.

Similar examples can be constructed for pronominal binding ((10), repeated here as (28), where the underlined quantifier is meant to bind the underlined pronoun):

(28) a. Which of his collaborators does no politician ignore t?
(Intended answer: His main pollster.)
b. *Which of his collaborators t ignores no politician?
(Intended answer: His main pollster.)

As seen earlier, the pronoun *his* can only be bound by the quantifier *no politician* if the trace of the *wh*-phrase containing it is c-commanded by this quantifier.

We can also illustrate this with respect to scopal interaction between quantifiers ((14), repeated here as (29)):

(29) a. How many friends of a friend did you convince t that every member should co-opt you?
b. How many friends of a friend did you convince Bill that every member should co-opt t?

As seen earlier, only in (29b) is it possible to understand the phrase *a friend* as being in the scope of *every member*. In (29b), Joe should co-opt a certain number of friends of a friend of Joe's, Mary should co-opt a certain number of friends of a friend of Mary's, etc. This reading is unavailable in (29a), and this is consistent with the idea that the pied-piped material in the preposed phrase can be interpreted in a position (it occupies overtly or in a position) it has been moved from.

3.1.2 Reconstruction into intermediate positions

When a phrase is moved several times, reconstruction appears possible, at least in some cases, in any position the phrase has moved through: reconstruction is possible into any trace. Let us examine the logic of this situation. Consider the following structure, in which each element c-commands the next one:

(30) P . . . A . . . t1 . . . B . . . t2

P is a phrase moved from t2 to the c-commanding t1 on the surface c-commanding position of P. To illustrate the existence of cases in which reconstruction is into t1, we need to look at cases in which the exact reconstructed position of a moved phrase matters. One option is to check Condition A, which imposes a locality requirement.[9]

The reconstruction properties of pied-piped anaphors is exemplified in (31):

(31) a. I wonder which pictures of each other you think they said we liked.
b. I wonder which pictures of each other [you think [t1 they said [t2 we liked t3]]].

(31a) is ambiguous as to what the antecedent of the reciprocal anaphor is. Any underlined DP qualifies ((32): contrast this with (20)):

(32) a. I wonder which pictures of the others (of you) each of you thinks they said we liked t.
b. I wonder which pictures of the others (of them) you think each of them said we liked t.
c. I wonder which pictures of the others (of us) you think they said each of us liked t.

This state of affairs finds a ready description, given the otherwise well-supported assumption that extraction out of a sequence of clauses proceeds by successively fronting the moving phrase to the beginning of each clause containing it until it finds its final landing spot. As a result, a more complete representation of (31a) is (31b). Optional reconstruction into traces can then put the moved phrase back into any intermediate t position, where it can select an appropriately local antecedent. If reconstruction in t1 or t2 were not available, neither *you* nor *they* would qualify as appropriately local antecedents. This is a reconstruction effect in 'intermediate' traces. (Note that this paradigm also illustrates a reconstruction effect for Condition A.)

3.2 Reconstruction and movement types

We now briefly address the question of whether the possibility of reconstruction is sensitive to the type of movement involved. We will show that reconstruction effects seem to be found with all types of movement.

3.2.1 A-bar movement

Reconstruction effects are not limited to direct *wh*-questions of DPs. We find the same Condition C effect as above in direct or indirect *wh*-questions or Topicalization of various phrases, such as PPs, APs, or VPs, or other types of A-bar movement of various phrases. This is illustrated in (33):

(33) a. *I wonder [whose pictures of a successful athlete] he reminded Bill that you saw t.
b. *It is incredible [how proud of a successful athlete] Mary told him you were t.
c. *[Next to a good student's locker], she always puts stickers t.
d. *[Train a successful athlete I know], he says I should t.

(34) exemplifies reconstruction effects with the anaphor *each other* in a variety of constructions:

(34) a. I wonder which of each other's comments they/*Sue reported t.
b. Which of each other's friends did they/*Bill remember t?
c. *It is incredible [how proud of each other] Mary said you were t.
d. Next to each other's starting blocks, the athletes/*she put lucky charms t.

And (35) does the same thing for bound pronouns:

(35) a. I wonder whose comments about him no one reported t.
b. Happy that he had to lie, no one thinks you are t.
c. Against his own country, no true patriot will ever fight t.

3.2.2 A-movement

We will now demonstrate that reconstruction effects are also found with A-movement. It should be noted that this is a more controversial conclusion. The reason is that reconstruction seems to fail in a variety of A-movement cases. Dealing in detail with this controversy is beyond the scope of this chapter. The preponderance of the evidence clearly supports the existence of reconstruction effects in A-movement constructions. Here, we will limit ourselves to presenting some clear cases of reconstruction effects, noting a couple of cases of reconstruction failures.

The basic problem is raised by the ambiguity of (36):

(36) A Russian seems to have won the race.

(36) can have the two paraphrases in (37):

(37) a. It seems that there is a Russian who won the race.
b. There is a Russian who seems to have won the race.

In (37a), existential quantification takes place inside the scope of the verb *seem*. In (37b), existential quantification outscopes the verb *seem*.

One standard account takes the following form:

(i) The target sentence involves raising to subject, that is, it is associated with a pair of syntactic representations, roughly (38):

(38) a. seems [a Russian to have won the race]
b. a Russian [seems to have won the race]

These two representations are technically described as respectively the underlying structure of the target sentence and the surface structure of the target sentence.

(ii) The relationship between these syntactic structures is movement: the difference between these two structures – the relative position of the constituent *a*

Russian – is formalized as a movement rule or movement dependency, the effect of which is to express the non-redundant portions of these two structures. The constituent [a Russian] is raised from the position 'subject of the embedded clause' to the position 'subject of the main clause'; everything else remains the same. This movement, called 'raising to subject', belongs to the subcategory of A-movement.

(iii) The scopal ambiguity arises from taking either of these representations as input to compute scope relations, the first one giving rise to (37a) or (37b), the second to (37b) only.

(iv) Since the first interpretation is computed on the basis of the representation of the target sentence which does not surface, it looks like this interpretation is reached by exactly undoing movement: this is a reconstruction effect.

Many authors have argued that there is reconstruction under A-movement in this sense (e.g., Barss 1986; Sportiche 1997, 1999; Romero 1997a; Lebeaux 1998; Fox 1999). Some authors (e.g., May 1985) have argued that these readings arise by a different mechanism than exact undoing of the movement (they invoke a mechanism of Q-lowering). These doubts are echoed by Zubizaretta (1982a) and Lasnik (1998) regarding whether there is reconstruction under A-movement. The form of their argumentation is as follows: if there is reconstruction, we expect it to be fully general. Whenever we have a raising-to-subject structure, we should expect all interpretations to be available that are computed on pre-movement structures. If some of these interpretations are not available, this suggests that reconstruction is not generally available.

One such case is attributed to Chomsky by Zubizarreta. It is based on the pair in (39–40):

(39) Everyone is not listening.

(40) Everyone seems not to be listening.

(39) allows a reading in which negation outscopes the universally quantified subject, yielding the meaning in (41):

(41) It is not the case that everyone is listening.

Assuming reconstruction is available in (40), it should, from the relevant interpretive point of view, be treated as in (42):

(42) It seems everyone is not listening.

and thus yield the interpretation in (43), which is not an available interpretation:

(43) It seems that it is not the case that everyone is listening.

Lasnik argues for a similar conclusion based on the available readings for (44) (and other comparable examples):

(44) Every building is 10 percent likely to collapse.

If reconstruction were available in such a case, it should behave as in (45):

(45) It is 10 percent likely that every building will collapse.

But such a reading seems unavailable. What (44) says is that each building has a 10 percent probability of behaving a certain way. If there are two buildings in total, the probability that both collapse is 10 percent of 10 percent, that is, 1 percent, not 10 percent as (45) states. In other words, *every* cannot scope under *10 percent likely*: reconstruction seems impossible.

Although such cases raise serious problems which a theory of reconstruction must address, they do not seem to undermine the availability in principle of reconstruction in A-movement cases. First, note that the reading in (41) of (39) (and many other similar cases) looks like a straightforward case of reconstruction of A-movement from VP-internal subject position:

(46) Everyone is not [t listening] → is not [everyone listening].

Second, there are many other cases that Barss (1986), Sportiche (1997, 1999), Romero (1997a), Lebeaux (1998), and Fox (2002) provide suggesting reconstruction does take place. Cases involving complex scopal interactions can straightforwardly be computed on the basis of the pre-movement structures. Consider (47):

(47) a. A southerner is predicted to win every senate race.
b. It is predicted that for every senate race, a (different) southerner will win it.
c. For every senate race, there is a (different) southerner who is predicted to win it.
d. For every senate race, it is predicted that there is a (different) southerner who will win it.

Three relevant scope-inducing elements are involved: the existential quantifier introduced by the singular indefinite subject *a southerner*, the universal quantifier *every*, and the verb *predict*. A priori this should yield six scopal readings, but the three in which *a southerner* outscopes *every senate race* are pragmatically odd (since they require the same southerner to win every senate race). The remaining three are listed in (47b, c, d). (47b) clearly is the most accessible and natural reading, and is also the most relevant for our present purposes. The readings paraphrased in (47b, c) correspond to readings in which the sentence expresses a summary of individual predictions, one for each senate race. Such readings seem difficult at best, perhaps entirely unavailable for this sentence (although

pragmatically quite plausible): the sentence in (47a) most naturally reports a unique global prediction. This means that the only way that *every senate race* can outscope *a southerner* is if both of them are in the scope of the verb *predict*. These two observations indicate that one (perhaps the only) input for scope computation is (48a):

(48) a. is predicted [a southerner to win every senate race]
b. a southerner will win every senate race

As the prominent reading of (48b) shows, within a single clause, *every senate race* can then outscope *a southerner*.

Moreover, reconstruction effects can be illustrated with binding effects. Let us begin with Condition A, and consider the well-formed examples in (49):

(49) a. Pictures of each other seemed to the boys [t to be fuzzy].
b. Pictures of each other struck them as [t rather fuzzy].
c. It seemed to each of the boys [that pictures the other boys were fuzzy].
d. It struck each of them [that pictures of the others were fuzzy].

(49a, b) are well-formed with the readings indicated in (49c, d) respectively, even though the antecedent *them* of *each other* does not c-command it. Furthermore, the presence of an acceptable (plural) antecedent seems crucial to their acceptability. A similar reading with a discourse antecedent or a singular antecedent is unavailable. Thus, (50a, b) are deviant:[10]

(50) a. *Pictures of each other seemed (to him) [t to be fuzzy].
b. *Pictures of each other struck him as [t rather fuzzy].

The interpretation of these facts is straightforward and indicates that reconstruction for binding is possible. Under reconstruction, sentences (49a, b) and (50a, b) are respectively treated from the point of view of binding as their underlying structures (in 51–52):

(51) a. seemed to the boys [pictures of each other to be fuzzy]
b. struck them as [pictures of each other rather fuzzy]

(52) a. *seemed (to him) [pictures of each other to be fuzzy]
b. *struck him as [pictures of each other rather fuzzy]

In (51), the anaphors have a local enough c-commanding antecedent, while they do not in (52). The assumption that the experiencer *them/the boys* does c-command the subject of the embedded clause can be somewhat controlled by the unacceptability of (53):

(53) *It seemed to him [that John was sick].

which follows straightforwardly from a Condition C violation if this c-command relation holds. The assumption that the experiencer *them/the boys* does c-command material in the embedded infinitive can be controlled by the unacceptability of (54):

(54) *Mary seemed to him [t to like John].

Reconstruction effects with pronominal binding can also be directly illustrated. The well-formedness of (55):

(55) a. Pictures of his child seemed to everyone [t to be good].
b. Such evaluations of his speech struck every child as [t unfair].

shows that A-movement can remove a c-commanding binder for a pronoun without creating a violation of the structural requirement for pronominal binding. This suggests that pronominal binding can be evaluated on the pre-movement (i.e., reconstructed) structures in (56):

(56) a. seemed to everyone [pictures of his child to be good]
b. struck every child as [such evaluations of his speech unfair]

We can control for this conclusion by first noting that close parallels to (56a) support the relevant interpretation (see (57)):

(57) it seemed to everyone that pictures of his child were good

Second, we can check that in the absence of a position to reconstruct the raised subject in, the relevant reading is unavailable (due to the weak crossover effect: see (58)):

(58) a. *The new friend of his father painted every child.
b. *Such teachers of her children call every mother.

Similar reconstruction effects can also be illustrated for Condition C (cf. again Sportiche 1997, 1999; Romero 1997a; Fox 1999). We present one such type of example which will become relevant later.

First note that the French idioms in (59–60) can be somewhat marginally passivized as indicated:

(59) a. Jean a pris grand soin de Marie.
'John took a lot of care of Mary.'
b. ?Grand soin de Marie a été pris (par Jean).
*'A lot of care of Mary was taken by John.'

(60) a. Dans cette conversation, Jean a pris le parti de Marie trois fois.
'In this conversation, John took Mary's side three times.'

b. ?Dans cette conversation, le parti de Marie a été pris trois fois (par Jean).
?'In this conversation, Mary's side was taken three times by John.'

The idea is to use these idioms to design examples in which movement of an idiom chunk overtly removes a Condition C configuration. Their crucial feature is the passivizable object which can contain a name, and which can then be raised across a coreferential pronoun. We get (61–62):

(61) a. ?Grand soin de Marie me semble avoir été pris t.
b. ?Grand soin d'elle$_j$ lui$_j$ semble avoir été pris t.
c. ?Grand soin de Marie$_j$ lui$_k$ semble avoir été pris t.
d. *Grand soin de Marie$_j$ lui$_j$ semble avoir été pris t.
'Good care of Mary/her seemed to me/her to have been taken.'

(62) a. ?Le parti de Marie me semble avoir été pris t trois fois.
b. ?Son$_j$ parti lui$_j$ semble avoir été pris t trois fois.
c. ?Le parti de Marie$_j$ lui$_k$ semble avoir été pris t trois fois.
d. *Le parti de Marie$_j$ lui$_j$ semble avoir été pris t trois fois.
'Mary's/her side seemed to me/her to have been taken three times.'

(Passivization followed by) raising of the embedded direct object containing a name across a co-indexed pronoun systematically yields the deviant sentences (61d) and (62d), as compared to the benchmark, in which either the direct object contains a name but is raised across a non-co-indexed pronoun ((61a, b) or (62a, b)) or the direct object contains a pronoun ((61c) and (62c)).[11]

We noted in section 2.6 that idiom chunks had to reconstruct for the purpose of idiom interpretation. The effect of idiom reconstruction is to create a configuration violating Condition C. Since the sentences are deviant, they show that Condition C has access to structures reconstructed for the purpose of idiom interpretation.

3.3 Modalities of reconstruction

Reconstruction seems to operate differently depending on the circumstances. In this section we briefly describe some observed possibilities before returning to some of them in later sections. First, we will illustrate the observation that reconstruction may appear to be obligatory, optional, or impossible. Second, we will briefly consider how much of a moved phrase can reconstruct.

3.3.1 Obligatoriness, optionality, or impossibility

We will illustrate the following basic observations. First, in the simple and general case, reconstruction for Condition A is optional, while reconstruction for Condition C is obligatory. Consider again the cases of Condition C discussed previously. Imagine the context of asking questions about, or commenting to a

person comparing and analyzing, various surveys of TV viewers. We find the following:

(63) a. *[Whose characterization of the typical male viewer does he object to t?
b. *The standard characterization of the typical male viewer, he objects to t.

It is not sufficient to say reconstruction is available; we must say it is obligatory. If the option of not reconstructing the (pied-piped portion of the) preposed phrase in its trace position were available, there would be a derivation without a Condition C violation and the sentences should be acceptable.

It is not the case, however, that reconstruction of pied-piped material is always obligatory. In some cases, it seems to be optional. Observe the contrast in (64):

(64) a. *[Whose characterization of the typical male viewer does he resent t?
b. [Whose survey describing the typical male viewer does he resent t?

This contrast is typically taken to reflect a complement–adjunct asymmetry (see Van Riemsdijk and Williams 1981; Freidin 1986; Lebeaux 1988b, 1991, 1998). The offending description in (64a) is part of a pied-piped complement of the pied-piped head N of the *wh*-phrase, while it is part of the adjunct (the relative clause) to the pied-piped head N of the *wh*-phrase in (64b). We return to discussion of these facts in section 4.2.1.

In the case of Condition A, the optionality of reconstruction can easily be illustrated. We have seen that pied-piped phrases containing anaphors may reconstruct into any of their traces, but they need not reconstruct at all. Thus (65a) is well-formed with the interpretation given in (65b):

(65) a. They wonder which pictures of each other I preferred t.
b. Each of them wonders which pictures of the others I preferred.

If reconstruction were required, we would expect this sentence to be deviant, since the only possible antecedent, *they*, for *each other* would be 'too far'. This expectation is not met.

Second, sometimes reconstruction is impossible. We have already seen such cases in A-movement constructions. For example, (44), repeated here as (66), lacks a reading in which *10 percent likely* outscopes *every*:

(66) Every building is 10 percent likely to collapse.

Other, superficially more complex cases of impossible reconstruction are illustrated in (67–68):

(67) a. Stand on every roof, a guard will.
b. A guard will stand on every roof.
c. Every roof will have a different guard on it.

(68) a. Likely to win, nobody is.
b. Nobody is likely to win.
c. It is likely that nobody will win. (= In all likelihood, nobody will win.)
d. Nobody has the property of being likely to win.

(67a) should, under reconstruction of the preposed constituent, allow all the readings allowed by (67b), and in particular, the pragmatically most plausible reading paraphrased by (67c). Such a reading seems unavailable, perhaps suggesting that reconstruction of the preposed constituent is not possible. (68a) should, under reconstruction of the preposed constituent, allow all the readings allowed by (68b), and in particular, the reading paraphrased by (68c). Such a reading also seems unavailable, only the reading paraphrased by (68d) is available. This again may suggest that reconstruction of the preposed constituent is not possible.

We will not discuss any of these extremely interesting cases any further here. Sportiche (2003) extensively discusses cases of the sort in (66). Barss (1986), Sauerland (1999c), and Sauerland and Elbourne (2002) discuss the sorts in (67–68).

3.3.2 Partial reconstruction vs. radical reconstruction

As we mentioned earlier in section 1.2.2, reconstruction typically is held to affect only pied-piped material. Whether or not this description is factually accurate depends on a fine analysis of movement triggers and targets. Superficially, however, it seems false.

First consider a *wh*-question already discussed in 2.2.1 ((14b), repeated here as (69); see also note 8).

(69) How many friends of a friend did you convince Bill that every member should co-opt t?

There does not seem to be a reading in which the *wh*-operator *how many* reconstructs. Such a question would ask, for each member, the number of friends of a friend (of his) that you convinced Bill that this member should co-opt. The unavailability of such a reading is plausible given that *wh*-operators seem to be propositional operators, which in English[12] scope over the clause in front of which they are preposed. Thus it is quite plausible to assume that they cannot reconstruct.[13] Such examples may thus involve partial reconstruction.

There are cases for which it is harder to tell. For example, in cases of 'Topicalization' such as (70):

(70) A book, it is obvious everyone will buy.

the whole of the preposed element can be under the scope of *every*, suggesting total or so-called 'radical' reconstruction. But we cannot really decide without knowing exactly what the movement trigger and targets are. In particular, when

a constituent is topicalized, there are informational properties added to the sentence (being a topic or a focus, etc.). What would it mean for these properties to be reconstructed, and are they?

Finally, there are similar cases in A-movement constructions. The reading in which the subject scopes under the raising verb in (71a) seems undistinguishable from the interpretation that (71b) – without the movement – would receive:

(71) a. A southerner will win every senate race.
b. is predicted [a southerner to win every senate race]

Such cases are also said to involve radical reconstruction. We will not discuss these questions any further here. Some issues regarding A-movement are addressed in Sauerland (1999c) and Sauerland and Elbourne (2002).

4 Accounts

We now turn to discussions of the accounts that have been given of the reconstruction effects found with each principle, accompanied by some critical remarks. We will provide a discussion of each principle and its associated reconstructed effects in turn. In the next section, we will look at how all the various conclusions reached for each individual principle can be reconciled in a coherent whole.

We begin by outlining the essential ingredients of the theoretical constructions elaborated in the Principles and Parameters framework to account for the facts above, following more or less their historical development. Again, very little that will be discussed depends on the particular notation that we use; most of what we say could readily be translated into other notations. However, we need to be rather specific about this notation to do justice to some of the proposals that have been put forth within this framework.

We assume the following:

(i) There is a level of surface syntactic structures (surface trees or, in Minimalist terms, input to spell-out). These structures are derived from underlying syntactic structures by means of movement.
(ii) There is a level of underlying structures (underlying trees). These structures are defined as representing predicate argument relations as local syntactic relations.
(iii) Movement maps underlying trees onto surface trees (spell-out trees) by successive application. Movement dependencies are represented as trace-binding relations in surface syntactic structures.
(iv) A surface structure tree can be manipulated by processes yielding its Logical Form (LF), which is the interface with non-grammatical systems of interpretation.

Note that conceptually, in such models, LF representations, which may (or may not) differ from underlying or surface representations, have their raison d'être in providing a transparent input for semantic interpretation. In effect, LFs 'are' exhaustive representations of the structure-sensitive aspects of sentence meanings. Note also that there is a priori no assumption that LFs are different from underlying structures or surface (spelled-out) structures.

4.1 Condition A

We begin with a discussion of reconstruction effects with respect to Condition A. Recall what we have established so far:

- There are reconstruction effects with respect to Condition A.
- Reconstruction for Condition A can be into any trace position of the moved phrase.
- Reconstruction is optional.

How do we account for these properties?

4.1.1 Anywhere Principle

All accounts essentially have the same structure: they simply allow a moved phrase containing an anaphor to be evaluated in any position that it is linked to by movement – its original position or any intermediate landing position. In the literature, several alternative proposals (P) are put forward to derive this result:

P1 Literal reconstruction: Condition A applies at the output of a manipulated surface structure in which pied-piped material is literally in a position in which Condition A can be satisfied. Under such a proposal, (72a) would be first manipulated to yield the LF (72b). Condition A would be applied to this LP, yielding the interpretation in (72c) or ultimately (72d):

(72) a. I wonder which pictures of <u>each other they</u> remained fond of t.
b. I wonder which <u>they</u> remained fond of pictures of <u>each other</u>.
c. I wonder for which x, <u>they</u> remained fond of x, pictures of <u>each other</u> (x).
d. I wonder for which x, each of them remained fond of x, pictures of the others (x).

P2 Modification of Condition A (Barss 1986, 1988): The binding domain of an anaphor for Condition A is by definition computed from any position that the anaphor has occupied in the course of a derivation. Thus, in (72a), the local domain of the anaphor can be computed either from the position that *which pictures of each other* occupies at surface structure or from t.

P3 Condition A as an anywhere principle (Belletti and Rizzi 1988): Condition A can be satisfied in the course of a derivation. As long as an anaphor satisfies

Condition A at any point in the course of derivation, Condition A is satisfied. Thus, (72a) is well-formed because Condition A is satisfied before *wh*-movement takes place.

P2 is stated in derivational terms while P3 is stated in representational terms (it can be seen as applying to a single level of representation). For our purposes, they are equivalent. The question, then, is whether we can distinguish P1 from P2/P3.

Consider, first, reciprocals. Recall that a reciprocal is a bound variable. As a result, it seems clear that given the shared conceptualization of LF, only P1 is acceptable for reciprocals. Indeed, since a reciprocal is a bound variable, to be interpreted as such it must be in the scope of – that is, be c-commanded by – its antecedent at LF (recall this is how LF is defined). This means literal reconstruction is required anyway for the LF of (72a). The other alternatives seem to become redundant.

It should be noted that current theoretical developments considerably narrow the difference between these two (or three) approaches. Indeed, under some recent models (Minimalist cyclic models), LF representations are constructed and interpreted cyclically from the bottom up. As a result, Condition A could reasonably be held to have to be checked at the end of each cycle, rather than only once at the end of the last cycle, giving the appearance of P2 or P3 under the guise of P1.

Turning now to reflexives, it is clear that this reasoning does not necessarily apply to them. Unlike reciprocals, a reflexive does not have to be analyzed as a bound variable. It can be thought of as a pronoun coreferential with (i.e., picking out the same referent as) its antecedent, whose selection obeys c-command and locality constraints. In other words, scope and the determination of an acceptable antecedent are perhaps divorced in the case of reflexives, and may thus provide a way to distinguish P1 from P2/P3 as they apply to reflexives. Indeed, if a phrase containing a reflexive is allowed to outscope the c-command position of the antecedent of the reflexive, P1 cannot be right, while P2/P3 may. We will leave this question open here (but see Cresti 1995 and Fox and Nissenbaum 2002 for some discussion).

4.1.2 Predicate–argument asymmetry

The statement that reconstruction for Condition A can be into any trace position of the moved phrase seem contradicted by the existence of the kind of case in (73–74), noted in Cinque (1984) and Barss (1986):

(73) a. [These pictures of each other], I think they liked t.
b. [Visit each other's parents], I think they will t.

(74) a. They think that [these pictures of each other], I like t.
b. *They think that [visit each other's parents], I will t.

In (73), the preposed phrase may reconstruct, allowing *they* to antecede *each other*. (74a, b), however, diverge: (74a) allows *each other* to take *they* as antecedent, indicating that the domain for anaphor binding is the main clause. This is not sufficient, however, for (74b), which is deviant. This suggests that predicate movement (such as VP-preposing) differs from A-bar movement of DPs: predicate movement behaves as if reconstruction is always obligatory even when anaphors are involved: if the preposed predicate must be interpreted in the position t in (74b), its deviance is derived. This generalization seems corroborated by the behavior of AP preposing:

(75) a. I wonder how fond of each other's parents (Bill thinks) they are t.
b. *They wonder how fond of each other's parents (Bill thinks) Sue is t.

As (75b) illustrates, it is not possible to select *they* as antecedent, even though it would be in the local domain of the anaphor if it could compute its binding domain from the moved position. Furthermore, when there are intermediate traces, reconstruction must be all the way down:

(76) a. *I wonder how fond of each other's parents they think [t Bill is t].
b. *Visit each other's parents, you think [t they said [t Mary and Bill did t]].

Reconstruction into intermediate trace positions would wrongly allow *they* to be antecedent in (76a) and *you* or *they* in (76b).

Descriptively, the computation of the binding domain for Condition A of an anaphor pied-piped under predicate movement must take place from the lowest possible reconstructed position. Of course, a theory of reconstruction should be able to derive why predicate movement behaves differently from other types of movement. We postpone this discussion to section 5.3, until after we have discussed reconstruction effects for Condition C.

4.2 Condition C

We now turn to a more detailed discussion of reconstruction effects with respect to Condition C. Summarizing the descriptive generalizations we have from section 3.3.1, we get:

- Reconstruction for Condition C is obligatory.
- Reconstruction for adjuncts is optional.

We will begin by examining how the second generalization should be derived. Next we will survey some proposals regarding the first generalization and proceed to discuss cases in which it appears violated. We will then return to predicate–argument asymmetries discussed in the previous section and survey how these asymmetries should be handled.

4.2.1 Argument–adjunct distinction

Recall what the argument–adjunct asymmetry is. It is based on the kind of contrast in (77a, b):

(77) a. *[Whose characterization of the typical male viewer does he resent t?
b. [Whose survey describing the typical male viewer does he resent t?

As was said earlier, this contrast is typically taken to reflect a complement–adjunct asymmetry (see Van Riemsdijk and Williams 1981; Freidin 1986; Lebeaux 1988b, 1991, 1998). The offending description in (77a) is part of a pied-piped complement of the pied-piped head N of the *wh*-phrase, while it is part of the adjunct (the relative clause) to the pied-piped head N of the *wh*-phrase in (77b).

(78) initially suggests that what is at stake in this difference is not only the degree of embedding of the offending descriptions within the preposed phrase, since they are more or less equally embedded:

(78) a. Which pictures that you had given to an actor you know did he say you wanted back t?
b. *How happy that you had met an actor you knew did he say you were t?

In both cases, the offending description is embedded inside a pied-piped clause. When this pied-piped clause is a complement of the Adjective head of the *wh*-phrase, deviance results. This seems to strengthen the conclusion that we are dealing with a complement–adjunct asymmetry. We should note, however, that this assumption is controversial (see, for example, Safir 1999; Kuno 1997; Lasnik 1998) and there seems to be some poorly understood speaker variation. In what follows, we will suppose that the relevant difference is indeed a complement–adjunct asymmetry and we will formulate the relevant generalizations in these terms.

At this point, the most mainstream idea concerning how to treat this asymmetry is the one put forward by Lebeaux (1988b, 1991). To resolve the apparent paradox caused by the difference between (77a) and (77b), Lebeaux suggests that unlike a complement to a phrase, an adjunct to a phrase – here the relative clause adjunct to the NP *survey* – can be inserted in a derivation after this phrase has moved (can be inserted acyclically).[14] Accordingly, the derivation of (77b) would have the stages in (79):

(79) a. Underlying structure: He resents whose survey?
b. *Wh*-movement: Whose survey does he resent t?
c. Adjunct insertion: Whose survey [describing the typical male viewer] does he resent t?

Since reconstruction is, descriptively, a matter of accessing a pre-movement structure to evaluate interpretation, no Condition C can arise in such cases if such a derivation is possible. Hence the complement–adjunct asymmetry that we have been assuming holds in these reconstruction cases.

Granting the correctness of the putative adjunct–argument asymmetry and Lebeaux's basic idea, several questions arise, which we address in turn. The first is why adjuncts can be inserted in this fashion while complements cannot. One idea is that relations of predicate saturation and modification must be syntactically local. A predicate needs its complement locally to be properly saturated. This means that at LF, a predicate must have its complement locally. If reconstruction is nothing but access to pre-movement structures, complements must be inserted in underlying structures. A phrase also needs its modifier locally somewhere, but this can be satisfied anywhere, e.g., after the phrase has moved. Such an idea makes sense especially for representations that are interpreted, that is, LFs. Consider now the well-formed example in (80a):

(80) a. Which [[pictures of each other] [which John likes]] does he think they like t?
b. Which [[pictures of each other] [which John likes]] does he think they like [pictures of each other]?

The head of the relative clause must reconstruct to allow *each other* to be properly and locally bound by *they*, but the relative must have been inserted late in order to avoid a Condition C violation between *John* and *he*. This means the interpreted form must be as in (80b); that is, the head of the relative clause must be present twice: once in the low position, because complements must reconstruct and because *each other* needs to be properly bound, and once high, so that the relative clause can modify it locally.

This is natural in the context of Chomsky's (1995c) proposal that traces are copies (to which we return in section 5.2.1): the second form is simply the LF representation of the first:

(81) a. Which [[pictures of each other] [which John likes]] does he think they like t?
b. Which [[pictures of each other] [which John likes]] does he think they like [pictures of each other]?

This means that we could just as well state Lebeaux's idea representationally by stating that the only requirement should be that LFs satisfy the locality requirement necessary to interpret predicate–complement (more generally predicate–argument) and modifier–modifiee relations. In such a case, the derivation of these sentences (if there is one) would be (82):[15]

(82) a. Which [[pictures of each other] [which John likes]] does he think they like [[pictures of each other] [which John likes]]?
b. Which [[pictures of each other] [which John likes]] does he think they like [[pictures of each other] [~~which John likes~~]]?

with selective LF erasure of what need not be interpreted (here the lowest copy of the adjunct).

As a last remark on this topic, it should be noted that relative clauses raise particular problems. First, it is not entirely clear that relative clauses should be treated as adjuncts. Kayne (1994), for example, argues that they should be treated as complements of Determiners. Second, there are cases which have been argued to involve raising of the head of the relative clause from inside the relative clause (cf. Vergnaud 1974; Kayne 1994). According to such proposals, the head of the relative must originate inside the relative clause. Consequently, the relative clause cannot be inserted as an instance of late adjunct insertion, which makes this derivational approach problematic. The representational equivalent does not face such a problem, however, as selective reconstruction (or partial copy erasure) is still viable.

A relevant case would be the well-formed sentence in (83):

(83) Which [[pictures of each other$_j$] [which Jane showed the boys$_j$]] does she think you like?

Since the reciprocal *each other*, as part of the head of the relative clause, is bound by the object inside the relative clause, this should be a case of a head having raised from inside the relative clause. Under a derivational approach à la Lebeaux/ Chomsky, the lower copy should at least contain the head of the relative clause, hence the relative clause itself (since this head is only introduced inside the relative clause), incorrectly triggering a Condition C violation, as in (84a). Under a representional approach, no such problem arises: portion of traces can be selectively interpreted as in (84b):

(84) a. Which [[pictures of each other$_j$] [which Jane showed the boys$_j$]] does **she** think you like [[pictures of each other$_j$] [which **Jane** showed the boys$_j$]]?
b. Which [[pictures of each other$_j$] [which Jane showed the boys$_j$]] does **she** think you like [pictures of each other$_j$]?

We leave these questions open and refer to Sportiche (2000) for further discussion.

4.2.2 Anywhere Principle

Ignoring the adjunct–argument asymmetries just discussed, the preliminary observations we have presented suggest that reconstruction is obligatory when it comes to Condition C effects. We first sharpen this observation by asking what happens when there are several traces. (85a, b) are illustrative:

(85) a. *[Whose characterization of the typical male viewer does he object to t1?
b. *[Whose characterization of the typical male viewer do you think t2 he object to t1?

(85b) is deviant.[16] If obligatory reconstruction could be done in the intermediate trace t2, no Condition C effect should arise, leaving this deviance unexplained.

We conclude that with respect to Condition C, reconstruction is mandatory in the lowest trace, all the way down.

How should these observations be handled? There are basically two proposals:

P4: Condition C is an anywhere principle: it cannot be violated at any stage of a derivation.

P5: Condition C applies at LF and literal reconstruction is obligatory: the (pied-piped portion of the) moved phrase occurs in LF in the position of the most deeply embedded trace.

P4 is put forward by Lebeaux (1988b, 1991, 1998), while P5 is proposed by Chomsky (1995c) and is defended in Fox (1999) (but perhaps undermined by Fox 2002 and by Fox and Nissenbaum 1999, as we will see below).

Comparing P4 and P5, it is easy to see that P5 is conceptually preferable: why should Condition C, a principle of interpretation, apply anywhere else but at LF? This is one of the reasons Chomsky provides for his view.[17] However, just as we have discussed in connection with Condition A, this argument loses some force in a model in which bits of LF are incrementally and cyclically calculated. P4 could, in such a model, be seen as applying at the output of each cycle. P5 could too, so that the differences between them would be much diminished, but it could also apply as originally intended by Chomsky (i.e., as last cyclic in a cyclic model).

Still, the proposals would not be identical. Are there grounds on which to decide whether P4 can be an anywhere Principle as Lebeaux defines it? Note that P4 is stronger than P5: P5 applies to a subset of cases that P4 applies to. The way to decide, then, is to find cases falling under P4 but not under P5 and see whether they are deviant or not: P4 predicts a positive answer, P5 a negative one. What we need to find are sentences in which a pre-movement structure violates Condition C, but the post-movement structure does not. P4 predicts them to be deviant, P5 does not.

One class of cases is discussed by May and Fiengo (1994) and Fox (1999, 2002), and involves Antecedent Contained Deletion (ACD). Examples are in (86):

(86) a. *If the pollsters showed him the characterizations of the typical male viewer . . .
b. If the pollsters showed him the surveys the typical male viewer would want them to . . .
c. [the typical male viewer would want them to ___]$_j$ the pollsters *showed him* t_j

(86a), a Condition C effect, shows that the pronoun *him* c-commands the second object *the characterizations of the typical male viewer*. Despite this c-command relationship, (86b) is fine. The basic reasoning proposed is the following (see the references cited for more detail): the antecedent of the missing VP in (86b) is the VP containing the relative clause. Replacing the missing VP with its antecedent would lead to infinite regress (as it still contains the missing VP). To resolve this paradox, movement of the relative to a position outside of the VP must be available

as in (86c), providing a non-paradoxical antecedent (in italics) for the missing VP. As a side-effect, this movement removes *the typical male viewer* from the c-command domain of the pronoun *him*. The fact that the sentence is fine suggests that Condition C is checked only after this movement has taken place.

However, according to Fox (2002) and Fox and Nissenbaum (1999), this last set of examples could be derived without the relative clause being c-commanded by the pronoun at any level – roughly speaking, the relative clause is merged into the tree as extraposed. Such analyses crucially rely on the adjunct–argument asymmetry (perhaps analyzed as late adjunct insertion – see section 4.2.1). Under such analyses, these examples, which involve the relative clauses as adjuncts, become irrelevant to the present point. A discussion of this proposal is important to decide the significance of examples such as (86a) and (86b), but this is beyond the scope of this chapter.[18]

There are cases, however, which seem more difficult to reconcile with P4. Consider the following examples involving A-movement, such as (87a) with (87b) as pre-movement structure:

(87) a. This picture of John seems to him [t to be fuzzy].
b. seems to him [this picture of John to be fuzzy]

Since this sentence is well-formed, it suggests that Condition C is not checked before movement, as the pre-movement structure in (87b) would otherwise violate Condition C. Lebeaux (1991, 1998), who wants to preserve Condition C as an Anywhere Principle, suggests a different theory of underlying structure to get around this problem, namely that in underlying structure, all NPs are empty slots which are allowed to be filled only after A-movement has taken place. Accordingly the underlying structure for (87a) would be:

(88) seems to him [[$_{DP}$ this [$_{NP}$ e] of [$_{DP}$ D [$_{NP}$ e]] to be fuzzy]

In this structure, it must be assumed that Names such as NPs are NPs (a non-trivial assumption) with a silent Determiner, annotated as D here. At this point, this DP would not qualify as a name or an R-expression and thus not fall under Condition C. Insertion of *John* would take place after raising to subject yielding (87a).

There are several problems with such an approach. One problem is that it is unclear exactly what the principles guiding the form of underlying structures are any more. Another is the fact mentioned earlier involving idiom chunks (which is actually a fact about scope). Recall that if an idiom chunk is (passivized and) raised, we get Condition C effects ((61–62), repeated here as (89–90)):

(89) a. ?Grand soin de Marie me semble avoir été pris t.
b. ?Grand soin d'elle$_j$ lui$_j$ semble avoir été pris t.
c. ?Grand soin de Marie$_j$ lui$_k$ semble avoir été pris t.
d. *Grand soin de Marie$_j$ lui$_j$ semble avoir été pris t.
'Good care of Mary/her seemed to me/her to have been taken.'

(90) a. ?Le parti de Marie me semble avoir été pris t trois fois.
b. ?Son$_j$ parti lui$_j$ semble avoir été pris t trois fois.
c. ?Le parti de Marie$_j$ lui$_k$ semble avoir été pris t trois fois.
d. *Le parti de Marie$_j$ lui$_j$ semble avoir été pris t trois fois.
'Mary's/her side seemed to me/her to have been taken three times.'

To get a Condition C effect, the name must be c-commanded by the pronoun either in underlying structure or at LF. If the former, a reason must be found as to why an NP object of an idiom chunk must be inserted in underlying structure. If the latter, we must suppose that we reconstruct into the trace position material that was never there in the first place. (What then is the reconstruction process?)

Similar conclusions can be reached by looking at cases (cf. Sportiche 1997, 1999; Romero 1997a; Fox 1999) in which a raised subject containing a name is understood as under the scope of the raising verb. Fox (1999), provides the following example, again going in the same direction:

(91) *For these issues to be clarified, many more new papers about Quine$_j$'s philosophy seem to him$_j$ [t to be needed].

Fox's reported judgment is as indicated. This sentence is constructed so as to strongly favor a reading in which the existence of these new papers is not asserted. In other words, it strongly favors a reading in which the subject is interpreted as reconstructed in the scope of the verb *seem*, i.e., as corresponding to the underlying representation in (92):

(92) seem to him$_j$ [to be needed many more new papers about Quine$_j$'s philosophy]

Its status ensues from the Condition C violation that is incurred.

As a control, note that coreference per se is not problematic. (93), with the pronoun and the name swapped, is fine:

(93) Many more new papers about his philosophy seem to Quine$_j$ [t to be needed].

All these are cases in which movement removes an offending configuration for Condition C, and thus they argue against the idea that Condition C is an Anywhere Principle.

We conclude that Condition C applies at LF and does not apply to underlying structures.[19] This is not compatible with P4, but it is with P5 and thus favors the latter (under either construal: cyclic or last cyclic). It is less clear at this point whether P5 is correct in stating that Condition C only applies at LF rather than, say, to surface representations as well (if they are different). In a Minimalist model such as Chomsky's (1995c), given the results above, LF would indeed be the only option.

Assuming the correctness of P5 raises further problems. If the mapping from (what roughly corresponds to) surface representations to LF is not trivial, it remains to be explained why, in general, such mapping operations (*wh*-in-situ

interpretation, quantifier raising – apart perhaps from the ACD cases discussed earlier) never bleed Condition C. For example:

(94) a. A different person compared her to every picture of Jane.
b. Who told him about which picture of Bill?

In (94a), *every picture of Jane* can outscope *a different person*, but this interpretive operation (quantifier raising to a position higher than the subject) cannot remove the Condition C violation incurred if *her* and *Jane* are coreferential. In (94b), if *wh*-movement preposes *which picture of Bill* to [spec, CP], there will not be a Condition C violation at LF.

One option is to assume that there are no 'covert' operations (cf. Williams 1986; Brody 1995b); another is to assume that Condition C applies to 'surface-like' structures. In Chomsky's (1995c) Minimalist framework, the second option is unavailable and the first is not considered. This is why, talking about *wh*-in situ interpretation, Chomsky suggests that such mapping operations move only the quantifier and not the whole DP (just the D without the NP), here yielding (95), which still violates Condition C:

(95) which [who told him about t picture of Bill]

Chomsky's copy theory of traces could be construed differently to handle this general observation. Adopting for expository purposes Fox's (2002) construal of such copies as definite descriptions and assuming phrasal covert movement, the LF of (94a) would roughly be (96):

(96) for every picture of Jane [a different person compared her to this picture of Jane]

New problems of course now arise: if traces are copies, or if movement is limited to Ds, what happens in the cases of ACD discussed above? We refer to Fox (1999, 2002) and Fox and Nissenbaum (1999) for further discussion.

4.2.3 Predicate–argument asymmetry

Unlike argument preposing, predicate preposing does not seem to increase the set of possible antecedents for a pied-piped anaphor. This contrast is illustrated in (97):

(97) a. They think that [these pictures of each other], John likes t.
b. *They think that [visit each other's parents], John will t.

How should this contrast be handled?

One class of proposals (Williams 1980; Barss 1986, 1988; Huang 1993; and in part Reinhart and Reuland 1993) require (using different devices) that nothing other than the subject of a predicate can bind an anaphor inside this predicate from outside this predicate: either the anaphor is bound internally to the predicate phrase, or it is bound by the subject of this predicate. Clearly all such proposals

will be able to exclude (97b), since the only antecedent it would allow for the reciprocal would be *John.* However, most will be insufficient in general to extend to cases not involving anaphors. For example, Barss (1986) and Heycock (1995) note the ill-formedness of the type of example in (98):

(98) a. *[Bribe a Nobel Prize winner]$_k$, he did t_k.
b. *[Bribe a Nobel Prize winner]$_k$, he says you$_j$ did t_k.

The relevant factor here is that coreference between *he* and *a Nobel Prize winner* is excluded. One option for handling these facts would be to adopt Lebeaux's (1991) proposal that Condition C is an Anywhere Principle and cannot be violated at any stage of the derivation. However, we have seen that this option is not tenable. Furthermore, it would not generalize to the anaphor cases.

In effect what is needed to handle all of these cases ((97) and (98)) is some reason why reconstruction of preposed predicates to their lowest trace is required. If such is the case, examples (97b) and (98b) would respectively receive the LFs in (99):

(99) a. *They think that ~~[visit each other's parents],~~ John will [visit each other's parents].
b. *[Bribe a Nobel Prize Winner], he says you did.

whose ill-formed status follows immediately. This is exactly what Barss (1986) proposes. The question is now why it should be true that reconstruction of predicates is required.

There are two proposals in the literature. The first is an elaboration of Huang (1993) due to Takano (1995), which we will detail below. The second is due to Heycock (1995), who argues that predicates must always reconstruct for scope reasons. If we accept that predicates must (at least under normal circumstances) take narrow scope – and Heycock (1995) provides strong supporting evidence for this claim – we derive the reconstruction properties of preposed predicates. We only have an explanation, however, if we can derive the idea that predicates must have narrow scope. Otherwise, we simply have a sophisticated stipulation of the result that we want with as many stipulated properties (= predicates must have narrow scope) as results (= they must reconstruct). In other words, granting that predicates must always reconstruct for scope reasons, the question is why.

If the semantic properties of predicates somehow precluded them from being interpreted with wide scope, we would have such an explanation, but there do not seem to be reasons why failure to reconstruct a predicate should lead to semantic ill-formedness. Thus a priori there is nothing wrong with representation of the meaning of (100a) as (100b) with wide scope of the predicate:

(100) a. John will sleep.
b. There is a property P of sleeping, will (P (John)). (assuming verbs range over properties or relations)

Huang's (1993) proposal seems to be successfully extendable to all such cases, and with some explanatory power, because it seems independently plausible given general assumptions about phrase structure. Regarding anaphors, Huang suggests the preposing of predicates actually always preposes a constituent containing the subject of this predicate. As a result, the domain within which the anaphor must be bound is no larger than this preposed constituent itself.

The details of this proposal are as follows: first, the subject of a predicate is always generated internally to the projection of this predicate as specifier of this projection (this is the so-called Predicate Internal Subject Hypothesis, justified on independent grounds). In underlying structure, the subject of a verb V (or an adjective A) is always the specifier of the corresponding VP (or AP). If this subject shows up elsewhere, it has been moved. For example, (101a) has the surface structure indicated in (101b):

(101) a. John will see Mary.
b. John_j will $[_{VP}\ t_j$ [see Mary]].

The structure of the example involving VP-preposing now looks as in (102):

(102) a. Visit each other's friends, you think they said [Bill and Mary]$_j$ will t_k.
b. [t_j Visit each other's friends]$_k$, you think they said [Bill and Mary]$_j$ will t_k.

The trace t_j closes off the domain within which *each other* can look for an antecedent and thus can be the only antecedent available. Since this trace is the trace of *Bill and Mary*, *Bill and Mary* is the only allowed antecedent. One appealing aspect of this proposal is that under these assumptions about phrase structure, pied-piping of the subject trace follows from the general properties of phrasal movement: the subject trace is within the minimal phrasal constituent containing the predicate and thus must move along with it; the minimal movable projection of a predicate always contains the (trace of the) subject of this predicate.

Of course, this proposal covers (98a) but not (98b), repeated – with traces – as (103):

(103) a. *[t_j Bribe <u>a Nobel Prize winner</u>]$_k$, <u>he</u>$_j$ did t_k.
b. *[t_j Bribe <u>a Nobel Prize winner</u>]$_k$, <u>he</u>$_m$ says you$_j$ did t_k.

As we saw earlier, (98b) would also be straightforwardly handled as a Condition C effect if the VP were forced to literally reconstruct: the description *a Nobel Prize winner* would be c-commanded by the coreferential pronoun *he*, thus triggering a Condition C effect.

If we modify Huang's proposal and suppose that literal reconstruction of moved predicates is required we handle all the relevant facts. This is Takano's (1995) proposal. The Huang–Takano proposal provides a simple reason why literal reconstruction is required: traces are bound variables and must, at LF, be in

the scope of (i.e., be c-commanded by) their binders.[20] In particular, if a preposed predicate does not reconstruct, it will leave the trace of the subject that it contains without c-commanding antecedent. Thus the behavior of fronted predicates is ultimately due to the Predicate Internal Subject Hypothesis (as Huang suggested), but in two different ways: for anaphors because the predicate always has a trace subject, and for Condition C because this trace forces reconstruction of the fronted predicate.

Heycock (1995) argues not only that the Huang–Takano proposal is insufficient,[21] but also that it is too strong. We will comment on Heycock's arguments and their inconclusiveness in sections 5.3.2 and 5.3.3.

4.3 Scope

We now turn to a more systematic investigation of the interaction of reconstruction for binding and reconstruction for scope. As we will see, such considerations play a major role in determining reconstruction possibilities (as shown, for example, in Cresti 1995; Heycock 1995; Fox 1999), and lead to substantial reformulations of the problem. In this subsection, we discuss scope reconstruction. In the next section we will turn to the interaction of scope and binding reconstruction.

We have already seen all sorts of reconstruction effect for scope, e.g., cases of pronominal binding, reciprocal binding, and quantifier–predicate interactions. We now focus a bit more on the last of these. Recall that in such sentences as (15) (repeated here as (104)), in which we paraphrase *compose* as *cause to be in existence* and *perform* as *cause to be performed:*

(104) a. How many songs will you compose?
b. How many songs will you perform?

we can paraphrase (104a) by (16a) (repeated here as (105a)), and (104b) by either (16b) or (16c) (repeated here as (105b, c)):

(105) a. For what number x, you will cause there to be x many songs in existence?
b. For what number x, you will cause there to be x many songs performed?
c. For what number x, there are x many songs you will cause to be performed?
= How many songs are there that you will perform?

As outlined above, the difference lies in the scope of the existential quantification rendered here by *there are* . . . with respect to the expression *will cause*. Reading (105c) is less natural in the case of (104a): we cannot assert the existence of a set of objects with certain properties if these objects do not yet exist (presuming that if the songs are not composed yet, they do not exist).[22] We have called the readings in (105) and (105b) the narrow-scope or narrow readings (since *there* has

narrower scope than *will cause*) and the reading in (105c) the wide-scope or wide reading.

As has often been noted (see, e.g., Dobrovie-Sorin 1994b; Heycock 1995), we can unambiguously render the narrow readings of (104a, b) in French as in (106a, b).[23] The wide reading of (104b) is rendered by (106c), which also allows the narrow reading:

(106) a. Combien vas-tu composer de chansons?
how many will you compose of songs
b. Combien vas-tu chanter de chansons?
how many will you sing of songs
c. Combien de chansons vas-tu chanter?
how many songs will you sing

Call the construction exemplified in the first two sentences *combien*-split. Given that *combien* means 'what is the number (or quantity) x such that', it is natural to take the position of *de chansons* to correspond to the locus of the existential quantification 'there are x many songs'. In this way, the surface form of the French narrow-reading question seems to be exactly what we need to express its meaning, as (106a) essentially has the form of (105a). By the same token, (106c) has the form of (105c). It is thus plausible to assume that the ambiguity of the English sentence (104b) is represented at LF by varying what reconstructs:

(107) a. Reconstruction: how many will you perform songs (narrow reading)
No reconstruction: how many songs will you perform (wide reading)

This plausibility argument as to what the LF representations of such sentences are finds support from some French facts noted in De Swart (1998):[24]

(108) a. Combien de chansons les enfants ont-ils tous chanté(s)?
how many of songs the children have-they all sung
b. Combien les enfants ont-ils tous chanté de chansons?
how many the children have-they all sung of songs
c. For what number x, the children all caused there to be x many songs performed?
d. For what number x, there are x many songs the children all caused to be performed?

The sentence in (108b) has only a narrow reading, represented by (108c), with the existential quantifier (*there*) in the scope of the universal quantifier (*all*) so that the choice of the songs to be performed can vary with each child. Given that floated quantifiers always take their surface scope, this reading is predicted by

the assumed LF representation for narrow readings. The sentence in (108a) is ambiguous between the narrow and the wide reading. Under the wide reading, represented by (108d), the existential quantifier (*there*) is not in the scope of the universal quantifier (*all*) so that the choice of the songs cannot vary with each child. To make this more concrete, imagine an exam situation in which children have to sing six songs. Three of them are the exact same three for all the children (the imposed program), and the other three are freely chosen by each child (the free program). To (108a), it is possible to truthfully answer 'three' or 'six'. To (108c), only 'six' is a truthful answer.

5 Simultaneous reconstruction requirements

In this section, we discuss what happens in situations in which the requirements of several binding and/or scope principles must be simultaneously satisfied. We actually already have encountered such situations, but we now discuss them somewhat more systematically. A coherent overall theory of reconstruction should be able to handle all such cases – certainly a non-trivial task and, if achieved, a non-trivial result.

We begin by discussing interactions between Condition C and pronominal binding. Next we turn to quantifier–predicate scope and Condition C. Finally, we examine the case of predicate preposing and its interaction with scope considerations and Condition C.

5.1 Condition C, Condition A, and pronominal binding

Lebeaux (1991) reports that Condition C effects and the possibilities for pronominal binding correlate. He discusses examples similar to (109) (from Fox 1999, in which more such examples are discussed):

(109) a. *Which survey that he could show to the typical female viewer would she hope no pollster would publish t?
b. Which survey that he could show to her would the typical female viewer hope no pollster would publish t?
(Desired answer to both: 'His most embarrassing.')
c. *Quel sondage qu'il pourrait montrer à Madame toutlemonde ne laisserait-t-elle aucun journaliste publier t?
d. Quel sondage qu'il pourrait lui montrer Madame toutlemonde ne laisserait-t-elle aucun journaliste publier t?

In order for the pronoun *he* to be understood as bound by the quantifier *no pollster*, reconstruction of the relative clause must take place. However, if

reconstruction takes place, this puts the indirect object of the verb *show* in the c-command domain of the subject of the verb *hope*. If the latter is a pronoun, and the former is a name or a description, we should observe a Condition C effect, and we do, as in (109a). Otherwise we should not, as in (109b). The deviance of (109a) indicates that Condition C and the condition on pronominal binding cannot be checked on strictly different inputs. If they were, we should be able to satisfy Condition C on some input and the condition on pronominal Binding on another at which the Condition C configuration is not met. This, for example, would be the case if Condition C applied at S-structure but not at LF and pronominal binding were checked at LF but not at S-structure.[25] This reinforces the idea that Condition C applies at LF (but says nothing about whether or not, in addition, Condition C applies elsewhere, e.g., to surface representations).

The same point can be illustrated with reciprocals, which also act as variables bound by their antecedents. This also illustrates an interaction between the locality requirement of Condition A and Condition C. Contrast (110a, b):

(110) a. *Which stories *about each other's characterizations of the typical male viewer* would he conclude the journalists should publish?
b. Which stories *about each other's characterizations of him* would the typical male viewer conclude the journalists should publish?

(110a) does not seem to allow the reading in (111a), but (110b) allows the reading in (111b). Some care is needed to evaluate this contrast, as we want to make sure that the interpretation under which (110a) and (110b) are judged has the relevant distributive readings, which can (roughly) be paraphrased as (111a, b):[26]

(111) a. Which stories about the others' characterizations of the typical male viewer would he conclude each journalist should publish?
b. Which stories about the others' characterizations of him would the typical male viewer conclude each journalist should publish?

5.2 Scope and Condition C

The conclusion that the LF of the narrow and wide readings is as in (107) directly bears on the relationship between scope and binding with respect to reconstruction, as extensively discussed in Heycock (1995). She reports the contrasts (the examples are slightly changed) in (112a, b) which we will discuss in turn. For the first one, imagine the following context in which no prior virtual existence has been established for such surveys (cf. note 23): have the opinions of the typical male viewer been taken into account in designing surveys of his TV viewing habits? Should we send questionnaires out to him to help us formulate the questions? Is it worth it, given the low response rate we get? In the end, when all is counted:

(112) a. *How many surveys about the typical male viewer is he likely to help design t?
b. How many surveys about the typical male viewer is he likely to challenge t?
c. *How many is he likely to help design surveys about the typical male viewer?
d. How many surveys about the typical male viewer is he likely to challenge t?

Let us examine these sentences in turn.

5.2.1 *The wide-scope reading*

Let us first consider the meaning of (112b), repeated here. Here, we can easily imagine a context in which the surveys about the typical male viewer already exist, since he is likely to challenge them. This makes the wide reading readily available, which means that the LF (112d) (repeated here) is fine, avoiding a Condition C effect:

(112) b. How many surveys about the typical male viewer is he likely to challenge t?
d. How many surveys about the typical male viewer is he likely to challenge t?

We are now faced with an apparent contradiction. We had concluded that reconstruction of non-adjunct pied-piped material is obligatory to guarantee that we observe Condition C effects. This means that at least the nominal *surveys* should reconstruct. For scopal reasons, however, it looks as though we want the same nominal not to reconstruct.

This problem becomes more acute in (113):

(113) a. *How many pictures of a famous artist you know is he looking for t?
b. LF1: How many pictures of a famous artist you know is he looking for?
c. LF2: How many is he looking for pictures of a famous artist you know?

Clearly the sentence in (113a) can receive a wide reading and thus get the LF representation LF1 in (113b). This predicts that under the wide reading there should not be any Condition C effect. But this seems wrong: coreference between the underlined elements is blocked in (113a). To get this result, we would need to postulate instead of LF1 the logical form LF2, given in (113c). But this would wrongly claim that only the narrow reading is available for (113a).

A solution to this problem can be constructed by using Chomsky's (1995c) theory of movement traces as copies, which we have already seen helps resolve other problems.[27] According to Chomsky's proposal, a sentence like (114a) would have (114b) as surface syntactic representation, (114c) as input to phonology (Phonetic Form or PF), and (114d) as manipulated surface structure for the purpose of interpretation (LF):

(114) a. How many books are you looking for?
b. Surface Form: How many books are you looking for how many books?
c. What PF sees: How many books are you looking for ~~how many books~~?
d. What LF sees: How many ~~books~~ are you looking for ~~how many~~ books?

Chomsky's copy theory of movement has several positive aspects. First, it eliminates the need to postulate objects (traces), whose internal structure is not entirely clear (e.g., how do traces obey X-bar theory?). Second, Move is an operation of copying a moving phrase and deleting the original copy. The copy theory turns movement into a simpler operation, essentially identical to the elementary structure-building operation (*merge*). It differs only in taking as input an object that has served as input for an earlier merger – *move* is *merge-the-same-object-again*, that is, by appealing to a notion of identity of distinct syntactic objects which seem independently required by cases of ellipsis, as Chomsky (1995c) notes. The 'deletion' part is now handled independently as part of PF interpretation or LF interpretation, and there can be mismatches between what is deleted in PF and what is deleted in LF, as the paradigm in (114) makes clear.[28]

Turning back to the problem raised by (113a), we can resolve the contradiction by departing from Chomsky's proposal and assume that the LF of (113a) is not (113c) but rather a representation in which both the moved copy and the original copy are interpreted at LF.[29] In the case of a narrow reading, reconstruction must be obligatory, as we have now seen several times. In the case of the wide reading, it is important that the moved constituent be interpreted with wide scope, but nothing prevents a copy of this constituent from being interpreted in the original trace position as well. This permits a reconciliation of scope considerations with the obligatory character of reconstruction of pied-piped complements necessary to explain certain Condition C effects.[30]

The idea that both copies can be interpreted is developed in Fox (1999) for different reasons (see also Brody 1995b; Safir 1999; Rizzi 2000a). Fox suggests that the 'bottom' trace is interpreted like a definite description. Other possibilities could be contemplated (Safir 1999 treats it like a pronoun), but from now on, for ease of exposition, we will represent the lower copy as a demonstrative expression referring back to the top copy when there are two (or more) copies. For the sentence in (115a), this would yield the LF representations (115b) for the narrow reading and (115c) for the wide reading. Taking Fox's proposal into account, we will understand the LF of (115c) as (115d):

(115)	a.	The sentence:	How many pictures of *a famous artist* is *he* looking for t?
	b.	Its narrow-reading LF:	How many is *he* looking for pictures of a famous artist?
	c.	Its wide-reading LF:	How many pictures of a famous artist is *he* looking for pictures of a famous artist?
	d.	Paraphrase of the wide-reading LF:	How many pictures of a famous artist are such that *he* looking for <u>these</u> pictures of a famous artist?

The effect of interpreting both copies in the case of wide readings are clear: in all cases, we see that coreference between *he* and *a famous artist* leads to a Condition C violation.

5.2.2 The narrow-scope reading

Turning now to (112a), its reported deviance might look surprising. Since *about the typical male viewer* is an adjunct, it should be allowed not to reconstruct and thus should not have to feed Condition C. The reason for the deviance, Heycock (1995) hypothesizes for similar examples, is that the LF representation of (112a) must be (112c), with reconstruction of the restriction of *how many*. Indeed, the surveys about the typical male viewer not having been designed yet, only the narrow reading of this question is plausible. In (112b), the wide reading is plausible, thus allowing the LF (112d), which causes no Condition C violation.

Note that in such circumstances, for this reasoning to go through in the case of the narrow reading, it must not be possible to totally reconstruct the nominal head *surveys* of the preposed constituent without reconstructing the adjunct modifier *about the typical male viewer* as well. This seems reasonable: the adjunct must, by hypothesis, be predicated of some modifiee, to which it must stand in a syntactically local relation: as a result, it cannot be left stranded in a high position.

5.3 Predicate movement, scope, Condition C, and predicate-internal subjects

5.3.1 Scope reconstruction and islands

Recall that we concluded that moved predicate phrases always reconstruct. This means that predicate movement should never obviate Condition C effects or increase the set of possible antecedents for a pied-piped anaphor. These two points are again illustrated in (116):

(116) a. *[t_j Pleased with an old painter], I think he was t.
b. *[t_j Pleased with an old painter], he thinks you were t.
c. *[t_j Visit [each other]$_k$'s parents], you think they said [Bill and Mary]$_j$ will t.

In (116a, b), obligatory reconstruction will put the preposed constituent back into position t, thus triggering Condition C effects. In (116c), the presence of t_j prevents anything other than *Bill and Mary* from qualifying as antecedent for *each other*. Note that the Predicate Internal Subject Hypothesis truly derives the required reconstruction from the independent existence of a condition on pronominal and variable binding.

Heycock (1995) provides support for her observation that predicates are limited to taking narrow scope. This support is based on some extraction facts out of *wh*-islands. Several authors (e.g., Cinque 1990c, who attributes the observation

to Giuseppe Longobardi) have noted that an amount question (*how much*, *how many*) out of *wh*-islands is only possible if this question receives a wide-scope reading in the sense of the text. Thus we find the facts in (117) (e.g., with *how many*):

(117) a. *How many songs do you wonder whether Sue will compose t?
b. ?How many songs do you wonder whether Sue will perform t?

In (117a) (without context), lexical choices strongly favor the narrow reading (the wide reading, *how many songs are there such that . . .*, is implausible given that the songs are not yet composed). In (117b), the wide reading is plausible and the sentence is better (with the reading *how many songs are there such that . . .*).[31] (See chapter 64.)

Degree questions (e.g., with *how* + adjective) behave like narrow-reading amount questions (as noted in Rizzi 1990b, citing Roberts 1988b and Baltin 1992) and unlike wide-reading amount questions:

(118) a. *How intelligent did she wonder whether she was?
b. *How afraid of dogs did they ask if he was?

Heycock takes this to suggest that the only (or the only accessible) interpretation degree questions tolerate is the narrow reading; that is, that predicates must reconstruct. (If the wide reading were available, (118a, b) should have the status of (117b) and not of (117a).)

Heycock further argues (following Kroch 1989a) that the unavailability of the narrow reading in amount or degree questions out of *wh*-islands is due to pragmatic infelicity rather than semantic deviance or ungrammaticality. Questions out of *wh*-islands, they argue, require that the questioned phrase ask the identity of an entity or entities presupposed to exist.[32] In the case of the wide-reading question (117b), repeated here as (119a), the presupposition would be what is given in (119b):

(119) a. ?How many songs do you wonder whether Sue will perform t?
b. There are songs such that you wonder whether Sue will perform them.

This should make it possible to rescue narrow readings for amount and degree questions out of *wh*-islands. First, Heycock (following Kroch) argues that contexts can be constructed that make amount questions or degree questions out of *wh*-islands more acceptable. Heycock's example is (120a), with its interpretation in (120b) and it presupposition in (120c):

(120) a. How many points are the judges arguing about whether to deduct?
b. What is the number such that the judges are arguing about whether to deduct this number of points?
c. There is a certain number of points that the judges are arguing about whether to deduct.

Similar facts can be found in French. Normally, *combien*-split is sensitive to weak islands such as *wh*-islands or an intervening negation. In French, this is easier to check, since we can guarantee the narrow reading by using *combien*-split. This type of context indeed makes the approximate translation of (120a) yield the relatively acceptable (121):

(121) Combien est-ce que les juges se demandent s'il faut déduire de points?

We find similar contrasts for negative islands. (122) is hard to interpret:

(122) *Combien est ce que Jean n'a pas emprunté de livres cette année?
'How many hasn't John borrowed books this year?'

Out of context, there is no particular presupposition about there being a number of books that one should borrow. However, this sentence improves greatly if we utter it with the presupposition that there is a certain number of books that John has not borrowed this year.

Consider now (123), asked in a context (familiar to French people) in which there is a small, fixed number of competitive exams to take every year, and every student decides which ones to take and which ones to opt out of. It is then perfectly natural to ask how many competitive exams John decided to opt out of, as in (123a) (with the intended interpretation in (123b)):

(123) a. Combien est ce que Jean n'a pas passé de concours cette année?[33]
'How many hasn't John taken of competitive exams this year?'
b. What is the number/it is not the case that John took this number of exams this year.

Extraction out of *wh*-islands of degree-modified predicates can also easily be done. For example, in the following context, sentence (124a) is fine: 'According to reliable sources, Einstein's sister was just as well informed and just as smart as him and he was extremely proud of her.' Just as well informed, I can believe' but:

(124) a. This smart, I wonder whether she was t.
b. *This proud of Einstein's sister, I wonder whether he was t.
c. This proud of his sister, I wonder whether every student ever was t.

We must make sure that sentence (124a) is not a case of wide reading but rather a case of felicitous narrow reading, since predicates must always reconstruct, ruling out wide readings in degree questions in principle. First, note that (124b) is still deviant. This shows that a copy of the predicate phrase is interpreted as reconstructed, but does not exclude the presence of an interpreted copy at the top as well. The well-formedness of the third sentence (in an appropriate context) does show that such structures may be interpreted with no copy left at the top (otherwise we would have an unbound pronoun). This does not demonstrate

that wide readings are unavailable for preposed predicates, but at least it shows that such examples as (124a) can be treated as cases of narrow readings, i.e., as having the interpretation in (125):

(125) There is an amount X such that, I wonder whether she was X smart.

5.3.2 Definite descriptions, predicate-internal subjects, and partial reconstruction

Heycock also discusses the contrasts in (126):

(126) a. *[How afraid of some question Gore has not prepared for] do you think he is now?
b. [How pleased with the pictures Pollock painted long ago] do you think he is now t?

The unacceptability of (126a) is predicted. Forced reconstruction of the preposed predicate phrase puts *Gore* in the c-command domain of *he*, thus triggering a Condition C effect. The acceptability of (126b) is unexpected. To deal with this, Heycock suggests that the definite description *the pictures that Pollock painted long ago* can be assigned wide scope, deriving the representation in (127):

(127) [The pictures that Pollock painted long ago]$_k$, how do you think he was pleased with t_k?

Heycock remarks that if this wide-scope reading becomes less plausible, a Condition C effect reappears. This is the case in (126a), in which it is most natural for the relative clause not to be interpreted with widest scope. The contrast in (128a, b) is similar:

(128) a. How jealous of a girl that Mary had met at the party did she become?
b. *How eager for a friend that Mary might confide in would she become?

It is possible to interpret the underlined indefinite in (128a) as having wide scope ('There is a girl that Mary had met at the party: how jealous of her did she become?'). Such a wide-scope reading for the indefinite is far less plausible for (128b).

Let us examine how this proposal can be reconciled with earlier conclusions. Consider again (126b), repeated here as (129):

(129) [How pleased with the pictures Pollock painted long ago] do you think he is now?

We must obligatorily reconstruct the predicate and its complement, and scope out the definite description in such a way that it leaves no interpreted copy

below the pronoun *he*. In this instance, this is possible because we need not reconstruct adjuncts, and an adjunct contains the potentially offending name. This yields (130):

(130) [How the pictures Pollock painted long ago do you think he is pleased with these pictures] now?

in which the lower copy does not contain the relative clause.

That this is on the right track seems supported by the contrast between (131a) and (131b):

(131) a. [How pleased with the pictures an old painter you know painted long ago] do you think he is?
b. *[How pleased with the pictures of an old painter you know] do you think he is?

The difference between them is that the potentially offending name is contained in an adjunct in (131a), and can thus fail to reconstruct. In (131b), it is part of the complement structure and thus must be reconstructed, triggering a Condition C effect.

Similarly, it is clear why (132) is a Condition C violation, given the only possible LF representation it could have:

(132) a. I gave him this picture of Bill yesterday.
b. LF: [This picture of Bill]$_j$, I gave him this picture of Bill yesterday.

However, the lack of obviation of Condition C effects in sentences such as in (133) is problematic. They would get the corresponding representations in (134) after scoping out of the definite description (leaving only copies of non-adjunct material), and would thus be predicted to escape Condition C, contrary to fact:

(133) a. *He says that the man who an old painter met left.
b. *She considers the book a European princess wrote to be unreadable.
c. *I told him that the man who an old painter met left.
d. *He$_j$ wonders [how pleased with the pictures an old painter you know painted long ago] you are.

(134) a. The man who an old painter met [he says that this man left].
b. The book a European princess wrote [she considers this book to be unreadable].
c. The man who an old painter met [I told him that this man left].
d. [The pictures an old painter you know painted long ago] he$_j$ wonders [how pleased with these pictures] you are.

One way out could be to restrict the distance that the definite description can scope over. If, roughly, it were clause bound, all these problems would disappear.

This would predict, however, that (135a) should still be fine (viz. its representation in (135b) after scoping out of the definite description):

(135) a. Je lui ai donné la photo que le vieux peintre m'a demandée.
b. I gave him the picture the old painter asked for yesterday.
c. [The picture an old painter asked for], I gave him this picture.

The French sentence in (135a) given in English in (135b), is clearly much better than (132a) and indeed is perfectly fine, particularly if read with such an intonation that the (underlined) direct object is backgrounded. This, however, may be an effect due to 'extraposition' of the relative clause.

The examples in (136) are sharply out:

(136) a. *Il m'a donné la photo que le vieux peintre m'a demandée.
b. *He gave me the picture the old painter asked for yesterday.
c. [The picture the old painter asked for], he gave me this picture.
d. He [the picture the old painter asked for] gave me this picture.

This suggests that if descriptions can scope out within their clause, leaving a copy optionally containing adjunct material, the distance this movement can span is quite restricted. Here the definite description must stay lower than a definite subject. Note that in the initial case in (130), scoping of the definite description is from within a preposed *wh*-phrase. Clearly this is an area for further research.

5.3.3 What drives predicate reconstruction?

The structure of (126b) under Huang's (1993) proposal is (137):

(137) [How t_j pleased with the pictures Pollock$_j$ painted long ago] do you think he$_j$ is now t?

This would seem incompatible with Huang's proposal, Heycock (1995) claims. The presence of t_j coindexed with *he* should trigger a Condition C effect (whether Condition C is an Anywhere Principle or only applies at LF). Under a theory assuming that Condition C cannot be violated anywhere, such examples are clearly incompatible with Huang's proposal, since at some level, t_j c-commands *an old painter*. But this problem is more general: this sentence poses a problem for any account assuming that the preposed predicate obligatorily reconstructs in its entirety to t, putting *Pollock* in the c-command domain of *he*. To get around this problem, Heycock suggests that definite descriptions can scope out. If Heycock's proposal is on the right track and the LF representation of (137) is (138):

(138) The pictures Pollock painted long ago [how do you think he$_j$ is t_j pleased with these pictures]?

the problem Heycock points out for Huang's proposal is also solved by her proposal *under the assumption that Condition C only applies at LF*: once the definite

description has been scoped out and the adjunct is not reconstructed, there is no longer a Condition C violation, regardless of the presence of a predicate-internal subject. We conclude that the Huang–Takano proposal (see section 4.2.3) can be maintained.

In Heycock (1995), one additional problem is mentioned regarding Takano's modification of Huang's proposal that we have been discussing. The examples of degree questions in (139) allow coreference:

(139) a. How much longer than your yacht actually is did John think it was?
b. How much more intelligent than John actually is did he say he was?

Of course, this would be a problem if Condition C were an Anywhere Principle. Is it so under the assumption that Condition C applies only at LF? To decide whether this indeed constitutes a problem, we must examine what the LFs of (139) can be. In (139b), for example, the *than* clause is a dependent of *more*. (In its absence, the *than* clause could not be present). Thus, the representation in (140) of this amount question seems reasonable:

(140) What is the degree D added to the degree to which John is actually intelligent such that he said he was D intelligent?

This makes it basically a narrow-reading amount question on a degree, in which no LF violation of Condition C should occur (the *wh*-question bears on a degree increase, but the predicate *intelligent* has narrow scope). As Heycock remarks, that this is a narrow-reading amount question is corroborated by the fact that such questions become unacceptable when originating inside a *wh*-island:[34,35]

(141) *How much more intelligent than he is do you wonder whether he was?

6 Conclusion

We begin with a summary of the conclusions we reached first descriptively. Then we summarize the accounts that these descriptive generalizations seem to suggest in a Principles and Parameters type of model.

Descriptively, we concluded that:

- We find reconstruction effects for scope, pronominal binding, and all binding conditions in all types of movement constructions.
- Reconstruction for preposed predicates is always required, with consequences for all relevant conditions: Condition A, Condition C, scope, and pronominal binding.
- Regarding Condition C, reconstruction is obligatory sometimes and optional at other times. We took the relevant factor to be a complement–adjunct distinction, but it is not fully established that this is the relevant distinction.

- Reconstruction for Condition A, scope, and pronominal binding is possible but not required.
- Reconstruction effects correlate to a certain extent: reconstruction for pronominal binding and scope either both take place or both do not.
- If reconstruction for scope or pronominal binding takes place, reconstruction for Condition C does too. (This is only relevant for cases of optional reconstruction for Condition C; that is, it only relates to adjuncts.)
- Reconstruction effects, however, do not always correlate: reconstruction may take place for Condition C without doing so for scope.
- There were cases of impossible reconstruction, which we left unexplained.

We construed these descriptive generalizations as follows:

- All binding conditions and scope computation must be computed on the basis of representations that serve as input for semantic interpretation, which we define as LF. It makes little sense for scope or pronominal binding (in effect a scope principle) to be evaluated anywhere else (at best it would be redundant). We reached similar conclusions for Condition A, although it should be noted that we did not discuss potentially relevant differences between reflexives and reciprocals.
- Condition C cannot hold of underlying structures but may of surface structures (depending on the treatment of antecedent-contained deletion and the correctness of the Huang–Takano approach, among other things).
- Mismatch of scope and binding reconstruction patterns can be handled by taking traces to be copies and requiring that bottom (or bottom-most) copies always be interpreted at LF.
- The obligatoriness of reconstruction for preposed predicates can be tentatively attributed to the Huang–Takano hypothesis, and to the idea that interpreted traces (which are lower copies) behave as bound variables (and are thus subject to the condition on pronominal binding).

It is worth noting that these conclusions are consistent with Chomsky's (1995c) proposal requiring all binding conditions to be LF conditions only.

Regarding the properties of movement, we reached the following conclusion regarding how to construe the basic operation Move and its interaction with LF principles of scope:

- Movement is copying.
- Either or both copies can be interpreted at LF.
- The position determining the scope of an XP is that of its highest interpreted copy.
  - If only the lower copy of an XP is interpreted, this XP receives narrow scope.
  - If the top copy of an XP is interpreted, this XP receives wide scope.

Among the issues left unresolved are the existence and exact properties of covert movement (although we have been led to the assumption that covert scoping out is possible, e.g., for definite descriptions), the impact of the analysis of relative clauses on the theory of reconstruction, and the behavior of reflexives.

Descriptively, there are a number of questions we have not discussed. We have not talked about reconstruction effects for negative- or positive-polarity-item licensing (see Den Dikken et al. 2000 for some relevant discussion). We also have not discussed the properties of reconstruction documented in other languages (e.g., in Arabic: see Aoun and Benmamoun 1998; in British English: see Elbourne 1999; or in Japanese: see Saito 1989 on scrambling).

Theoretically, we have limited ourselves to implementing the assumed descriptive generalizations in a Principles and Parameters type of framework, but we have of course not discussed all approaches to reconstruction within it. Among recent works that were not discussed here, there are approaches assuming PF movement (e.g., Aoun and Benmamoun 1998; Sauerland and Elbourne 2002). The work of Safir (1999) incorporates ideas about vehicle change originally proposed in May and Fiengo (1994) into the treatment of reconstruction effects (by treating lower copies as pronominals, for example). Putting the burden of the treatment of reconstruction effects onto the semantic rules themselves rather than onto the syntactic input to these interpretive rules is done in flexible composition rules approaches, such as Jacobson (1999) or Sharvit (1998). More distant treatments of reconstruction effects can be found in McCawley (1999) within generative semantics. As mentioned at the outset, it remains to be seen to what extent these alternatives are truly different from what we have covered in the logical structure of the proposals that they make.

NOTES

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1 This notion of canonical is far from trivial, of course. Informally, let us think of it in English as the normal immediately postverbal position of direct objects.
2 The general issue is that of how movement dependencies should be represented – antecedent trace binding relations, slash notation, feature percolation, or other possibilities.
3 This would include all cases of movement, whether overt or 'covert', as well as possibly other cases.

4 At the right level of abstraction(/formalization), it is likely that most of the superficial differences between our description of the data and others induced by the particular notation we use would disappear. Assuming that the empirical generalizations we accept are correct, this is due to the fact that the notations most often simply directly encode them (a comment about the relative theoretical shallowness of the field at the present stage of its development).

5 Standard use takes this to be a case of feature projection instead, taking the string D NP *which boy* in (7) to obligatorily be a DP (inheriting the D property), and reserves the term 'pied-piping' for cases when such feature projection is optional, as in $[_{+wh}$ which boy] and $[_{\text{Optionally }+wh}$ with [[$_{+wh}$ which boy]'s brother]].

6 Note that we use the term 'reconstruction' as meaning 'connectivity in case of movement'. In particular, we make no assumption here about the mechanism by which these reconstruction effects arise.

7 One possible reason sometimes given is that it may allow us to circumvent grammatical constraints on movement. It is also conceivable that pied-piped material may in some respect (e.g., in terms of scope, or in terms of the *de re*/*de dicto* distinction) receive different interpretations than non-pied-piped material.

8 Consistent with the idea that only pied-piped material reconstructs is the observation that it is difficult to understand the *wh*-quantifier itself as reconstructed: the number asked does not seem able to vary with the choice of member.

9 For a variety of reasons (if P reconstructs in t2, it will be in the scope of A and B), it is more difficult to illustrate this property of reconstruction into intermediate traces with other principles. One option is the following example:

(i) Which picture that John sold to <u>her</u> did you convince <u>every girl</u> t_1 that he had stolen t_2?

This sentence seems good with *her* bound by *every girl*, and *John* and *he* coreferential. Reconstruction of the relative clause *picture that John sold to her* is required to allow pronominal binding of *her* by *every girl*. If reconstruction was in t_2, it would create a Condition C effect between *he* and *John*. However, if reconstruction is in t_1, no Condition C effect is created. Note that the relative clause is an adjunct and can thus be 'late inserted' in t_1.

10 We are not considering the reading in which each picture is of the other pictures, which may be available but is irrelevant.

11 An additional control would raise a name or a pronoun across a name Experiencer, but raising across a non-pronoun is deviant in French (as in German or Dutch, unlike what happens in English):

(i) *Ma place semblait à Marie avoir été prise.
'My seat seemed to Mary to have been taken.'

This is only marginally improved by 'extraposing' the Experiencer:

(ii) *?Ma place semblait avoir été prise à Marie.
'My seat seemed to have been taken to Mary.'

12 The restriction "in English" is meant to exclude from discussion cases of partial *wh*-movement (which may also satisfy this description; see chapter 47) and cases of scrambling of *wh*-phrases.

13 There exist interesting apparent counter-examples, such as:

(i) Where do you think every kid will hide?

with the reading 'Every kid will hide in a different place. For each kid, where do you think it is?'.

14 Chomsky (1995c) has argued that to make sense of Lebeaux's proposal, we need to abandon the idea of a level of underlying structure in favor of the Minimalist cyclic MERGE approach.

15 Throughout, we ignore the lower copy of the *wh*-element itself.

16 Some authors disagree (cf. Huang 1993) and detect a significant improvement in the second member of each sentence as opposed to the first one. If this effect is real, a principle like P4 below in the text cannot be right in general.

17 This would also be necessary in treatments such as Reinhart's (1983a), which crucially appeal to the meaning of the sentence and comparisons between ways of expressing it.

18 It is not entirely clear that such an analysis is generally tenable for ACD given the availability of cases such as:

(i) I wanted everyone you did to leave.

in which Extraposition seems unavailable for the relative. If *you did* was extraposed, the infinitive would have had to extrapose too, but extraposition of infinitivals seems unavailable (viz. **I wanted you tomorrow to leave*). Moreover, there may be another difficulty found in the following type of acceptable example:

(ii) If the journalists always agreed to show him the stories about her that no model would want a known gossiper to see . . .

These are cases which have been argued to involve raising the head of the relative clause from inside the relative clause (cf. Vergnaud 1974; Kayne 1994): here the head of the relative presumably must originate inside the relative clause (so that it can reconstruct and get *her* bound by *no model*), and thus this construction cannot involve late adjunction of the relative clause in an extraposed position.

19 Note that if LF is constructed and interpreted cyclically, the span of A-movement cannot be larger than one cycle (otherwise the Condition C problems with A-movement reappear).

20 If trace are copies, such copies must be properly construed so that they are scopally dependent.

21 Apart from the arguments of the text above, Heycock argues that the following pair undermines Huang's approach:

(i) *I would never consider her Sally's worst enemy.
(ii) *Sally's worst enemy, I would never consider her.

According to Heycock, the preposed constituent in (ii) could not contain the trace of *her* because it is a DP, *a DP only can have one specifier*, and Sally occupies this specifier position. This argument seems less strong as it relies on the italicized assumption, which basically contradicts the Predicate Internal Subject Hypothesis (*her* is the subject of the predicate *Sally's worst enemy*), and should thus be taken to be incorrect,

pending strong evidence to the contrary–evidence lacking at the moment. (There is some evidence that argument DPs can have only one overt specifier, but this hardly bears on the question at hand.) Heycock also points out other arguments that we will review in section 5.3.3.

22 This is plausible without relevant context. It would be naive to conclude that the reading in (105c) is unavailable for the first question in general. Such a question can very well be asked with that reading in a context in which the songs have a virtual if not actual existence. For example, knowing that six different songs must be composed for a movie, one can ask one of the composers:

(i) How many of these songs will you compose?

with the reading in (105c). As Tim Stowell points out (p.c.), the same remark applies to examples of this sort:

(ii) I am building the house.

which seem paradoxical as the object of the verb of creation is definite (and thus referring to some pre-existing entity). Even examples similar to Heycock's (1995) below, carefully chosen to eliminate this possibility, can be circumvented in an appropriate context:

(iii) How many stories about John is she likely to invent?

could be uttered felicitously with a wide reading if we interpret this not as an actual present but as a historical present (reviewing the woman's life and knowing all the stories she invented, we can mentally place ourselves at some stage of her life and utter (iii) meaning '(Of all the stories she will invent in her life) how many of these is she likely to invent at this point)?' In what follows, we always assume that we are not in such contexts in the narrow-scope examples.

23 To the author's ear, only the narrow reading remains available even if we modify the sentence to allow for a pre-established set of songs in discourse, as in:

(i) Combien vas-tu chanter de chansons apprises l'an dernier?
how many will you sing songs learned last year

The construction *combien . . . de* differs from the (partitive) construction *combien . . . des* (where des = de +les), as in:

(ii) Combien vas-tu chanter des chansons apprises l'an dernier?

which also allows moving *combien* by itself but uses a different (extraposed) intonation and is ambiguous. See also Fox (1999: 153, fn. 20).

24 Two remarks on these data: first, the agreement on the past participle in (108a) is indicated as optional. The correct description is more complex: it depends on the reading that is assigned to the question: (impossible with the narrow reading, optional with the wide reading). See Obenauer (1994) for relevant discussion. Second, de Swart reports the French facts differently: she reports that under the wide reading, the

universal quantifier *tous* can take scope of the *wh*-word *combien* (so that the number varies with each child). I think such a reading – a pair-list reading – is impossible with a floated Q, but would be possible with a non-floated Q (i.e., in *Combien de chansons tous les enfants ont-ils chanté?*).

25 Recall that the condition on pronominal binding cannot fail to be checked at the level at which interpretation is actually performed, i.e., LF, by definition, so the only possibility for strictly different inputs for Condition C and pronominal binding is if Condition C applies to surface or underlying structures (if they are different from LF structures).

26 In particular, parasitic readings should be avoided, e.g.:

(i) Stories about each other's characterizations = Each story is about the characterization of the other stories
(ii) Stories about each other's characterizations = Each one's story about the others' characterizations

27 This idea is already present in various form in earlier literature, e.g., Burzio (1986). Chomsky, however, uses and justifies it in ways consistent with our present discussion.

28 One problem with copy theory is that portions of the resulting interface representations (in Chomsky's 1995c sense) are allowed to be ignored. This raises questions regarding the empirical content of the 'bare output' (or 'legibility') conditions crucial to Chomsky's (1995c) minimal design conjecture.

29 This proposal takes care of all the problems raised in Heycock (1995: section 6) for the idea that Condition C applies only at LF.

30 Another option would be to get the wide reading from a representation like:

(i) How many you are looking for pictures?

and let the indefinite *pictures* take wide scope by other mechanisms (e.g., choice function). Space precludes a discussion of this option. Let us remark that it would wrongly predict impossible answers to questions such as (108a).

31 It is not relevant here why such a difference is observed. For proposals, see chapter 64 and references therein.

32 There are other proposals similar in spirit if not in detail to this idea (see Szabolcsi and Zwarts 1993, for example).

33 Such facts show that there cannot be an absolute prohibition on certain types of quantifiers (*combien*) crossing over others (negation). This would call at the very least for refinements of approaches to these questions, such as Rizzi's (1990b) Relativized Minimality approach.

34 By the Heycock–Kroch proposal mentioned in section 5.3.1, these questions should improve in a context with the right presupposition.

35 Heycock mentions one more example of the same kind. She gives:

(i) *How much faster than John did he see Mary running?

but native speakers rejected even a variant of it without coreference, due to the clash between the tense of the elided VP and its antecedent (running). If the tense clash is resolved as in:

(ii) How much faster than John did does he think Mary ran?

the sentence seems fine. Note also that the underlined part would be barred from reconstructing all the way down, because it would be a paradoxical antecedent-contained deletion structure.

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55 Resumption

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1 Introduction: phenomena and issues

The italicized pronouns in (1) (cited from Prince 1990, and attributed there to Tony Kroch) are conventionally known as 'resumptive' pronouns:

(1) a. There are guests who I am curious about what *they* are going to say.
    b. The only one we could see *her* figure was Number Two.

Compare the pronouns in (1) with those in (2):

(2) a. Sally said that *she* would resign.
    b. Most people think that *they* have a right to a decent job.
    c. Every kid in my class who has a VCR knows how to program *it*.

What distinguishes the two cases? The pronouns in (1) appear in positions where one would, in a certain sense, have expected to find a gap. The expectation is reasonable because the variable position in a relative clause or question in English is normally defined by the presence of a gap, as in (3):

(3) a. There are guests that everyone wants to invite ___.
b. The only one (who/that) we could see ___ was Number Two.

For the cases in (2), on the other hand, there is no sense at all in which the possibility of a pronoun alternates with the possibility of a gap.

This first contrast between (1) and (2) is closely linked with a second. The pronouns in (1) are obligatorily bound (as gaps, of course, would be in the same positions). The pronouns in (2), on the other hand, are free to find their antecedents in pragmatic or discourse context.

Putting these observations together in an initial way, then, we can say that a resumptive pronoun is a pronominal element which is obligatorily bound and which appears in a position in which, under other circumstances, a gap would appear. The binder of the pronoun is the same, apparently, as the element which binds the gap in the corresponding filler-gap construction.

I use the term 'pronominal element' in this informal definition (rather than the simpler 'pronoun') because the range of elements which can serve the resumptive function is in fact quite broad. Besides including all categories of pronoun – tonic and clitic, overt and non-overt – it also includes epithets, which seem to be sufficiently pronominal that they can serve the resumptive function in certain languages and under certain conditions. This is shown, for example, by the informal English (4) (from Kroch 1981; see also Sells 1984b; Aoun and Choueiri 1996; Safir 1996a; Aoun et al. 2001):[1]

(4) There was one prisoner who we couldn't even figure out why *the poor guy* was in jail.

Most discussion of resumption has centred on cases in which the pronoun appears in the variable position of an unbounded dependency construction – relative clauses, constituent questions, clefts, comparative clauses, infinitival null-operator constructions, and the like. The phenomenon is almost certainly broader than this would suggest, but this chapter will begin by following tradition in focusing on this set of cases.

Characterized in this way, the phenomenon of resumption is very widespread, as is illustrated briefly in (5–8):[2]

(5) an ghirseach ar ghoid na síogaí í — Irish
the girl C stole the fairies her
'the girl who the fairies stole'

(6) Es un país que hablan tanto de él. — (Informal) Spanish
is a country C they-talk a-lot about it
'It's a country that they talk a lot about.'

(7) L-kteeb yalli ʃtarayto mbeeriħ Daa‿. Lebanese Arabic
the-book C bought [S1]-it yesterday is-lost
'The book that I bought yesterday is lost.'

(8) ha-ʒiš še- raʒ ʒoto Hebrew
the-man C saw [S1] him
'the man that I saw'

Within the broad category of unbounded dependency constructions, attention has tended to focus on the case of relative clauses, but the phenomenon of resumption extends (at least in certain languages) to the entire range of unbounded dependency constructions. This is illustrated for constituent questions in two languages in (9) and (10), and for clefts in the Irish example in (11):

(9) Céacu fear ar labhair tú leis? Irish
which-of-two man C spoke you with [MS3]
'Which man did you talk to?'

(10) ʒayya rəʒʒeel χabbartu-u ʒenno . . . Lebanese Arabic
which man told [2P]-him C
'Which man did you tell that . . . ?'

(11) Tigh beag caol gur mhaireamar ann. Irish
house little narrow C we-lived in-it
'It was a narrow little house that we lived in.'

McCloskey (1990) provides a much more thorough discussion of the range of constructions in Irish in which resumptive pronouns may figure.

These initial observations are enough to set the scene for the major questions which have shaped work on the phenomenon of resumption. Since resumptive pronouns are pronouns (at least in their apparent form), a series of questions can be asked about where they fit in the context of the general theory of pronominal anaphora. To what extent do they share the properties of other classes of pronouns (those in (2), for instance)? But since they simultaneously appear in positions which are canonically associated with the appearance of gaps, one can also ask a series of questions about how resumptive elements interact with the processes which create gaps. If we follow much recent work in assuming that gaps in relative clauses and questions are always created by movement operations, this second question then becomes the following: to what extent does the relation between a resumptive element and its binder exhibit the properties of movement?

Most work on resumption attempts to answer these two questions and tries to understand the Janus-like nature of resumptive elements – one face toward the domain of pronouns and anaphoric elements, the other toward the theory of movement.

A fundamental question, which has not often been explicitly addressed, but which lies behind much of the discussion, is why resumptive elements have the form that they do. That is, resumptive pronouns simply *are* (formally) pronouns. I know of no report of a language that uses a morphologically or lexically distinct series of pronouns in the resumptive function. If we take this observation to be revealing, there can be no syntactic feature which distinguishes resumptive pronouns from 'ordinary' pronouns, and any appeal to such a feature must be construed as, at best, an indication of the limits of understanding.

2 Early treatments

Work of the 1970s (especially in the second half of the decade) addressed these fundamental questions by assuming that unbounded dependency constructions were frequently derived by way of a rule which deleted bound pronouns in certain contexts – when bound by the head of a relative clause construction, for instance (Morgan 1972; Perlmutter 1972; Bresnan and Grimshaw 1978; McCloskey 1979). An example like (12a), on this account, would derive by way of deletion of the pronoun from an underlying structure which more resembled (12b):

(12) a. the guy that I talked to ___
b. the guy that I talked to *him*

Resumptive pronouns, on this account, are the surface manifestation of the failure of this rule to apply – either because the targeted pronoun occupies a position that was inaccessible for one reason or another (possessor position, say, in most languages, or prepositional object position, or within an island), or else because the rule is optional. The synonymous Irish pair in (13), for example, would be taken to reflect optional application of the rule of bound pronoun deletion:

(13) a. an ghirseach a ghoid na síogaí ___
the girl C stole the fairies
'the girl who the fairies stole'
b. an ghirseach ar ghoid na síogaí í
the girl C stole the fairies her
'the girl who the fairies stole'

The larger framework of assumptions here is that:

(i) Unbounded dependency constructions need to contain a bound variable, to be semantically well-formed.
(ii) Pronouns are the devices which natural language canonically makes available for the expression of bound variables.
(iii) The gaps characteristic of unbounded dependency constructions can be produced either by movement or by deletion.

On this view, then, resumptive pronouns have the form of pronouns because they mark variable positions and pronouns are the canonical linguistic expression of variables (even when those pronouns are not apparent in the pronounced string). And the widely noted tendency for resumptive pronouns to appear in inaccessible positions (inside islands particularly) can be understood as reflecting the island-sensitivity of the bound pronoun deletion rule.

A core assumption, of course, was that movement and deletion are equally available in unbounded dependency constructions. On this view, for instance, (14a) in English would be derived by way of *wh*-movement, while (14c) would reflect application of a rule deleting the pronoun of (14b):

(14) a. the guy who I talked to ___
b. the guy that I talked to *him*
c. the guy that I talked to ___

Since it depended on the postulation of unbounded and island-sensitive deletion rules (as in Ross 1986, from his 1967 dissertation), this set of ideas formed one part of the debate in the second half of the 1970s about the nature of islands and the typology of transformational operations. As a consequence, as that debate moved toward resolution and as the hypothesis of successive-cyclic rule application (Chomsky 1973) came to be widely accepted, the foundation on which these ideas rested (assumption (iii) above in particular) came to seem untenable.

In the new context, the relations among (14a, b, c) look rather different. (14a) and (14c) are both derived by movement of a relative pronoun. (14c) differs from (14a) only in that the fronted pronoun is subsequently deleted (or was phonologically null to begin with). Given this, the fundamental challenge becomes that of understanding how the presence of a pronoun (as in (14b)) can serve the same function as, or in some sense stand in for, a gap derived by movement. The relation between resumption and movement – what they share and how they differ – thus becomes central.

3 Issues

Within that broad context, work on resumption can be seen as addressing the following sharper questions:

(i) What mechanisms license the appearance of resumptive pronouns, and what is the place of those mechanisms in the typology of anaphoric interactions?
(ii) How do those mechanisms relate to, and interact with, the movement mechanism?
(iii) What defines the difference between languages which make productive use of resumptive elements and those which do not? How can this difference be understood within the larger setting of work on the parameters that define differences among languages?

(iv) Is the pre-theoretical category 'resumptive pronoun' theoretically unitary? Or are there rather distinct types of elements and devices which are grouped under this rubric?
(v) In what sense (if any) is resumption a last resort mechanism?

A way of broaching these issues is to look at what have been thought to be the core properties of resumptive pronoun constructions. Looking at those properties, and the attempts that have been made to understand them, will lead us to the kind of consensus that emerged in work of the middle and late 1980s – a consensus that embodied a set of answers to questions (i–v) above. We will at that point be in a position to look at the various theoretical and empirical challenges that have arisen to subvert that consensus, or at least to bring it into question.

4 Properties

4.1 Immunity from constraints on movement

The single most celebrated property of the binding relations that resumptive pronouns enter into is that they show no sensitivity to general constraints on movement. (We will consider exceptions and objections to this very general claim shortly.) This property has been familiar at least since the work of Ross (1986), where it was discussed as a sensitivity to the difference between 'chopping' rules (movement and deletion) and 'copying' rules (those which leave a pronominal copy in the origin site).[3] I will illustrate the effect here with (attested) examples from Irish (15–20). In all cases, the resumptive element is underlined.

Examples (15) and (16) demonstrate immunity from the *wh*-island constraint:

(15) na hamhráin sin nach bhfuil fhios cé a chum iad
the songs DEMON NEG C is knowledge who C composed them
'those songs that we don't know who composed them'

(16) teach nach n-aithneochthá cá rabh sé
house NEG C recognize [COND] [S2] where was it
'a house that you wouldn't recognize where it was'

Examples (17) and (18) illustrate immunity from the Complex Noun Phrase Constraint:

(17) An fánaidhe a n-abradh daoine nár thuig é go rabh sé
the wanderer C would-say people NEG C understood him C was he
éadtrom sa cheann.
light in-the head
'The wanderer that people who didn't understand him would say that he was soft in the head.'

(18) seanchasóg ar dócha go bhfuil an táilliúir a dhein í sa chré
old-jacket C probable C is the tailor C made it in-the earth
fadó
long-ago
'an old jacket that the tailor who made it has probably been in the grave for ages'

In (19) we have a case of the cleft subcase of the *wh*-island constraint:

(19) cathracha nach sibh a chuir suas iad
cities NEG C you C put up them
'cities that it wasn't you that built them'

And in (20) we have an instance in which a resumptive pronoun appears inside an adjunct island:

(20) Nérée Caron, nach bhfuil ann ach tamall beag ó bhí sí
Nérée Caron, NEG C is in-it but time small since was she
dóigheamhail feiceálach
beautiful attractive
'Nérée Caron, who it is only a short time since she was beautiful and attractive'

The examples cited in (15–20) illustrate a lack of sensitivity to subjacency effects, but it is well known that resumptive pronouns also amnesty ungrammaticalities attributed to the Empty Category Principle (ECP), as can be seen in the (informal) English examples in (21):

(21) a. He's the kind of guy that you never know what he's thinking.
b. *He's the kind of guy that you never know what ___ is thinking.
c. They're the kind of people that you can never be sure whether or not they'll be on time.
d. *They're the kind of people that you can never be sure whether or not ___ will be on time.

4.2 Strong crossover

The relation between a resumptive pronoun and its binder, then, does not show sensitivity to the locality conditions thought to be diagnostic of the movement relation. It does, however, exhibit a number of properties characteristic of A-bar-binding. Specifically, the bound element itself behaves like a variable (understood for present purposes as being an element whose most local binder occupies an A-bar-position). There are at least two senses in which this is true.

Most fundamentally, it is the resumptive element which is the syntactic correlative of the semantic variable which is found in every A-bar-binding construction.

But there is also a more specific sense in which resumptive pronouns "behave like variables." A property of the traces left by movement to A-bar-positions is that they are subject to the strong crossover effect (Postal 1971; Wasow 1979):

(22) **Strong crossover effect:**
The trace of movement to an A-bar-position may not be anaphorically linked with a c-commanding pronoun.

In (23):

(23) *Who did she$_j$ claim [t_j had arrived earliest]?

the trace in embedded subject position is c-commanded by, and co-indexed with, the pronoun *she*, resulting in ungrammaticality. A now widely accepted proposal by Chomsky (1981) derives this effect from Condition C of the Binding Theory, which requires that a certain class of elements (non-pronominal DPs and *wh*-traces) not be bound by an element in an A-position. Whether or not this proposal is right (see Lasnik 1989b for a proposed refinement and Postal 1997b for an argument that the whole approach is misguided), the phenomenon itself provides us with a question to ask about resumptive pronouns – do they resemble *wh*-traces in giving rise to strong crossover effects?

The question has been addressed for a number of languages (those languages for which the most complete descriptions of resumptive pronouns are available), and the answer so far seems to be that resumptive pronouns do trigger strong crossover effects. Demonstrating this requires some ingenuity. One cannot simply take (23) and replace the trace with a pronoun as in (24):

(24) Who$_j$ did she$_j$ claim [that she$_j$ had arrived earliest]?

This does not provide a test case for strong crossover because the possibility remains open that the higher of the two pronouns functions as the required variable, in which case the second (lower) pronoun has the same (unproblematic) status as the pronoun in (25):

(25) Who$_j$ t_j claimed [that she$_j$ had arrived earliest]?

To overcome this difficulty, one can use, instead of the higher pronoun in (23), some element which is known to give rise to robust strong crossover effects but which cannot itself be used as a resumptive element. Epithets may be used for this purpose in many languages. Lasnik (1989b) has shown that they give rise to clear strong crossover effects (even in languages in which lexical DPs do not), and in many languages at least in which resumptive pronouns figure, epithets may not in general serve the resumptive function. McCloskey (1990) conducts this test for Irish and demonstrates that the strong crossover effect does indeed emerge:

(26) *Sin an fear ar dhúirt an bastard go maródh sé muid. Irish
that the man C said the bastard C kill [COND] he us
'That's the man$_j$ that the bastard$_j$ said that he$_j$ would kill us.'

The experiment was subsequently replicated in a number of Semitic languages – see Shlonsky (1992) on Hebrew and Palestinian Arabic, Aoun and Choueiri (1996) and Aoun et al. (2001) on Lebanese Arabic.

4.3 Weak crossover

Although resumptive pronouns share with variables a sensitivity to strong crossover, it was established early (Sells 1984a, 1984b; McCloskey 1990; Shlonsky 1992) that they quite generally show no weak crossover effects. Weak crossover (Wasow 1979) arises when a variable is coreferent with a pronoun which does not c-command it. The Irish example in (27), however, is fully grammatical (see also (17) above), in contrast with its English translation, which is degraded to some degree (Safir 1984, 1986, 1996a):

(27) an fear$_j$ ar fhág a$_j$ bhean é$_j$
the man C left his wife him
'the man$_j$ that his$_j$ wife left ___$_j$'

4.4 Antilocality and the Highest Subject Restriction

But if resumptive pronouns show some of the distinctive properties of variables, they also betray their origins by exhibiting at least one important pronominal property as well.

One of the core properties of pronouns is that their binding is subject to an antilocality requirement – a pronoun and its antecedent cannot occupy the same local domain. In the area of A-binding, this requirement is encapsulated in Condition B of the Binding Theory (Chomsky 1981), which renders ungrammatical an example like (28):

(28) a. *Charles$_j$ is proud of him$_j$.
b. *Each actress$_j$ nominated her$_j$.

Resumptive pronouns in a number of languages show what is arguably a similar kind of restriction. In these languages, a resumptive pronoun cannot occupy a subject-position immediately subjacent to its binder. This condition, known as the Highest Subject Restriction (McCloskey 1990), is illustrated with the contrasting Irish examples in (29a, b):

(29) a. *fear nár fhan sé sa bhaile
man C NEG–PAST remained he at-home
'a man that didn't stay at home'

b. fear nár fhan ___ sa bhaile
man C NEG–PAST remain at home
'a man that didn't stay at home'

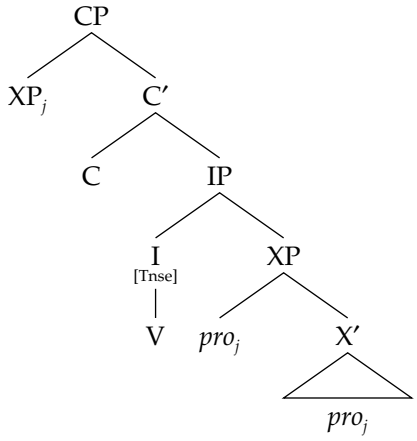
Similar facts have been documented for a variety of languages and language-types (Doron 1982; Borer 1984b; Shlonsky 1992; Ouhalla 1993; Schafer 1995).

Various approaches to the analysis of this phenomenon have been suggested. One thread that runs through many of them is that the ungrammaticality of local subject resumptives is best seen as an aspect of the kind of antilocality property typical of pronouns (Borer 1984b; McCloskey 1990; Aoun and Choueiri 1996). One way of implementing the general idea is presented in McCloskey (1990), drawing on earlier work by Aoun and Li (1989). There it is proposed that the disjointness requirement defined by Principle B of the Binding Theory (which in its original formulation governs only binding by an element in an A-position) should be extended to the domain of A-bar-binding. A formulation like the one in (30) has the required consequences (Aoun and Li 1989, 1990, 1993a; McCloskey 1990; Aoun and Choueiri 1996):

(30) **The A-bar-Disjointness Requirement:**
A pronoun must be A-bar-free in the least complete functional complex containing the pronoun and a subject distinct from the pronoun.

To see how this will work, consider the schematic structure in (31):

(31)



Assume for present purposes that the specifier of XP in (31) is the 'subject position' in the language in question. If the element in specifier of CP binds the occurrence of *pro*$_j$ within X′ (a non-subject), then the binding is not in violation of (30), since the relevant CFC in this case is IP, and the pronoun is in fact A-bar-free within IP. When the element in specifier of CP binds *pro*$_j$ in the specifier of XP, on the other hand, the structure stands in violation of (30), since here the least CFC containing

the pronoun and a subject distinct from the pronoun is the higher IP (or the root), and the pronoun is not A-bar-free in this domain.

There are numerous known difficulties for this approach,[4] but it is not irrational to hope that those difficulties could be resolved without sacrificing the essence of the proposal.

Summarizing, then, A-bar-bound resumptive elements show the following mix of properties in many languages:

(i) The binding relation they enter into shows no sensitivity to the locality constraints which characterize movement.
(ii) They share with variables the property of triggering strong crossover effects.
(iii) The binding relation they enter into does not show weak crossover effects.
(iv) The binding relation they enter into is constrained by an antilocality requirement reminiscent of Principle B of the Binding Theory.

4.5 An understanding

If these general lines of thought could be sustained, a pleasingly consistent overall view could be seen to emerge:

(i) Transformational theories of the origin of pronouns have been thought to be deeply flawed,[5]
(ii) therefore pronouns have to be regarded as base-generated rather than as being derived by transformation.
(iii) Resumptive pronouns look just like ordinary pronouns. Therefore the null hypothesis is that resumptive pronouns should also be taken to be base-generated.
(iv) The binding relation between the resumptive pronoun and its binding operator is therefore not created by movement, so
(v) no sensitivity to constraints on movement is expected in the binding of resumptive pronouns.
(vi) But it has been independently argued by Safir (1986) that the notion of 'variable' should be defined contextually (a variable is an element whose most local binder occupies an A-bar-position).
(vii) That being so, resumptive pronouns must be variables and should be subject to Condition C. We therefore expect strong crossover effects.
(viii) But resumptive pronouns are also pronouns. Therefore it is natural that they should exhibit the antilocality requirement which is a fundamental constraint on the binding of pronouns; from this we derive the Highest Subject Restriction.
(ix) The absence of weak crossover effects is also consistent with the overall conception. Safir (1984, 1986, 1996a) argues that weak crossover is to be understood as a violation of a general parallelism constraint which requires that all the variables bound by a single operator be of the same

type – all pronominal or all non-pronominal. This requirement is respected in the Irish example in (27) (since both variables are pronouns) but violated in its English translation.

Standing back from the specifics, the intuition here is that unbounded dependency constructions are characterized by the presence of a bound variable, and that natural language provides two distinct ways to realize variable binding relationships – either by way of a bound pronoun or by way of movement from the bound to the binding position. In the language of 'chains': the sense in which resumptive pronouns and traces can serve many of the same functions is that both can serve the function of being the bottom-most position in an A-bar-chain, an abstract theoretical notion which subsumes both certain movement relations and certain binding relations, both linking binding positions with bound positions.

5 Open issues

It would be an overstatement to call the understanding just sketched a 'consensus'. But something like it guided a good deal of work on resumption in the middle and late 1980s and into the early 1990s, and generated a research agenda – one that grappled with the important issues that remained unresolved even within that consensus.

One of those issues concerns the level of representation at which resumptive pronouns are defined as variables, the two candidates most often considered being S-structure and LF.[6] A second issue is whether or not the use of resumptive pronouns represents a last resort mechanism. The conception of resumption just outlined provides no reason to expect that it might in any sense represent a reach for the last resort. Resumption simply represents (on this view) one of the ways in which an A-bar-binding relation can be established. But many theoreticians have had the intuition that resumption is in fact a last resort mechanism, and have striven to design theories in which it would follow that resumption would be available only if movement (the unmarked way, on this view, to establish an operator–variable binding) were unavailable.

For anyone whose native language is English, the intuition is strong and clear that this is how things work. Resumptive pronouns in English appear – if not exclusively then at least in the general case – in positions from which movement would be impossible (see (21) above, for instance). But for many languages in which the resumptive strategy is more productively used, the situation seems to be very different.[7] The apparent fact in Irish, for instance, is that resumptive pronouns and gaps are in free variation in all positions except those from which movement is impossible (in which resumption is the only option) and those affected by the Highest Subject Restriction (see (29a, b)), in which only a gap is possible. Similar facts appear to hold in Hebrew.[8]

6 The identity of the binding element

The issues considered so far have been the focus of a great deal of discussion. In this section I want to highlight an issue which is, in my view, of central importance, but which has been less discussed.

There is strong evidence (as we have seen) that resumptive pronouns function as 'variables' in the technical sense. Given the theoretical context in which we are working, this means that they must have a binder (a co-indexed element in a c-commanding A-bar-position). There has also seemed to be strong evidence that the local binder of the resumptive element cannot be the overt element with which it is ultimately linked – the head of a relative clause, the interrogative phrase of a question, the focused phrase of a cleft and so on (Safir 1986; McCloskey 1990). The evidence seems rather to suggest that that ultimate binding is mediated by a more local binding – between the resumptive pronoun and an element in CP. The Irish evidence, as we will see below, seems to be particularly clear on this point.

But what then should the binder of the resumptive pronoun be taken to be? The answer that has usually been given is that the binding element must be a null operator base-generated in the specifier position of CP. The null operator is linked in turn with the ultimate binder by way of the relation called 'R-Binding' by Safir (1984). For the case of an interrogative structure, then, we will have the schematic structure in (32a), and for a relative clause the schematic structure in (32b):

(32) a. $[\mathrm{DP}_{[\mathrm{Q}]j}\ [_{\mathrm{CP}}\ \mathrm{Op}_j\ \mathrm{C}[_{\mathrm{IP}}\ \ldots\ \textit{pro}_j\ \ldots\ ]]]$
b. $[_{\mathrm{DP}}\ \mathrm{NP}_j\ [_{\mathrm{CP}}\ \mathrm{Op}_j\ \mathrm{C}[_{\mathrm{IP}}\ \ldots\ \textit{pro}_j]]]$

There is a worry here, though – a worry that one might label 'the problem of eternal silence'. I mean by this that there are no cases, as far as I have been able to determine, in which the postulated operator is other than null. No language, I believe, has an element *foo* such that one finds relative clauses analogous to (33):

(33) $[_{\mathrm{DP}}$ the guy $[_{\mathrm{CP}}$ *foo* that $[_{\mathrm{IP}}$ I spoke to him]]]

What one finds over and over again is some equivalent of (34), with no audible element occupying the specifier position of CP:

(34) $[_{\mathrm{DP}}$ the guy $[_{\mathrm{CP}}$ that $[_{\mathrm{IP}}$ I spoke to him]]]

The conception of resumption as we have outlined it so far has no explanation for the absence of (33) – an absence which can hardly be accidental. If invariant binding operators exist, it is not obvious what principle would force such operators to be phonologically null in *every* case.

The only set of proposals in this general family, as far as I know, which is not subject to this objection is that developed by Demirdache (1991), who argues that

the specifier position of CP is empty until LF. In the derivation of LF representations, the resumptive pronoun itself is taken to move into the specifier of CP. As long as movement between S-structure and LF is not subject to the same locality requirements as overt movement (Huang 1982a and much subsequent work), this analysis is tenable.

7 Parameterization

A remaining open issue concerns how language-particular differences in this domain are to be characterized. For some languages (Hebrew, Lebanese Arabic, Irish), resumption is a fully integrated aspect of the grammatical system. For others (English, for instance), it is typically regarded as an auxiliary phenomenon, not part of the grammar proper, but rather a device that speakers resort to under certain performance conditions (increased processing load in particular – Erteschik-Shir 1992; Dickey 1996). Chao and Sells (1983) and Sells (1984b) present evidence from English that the distinction between the two language types is necessary, delineate some of the distinctive characteristics of the two types, and introduce the term 'intrusive resumption' for the English type. They point out in particular that resumption in English relative clauses is degraded if the ultimate antecedent of the resumptive pronoun is quantificational:

(35) *I'd like to meet every linguist that Mary wondered if she should invite *him* to the party.

If this position is correct, as is widely assumed, then the theory of parameterization has to provide a way to draw a distinction between the two language types. One proposal within the larger framework just sketched is that the relevant property is a property of the functional head C. If resumptive pronouns are bound by null operators in the specifier of CP, then it is natural that the heads which host such binding operators in their specifiers should bear a distinctive morphosyntactic feature, a feature which has an overt morpho-phonological consequence in the Irish complementizer system, as seen in (13), repeated here as (36):

(36) a. an ghirseach a ghoid na síogaí ___
the girl C stole the fairies
'the girl who the fairies stole'
b. an ghirseach ar ghoid na síogaí í
the girl C stole the fairies her
'the girl who the fairies stole'

Here there are distinct complementizers (*a* versus *ar* in the case in point) depending on whether the clause contains a gap or a resumptive pronoun (see McCloskey 1990, 2001b, 2002 for discussion). If this position turns out to be defensible, then

this instance of parameterization falls into line with the emerging consensus that parametric differences derive from featural properties of functional lexical items.

8 Movement and resumption

The open issues just summarized are serious and substantial; some seem soluble, some seem deeper. Overall, though, the conception is reasonably attractive and could make some claim to cross-linguistic generality. But we must now look at a series of cases and issues which pose more fundamental problems for the conception just outlined and which ultimately threaten to subvert it completely, or at least to force radical revisons. Interestingly, all have to do with the interplay between resumption and movement. I want to look at these cases in order of ascending difficulty.

8.1 Swedish, Vata, and Gbadi

Engdahl (1985) provides one of the earliest comprehensive studies of the resumptive pronoun phenomenon in a given language – Swedish in this case. A typical example is given in (36):

(37) Vilket ord visste ingen hur det stavas ___?
which word knew no one how it is-spelled
'Which word did nobody know how it is spelled?'

Engdahl demonstrates that resumptive pronouns in Swedish have the following range of properties:

(i) They license parasitic gaps; see (38).
(ii) They give rise to weak crossover effects.
(iii) They satisfy the ATB requirement on extraction from coordinate structures; see (39).
(iv) They worsen, rather than improve, subjacency violations; see (40).
(v) They "are used systematically only in the subject position of tensed clauses" – in fact, to void what would otherwise be 'COMP-trace' violations (Engdahl 1985: 11).

(38) Vilken fånge var det läkarna inte kunde avgöra om han verkligen
which prisoner was it the-doctors not could decide if he really
var sjuk utan att tala med ___ personligen?
was ill without to talk with in-person
'Which prisoner was it that the doctors couldn't decide if he really was ill without talking to in person?'

(39) Det finns vissa ord som jag ofta träffar på ___ men inte minns
EXP are certain words that I often meet but not remember
hur de stavas.
how they are-spelled
'There are certain words that I often come across but never remember how they are spelled.'

(40) ?*Vilken bil åt du lunch med någon som körde den?
which car ate you lunch with someone that drove it
'Which car did you have lunch with someone that drove?'

Engdahl concludes from these observations that resumptive pronouns in Swedish "behave just like *wh*-traces" and are "phonetically realized traces." At about the same time, and I believe independently, Hilda Koopman (1982) (see also Koopman 1984: sections 2.3.3.2 and 6.2.4) made an almost identical set of observations and drew similar conclusions about the behavior of resumptive pronouns in two Kru languages of West Africa (Vata and Gbadi).

In the face of these observations and proposals, it is impossible to maintain the simplest view of the relation between resumptive pronouns and gaps in A-bar-binding constructions. One cannot maintain, that is, that the presence of a gap indicates that movement has applied and that the presence of a pronoun indicates that movement has not applied. Simple inspection of a string will never be enough to establish whether a given instance of A-bar-binding is established by way of movement or by way of base-generation followed by binding.

There is a sense, though, in which these results do not challenge what I have called here the consensus view in any very deep way. The two sets of properties (properties of movement-derived constructions and properties of non-movement-derived constructions) still line up in neat opposition. In Swedish, Vata, and Gbadi, those A-bar-binding relations which terminate in a pronoun show the complete constellation of properties associated with A-bar-movement. In Irish and similar languages, resumptive pronoun constructions show none of those properties. As long as we can make sense of the idea that a pronoun can be the 'spell-out' of a trace (as in the former group of languages), the larger conceptual architecture is not severely threatened.

Two points are worth making, however. The first is that, interpreted in this way, the observations imply that the phenonemon of resumption is not theoretically uniform ((iv) of p. 99 above). The second is that in the theoretical context in which such proposals were first made, it was not clear that the notion 'spell-out of a trace' made much sense. Two strands of development, however, changed that. One has to do with our understanding of the movement operation, and the other has to do with our understanding of the category 'pronoun'.

One of the innovations of the Minimalist program (Chomsky 1993, 1995c) has been to reintroduce, or re-emphasize, a certain understanding of movement which was standard in work of the 1960s and 1970s – namely that the movement operation, rather than being a primitive, is in fact a composition of two more

fundamental operations: copying and deletion. A copy of the moved element is first created; it is inserted in the target position; then the occurrence of the moved phrase in the origin site is deleted. Given this rediscovery or re-emphasis, it becomes easier to understand what it might mean to 'spell out' a trace. A trace, on this general view, is simply the silence that remains after the lowest occurrence of a copied phrase is deleted. Chomsky (1993) proposes that the deletion takes place on the 'phonological' side of the derivation (that is, in a derivational sequence which follows SPELL OUT and is inaccessible to the operations which create and interpret logical forms). Given that overall conception, it is easy to imagine that deletion of the original copy of the phrase might be partial rather than complete. That is, for a *wh*-question like (*I wonder*) *which word they are not sure how it's spelled?*, we will have a sequence of representations like that illustrated schematically in (41):

(41) a. [$_{IP}$ they are not sure [$_{CP}$ how [$_{IP}$ [$_{DP}$ *which* [$_{NP}$ *word*]] is spelled]]]
b. [$_{CP}$ [$_{DP}$ which [$_{NP}$ word]] [$_{IP}$ they are not sure [$_{CP}$ how [$_{IP}$ [$_{DP}$ *which* [$_{NP}$ *word*]] is spelled]]]]
c. [$_{CP}$ [$_{DP}$ which word] [$_{IP}$ they are not sure [$_{CP}$ how [$_{IP}$ [$_{DP}$ *which* [$_{NP}$ Ø]] is spelled]]]]
d. [$_{CP}$ [$_{DP}$ which word] [$_{IP}$ they are not sure [$_{CP}$ how [$_{IP}$ [$_{DP}$ *it* [$_{NP}$ Ø]] is spelled]]]]

In (41b), we have the immediate aftermath of movement (copying of the *wh*-phrase and its merger into the specifier position of CP). In (41c), the NP-portion of the lower copy has been deleted. In (41d), the *wh*-feature on D has been eliminated, and D is as a consequence realized as the default third singular pronoun, namely *it*.

Furthermore, given the view that pronouns are in fact determiners (Postal 1970b; Abney 1987; Koopman 1999b), it becomes easy to imagine derivations in which the NP-part of a moved phrase would be deleted stranding a D – that is, a 'resumptive' pronoun.

Two theoretical developments combine to make this set of ideas as plausible as they now are. One is the (re)introduction of the copy-and-delete theory of movement. The second is the articulation of a complex internal structure for nominal phrases – a development which in turn opens the possiblity of viewing pronouns also as having complex internal structures. This last move (on which see especially Koopman 1999b) opens up a range of new possibilities and options in debates about base-generation versus derivation by movement. The pronoun in (41d), for instance, can be said to be both base-generated *and* tranformationally derived.

Numerous difficulties and puzzles remain, of course. What mechanism forces or permits partial deletion following movement? Why exactly is it that the results of partial deletion systematically resemble pronouns? How is the theory of islandhood and of ECP effects to be rethought in this context?

However these questions are ultimately answered, the type of resumptive documented by Engdahl and Koopman (which exhibits all the properties of a

trace but involves pronunciation of D) seems to demand an understanding along these lines.

If this line of thought is roughly correct, then certain consequences follow which are unexpected within more traditional perspectives. Engdahl documents for Swedish, and Koopman documents for the Kru languages, that resumptive pronouns are found only in positions in which a trace would be in violation of the ECP. More exactly, resumptive pronouns are found in these languages only in subject positions immediately subjacent to a *wh*-phrase, much as in English examples such as (42):

(42) They're the kind of people that you never know who *they* might insult.

The ungrammaticality of the corresponding examples with gaps rather than resumptive pronouns, such as (43):

(43) *They're the kind of people that you never know who *t* might insult.

has generally been attributed to the Empty Category Principle, standardly taken to be a condition on representations at the level of Logical Form. But this interpretation cannot be right if the perspective just developed is on the right track. Given that perspective, the difference between the (Swedish equivalent of) (42) and (the Swedish equivalent of) (43) emerges only at the point where deletion applies, and the difference is a function only of whether that deletion is complete or partial. But when that conclusion is in turn embedded within the general framework of Chomsky (1993) or Chomsky (1995c: chapter 4), it follows in turn that whatever makes the difference between (42) and (43) cannot be an LF principle. Whatever it is, it must rather do its work on the 'phonological' side of the derivation (where the deletion subcomponent of movement does its work). It is only on that side of the derivation that (42) and (43) are distinguishable at all, on this view of matters. Put more crudely, it follows that subject ECP effects must be 'phonological' phenomena, in the broad sense. This conclusion in turn now makes contact with the strand of more recent work which suggests that many traditional island and ECP effects may find their explanation in the syntactic space between the syntax proper and the linearized prosodic and phonological string (Merchant 2001; Boeckx 2003).

8.2 Reconstruction

A more complex set of facts has been documented for Lebanese Arabic in an important series of papers by Joseph Aoun, Lina Choueiri, and Norbert Hornstein (Aoun and Choueiri 1996, 2000; Aoun et al. 2001).

This pattern of facts is of importance because of the complex interplay it exhibits between resumption and reconstruction. This interaction is in turn crucial in assessing to what extent resumption shows the characteristics of movement. Reconstruction is the phenomenon whereby a moved phrase exhibits properties

or interactions attributable to its occupying a syntactic position other than the one in which it is pronounced. A strong (but not universal) consensus in recent work attributes reconstruction effects in general to syntactic movement. A phrase 'acts as if' it occupies a position other than that in which it is pronounced because it has been moved from that position. One of the virtues of the copy-and-delete understanding of movement is that it provides a particularly simple understanding of the phenomenon. A phrase 'acts as if' it occupied a lower position than that in which it is pronounced because there is an occurrence of that phrase (deleted in the pronounced string but not in the representation submitted to interpretive mechanisms) in the lower position.

This account makes a very tight connection between the phenomenon of reconstruction and the operation of movement. If it is correct, then reconstruction effects constitute as reliable a diagnostic as there can be that a movement operation has applied.

The question of whether or not one gets reconstruction effects under resumption was asked early (Zaenen et al. 1981) and answered positively. The investigation was fairly brief, however, and centered on a language (Swedish) for which the movement analysis of resumptive pronouns was already well supported. The work of Aoun, Choueiri, and Hornstein is important because the investigation went farther empirically, was embedded in a richer theoretical context, and centered on a language (Lebanese Arabic) for which the movement theory of resumption was initially much less plausible because resumptive pronouns in the language appear routinely inside islands.

What emerges, briefly, from this body of work is the following. Resumptive elements (strong pronouns or epithets) which appear inside islands behave differently from resumptive elements which are not inside islands, even though the two are formally identical (Aoun and Choueiri 1996 suggest the terms 'true resumption' and 'apparent resumption' respectively for the two cases). In particular, resumptive elements which are not trapped within islands exhibit reconstruction effects, but resumptive elements inside islands show no reconstruction effects.[9] In (44), for example, in the absence of an island boundary, the clitic pronoun inside the fronted nominal phrase may be bound by the negative quantifer:

(44) **Lebanese Arabic:**
təlmiiz-a l-kəsleen ma abbarna wala m allme ənno huwwe
student-her the-bad NEG told-1.PL no teacher that he
za bar b-l-fa S
cheated-3.SG.MASC in-the-exam
'Her bad student, we didn't tell any teacher that *he* cheated on the exam.'

That is, the pronoun contained within the fronted phrase can apparently be reconstructed to the position of the resumptive pronoun, a position from which it can be bound by the negative quantifier *no teacher*. Such reconstruction, however, is systematically impossible if the resumptive element (pronoun or epithet) is contained within an island which excludes its ultimate binder.

If reconstruction is a true diagnostic for movement, then it follows from these observations that (at least in Lebanese Arabic) resumptive pronouns outside islands are formed by movement, but those inside islands are not. It follows in turn that both mechanisms (movement and base-generation) must be available within the same language, and the fact that the two outcomes are formally indistinguishable becomes very puzzling.

Further research on the interaction between resumption and reconstruction is urgently needed.

9 Conclusion

What we have called here (in a deliberate oversimplification) the 'consensus view' of resumption found in work of the 1980s and early 1990s is, then, now difficult to maintain, at least in its entirety or in its simplest form. It has been subverted by a number of developments – the rethinking of what the movement operation is, the new centrality of reconstruction as a diagnostic tool, and the ongoing rethinking of islandhood and ECP phenomena (encouraged in part by study of cases in which ellipsis makes good what would otherwise have been an island violation – Merchant 2001 and much subsequent work). It is hard to predict how of all of this will be resolved, but the area is ripe for further work, and there is a rich base of observation and analysis upon which to build.

There is also a deep mystery lying at the bottom of it all. It is known that resumptive elements may serve the purpose of marking variable positions in unbounded dependency constructions. It is known that resumptive elements may occur in positions from which movement is impossible (hence apparently allowing greater expressive power than is permitted by movement alone). It is also known that resumption imposes a considerably lighter burden on the human sentence processor than does the production and resolution of syntactic movement configurations. Why, then, is movement used at all in the creation of these structures?

NOTES

1 There is a certain sense in which it is unsurprising that this possibility should exist. Epithets exhibit a number of other 'pronominal' properties – they give rise to robust Condition C effects in languages (Thai and Vietnamese, for instance) in which only pronouns give rise to such effects (Lasnik 1989b). In addition, as noted more than once, epithets may be bound by quantifiers:

(i) Each delegation's leader spoke on its behalf.
(ii) Each prisoner's lawyer had to witness the poor bugger's punishment.

The point can only be made with examples in which the quantifer does not command the epithet (as in (ii)), since one would otherwise have Condition C effects. However,

when allowance is made for this, the effect seems clear enough. The examples in (i) and (ii) seem to be equivalent in acceptability.

2 (5) is from McCloskey (1990), (6) from Suñer (1996), (7) from Aoun and Choueiri (1996), and (8) from Borer (1984b).

3 This property of resumptive pronouns has played an important part in the investigation of weak island phenomena. Much work on the topic (see especially Cinque 1990c and Postal 1998, anticipated by Perlmutter 1972) argues that under certain conditions the apparent trace of A-bar-movement is in fact a silent resumptive pronoun. Given the amnestying effect of resumption on island violations, one can in this way understand why certain cases of (apparent) extraction from island configurations are relatively well-formed.

4 For some difficulties internal to Irish, see McCloskey (1990: fn 14). The difficulty here revolves around an equivocation in (30) concerning use of the term 'subject' – which is not well-defined. An additional concern is that languages which have the Highest Subject Restriction (HSR) in some form seem to differ in how they treat embedded subjects. In Irish, subjects of embedded clauses may freely serve the resumptive function (McCloskey 1990: 210, 240). But in Lebanese Arabic (Aoun and Choueiri 1996, 2000; Aoun et al. 2001) they cannot. Certain languages (literary Welsh, Russian) require that neither subjects nor objects in the highest clause be resumptive (Harlow 1981; Sells 1984b; Déprez and Hale 1986; Broihier 1995; Pesetsky 1998b). Finally, not all languages which exhibit resumptive pronouns exhibit the HSR effect. We will consider a suggestion about one such group of languages shortly, but that suggestion will leave a number of cases untouched (see Suñer 1996, for instance, on (informal) Spanish, and Prince 1990 on Yiddish). Perhaps in such cases, there is no A-bar-binder at all and the pronoun trivially satisfies the A-bar-Disjointness Requirement. For alternative approaches to the Highest Subject Restriction effect, see Déprez and Hale (1986); Shlonsky (1992); Pesetsky (1998b).

5 But see Kayne (2002) for an argument that this consensus view should be reconsidered.

6 Chomsky (1982) argued that resumptive pronouns in English were identified as such (by being bound) only at the level of Logical Form. McCloskey (1990) presented an argument from Irish that resumptive pronouns in that language must be distinguishable from other pronouns at the level of S-structure. Shlonsky (1992) countered the argument and suggested a return to the position of Chomsky (1982). One of the principal empirical issues at stake here is the question of whether or not resumptive pronouns license the appearance of parasitic gaps (an indicator of S-structure A-bar-binding). Sells (1984b) argued that, at least in Hebrew, resumptive pronouns do license the appearance of parasitic gaps, and concluded that they must represent S-structure variables. Shlonsky (1992) challenged both the empirical claim and the conclusion derived from it.

7 Prince (1990) cites a great number of naturally occurring data which might suggest that the usual claim is not in fact correct for English either. McDaniel et al. (1997) report experimental data suggesting that children learning English (unlike adults) accept resumptive pronouns in positions in which traces are also possible.

8 The qualifying "appear" is important here, because many of those who have argued for the last resort character of the resumption mechanism (Shlonsky 1992; Fox 1994; Pesetsky 1998b) have argued for the existence of hidden factors which block movement (and hence force the appearance of resumptive pronouns) in all the cases in which resumptive pronouns appear. I know of no suggestion about what these hidden factors might be in the case of Irish. This issue is closely connected with the issue of

how to understand the Highest Subject Restriction. If movement is freely available from subject position, and if resumption is possible only when movement is impossible, then it will follow that resumptive pronouns will never appear in subject position. See Shlonsky (1992) in particular for a development of this line of thought.

9 There is in addition a set of correlated effects involving obviation and the possibility of having quantificational antecedents.

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56 The SE-Anaphor and its Role in Argument Realization

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1 Introduction

All Romance languages have a reflexive-reciprocal clitic (*se* in French, Spanish, and Romanian, and *si* in Italian, referred to as SE henceforth). In most Romance languages, Goal/Benefactive reflexives are formally indistinguishable from Theme/Patient reflexives. In Romanian, however, Goal/Benefactive reflexive clitics are overtly marked for dative Case (*îşi*$_{\text{Dat}}$ vs. *se*$_{\text{Accus}}$). Certain Romance languages – for example, Italian, Spanish, and Portuguese (but not French or Romanian) – also have a nominative/subject SE (best translated as 'one' in English and 'on' in French).

The terms 'accusative, dative, and nominative' SE may seem somewhat surprising insofar as these three elements show no overt morphological distinctions (with the exception of Romanian dative SE). This terminology is nevertheless justified by the possibility of analyzing the three types of SE as differing with respect to abstract Case. Assuming that a given abstract Case can be assigned to only one element (or chain) inside the same syntactic domain, it is possible to infer the abstract Case of SE on the basis of the Cases of the other DPs with which SE co-occurs: thus, accusative SE may co-exist with nominative or dative DPs,

but not with accusative DPs; nominative SE may co-exist with accusative DPs; etc. The abstract Case distinctions correlate with functional distinctions only partially: nominative SE can indeed be analyzed as an arbitrary subject clitic, but accusative SE cannot be said to be an object clitic, because (i) reflexives built with accusative SE do not behave as transitives (see section 2.1.3.1) and (ii) accusative SEs other than reflexives (inherent, inchoative, passive, or middle SE) cannot even be assumed to correspond to (suppressed) arguments. Finally, theta-role distinctions are also only partially helpful: we can indeed distinguish between accusative and dative reflexive-reciprocals in terms of theta-roles (Theme/Patient vs. Goal/Benefactive), but theta-roles are irrelevant for distinguishing between accusative and dative inherent SE-verbs.

Dative and nominative SE will occupy only very few pages of this chapter (see sections 2.2 and 2.3, respectively). Starting with section 3, we will focus on accusative SE, and more particularly on its middle and passive readings. How many accusative SEs are there? What is the common feature or structure that underlies its various readings (reflexive, passive, middle, inchoative, inherent)? Is it possible to propose a unifying analysis or should we postulate several homophonous types of accusative SE?

There are many phenomena regarding *se/si* in Romance that will be left aside: (i) the intricate detail of the placement of SE in French and Italian causatives and Italian restructuring environments; (ii) the various semantic constraints on the features of the implicit Agent in passive SE configurations; and (iii) long-distance bound reflexives in Italian.[1]

2 Types of SE

The overview below is meant to illustrate the main contexts in which accusative, dative, and nominative SE can each be found.

2.1 Accusative SE

According to some GB theorists of the 1980s, reflexive, middle, and passive SE are intrinsically distinct elements (Belletti 1982; Grimshaw 1982; Zubizarreta 1987; Cinque 1988; among many others).[2] This view cannot explain why these elements systematically exhibit the same morphological form across Romance languages.[3]

Partial unification of the various readings of accusative SE goes back to Burzio (1986): inchoative, inherent, middle, and passive SEs are alike insofar as they can all be analyzed as markers of unaccusativity,[4] understood as a lexical operation that triggers the suspension of the external theta-role and of accusative Case.

Interesting evidence due to Kayne (1975), Burzio (1986), and Pesetsky (1995) suggests that the unaccusative analysis can be extended to reflexive SE. This hypothesis has been convincingly criticized by Reinhart and Siloni (2004), who argue instead that reflexive SE-verbs behave as unergatives.

2.1.1 Inherent and inchoative SE

Inherent and inchoative SE-verbs are two subclasses of unaccusatives (overt Theme, no explicit or implicit Agent), which differ from each other by the absence vs. presence of transitive alternates: inchoatives have transitive alternates, whereas 'inherent SE-verbs' do not; they are of necessity accompanied by SE, and are registered as such in the Lexicon:

(1) a. **Inherent:**
Marie s'est évanouie.
Mary SE has fainted.[5]
'Mary fainted.'

b. **Inchoative:**
La branche$_i$ s$_i$'est cassée e$_i$.
the branch SE has broken
'The branch broke.'

Building on earlier insights by Zribi-Hertz (1987), Labelle (1992) has established that French inchoatives built with SE (e.g., *s'agrandir* 'to get bigger, to enlarge') behave as unaccusatives, whereas those inchoatives that cannot be constructed with SE (e.g., *cuire* 'to cook') qualify as unergatives. The distinction was clearly established on the basis of tests such as auxiliary selection, *il*-impersonals and *en*-extraction, embedded infinitival relatives, tough-constructions, adjectival passives, and participial constructions.

The question now arises as to what determines – for a given change-of-state verb – the choice between functioning as an unaccusative (in which case it is marked with SE) or as an unergative (in which case SE is precluded). Following Rothemberg (1974), Bernard (1971), Burston (1979), and Forest (1988), the answer proposed by Labelle is that the unergative form is used with predicates that express internally driven, autonomous natural processes[6] (*vieillir*, *maigrir*, *grandir*, *grossir*, *rougir*, *sécher*, *pâlir*, *fondre*, *cuire*, *durcir*, *éclater* 'to grow old, thin, tall, fat, to go red in the face, to dry, to pale, to melt, to cook, to harden, to burst'). The processes described by these verbs may be brought about by external causes expressed by complements introduced by *de*, but such causes only constitute the initial force that induces an internally caused process. Even if such external causes are mentioned, these verbs do not allow SE: *(*se) rougir de honte*, *(*se) fondre sous l'effet de la chaleur* '(*se) go red with shame, (*se) melt with the heat'.

Many inchoative verbs – more precisely, those that may refer to natural processes as unfolding in an autonomous way (although not internally caused) – allow both constructions, with notable aspectual differences: *casser/se casser* 'break', *raffraîchir/se raffraîchir* 'cool off', *durcir/se durcir* 'harden'. In the SE-construction, the object undergoing the change of state is projected to the object position, and consequently it is used as an event-measure in the sense of Tenny (1987). Correlatively, SE-inchoatives focus on the final state of the entity undergoing the change, rather than on the unfolding of the process itself.[7] This characterization of the difference between unergative and unaccusative inchoatives constitutes a

refinement of Zribi-Hertz's (1987) claim that reflexive inchoatives are perfective or resultative. This generalization has been questioned by Lagae (1990), who argues that the focus on the final state that indeed characterizes SE-inchoatives is not to be analyzed as perfectivity, although it does explain certain restrictions on the choice of tense or the incompatibility with certain aspectual markers, e.g., *mettre le vin à raffraîchir/*se raffraîchir* 'let the wine cool'.

SE is obligatorily used whenever an external cause is implied. It is particularly striking that verbs built with causative prefixes such as *a-* or *en-*, or causative suffixes like *-ifier-* or *-iser*, require SE: *s'alléger* 'become lighter', *s'agrandir* 'to grow bigger', *s'assécher* 'to dry out', *s'amaigrir* 'to become thinner', *s'abêtir* 'become stupid', *s'allourdir* 'to become heavier', *se diversifier* 'to diversify', *s'humidifier* 'to become humid'.

There exist some verbs which, although they are not morphologically complex, require SE in order to take the inchoative reading. According to Labelle, such verbs are to be classified as "conceptually transitive," i.e., as requiring both their arguments to be projected, unless the external argument is absorbed by SE. A case in point is provided by the pair *briser/casser* 'break', which are near-synonyms, but differ regarding the use of SE: in the absence of SE, *casser* can be used both as a transitive and as an inchoative, whereas *briser* is of necessity transitive; its inchoative use requires SE. The existence of pairs of verbs such as *briser/casser* indicates that the choice between the unaccusative and unergative status may sometimes be idiosyncratic, unmotivated. This leads us to expect that the choice between SE-marking and unmarked forms for semantically close verbs may differ from one Romance language to another. Although detailed analyses exist for most Romance languages (see in particular Folli 2002a, 2002b and Masullo 1999 for Italian and Spanish, respectively), there is no comparative study of this domain of the grammar.

2.1.2 Middle and passive SE

Middle SE and passive SE are alike regarding thematic structure (the overt DP is a Theme, and the Agent is either implicit or realized as an Adjunct *by*-phrase), but differ insofar as middles are interpreted generically, as ascribing a property to the subject DP, whereas passives refer to (particular or habitual) events:

(2) a. **Middle:**
Le $grec_i$ se_i traduit e_i facilement.
the Greek SE translates easily
'Greek translates easily.'

b. **Eventive passive:**
Il_j s_i'est traduit trois $romans_i$.
it SE has translated three novels
'Three novels were translated.'

c. **Habitual passive:**
Les pommes se mangent en hiver.
apples SE eat during winter
'Apples are eaten during winter.'

Much of the literature devoted to SE has focused on various issues relating to the analysis of middle and passive SE: (i) the syntactic representation of the implicit Agent; (ii) the distribution of middle and passive SE in Italian non-finite clauses; and (iii) the correlation between the position of the subject and the reading of SE-verbs. Sections 3, 4, and 5 below are devoted to these issues respectively.

2.1.3 Reflexive-reciprocal SE

(3a–b) illustrate the reflexive and reciprocal uses of SE-verbs:

(3) a. Jean$_i$ se$_i$ lave e$_i$.
John SE washes
'John washes himself.'
b. Jean et Marie se disputent souvent.
John and Mary SE quarrel frequently

Insofar as they alternate with object clitics, reflexive and reciprocal SEs seem to have pronominal status; hence Kayne's (1975) rule of SE-placement, which leaves behind a trace of SE in an A-position. Kayne clearly showed, however, that SE-placement differs from Cl(itic)-placement (the rule that moves pronominal clitics from an A-position to a clitic position; see chapter 13) in crucial ways. Further evidence going in the same direction led Burzio (1986: 42) to the conclusion that reflexive SE is ambiguous between an object clitic and a marker of unaccusativity ("affix[es] with no other syntactic function than marking the lack of theta-role assignment to the subject position").[8] The same view was adopted in Bouchard (1984), Marantz (1984), Grimshaw (1990), and Pesetsky (1995), but Reinhart and Siloni (2004) have convincingly argued against analyzing reflexive SE-verbs as unaccusatives and have proposed instead that they behave as unergatives.

2.1.3.1 Reflexive SE-verbs are not transitives

The empirical evidence reviewed in this subsection was invoked by Burzio (1981) and subsequently by most GB theorists in favor of the unaccusative analysis. On closer scrutiny, however, these are not arguments in favor of the putative unaccusative behavior of reflexive verbs. What the facts really show is that reflexive SE-verbs do not pattern with transitives, which means that reflexive SE is not an object clitic.

Clear evidence against the pronominal status of SE is provided by French causatives. Pronominal clitics cannot attach to a verb embedded under causative *faire*, whereas this position is accessible to SE:

(4) a. *La crainte du scandale l'a fait *la* tuer.
the fear of scandal him-has made her kill.
'The fear of scandal made him kill her.'
b. La crainte du scandale l'a fait *se* tuer.
the fear of scandal him-has made SE kill.
'The fear of scandal made him kill himself.'

Consider next the paradigm in (5a–f). According to a clear empirical generalization, the underlying subject of an infinitival clause embedded under a causative *faire* must be preceded by the preposition *à* in case a direct object is present, but lacks *à* with intransitive verbs (see (5a–c)). The example in (5d) shows that pronominal clitics behave on a par with object DPs (see (5c)), whereas the grammaticality of (5e), without *à*, and the ungrammaticality of (5f), where *à* is present, indicate that SE does not function as a direct object:

(5) a. Jean a fait manger Marie.
John has made eat Mary
'John let Mary eat.'
b. *Jean a fait manger **à** Marie.
c Jean a fait manger la soupe **à** Marie.
John has made eat the soup to Mary
'John let Mary eat the soup.'
d. Jean l_i'a fait manger e_i **à** Marie.
John it-has made eat to Mary
'John let it eat to Mary.'
e. La crainte du scandale a fait *se* tuer la mère du juge.
The fear of scandal has made SE kill the mother of the judge.
'The fear of scandal made the mother of the judge kill herself.'
f. *La crainte du scandale a fait *se* tuer **à** la mère du juge.
The fear of scandal has made SE kill **to**-the mother of the judge.

The two tests just discussed for French cannot be used in other Romance languages such as Romanian or Italian: Romanian does not have counterparts of *faire*-causatives, and in Italian, *fare*-causatives block the cliticization of SE on the embedded infinitival (Burzio 1986):

(6) a. *Questo farà [$_{VP}$ pentirsi Giovanni]
This will make John repentSI
b. *Maria ha fatto [$_{VP}$ accusarsi Piero]
Mary has made accuseSE Peter
'Mary has made Peter accuse himself.'

Burzio (1986: 410) attempts to correlate the contrast between Italian and French with the difference between free subject inversion and *il*-impersonals, but the issue remains open.[9]

2.1.3.2 Reflexive SE-verbs are not unaccusatives

Burzio's (1986) data reviewed above show that SE-reflexives do not behave as transitive verbs accompanied by object clitics. Although the data are compatible with both the unergative and the unaccusative analysis, Burzio favored the unaccusative hypothesis: reflexive SE would be an unaccusative marker that suspends the subject theta-role: SE-affixation to a transitive verb, e.g., *accuse*, would be a

morphological process that gives rise to a corresponding verb, 'self-accuse', which is an unaccusative verb (1986: 415). Reinhart and Siloni (2004) argued conclusively against the unaccusative analysis of SE-reflexives. Under their view, SE-reflexives are unergatives.

Arguing in favor of the unaccusative analysis of reflexives, Burzio (1986) observed that the object of transitives and the subject of unaccusatives (cf. *arrivare* as well as SE-marked unaccusatives) can be relativized via small-clause relativization, in contrast with the subject of unergatives and transitives:

(7) a. uno studente [scPRO$_i$ invitato t$_i$ alla festa]
a student (who was) invited to the party
b. uno studente [PRO$_i$ arrivato t$_i$ ieri sera]
a student (who had) arrived yesterday evening
c. L'auto capovoltasi nell'incidente era la Ferrari.
The car (which had) rolled over in the accident was the Ferrari.
d. Un pilota accortosi dell'incidente diede l'allarme.
A driver (who had) become aware of the accident gave the warning.

(8) a. *uno studente [PRO telefonato ieri sera]
a student (who had) telephoned yesterday evening
b. *Un individuo accusatolo di aver assassinato il presidente fu creduto pazzo.
A guy (who had) accused him of having assassinated the president was thought (to be) crazy.
c. *un individuo accusato se stesso di aver assassinato il presidente
a guy (who had) accused himself of having assassinated the president

SE-reflexives behave on a par with unaccusatives:

(9) Un individuo accusatosi di aver assassinato il presidente fu creduto pazzo.
A man (who had) accused himself of having assassinated the president was believed crazy.

Reinhart and Siloni observed, however, that not all reflexives are allowed to occur in Italian reduced relatives:

(10) *L'uomo lavatosi ieri è mio nonno.
The man washed-SE yesterday is my grandfather.

Burzio himself brought up empirical evidence going against his own proposal; in particular, SE-reciprocals cannot appear in reduced relatives:

(11) ?Due amici incontratisi allo stadio non si vedevano d'anni.

A second argument in favor of the unaccusativity of SE-reflexives is based on auxiliary selection: they select the auxiliary *be*, in contrast with both transitives and unergatives, which select *have*:

(12) a. Jean s'est puni.
John SE-has punished
b. Jean s'est lavé le visage.
John SE-has washed his face
c. Il s'est mangé 300 kg de viande.
there SE-has eaten 300 kg of meat

Reinhart and Siloni observe that auxiliary selection is not a decisive argument in favor of unaccusativity, since *be* is selected by transitive verbs taking a dative SE:[10]

(13) Marie s'est envoyé une carte du Maroc.
Mary SE-has sent a postcard from Morocco

Further evidence against the unaccusativity of SE-reflexives is related to the distribution of *en*. Thus, although reflexives (marginally) allow their subject DP to occupy the postverbal position (presumably the direct object position) in French *il*-impersonals, *en*-extraction is blocked by SE-reflexives, in contradistinction to SE-unaccusatives and SE-passives, which behave on a par with unmarked unaccusatives and copula passives:

(14) a. Il s'en est cassé beaucoup dans ce lave-vaisselle. (unaccusative)
there SE of them has broken many in this dish-washer
b. Il s'en est lavé beaucoup dans ces douches publiques récemment. (OK passive; *refl.)
there SE of them has washed many in these public showers recently
c. ?*Se ne sono incontratisi due.
SE of them have met two. (Burzio 1986: 424)

Note that quite independent of the distribution of *en*, the context of *il*-impersonals does not constitute clear evidence in favor of the unaccusative analysis of SE-reflexives. As shown in (15a), *il*-impersonals are productive and perfectly grammatical with unaccusatives (be they marked with SE or unmarked) and with periphrastic as well as SE-marked passives (Burzio 1981, 1986; Pollock 1981, 1983), but examples of the type in (15b), built with SE-reflexives, are quite hard to find:

(15) a. Il s'est mangé 20 kg de viande en deux jours. (passive)
it SE ate 20 kg of meat in two days
b. ?Il s'est dénoncé trois mille hommes ce mois-ci. (reflexive)
it SE denounced 3,000 people this month (Kayne 1975: 381)

2.1.3.3 Reflexive SE and the Agent theta-role

Under later implementations of the unaccusative analysis of reflexives, reflexive SE was assumed to absorb the external theta-role (see Marantz 1984; Kayne 1988; Guéron 1991; Pesetsky 1995; Sportiche 1998), on a par with passive SE. In section 3 below, we will show that the hypothesis that accusative SE absorbs the external theta-role is problematic for passive SE. Those problems transfer to reflexive SE.

2.1.3.4 Reflexive SE-verbs are unergatives

We have so far reviewed the evidence against two possible analyses of SE-reflexives: they are neither transitives nor unaccusatives. Reinhart and Siloni (2004) propose instead that SE-reflexives are unergatives, obtained from their transitive alternates by an operation that identifies the two arguments of a two-place relation. In certain languages, e.g., Hebrew, this identification takes place in the lexicon, in which case it amounts to a lexical reduction operation that reduces a two-place relation to a property (Chierchia 1989; Reinhart 1997). In Romance languages, on the other hand, reflexivization relies on an identification operation that takes place at LF. Whereas lexical reduction is restricted to apply to co-arguments, LF-identification may apply to arguments of two distinct predicates, as in ECM constructions:

(16) Jean se considère [e intelligent].
John SE considers intelligent
'John considers himself (to be) intelligent.'

Hebrew counterparts of this kind of example are ungrammatical, because Hebrew reflexivization can only resort to lexical reduction.

2.1.4 Unifying characterizations of accusative SE

Beyond important differences, non-reflexive accusative SE-verbs (inherent SE-verbs, inchoatives, middles, and passives) can all be argued to be unaccusatives[11] insofar as the external role is suspended (i.e., not realized in the syntax), and the internal role is realized as a subject (in particular, it is assigned nominative Case).[12]

In the preceding section we have concluded, following Reinhart and Siloni (2004), that the unaccusative analysis of SE-reflexives should be discarded. And yet a unifying analysis of reflexive and non-reflexive accusative SE-verbs is desirable, due to very clear cross-linguistic generalizations: (i) Romance languages all have both reflexive and non-reflexive accusative SE; and (ii) many languages other than Romance have a non-active voice that is used both for reflexives and for inchoatives and middle-passives.

2.1.4.1 Lexical accounts

It is widely agreed that accusative SE does not function as an object clitic, but rather as a morphological marker that affects argument structure at the level of

the lexicon. This general characterization is compatible with quite different lexical rules, e.g., Inchoativization, Reflexivization, or Middle Formation (Grimshaw 1982). According to Reinhart and Siloni (2004), the SE-morphology appears when some derivational operation has taken place, be it reduction, saturation, or reflexivization (identification).[13]

One may wonder why operations as distinct as lexical reduction (which itself comes in two flavors: reduction of the external or of the internal role, corresponding respectively to unaccusatives and reflexives), LF-identification, or saturation (postulated in the analysis of passives and middles by Chierchia 1989 and Reinhart 1997) should be marked by one and the same morphological marker, SE.

Similar questions arise for other lexicalist analyses, in particular for Wehrli's (1986) view that the unifying characteristic of SE is that it absorbs an argument. According to this author, the various instantiations of SE are obtained by combining two parameters: (i) which argument is absorbed; and (ii) whether the absorption operation is lexicalized or not:

(17) a. Inherent SE: absorption of the internal argument; lexicalized
b. Unaccusative SE: absorption of the external argument; lexicalized
c. Reflexive SE: absorption of the internal argument; non-lexicalized
d. Middle SE: absorption of the external argument; non-lexicalized

But why should one and the same element absorb either one of the two arguments, despite the fact that it is uniformly marked with accusative Case?

2.1.4.2 SE as an anaphor

Dobrovie-Sorin (1994b, 1998) argues that the GB notion of anaphor (defined as an element that is subject to Principle A of Binding Theory) provides a unified characterization of the various types of accusative SE. According to a restricted theory of binding, only elements that occupy A-positions are subject to binding conditions. Under such a theory, binding conditions do not apply to clitics, but only to their traces. In particular, the anaphoric feature of SE, which is registered in the lexicon, is transferred to a designated A-position. A sentence containing SE will thus of necessity rely on the indexing configuration given in (18), where NP_i and e_i occupy respectively the subject and the object positions. The 'complete' version of the representation in (18) is (18'):

(18) $NP_i\ e_i$

(18') $NP_i\ SE_i\ e_i$

The absence of SE in (18) is only meant to indicate that the S-structure position of SE is irrelevant for Binding Theory, although, of course, the position of SE is crucial for phenomena having to do with cliticization; e.g., clitic climbing in *faire*-causatives or restructuring environments, etc.

The assignment of indices in (18–18′) characterizes reflexive as well as unaccusative uses of SE, which differ regarding thematic structure, as shown in (19a–b), or the fully developed representations in (19′a–b):

(19) a. (NP_i) (e_i)
b. $(NP_i\ e_i)$

(19′) a. (NP_i) $(SE_i\ e_i)$
b. $(NP_i\ SE_i\ e_i)$

The representation in (19b) differs from that in (19a) insofar as the two co-indexed argument positions belong to the same theta-chain. The two-chain configuration given in (19a) underlies SE-reflexives, which are characterized by an identification relation between the internal and the external arguments,[14] whereas the representation in (19b) underlies the non-reflexive uses of accusative SE-verbs (inherent, inchoative, middle, and passive SE-verbs),[15] which qualify as unaccusatives.[16]

In sum, the possibility of similar and yet distinct syntactic configurations is the result of the modularity of GB theory. The common property of SE-constructions pertains to binding theory (SE is lexically marked as an anaphor, and as such it forces the binding/co-indexation relation that characterizes both (19a) and (19b)),[17] whereas their dissimilarities pertain to theta-theory: one and the same binding relation may form one or two theta-chains, depending on the lexical properties of the predicates.

Postma (1995a) shares with Dobrovie-Sorin (1994b, 1998) the hypothesis that the unifying property of all uses of accusative SE is its being an anaphor, but proposes a different analysis. Postma assumes that the Agent role is projected in the syntax and that the various readings of SE arise as a consequence of the way in which the theta-chain corresponding to the Agent role is identified with the Theme-chain (for further details of Postma's proposal see section 3.5. below). In section 3 it will be argued that the Agent is not projected in the syntax of SE-verbs (other than reflexives), and in section 5 it will be shown that agentive or non-agentive interpretations depend on the syntactic position in which the internal argument is realized.

2.2 Dative SE[18]

In most Romance languages, dative SE is homophonous with accusative SE (cf. French, Italian, Spanish, Portuguese):

(20) a. Marie se fait des robes. French
Mary SE makes dresses
'Mary makes dresses for herself.'
b. Jean s'est envoyé des cartes postales.
John SE HAS sent postcards

In Romanian, reflexive clitics show an overt case distinction: *se* for accusatives and *îşi* for datives. The Romanian counterparts of the French examples in (20) are given in (21):

(21) a. Maria îşi face rochii.
Mary SE_{Dat} makes dresses
b. Ion şi-a trimis cărţi poştale. (*şi* is the phonologically weak form of *îşi*)
John SE_{Dat}-has sent postcards

Kayne (1975) observed that in French, dative SE cannot be bound by a derived subject, i.e., a subject that is the head of an NP-chain resulting from NP-movement (cf. passives and subject-raising configurations). Rizzi (1986b) showed that the generalization also holds in Italian ((22) for – passives, (23–24) for – subject raising):

(22) a. *Gianni$_i$ si$_i$ è stato affidato e$_i$.
John SI HAS been entrusted
'John to-himself was entrusted.'
b. *I nostri amici$_i$ si$_i$ sono stati presentati e$_i$.
our friends SI HAVE been introduced
'Our friends to-each-other were introduced.'

(23) a. *Gianni$_i$ si$_i$ sembra [e$_i$ non fare il suo dovere].
John SI seems not (to) do his duty
'John to-himself seems not to do his duty.'
b. *Le due candidati$_i$ si$_i$ risultavano [e$_i$ poter vincere].
the two candidates SI appeared (to) be able (to) win
'The two candidates to-each-other appeared to be able to win.'

(24) a. *Gianni$_i$ si$_i$ sembra [e$_i$ intelligente].
John SI seems intelligent
'John to-himself seems intelligent.'
b. *Loro$_i$ si$_i$ risultano [e$_i$ in regola con le tasse].
(they) SI appear in good order with taxes
'They to-each-other appear in good order with the taxes.'

Non-clitic anaphors such as *se stesso* or *l'uno l'altro* are not subject to this constraint:

(25) a. Gianni$_i$ è stato affidato a **se stessi$_i$**.
John HAS been entrusted to himself
b. I nostri amici$_i$ sono stati presentati l'uno all'altro$_i$.
our friends HAVE been introduced to each other

The restriction observed with passives and raising verbs also holds in adjectival constructions, as shown in the (b) examples below. The (a) examples, which contain the corresponding non-clitic anaphors, are grammatical:

(26) a. Gianni$_i$ è [e$_i$ affezionato a se stesso$_i$].
John is affectionate to himself
b. *Gianni$_i$ si$_i$ è [e$_i$ affezionato].
John SI is affectionate

(27) a. Loro$_i$ sono simili [e$_i$ l'uno all'altro].
they are similar to each other
b. *Loro$_i$ si$_i$ sono [e$_i$ simili].
they SI are similar

(28) a. Loro$_i$ sono [e$_i$ odiosi l'uno all'altro$_i$].
they are hateful to each other
b. *Loro$_i$ si$_i$ sono [e$_i$ odiosi].
they SI are hateful

The observed parallelism between A-chain configurations (passives and subject raising) and adjectival constructions is expected under the GB analysis of adjectives, going back to Couquaux (1979, 1981): the copula verb *be* is assumed to take a small-clause complement headed by the adjective; the subject position of *be*, which is empty at D-structure (because *be* assigns no theta-role) is targeted by the NP-movement of the subject of the small clause.

Verbs that are semantically close to the adjectives in (26–28) do not trigger ungrammaticality, presumably because in this case the subject is not the head of an A-chain but instead is base-generated in its S-structure position:

(29) a. Loro$_i$ si$_i$ assomigliano e$_i$.
(they) SI resemble
'They resemble each other.'
b. Loro$_i$ si$_i$ fanno e$_i$ pena/tenerezza/simpatia.
(they) SI make pain/tenderness/liking
'They make pain/tenderness/liking to-each-other.'

Kayne's (1975) account of the phenomenon relied on an extrinsic ordering of the rules of passivization and reflexive cliticization: the former applies before the latter, and the observed ungrammaticality obtains because reflexivization requires SE to be co-indexed with a subject, a requirement that cannot be satisfied: the prior application of passivization has suspended the external theta-role, and the object-to-subject NP-movement has not yet applied.

Burzio's (1986: 397–399) explanation builds on the same idea, but differs in the technical implementation. The ungrammaticality of dative SE with derived subjects would be due to the fact that the co-indexation relation between SE and a subject in Spec, IP, which defines SE, cannot be satisfied at D-structure in the relevant configurations: within the model of grammar assumed by Burzio, passives and raising verbs are generated with an empty Spec, IP position.

Rizzi (1986) rejected Burzio's account on the grounds that it stipulates an idiosyncratic property of SE, that of requiring a co-indexation with a subject at all levels of representation (in particular at D-structure), and he proposed instead an explanation relying on a Chain Condition: the chain in (30), representing a dative SE bound by a subject heading an A-chain, is ill-formed because the NP-trace (resulting from the NP-movement of the subject) is unduly locally bound by SE:

(30) *NP_i SE_i t_{NP_i}

This solution raises both empirical and theoretical problems. Note first that configurations of the type in (30) are grammatical in English, where the intervening binder is a strong dative reflexive pronoun:

(31) a. $Mary_i$ seems [to $herself_i$] t_i to have done her duty.
b. $John_i$ appeared [to $himself_i$] t_i to be capable of doing the job.

Within Rizzi's proposal one could account for the grammaticality of (31) by assuming that the reflexive pronoun, because it is embedded inside a PP, does not C-command the NP-trace, and thus does not count as a disturbing intervening binder. Pesetsky (1995: 105) observes that C-command must be postulated in exactly the same configuration in order to account for Principle C violations:

(32) *$Mary_j$ seems [to him_i] t_j to like $John_i$.

A comparable problem is raised by Romanian, a language in which the dative clitic *îşi* can be bound by derived subjects:[19]

(33) a. Ion şi Maria şi-au fost prezentați anul trecut.
John and Mary SE_{dat}-have been presented year-the last
'John and Mary were presented to each other last year.'
b. Ion îşi e recunoscător numai lui.
John SE_{dat} is grateful only to him(self)
c. Ion şi Maria şi-au devenit pur şi simplu insuportabili.
John and Mary SE_{dat}-have become purely and simply unbearable (to each other)
'John and Mary have become purely and simply unbearable to each other.'

Romanian clearly differs from French and Italian insofar as dative and accusative reflexive clitics are overtly distinguished by morphological Case: *îşi* and *se* respectively. Given Rizzi's account, one would have to say that morphological Case-marking blocks C-command. This proposal faces the problem noted above for English, regarding Principle C violations:

(34) *Maria $îi_j$ para a-l_j place pe Ion_j.[20] Romanian
$Mary_i$ to-him_j seems to [e_i] him_j like $John_j$.

It should be noted that although Rizzi's (1986) Chain Condition has the flavor of Rizzi's (1990b) Relativized Minimality Constraint, Rizzi (1990b) does not attempt to restate it. The reason might be that the Chain Condition cannot be restated in terms of relativized minimality: SE is an A'-antecedent, and as such it should not disturb the relation between an NP-trace and its antecedent, because the latter sits in an A-position.

Following a suggestion by Kayne, Pesetsky (1995: 103–105) proposes an explanation based on a Marantz–Kayne type of analysis for SE (see section 3.6): SE would necessarily be an external argument, regardless of whether it gives rise to reflexive, passive, or middle interpretations, and regardless of its Case: nominative, accusative, and dative SEs all need to absorb the external theta-role. The ungrammaticality shown in (22–24) and (26b), (27b), and (28b) would then be due to the fact that there is no external theta-role available for absorption by SE, since passives, raising verbs, and *be* do not assign an external theta-role. This solution does not explain why a dative SE that bears *morphological* dative Case, as in Romanian, does not need to absorb the external theta-role.

The problems faced by Rizzi (1986) and later proposals do not arise within Burzio's account, the only defect of which seems to be that it stipulates that the co-indexation relation required by SE (by virtue of its being an anaphor) should hold at all levels of representation, in particular at D-structure. This proposal is also confronted by a theory-internal problem, due to the evolution of the generative model: in the various versions of Minimalism, the D-structure level of representation is eliminated. It seems possible to solve this problem, while at the same time giving a conceptual justification to Burzio's proposal, by slightly modifying it: the co-indexing requirement imposed by SE would hold in the lexicon rather than at D-structure. The reason why it should hold in this component of the grammar would simply be its lexical nature: on a par with accusative SE, dative SE would be a *lexical* affix (rather than a pronominal clitic; see section 2.1.3), which as such should satisfy its anaphoric feature in the lexicon itself. This requirement cannot be satisfied if we assume that passives, adjectives, and raising verbs do not have external arguments in the lexicon. Because strong pronominal anaphors such as *l'uno l'altro* or *se stessi* are pronominal anaphors rather than lexical affixes, they do not function as anaphors in the lexicon, but only in the syntax: hence, they can be bound by derived subjects, i.e., elements that fill the (Spec, IP) position at S-structure. Similarly, we may explain the Romanian data by assuming that reflexives that are overtly marked for dative Case function as pronominal clitics rather than lexical affixes, and therefore the binding conditions are to be satisfied in the syntax rather than in the lexicon.

2.3 *Nominative SE*

Only certain pro-drop Romance languages – in particular Italian, Spanish, and Portuguese – have a nominative/subject SE:

(35) a. Non si_i e_i è mai contenti. Italian
not SI is ever satisfied
'One is never satisfied.'
b. Spesso si_i e_i è traditi dai falsi amici.
frequently SI is betrayed by false friends
'One is frequently betrayed by false friends.' (SI+passive)
c. In questa università si_i e_i studia le materie letterarie.
in this university SI teaches the humanities
d. (Le materie letterarie) le si_i e_i studia in questa università.
(the humanities) them SI teaches in this university
'(The humanities) one teaches them in this university.'

(35a–b) cannot involve an accusative SE because neither (the copula verb *be* +) adjectives nor passives can assign accusative Case. In (35c), the verb does not agree with *le materie letterarie*; therefore this DP cannot be a postverbal subject, but must instead be analyzed as a direct object; since direct objects take accusative Case, SE itself cannot be accusative. In (35d), accusative Case is assigned to the object clitic *le*, and is thus unavailable for SE itself. The examples in (35a–d) are instead compatible with analyzing SE as an arbitrary subject clitic (marked with abstract nominative Case) comparable to arbitrary *on* 'one' in French.

Romance scholars have frequently attempted to unify nominative and accusative SE (see, among others, Castelfranchi and Parisi 1976; Manzini 1986b; Guéron 1991; Kayne (class lectures in the 1980s and 1990s)). According to Manzini (1986b), what brings together all the occurrences of *si* is the fact that *si* is co-indexed with the subject NP. This suggested unification is, however, problematic, since the co-indexation convention notates here two distinct types of dependency relations. It is by virtue of being a subject clitic that nominative *si* is co-indexed with the subject position. Accusative *si*, on the other hand, is co-indexed with the subject not because it is a clitic, but rather because it is an anaphor. Since it notates two distinct types of dependency relations (a subject clitic chain and an A-chain, respectively), the co-indexation itself cannot be viewed as a common property of the two *si*s, which means that Manzini's unification attempt fails. According to Kayne (1986), the unifying property of all uses of SE is the fact that it absorbs the external role. As we will demonstrate in section 3 below, the notion of 'absorption' was used to refer to two irreconcilable operations:

(i) The external theta-role may be 'absorbed' but nevertheless projected in the canonical syntactic position of subjects. This kind of absorption characterizes nominative clitics (and agreement morphemes in pro-drop languages), in particular nominative SE, but crucially not passivizing morphemes.
(ii) The external theta-role may be 'suspended', i.e., not projected in the subject position; it remains present in argument-structure and may surface as an adjunct *by*-phrase. The suspension of the external role characterizes passivizing morphemes in general, and middle-passive SE in particular, but cannot be correct for nominative SE.

Note that a unified approach to accusative and nominative SEs would predict that these two types of SE necessarily co-occur cross-linguistically, but this prediction is incorrect. It is indeed clear that French does not have nominative SE. Moreover, Dobrovie-Sorin (1986, 1987, 1994b, 1998) has established that although it is a pro-drop language, Romanian lacks nominative SE.[21] Thus, the Romanian counterparts of the Italian examples in (35) are all ungrammatical:

(36) a. *Nu *se* este niciodată mulțumit. Romanian
not SE is never satisfied
'One is never satisfied.'
b. *Adesea *se* este trădat de prieteni falşi.
frequently SE is betrayed by false friends
'One is frequently betrayed by false friends.'
c. *În această universitate se predă ştiințele umane.
in this university SE teaches the humanities
d. *(Stiințele umane) le se predă în această universitate.
(the humanities) them SE teaches in this university

The contrast between Spanish and Romanian illustrated in (37–38) constitutes further evidence in favor of the lack of nominative SE in Romanian. Since Spanish SE may be nominative, it may co-occur with a prepositional accusative. Since Romanian SE is of necessity accusative, it blocks the occurrence of a prepositional accusative:

(37) En esta escuela se castiga a los alumnos. Spanish
in this school SE punishes *a* the students
'In this school they punish the students.'

(38) *În şcoala asta se pedepseşte pe elevi. Romanian
in this school SE punishes *PE* students
'In this school they punish the students.'

Given that all Romance languages have accusative SE, but only some of them have nominative SE, we may assume, in line with Belletti (1982), Burzio (1981, 1986), Zribi-Hertz (1982), Hyams (1986), Zubizarreta (1987), and Dobrovie-Sorin (1986, 1994b, 1998), that these two SEs are homophonous, but clearly distinct linguistic entities as different from each other as *man* 'one' and *sich* in German or *on* 'one' and *se* in French.

Although some empirical intricacies related to the distribution of SE in Italian infinitivals made Burzio (1982, 1986) wrongly believe that middle-passive SE is a particular type of nominative SE (see sections 3.4 and 4 below), Burzio proposed clearly different analyses for accusative and nominative SE, which can still be maintained modulo technical restatements due to the evolution of the GB model itself. Burzio's (1986) characterization of the distinction is stated in terms of the level at which SE is inserted: (the core cases of) accusative SEs are analyzed as

lexical affixes marking unaccusativity, which absorb/suspend the external theta-role at the level of the lexicon and are base-generated directly in their S-structure position (this is true for simple predicates; in complex predicates, e.g., causatives and restructuring environments, one must allow for clitic climbing). Nominative SE, on the other hand, behaves as a pronominal clitic: it is subject to clitic movement, and functions as an argument, being assigned a theta-role via a clitic chain.

The homonymical treatment of nominative and accusative SEs is confronted with some potential problems: auxiliary selection, relative order with respect to object clitics, and negation seem to treat the two SEs alike. Although these problems have not yet received a satisfactory solution, they do not seem to affect the view that nominative SE and accusative middle-passive SE should be treated as homonyms rather than as instantiations of the same element. This does not mean that the homonymy itself is completely accidental. It is, indeed, known that nominative SE developed via a diachronic reanalysis from accusative SE. According to Naro (1976), constructions of the type SE V NP, involving passive SE, came to be reanalyzed as an S-V-O sequence, with SE taken as a subject pronoun. This reanalysis took place in Italian, Spanish, and Portuguese, but not in French or Romanian. In sum, the existence vs. the absence of nominative SE is a parameter according to which Romance languages that have middle-passive SE vary: Italian, Spanish, and Portuguese have both nominative and accusative SE, whereas Romanian and French have only accusative SE. This variation is expected under the homonymical analysis of nominative and accusative SE, since the existence of particular pairs of homonyms is language-specific.

2.4 When SE combines with unergatives

Italian (and Spanish or Portuguese) constructions of the type *si dorme* 'SE sleeps', in which SE combines with unergatives, rely on nominative SE, but their Romanian counterparts cannot be assigned this analysis, because Romanian does not have nominative SE (see section 2.3 above):

(39) si canta/si dorme . . . /si mangia — Italian
SE sings/SE sleeps/ . . . SE eats
'one sings/one sleeps/ . . . one eats'

(40) *se* cîntă/*se* doarme/*se* munceşte/*se* mănîncă — Romanian
SE sings/SE sleeps/SE works/SE eats

According to Dobrovie-Sorin (1986, 1994b), examples such as (40) rely on a passivizing accusative SE, comparable to impersonal middle *sich* in German:[22]

(41) Es lebt sich angenehm hier. — German
it lives SICH in a pleasant way here
'Life is pleasant here.'

2.4.1 The passivization of unergatives

The passive phenomenon is currently described as involving the suspension of the external theta-role and of accusative Case; correlatively, the internal argument is NP-moved from the object to the subject position (see chapter 2). Because unergatives are currently viewed as being unable to subcategorize a direct object, Marantz (1984), Baker (1988a), and Sobin (1985), among many others, were led to modify and parameterize the analysis of passivization. The core property of passives was relaxed, merely requiring the suspension of the external role (the precise technical stipulation differs from one author to the other, and is of no interest here). This analysis of impersonal passives, described as the spontaneous demotion of the Agent by Perlmutter (1978), has become general across grammatical models. This kind of analysis stipulates two distinct rules of passivization: one for transitives and another one for unergatives. Moreover, no real understanding of the cross-linguistic variation shown by the passivization of unergatives was achieved: the impossibility of passivizing unergatives in certain languages is assumed to be due to the parameterization of either passive morphemes or unergatives, but no independent evidence can be adduced in favor of either one of these parameters.

Dobrovie-Sorin (1986, 1994b, 1998) proposed a different line of inquiry, based on the hypothesis that the passivization of unergatives relies on exactly the same rule as the passivization of transitives.[23] Under this view, the structure underlying the example in (42c), where *se* combines with an unergative, is exactly the same as that underlying (42a) and (42b), constructed with a transitive. This analysis relies on the hypothesis that unergatives may project a null cognate object:[24]

(42) a. S_i-au mîncat pro_i e_i ieri.
SE$_i$-HAVE-3RD PLUR eaten pro_i e_i yesterday
'They were eaten yesterday.'

b. S_i-a mîncat pro_i e_i bine ieri.
SE$_i$-HAS-3RD SING eaten pro_i e_i well here
it was eaten well yesterday
'We/they ate well yesterday.'

c. Se$_i$ doarme pro_i e_i bine aici.
SE$_i$ sleeps-3RD SING pro_i e_i well here
it is slept well here
'One sleeps well here.'

According to Dobrovie-Sorin's analysis, these examples rely on chains of the form *(pro, e)*, made up of a null subject (its exact position is not directly relevant here: one may assume either (Spec, VP) or (Spec, IP)) and of an empty category that occupies the direct object position; this chain is marked with the Theme role, assigned in the object position.[25] The only difference between (42a, b, and c) concerns the interpretation of this chain (referential, protoypical, and cognate objects respectively), which depends on the selectional properties of the verb.

This analysis of middle-passive unergatives seems to be facilitated by Hale and Keyser's (1993a) hypothesis that unergatives are universally transitive in their lexical relational structure; that is, they are to be represented as being derived by the incorporation of cognate objects into light verbs. Note, however, that this view on the lexical representation of unergatives does not oblige us, and perhaps does not even authorize us, to assume that the traces of the incorporated cognate objects are projected in the syntax. According to Dobrovie-Sorin (1986, 1994b, 1998), the presence of null cognate objects in the syntactic representation of passive unergatives is not induced by the lexical properties of unergatives (unergatives merely *allow* the presence of a direct object), but rather by the properties of *passive* configurations, and in particular by the properties of middle-passive SE. Note that this proposal does not entail that null prototypical and cognate objects are projected in the S-structure representation of *active* unergatives or intransitively used transitives.

2.4.2 Does SE combine with unaccusatives?

According to a well-known generalization, unaccusative verbs cannot passivize.[26] Given this generalization, we expect examples such as (43) to be ungrammatical in Italian:

(43) a. *Ritengo non essersi arrivati in sufficiente anticipo.
(I) believe not to HAVE-SE arrived sufficiently ahead of time
b. *Non essendosi morti in giovane età
not HAVING-SE died young
c. *Sembra essersi arrivati troppo tardi.
(it) seems to HAVE-SI arrived too late

These examples are ungrammatical because SE can be neither nominative (because nominative SE is ruled out in Italian non-finite clauses; see section 4 below) nor a passivizing accusative SE (because unaccusatives cannot passivize).

Quite surprisingly, however, the Romanian examples in (44) are grammatical:

(44) a. Ieri s-a ajuns la timp.
yesterday SE-has arrived in time
'Yesterday people arrived on time.'
b. La noi, se moare des din cauza cancerului şi a bolilor cardiace.
here/in our country SE dies frequently because of cancer and of cardiac diseases
'Here/in our country people die frequently from cancer and from cardiac diseases.'
c. Nu se moare din atîta.
not SE dies of that much
'One does not die from so little.'
d. In sală se amuțeste la apariția examinatorului.
in the classroom SE goes quiet when the examiner appears
'Everyone goes quiet when the examiner shows up in the classroom.'

e. Se întîrzie zilnic.
SE arrives late every day
'People arrive/are late every day.'
f. După medicamentele astea, sigur se va învia!
after (having taken) medicines-the these, for sure SE will resurrect
'People will surely be restored to life after having taken these drugs.'
g. La temperatura de –20 grade, se degeră.
at the temperature of –20 degrees, SE freezes

Given this type of data, one might be led to conclude, contra Dobrovie-Sorin, that Romanian does have a nominative SE. The solution suggested by Dobrovie-Sorin (1987, 1994b) herself is that in Romanian, the distinction between unergatives and unaccusatives is not grammatically encoded. Indeed, most of the current tests of unaccusativity cannot be used in Romanian: this language does not use *be* as a perfect auxiliary (all verbs are built with *have*), and it has no counterpart of the French clitic *en* (Italian *ne*).

One may, however, wonder whether there is any limitation on the use of passive SE with verbs that are semantically close to unaccusatives. And indeed, there exist at least two types of impossibilities (Pană-Dindelegan, p.c.). On the one hand, passive SE cannot apply to inherent reflexives. Thus, verbs such as *a se aglomera*, *a se atrofia*, *a se bifurca*, *a se bronza*, *a se caria*, *a se cicatriza*, *a se înnora*, *a se învechi*, *a se îneca* 'to get crowded, to atrophy, to bifurcate, to get tanned, to get a cavity, to scar, to get cloudy, to get old, to drown' cannot be used with an impersonal passive SE. Given that inherent reflexives are unaccusatives, they behave exactly as predicted by the hypothesis that unaccusatives cannot passivize.

The second limitation concerns the type of subject selected by the verb: a one-argument verb can be used with an impersonal passive SE only if it is construed as involving a human argument. Thus, examples such as *Vasul acostează* 'The ship is coming ashore', *Mi- a amorțit piciorul* 'My leg went numb', *Soarele apune* 'The sun is going down', *Luna asfințește* 'The moon is going down', *Pomii au înfrunzit/ înmugurit/înflorit* 'The trees grew leaves/budded/flowered', *Veniturile cresc/ descresc* 'The income increases/decreases' cannot give rise to impersonal forms. Some of these verbs may combine with impersonal SE, as shown in (45). But crucially, the implicit suspended argument can only be interpreted as human:

(45) a. După vîrsta de 60 de ani, se apune încet-încet!
after the age of 60, SE goes down slowly-slowly
'People slowly fade after reaching the age of 60!'
b. S-a acostat departe de aici.
SE-has come ashore far from here
'The landing was far from here.'
c. S-a amorțit.
SE-has come numb
'People got numb.'

d. Se creşte fără griji.
SE grows up without worries
'One grows up carefree.'

Although the constraint regarding the human feature of the implicit suspended argument of SE-passives is not well understood (see Mendikoetxea 1999), its existence supports the hypothesis that SE-passivization cannot apply to genuine unaccusatives: the human feature of the external argument makes it easier for a given verb to be construed as unergative, thus allowing for passivization.

2.4.3 Cross-linguistic variation: the passivization of unergatives and impersonal constructions

French clearly differs from Romanian in not allowing passive SE to combine with unergatives:[27]

(46) a. *Il se procédera à une enquête. French
IL SE will proceed to an inquiry
'An inquiry will be started.'
b. *Il s'aboutira à un compromis acceptable.
IL SE will arrive at/reach an acceptable compromise
'An acceptable compromise will be reached.'
c. *Il s'est tiré sur les manifestants.
IL SE-HAS shot at the demonstrators
'The demonstrators were shot at.'
d. *Il se lui a été demandé/suggéré de partir.
IL him/her$_{Dat}$ SE-has asked/ordered/suggested to leave
'He/she was asked/ordered/suggested to leave.'

Cinque (1988) explains the ungrammaticality of (46) by parameterizing the types of SE, and by assuming that the SE that is allowed to combine with unergatives (analyzed as an impersonal passivizing +arg nominative SE by Cinque) does not exist in French. This kind of account is not available for Dobrovie-Sorin (1998), who argues against the existence of a nominative +arg SE (see section 4.1 below) and assumes that unergatives may combine with an accusative middle-passive SE. Since such an element exists in French, we would expect examples such as (46) to be grammatical.

One may choose to parameterize unergatives, as proposed by Jaeggli (1986):

(47) In certain languages (see German), but not in others (see French), unergatives assign structural Case.

The first problem with (47) is that it parameterizes a property that is currently assumed to be universal, namely the possibility for unergatives to assign structural Case.

Note furthermore that the parameter in (47) cannot account for a very clear empirical generalization: languages that (do not) admit *se* V_{unerg} also (do not) admit *se* V_{trans} with a null prototypical object. Thus, the contrast between the Romanian examples in (42) and the French examples in (46) is parallelled by the contrast in (48a–b), where the verb is transitive in both languages:

(48) a. Se_i mănîncă pro_i e_i prea mult aici. Romanian
SE$_i$ eats pro$_i$ e$_i$ too much here
'One eats too much here.'
b. *Il_i se_j mange e_j trop ici. French
it$_i$ SE$_j$ eats e$_j$ too much here

Another problem raised by the parameterization of unergatives is that it cannot account for the fact that in one and the same language, French for example, unergatives may be used with copula passives, although they cannot be used with middle-passive *se*. Note indeed that the examples in (46) become grammatical if instead of the middle-passive *se* we use the copula passive:

(49) a. Il sera procédé à une enquête.
IL will be proceeded to an inquiry
'An inquiry will be undertaken.'
b. Il sera abouti à un compromis acceptable.
IL will be arrived at a compromise acceptable
'An acceptable compromise will be reached.'
c. Il a été tiré sur les manifestants.
IL has been shot at the demonstrators
'The demonstrators were shot at.'
d. Il lui a été demandé/ordonné/suggéré de partir.
IL him$_{Dat}$ has been asked/ordered/suggested to leave
'He was asked/ordered/suggested to leave.'[28]

If we tried to analyze the ungrammaticality of (46) as being due to some property of French unergatives, we would incorrectly expect the examples in (49) to be equally ungrammatical.

We are led to conclude that the cross-linguistic variation regarding the possibility or the impossibility of passivizing unergatives cannot be due to parameters bearing on either passivizing morphemes or unergatives. A possible line of investigation is to relate the possibility of passivizing unergatives to the syntactic properties of *il*-impersonals, by taking into account the constraints that bear on copula passives and on SE passives, respectively. Thus, SE is legitimate only if a binding relation can be established, but this requirement cannot be satisfied in (48b): the trace of SE and the expletive subject are contra-indexed; if these two elements are co-indexed, *il* no longer counts as an expletive, but rather as a referential pronoun, which conflicts with the selectional properties of unergatives: they select cognate objects. In sum, a violation of Principle A arises in French

il-impersonals whenever SE combines with unergatives. Romanian impersonals, on the other hand, rely on free subject inversion, the syntactic properties of which make it possible for Principle A to be satisfied: in (48a), the trace of SE is A-bound by the null subject *pro*. Turning finally to the French examples in (49), constructed with a copula passive, they do not contain any lexical anaphor, and consequently Principle A is irrelevant.

3 SE-verbs and the representation of Agentivity

3.1 Suspension of the external theta-role: suppression or absorption?

Descriptively speaking, passive configurations can be characterized as follows: the internal argument of the corresponding active verb surfaces as a subject (it is either realized in the canonical subject position or else is part of an expletive–argument chain), and this necessarily correlates with the fact that the Agent role is not realized in the subject position. In somewhat more theoretical terms, passive 'morphemes' (cf. the *-en* suffix or passive SE) can be assumed to suspend the Agent role and correlatively block the assignment of accusative Case. For this generalization, as well as for many other issues brought up below (the realization of external arguments, the relations between lexicon and syntax), see chapter 2.

One way of understanding the suspension of the external theta-role is to identify it with its suppression. It is indeed clear that in the case of inchoatives, middles, or adjectival passives, the Agent role manifests no 'syntactic activity' (see section 3.2 below), although middles (unlike inchoatives and adjectival passives) arguably involve some kind of implicit agentivity.

Verbal passives in general, and passive SE configurations in particular, differ from inchoatives, adjectival passives, and middles in exhibiting agentivity: tests such as Agent-oriented adverbs or control into purpose clauses have been recurrently invoked in favor of the hypothesis that in passive configurations, the Agent is not suppressed but, quite on the contrary, syntactically realized (see chapter 34).

What is, then, the syntactic position occupied by the Agent in passives? By the very definition of passives given above, a 'suspended' Agent is *not* projected onto the subject position. One possibility is to assume that the Agent of passives is realized as an overt or covert *by*-phrase (Chomsky 1965; Wasow 1977; Jaeggli 1986; Åfarli 1989; Schoorlemmer 1995). Other authors believe that implicit Agents are realized as pro or PRO (see chapter 34). Still other theorists propose that it is the passive morpheme itself that constitutes the syntactic realization of the Agent role (this assumption was made for passive SE by Belletti 1982 and for the past participle morpheme *-en* by Baker et al. 1989).

In what follows, we will first review the empirical evidence adduced in favor of the hypothesis that passive SE absorbs the external role (section 3.2). The various implementations of this widely assumed hypothesis[29] will then be discussed and rejected (sections 3.3–3.6). The concluding remarks (section 3.7) will establish an

essentially negative result: in passive configurations, the Agent is not projected onto a subject(-like) position; nor can passive SE itself be assumed to function as an external argument; tests such as control into adjunct clauses or Agent-oriented adverbs do not prove the existence of a syntactically realized Agent (Williams 1985).

3.2 Control

Belletti (1982) proposed that the external theta-role is *absorbed* rather than merely *suspended* by passive SE. Belletti believed that this hypothesis could explain why, in contradistinction to analytic passives (*be* + past participle), passive SE is incompatible with a *by*-phrase (e.g., *Ce poème s'est lu hier pendant la fête (*par Marie)* 'This poem SE HAS read yesterday during the party (*by Mary)'): because the Agent theta-role is realized as SE, it cannot surface as a *by*-phrase. Belletti's hypothesis was extended to analytic passives by Baker et al. (1989), who assume that the Agent role is absorbed by the passive morpheme *-en*. Under this view, the different distribution of *by*-phrases in passive SE configurations as opposed to analytic passives can no longer be explained.

Belletti (1982) assumed Agent-absorption by SE not only for passive but also for middle SE, which also implies some kind of agentivity (in clear contrast with, e.g., inchoative SE). This unifying hypothesis conflicts with a clear split between the two constructions: certain types of adjunct clauses can be controlled by the implicit Agent of (analytic or SE-marked) passives, but not by that of middles (the latter are identifiable by the property reading):

(50) a. Les livres ont été vendus pour aider les pauvres. French
'The books were sold in order to help the poor.'
b. *Les livres se vendent facilement pour aider les pauvres.[30]
'The books [SE] sell easily in order to help the poor.'

(51) a. Questi appartamenti si vendono volutamente occupati. Italian
these apartments SI sell deliberately occupied
'These apartments are deliberately sold occupied.'
b. Quell'uomo politico si può corrompere (facilmente) per dimostrare la propria influenza.
that politician SI can bribe (easily) to show one's influence
'That politician can be bribed (easily) in order to show one's influence.'
c. Il museo del campo si può visitare facilmente anche nudi.
the camping museum SI can visit even naked
'The camping museum can be visited even naked.'

(52) a. Questi appartamenti hanno il vantaggio di vendersi (*volutamente) occupati.
these apartments have the advantage of to sell-SI (*deliberately) occupied
'These apartments have the advantage of being sold (*deliberately) occupied.'

b. Quell'uomo politico ha il vantaggio di potersi corrompere facilmente (*per dimostrare la propria influenza).
that politician has the advantage of to bribe-SI easily (*to show one's influence)
c. Il museo del campo ha il vantaggio di potersi visitare facilmente (*anche nudi).
the camping museum has the advantage of to be allowed-SI to visit easily (*even naked)

The possibility of control is currently invoked in favor of the hypothesis that the Agent of passives is projected in the syntax. The passive morpheme *-en*, as well as passivizing SE (in contrast with middle SE), would instantiate syntactically projected Agents (see Jaeggli 1986; Baker et al. 1989; Hoekstra and Roberts 1993b for *-en*; and Belletti 1982a and Cinque 1988 for SE). This view has been convincingly criticized by Fellbaum and Zribi-Hertz (1989), who argued that phenomena such as control into final clauses or the possibility of Agent-oriented adverbs do not depend on the syntactic realization of the external argument, but instead should be analyzed as being sensitive to the presence of semantically implicit Agents.[31]

Important evidence against the projection of Agents in passive configurations comes from control verbs. The Spanish examples in (53) are grammatical (and so are their analogs in (85a–b)), because in Spanish and Italian, SE can be a nominative clitic which, like any other subject clitic, qualifies as a legitimate *syntactic* controller:

(53) a. En ciertos estudios basados en fenomenos linguisticos, se ha intentado reformar la historia politica y social.
in certain essays based on linguistic phenomena, SE has tried to reconstruct the political and social history
b. Se espera llegar al final del camino.
SE hopes to arrive at the end of the road

The ungrammaticality of the Romanian examples in (54) can be explained if we assume that (i) passive SE is not a legitimate syntactic controller and (ii) Romanian does not have nominative SE (see section 2.3 above):[32]

(54) a. *In unele studii s-a încercat a reface, pe baza unor fenomene lingvistice, istoria politică şi socială.
in certain essays based on linguistic phenomena, SE-has tried to reconstruct the political and social history
b. *Se speră a ajunge la capătul drumului.
SE hopes to arrive at the end of the road.
c. *S-a început a ține seama de nevoile tuturor.
SE-has started to take into account everybody's needs
d. *S-a promis a respecta dispozițiile
SE-has promised to obey the instructions

The different guises of agentivity described above can be summarized as follows:

(55) Verbal passives and middles (unlike adjectival passives and inchoatives) are semantically agentive (semantically imply an Agent-role).
   a. Verbal passives (be they analytic or marked by SE), have a *syntactically active implicit agent* (control into purpose adjunct clauses, subject-oriented adverbs).
   b. Middles (exhibiting the property reading) have a *syntactically inactive implicit agent* (their implicit Agent-role shows no syntactic activity).

(56) Neither analytic nor SE-marked passives can combine with control verbs (*try, start*, etc.), nor do they license a reflexive pronoun, in contradistinction to nominative SE.

Although Cinque (1988) advocates a unifying analysis of SE, his proposal is in fact based on postulating two homonymical morphemes, marked with distinct Cases: nominative [+arg] SE, which absorbs the external theta-role, and accusative [–arg] SE, which merely suspends it, respectively corresponding to passive and middle SE. This distinction would explain the contrast described in (55a) vs. (55b) and illustrated in (50a) vs (50b) and (51) vs. (52). The hypothesis that passive SE is a nominative clitic functioning as an argument cannot, however, account for the generalization in (56).[33] A more detailed discussion of Cinque's proposal can be found in section 4 below.

3.3 *Passive SE absorbs the external theta-role in the lexicon*

According to some authors, the absorption of the external theta-role by SE takes place in the lexicon, in which case middle-passive SE, although functioning as an Agent, bears no syntactic relation to the subject position. This type of lexical rule is, however, highly problematic. Standard lexical rules affect argument structure, by suppressing or adding a theta-role (cf. passivization and causativization, respectively), but cannot directly assign a given theta-role to a designated lexical item.[34] Theta-roles can be assigned to lexical items only indirectly: a given lexical item is assigned a grammatical function (due to the syntactic position it occupies or to the morphological or abstract Case that it is assigned), and linking rules (lexicon–syntax mapping rules) ensure the relation between grammatical functions (or syntactic positions) and theta-roles.

3.4 *Middle-passive SE absorbs the external theta-role in the syntax, via a chain with the Spec, IP position*

Let us now examine those analyses that rely on the hypothesis that passive SE is a particular type of subject clitic, which takes its external role in the syntax, via

a chain with a subject-related position (which, depending on the author, can be Spec, IP; Spec, VP; Spec, vP; or Spec, AgrP), onto which the external role is projected. The numerous implementations of this view vary depending on the Case-features attributed to SE (accusative, nominative, or even dative), the empirical motivation, and the types of accusative SE for which the absorption hypothesis is postulated (most authors assume this analysis for passive SE; certain authors extend it to middle SE).

According to Burzio (1981), middle-passive SE is a particular type of nominative-subject SE, which forms a chain with the (Spec, IP) position. This analysis is confronted with a number of problems, among which is Case-assignment: if SE itself absorbs nominative Case, there is no Case left for the overt DP, corresponding to the externalized internal argument. In order to allow nominative Case on both *si* and the preverbal DP, Burzio (1986: 47) allows for overlapping chains (see also Cinque 1988), an undesirable assumption. In (57), the chain (*gli spaghetti*, *si*), needed for the transfer of nominative Case to *si*, overlaps with the chain (*gli spaghetti*, *t*), needed for theta-role transmission. Precisely because the two chains intersect in the (Spec, IP) position, nominative Case would be assigned to both chains:[35]

(57) Gli spaghetti$_i$ si$_i$ sono già comprati t$_i$.
the spaghettis SI HAVE already bought
'The spaghettis have already been bought.'

Quite clearly, the assumptions needed in order to allow both SE and the overt DP to take nominative Case (and correlatively be in a CHAIN with Spec, IP) do not belong to core GB theory, but are in fact distortions of GB theory that are merely meant to provide a technical solution for the problems raised by the Burzio–Cinque analysis.

A further, interrelated problem is that the trigger of NP-movement is lost: an affix marked with nominative Case does not absorb accusative Case, which therefore is available for the internal argument, thus voiding the need for NP-movement. Since Cinque wants to preserve the hypothesis that passivization correlates with NP-movement, he provides the following solution (1988: 558–559): the suspension of accusative Case is triggered, due to Burzio's generalization, by the fact that nominative SE suspends/withholds the external theta-role.[36]

Another problem is that French (as well as Romanian) lacks nominative SE, and yet has passive and middle SE. This is unexpected within Burzio's assumption, according to which middle and passive SEs are particular instantiations of nominative SE.[37] Burzio (1986: 145–148) concludes his short discussion of French middle-passive SE by acknowledging that it does not show the standard properties of nominative SE; it would be a "particular, unique" manifestation of nominative SE. But then, precisely because Italian and French middle-passives behave on a par, Burzio is led to conclude that Italian has two distinct types of nominative SE: the canonical one, which qualifies as a well-behaved nominative clitic, and is absent in French, and a peculiar one, corresponding to middle-passive SE (in both French and Italian).

Burzio's problematic analysis was adopted, under Cinque's (1988) revision,[38] by the vast majority of GB theorists. Dobrovie-Sorin (1994b, 1998) argued instead that middle and passive SEs are particular instantiations of accusative SE (see section 4 below for alternative analyses of the data brought up by Burzio and Cinque). Here, we will briefly sketch an alternative account of the piece of data illustrated in (58), corresponding to Burzio's (1986: 47, example (69)):

(58) [quei libri]$_i$ si andranno . . . a comprare t$_i$

According to Burzio, examples of this kind rely on both object-preposing of *quei libri* and NP-movement (more precisely, subject raising) of *si*. Since the NP-movement of *si* can only apply to the subject clitic *si*, in contrast to accusative *si*, Burzio concludes that the *si* in (58) is a subject *si*. There is, however, no evidence in favor of the fact that in this example, *si* has undergone NP-movement. We may alternatively analyze this displacement as being due to Restructuring (Rizzi 1982a), a configuration in which the object clitics generated on the embedded verb end up cliticized on the main verb:[39]

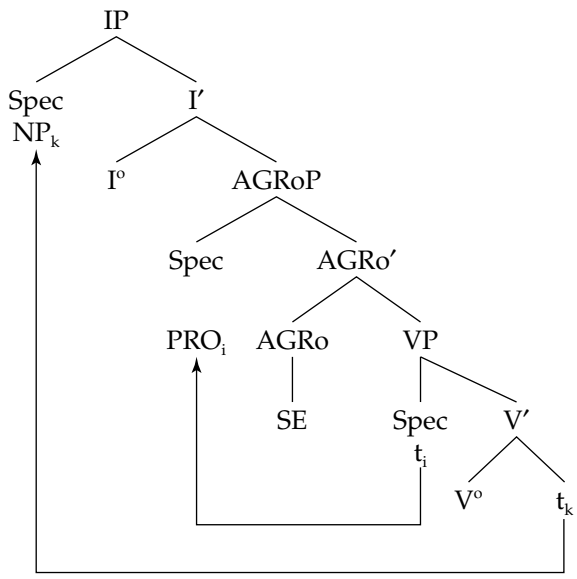
(59) Giovanni lo$_i$ va/viene a prendere t$_i$.

In sum, the position of *si* in (58) is to be accounted for in the same way as the position of *lo* in (59), which is consistent with *si* being accusative rather than nominative.

3.5 Middle-passive SE forms a chain with an A-position other than Spec, IP

The proliferation of syntactic positions that characterized late versions of GB theory made it technically possible for the external role of middle-passive verbs to be syntactically projected in positions other than Spec, IP. In their analysis of Dutch middles (which are not marked by a reflexive clitic) Hoekstra and Roberts (1993) propose that the external role is absorbed by a null subject of type pro that occupies (Spec, VP), the VP-internal subject position (see Sportiche 1988 and many others). The advantage of this proposal, which was adapted to Romance middle-passive SE in the subsequent GB and Minimalist literature, would be that the (Spec, IP) position remains available for the Theme to raise to. Note, however, that we must assume that an agentive pro in (Spec, VP) can be bypassed by the Theme-DP on its way to (Spec, IP). This is a locality problem that arises for all versions of this analysis, which essentially postulate that passive SE configurations consist of two chains: the chain of the internal argument, obtained by NP-movement from the object position to (Spec, IP), would co-exist with the chain of the external argument. The exact shape of this second chain differs from one author to the other, varying with the technical changes of the model itself. According to Postma (1995), SE heads the projection of AGRo,[40] and PRO sits in the Spec of this same projection and binds a trace in (Spec,VP):

(60)



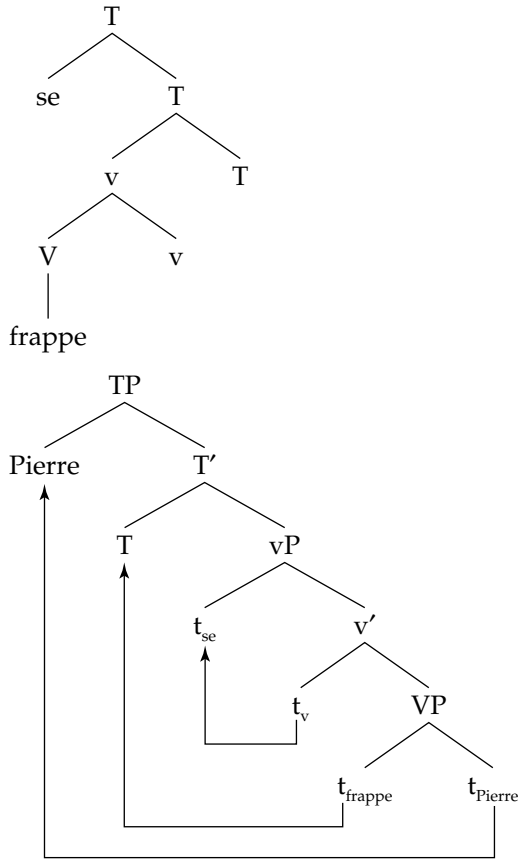
Postma assumes that this configuration underlies all uses of accusative SE, and he derives the different possible readings from differences in agreement relations: if agreement takes place in IP, we get the reflexive reading; if no agreement takes place, we get the passive reading. The reader is referred to the technical details of this quite complex analysis. Let us simply observe that any analysis that assumes that passives rely on two distinct theta-chains is confronted with the locality problem. Various technical solutions have been proposed, which remain unconvincing.

Minimalist implementations of the same basic analysis are led to stipulate that, unlike overt external arguments (see (61b)), null pronouns corresponding to the external argument (see (61a)) do not block the movement of the internal argument to the subject position (McGinnis 1998):[41]

(61) a. A good guide *pro* was recommended *t* by Susanna.
b. *A good guide *Susanna* was recommended *t*.

Similarly, the movement of the internal argument would not be blocked by the trace of se in se-passives and se-reflexives (for which McGinnis adopts an unaccusative/passive analysis). The configuration postulated by McGinnis is essentially the same as Potsma's, with AGRoP having been replaced by a light verb projection, notated vP (Chomsky 1995c: chapter 4). The replacement of AGRoP with vP triggers another technical difference: SE can no longer be assumed to head the projection, but may instead be assumed to be generated in the (Spec, vP) position, which in this model is the canonical position for external arguments:

(62) Pierre se frappe.
'Pierre slaps himself in the face.'



SE cliticizes to T° as soon as this node is filled by the raised verb, and once SE has cliticized, the object is free to raise to Spec, IP. The fact that null pronouns (see (61a)) and clitic traces allow NP-movement to bypass them, in sharp contrast with overt DPs, is explained on the basis of the assumption that once an NP has cliticized to T, it is no longer accessible for movement to Spec-TP, so this NP and its trace don't count as interveners for Shortest Move.

A still different version of the hypothesis that the external theta-role is syntactically projected in middle-passive configurations can be found in Cardinaletti's (1990) analysis of German middles. According to Cardinaletti, the *es* that shows up in *hier lebt sich es angenehm* absorbs the external theta-role. Note that unlike Italian *si*, German *sich* is uncontroversially an accusative clitic. Cardinaletti's analysis of German thus winds up postulating that an accusative middle-passivizing morpheme such as *sich* (i) does not absorb the external theta-role but (ii) does not suspend it either (since this theta-role would be linked to *es*).

3.6 SE absorbs the external theta-role and dative Case

The locality problem discussed above is avoided by a technical implementation due to Guéron (1991), who builds on Kayne's (1988) suggestion that in all its uses, including reflexive SE and subject/nominative SE: (i) SE absorbs the external role; (ii) SE absorbs dative Case; (iii) SE binds/identifies an empty category in a VP-adjoined position.[42] Although this is not explicitly stated, the Kayne–Guéron analysis is meant to solve what was taken to be a severe problem for the analysis of middle-passive SE (and for that of reflexive SE, if the latter is analyzed as unaccusative): if the empty category in object position is the trace of SE, it cannot also be the trace left behind by the A-movement of the internal argument. Note, however, that this problem only arises if one assumes the pronominal analysis of SE, according to which SE necessarily binds a SE-trace in the object position. If instead we adopt Burzio's hypothesis that accusative SE, including middle-passive SE, is a morphological marker, which as such binds no trace, the object position may host the NP-trace of the object raised to the subject position.

The Kayne–Guéron proposal is confronted with several problems. To make the discussion concrete, consider examples such as (63):

(63) Les pommes se mangent en automne.
the apples SE eat in autumn
'One eats apples in autumn.'

Since by assumption SE is dative, it is unclear how it can absorb the external role, because this role is not linked to a VP-adjoined position, or to any kind of dative-related position. The answer could be that the external role is of the Experiencer-type. This is indeed compatible with dative-marking, but crucially not with the suspended external role of passives, which is agentive. Guéron suggests that this peculiarity is due to quirky Case, but no empirical evidence supporting this proposal is provided. It is furthermore unclear why a dative-marked reflexive should trigger the absorption of accusative case, which is a defining characteristic of passives.[43]

3.7 Conclusions

Although standard GB theory (Chomsky 1981) was designed to block it, most GB analyses of passivization postulated the projection of the external role in subject-related positions by modifying those principles of GB that were meant to prevent it. But each of the particular implementations of this hypothesis is confronted with its own problems: passive SE cannot be analyzed as either a nominative clitic or a (possibly accusative) clitic associated with (Spec, IP); nor can we assume passive SE to be a pro occupying (Spec, VP) or the Spec position of some other functional projection.

This negative result calls for alternative analyses of the empirical evidence adduced in favor of the syntactic projection of the Agent in middle-passive SE constructions: (i) the intricate distribution of middle-passive SE in Italian non-finite clauses; (ii) the correlation between the (preverbal vs. postverbal) position of the subject DP and the meaning (generic/middle/stative vs. eventive passive) of SE-verbs (Ruwet 1972; Raposo and Uriagereka 1996). These two sets of data will be examined in sections 4 and 5 below.

4. The distribution of SE in non-finite Italian clauses

Because passivizing SE is illegitimate in control configurations, Burzio (1981, 1986) and all the subsequent literature assumed that passivizing SE needs nominative Case, an assumption that creates theoretical and empirical problems (see sections 4.1.3 and 4.1.4). Dobrovie-Sorin (1998) has provided new solutions to the peculiar distribution of passivizing SE in control infinitivals, based on the view that (i) passivizing SE carries accusative Case and (ii) nominative SE is banned from non-finite clauses (see section 4.2.1). The ungrammaticality of passive SE in control configurations is traced back to three distinct constraints (see section 4.2.2). Finally, it is argued that in Italian non-finite clauses, the SE that appears with unergatives is a passivizing accusative SE (see section 2.4 above).

4.1 Cinque's (1988) analysis: two types of nominative SE in Italian

4.1.1 SE with unergatives vs. SE with adjectives, analytic passives, or psych verbs

The contrast between (64) and (65) shows that the class of (presumably) nominative SEs splits in Italian infinitivals: the examples in (64), in which nominative SE combines with unaccusatives, analytic passives, and adjectival predicates, are ungrammatical, whereas the examples in (65), built with unergatives, are grammatical. The examples in this section are borrowed from Cinque (1988), but some of the glosses and the clustering of examples may be different:

(64) a. *Ritengo non essersi arrivati in sufficiente anticipo. (SE + unaccusatives in Aux-to-Comp)
(I) believe not (to) HAVE-SI arrived sufficiently ahead of time
b. *non essendosi morti in giovane età. (SE + unaccusatives in Aux-to-Comp) not HAVING-SI died young
c. *Sembra essersi arrivati troppo tardi. (SE + unaccusatives in raising configurations) it seems (to) HAVE-SI arrived too late

e. *Sembra non essersi benvenuti qui. (SE + copula in raising configurations)
it seems not (to) BE-SI welcome here
f. *Sembra non essersi stati invitati da nessuno. (SE + passive in raising configurations) it seems not HAVE-SI been invited by anybody

(65) a. Ritengo non essersi provveduto alle sue necessità con la dovuta solerzia.
(I) believe not (to) HAVE-SI taken care of his needs with due zeal.
'(I) believe his needs have not been taken care of with due zeal.'
b. non essendosi provveduto alle sue necessità con la dovuta solerzia
not HAVING-SI taken care of his needs with due zeal
'his needs not having been taken care of with due zeal'
c. Sembra non essersi lavorato a sufficienza.
(it) seems not HAVE-SI worked sufficiently
'It seems that there was not enough work.'

Given this contrast, we may conclude that the SEs that show up in the two classes of examples are of different types. This solution is compatible with several options: we may believe that (i) the two SEs are nominative and accusative, respectively, or (ii) the two SEs are both nominative, but nevertheless distinct. Building on a suggestion by Burzio (1981, 1986), Cinque argues in favor of the second hypothesis, which seems to be supported by the fact that in (65), SE combines with unergatives, a context that was believed to be compatible with nominative SE, but not with accusative SE. This hypothesis seems to be further supported by the contrast between examples such as (65), illustrating Aux-to-Comp and subject-raising configurations, which are known to be compatible with nominative Case assignment, and examples of the type in (66), illustrating configurations relying on arbitrary PRO, in which nominative Case cannot be assigned:

(66) *Sarebbe meglio lavorarsi un po' di più.
(it) would be better (to) work SI a bit more
'It would be better to be worked a bit more.'

According to Burzio (1986) and Cinque (1988), the contrast between (65) and (66) can be explained by assuming that the SE that combines with unergatives needs nominative Case: the examples in (65) are grammatical because SE can get nominative Case (Aux-to-Comp configurations allow nominative Case assignment in Italian infinitivals), whereas the example in (66) is ungrammatical because nominative Case is unavailable in controlled clauses.

4.1.2 A passivizing nominative SE

The contrast between (65) and (66) is parallelled by the contrast between (67) and (68), which shows that passive SE is allowed in Aux-to-Comp and subject-raising contexts, but disallowed in control configurations:

(67) a. Ritengo non essersi ancora scoperto il vero colpevole. **(Aux-to-Comp)**
[I] believe not to HAVE-SI yet discovered the true culprit
'I believe the true culprit has not yet been discovered.'
b. non essendosi ancora scoperto il vero colpevole **(Aux-to-Comp)**
not HAVING-SI yet discovered the true culprit
'the true culprit not having yet been discovered'
c. Sembra non essersi ancora scoperto il vero colpevole. **(Subject raising)**
(it) seems not (to) HAVE-SI yet discovered the true culprit
'It seems that the true culprit has not yet been discovered.'

(68) **Control configurations:**
a. *Sarebbe meglio scoprirsi il colpevole.
(it) would be better (to) discover SI the culprit
'It would be better for the culprit to be discovered.'
b. *Quei prigionieri$_i$ vorrebero [PRO$_i$ essersi già liberati e$_i$].
those prisoners would want have SI already released
'Those prisoners would want to have been already released.'

Although passive SE is compatible with an analysis in terms of accusative SE, the contrast between (67) – where nominative case can be assigned – and (68) – where nominative Case cannot be assigned – was interpreted by Burzio (1986) and Cinque (1988) as indicating that passive SE needs nominative Case, on a par with the SE that combines with unergatives (see again examples (65) vs. (66)).

Let us now be more specific about the details of Cinque's analysis: (i) two distinct nominative SEs are postulated, which are distinguished by different choices for the feature ±arg(ument); (ii) the SE that combines with unergatives (see (65)) may be either +arg or –arg, whereas the SE that combines with the copula, passives, unaccusatives, etc. (see (64)) can only be marked as –arg; (iii) –arg SE is disallowed in those configurations in which no overt AGR morpheme is present (hence the ungrammaticality of (64)).

(69) **Cinque's (1988) typology:**
a. –arg [nom] impersonal SE (SE + copula, SE + unaccusatives, SE + passives, SE + unergatives)
b. +arg [nom] passivizing SE (SE + transitives, SE + unergatives)
c. –arg [acc] 'pure' passivizing SE (Middle SE)

4.1.3 Theoretical problems with the ±arg(ument) distinction

As presented by Cinque himself, the ±arg distinction is an attempt to solve a theoretical problem, which had been previously noted by Burzio (1986: 45f.), Belletti (1982a: fns. 21, 37, Appendix), and Manzini (1986), concerning examples such as (70):

(70) Si parte.
'One leaves.'

The verb *partire* 'to leave' belongs to the unaccusative class, and as such assigns a theta-role to the [NP, V'] position, and leaves [Spec, IP] with no theta-role. On the assumption that *si* is an argument subject clitic base-generated in Infl (or in some Infl-related clitic position) that can take its theta-role only from the Spec, IP position, examples such as (70) violate the Theta-Criterion at D-structure. Cinque solves this problem by assuming that the *si* that appears in (71) is not an argument (hence the feature [–arg] that would characterize it). Compare an example such as (71):

(71) Si dorme.
'One sleeps.'

Since *dormire* 'to sleep' assigns a theta-role to the Spec, IP position at D-structure, it may combine with a +arg *si*. But note that under Cinque's analysis, *dormire* may also combine with a –arg *si*, on a par with *partire*. In other words, *si dorme* is systematically ambiguous in Italian, depending on the nature of *si*, whereas *si parte* unambiguously relies on a –arg nominative *si*.

Dobrovie-Sorin (1998) observes that the theoretical problem invoked by Burzio, Belletti, Manzini, and Cinque in connection with *si* in fact extends to subject clitics in general. Should we then assume a systematic ambiguity for subject clitics in general (cf. in particular the subject clitics of Italian dialects), on a par with the ambiguity that Cinque assumes for *si*? More concretely, should we assume that subject clitics may be either +arg or –arg when they combine with transitives or unergatives, but only –arg when they combine with unaccusatives?[44] Cinque does not go in this direction, and his implicit answer to the problem of subject clitics is that they should be assumed to be –arg elements, regardless of the type of verb with which they combine. It is important to stress that Cinque's –arg feature should not be interpreted as notating expletive clitics, as opposed to referential clitics, but rather as saying that nominative clitics (and clitics in general) fall outside the argument/non-argument distinction, which is relevant only for elements that occupy A-positions.

We are thus led to conclude that the [–arg] feature need not be stipulated: it is the unmarked option for clitics in general; [+arg] nominative SE, on the other hand, is an element that does not fall under the general characterization of clitics. Cinque assumes [+arg] *si* to be related to an A-position that is assigned a theta-role at D-structure, but is filled with an expletive at S-structure. Such a discrepancy between the clitic and its trace, which is unprecedented for clitics, brings to mind the current characterization of passive morphemes in general and middle-passive *si* in particular: *si* absorbs (or rather suspends) the external theta-role, and as a consequence the subject position is occupied by an expletive. In sum, the [+arg] feature of *si*, which is found with no other clitic, can be viewed as a label for passive *si*. Since passive morphemes cannot be marked with nominative Case, we are led to conclude that Cinque's +arg nominative SE is in reality a passivizing SE that absorbs accusative Case. The only genuine nominative SE is Cinque's –arg nominative SE. We thus end up with only two basic distinct types of SE, accusative and nominative.[45]

4.1.4 *Empirical problems*

Cinque's proposal is also confronted by several empirical problems:

(72) a. The hypothesis that [+arg] nominative SE is a passivizer[46] is problematic, since the occurrence of a nominative clitic marked with the external theta-role is incompatible with the passivization phenomenon. To make them compatible, one would have to allow for the double assignment of nominative Case or for overlapping CHAINS, which are undesirable on general grounds (see section 3.4. above).
b. Passive SE-verbs agree with the overt DP, on a par with reflexives and other types of accusative SE-verbs. Compare –arg [nom] SE, which triggers *lack* of agreement between the verb and the overt DP.
c. Passive SE cannot co-occur with an accusative-marked argument. This is expected if SE itself is [acc], but not if it is [nom].

In what follows, these problems will be illustrated with examples borrowed from Cinque (1988) himself. Crucial for the analysis of the data is the contrast between SE-verbs in Italian finite and non-finite clauses: whereas a truly nominative SE can appear in Italian finite clauses (see section 2.3 above), it is ungrammatical in Italian non-finite clauses. The contrast between Italian finite and non-finite clauses is parallelled by the contrast between Italian and Romanian finite SE-verbs. This is predicted by the hypothesis that Romanian does not have nominative SE.

4.1.4.1 Verbal agreement

Because the overt DP of a middle-passive SE is a subject, it triggers agreement with the verb. With nominative SE instead, the verb is in the third person singular. In Italian infinitivals, verb agreement with the postverbal NP is obligatory (the agreement can only be checked here on the past participle, since in non-finite clauses the auxiliary verb is not inflected for number and person), which supports the analysis in terms of a middle-passive SE:

(73) a. *Ritengo essersi venduto pochi automobili.
(I) esteem (to) have SI sold (sing.) few cars
b. *?essendosi venduto pochi automobili
having SI sold (sing.) few cars

(74) a. Ritengo essersi venduti pochi automobili.
(I) esteem (to) have-SI sold (pl.) few cars
'I esteem to have been sold (pl.) few cars.'
b. essendosi venduti pochi automobili
having SI sold (pl.) few cars
'having been sold (pl.) few cars'

(examples borrowed from Cinque 1988: (79–80))

As expected, the agreement pattern found in Italian non-finite *si* constructions also characterizes Romanian finite *si* constructions, because they can only rely on middle-passive *si*:

(75) a. *În această universitate se predă ştiinţele umane.
in this university SE teaches (sing.) the humanities
b. În această universitate se predau ştiinţele umane.
in this university SE teach (plur.) the humanities
'In this university are taught the humanities.'

4.1.4.2 The distribution of accusative clitics

Another piece of evidence showing that passive SE in Italian infinitivals is [acc] is provided by the distribution of accusative clitics. While [nom] impersonal SE is compatible with accusative clitics (see example (35d)), middle-passive SE is not:

(76) a. *Ritengo esserlesi vendute ad un prezzo eccessivo.
(I) esteem (to) have-them-SI sold at an excessive price
b. *essendolesi vendute ad un prezzo eccessivo
having-them-SI sold at an excessive price
(examples borrowed from Cinque 1988: (81–82))

The same type of ungrammaticality arises in Romanian finite clauses:

(77) *(ştiinţele umane) le *se* predă în această universitate
(the humanities) them SE teach in this university

4.1.4.3 *L'uno l'altro*, floating of *tutti*

Impersonal [nom] SE can serve as an antecedent for *l'uno l'altro*:

(78) Si era parlato l'uno con l'altro. Italian
SI had spoken with each other
'We/they had spoken with each other.'

But *l'uno l'altro* is disallowed in Italian infinitivals (and in Romanian finite clauses):

(79) a. (Io non c'ero, ma) *deve/sembra essersi parlato l'uno con l'altro. Italian
'(I wasn't there, but) (it) must/seems (to) have SI spoken with each other.'
b. *Ritenevo essersi parlato l'uno con l'altro.
'I deemed (to) have SI spoken with each other.'
c. *non essendosi affatto parlato l'uno con l'altro
'not having SI at all spoken with each other'

(80) *S-a vorbit unul cu altul. Romanian
'SI has spoken with each other.'

The observed ungrammaticalities can be understood if we assume that in Italian infinitivals, the SE that combines with unergatives can only be a middle-passive accusative SE (just as in Romanian finite clauses; see (82) and section 2.4 above), which induces a chain of the type (pro, e), which is assigned the theta-role corresponding to a cognate object. But cognate objects are not legitimate antecedents of *l'uno l'altro*, hence the ungrammaticality of (79a–c) in Italian and (80) in Romanian.

The same behavior is found with the quantifier *tutti*: it allows impersonal [nom] SE as an antecedent (see (81)) but not the [acc] passive SE, which occurs in Italian embedded infinitivals (see (82)) and in Romanian finite clauses (see (83)):

(81) Si è reagito a sproposito tutti. Italian
SI has reacted off the point all
'We all reacted off the point.'

(82) a. *?Sembra essersi reagito a sproposito tutti. Italian
'(It) seems (to) have SI reacted off the point all.'
b. *?Ritiene essersi reagito a sproposito tutti.
'(He) believes (to) have SI reacted off the point all.'
c. *?essendosi reagito a sproposito tutti
'Having SI reacted off the point all'

(83) *S-a reacționat prost toți. Romanian
'SE-has reacted badly all.'

4.1.4.4 Control

In Italian non-finite clauses, *si* cannot combine with control verbs:

(84) *Ritengo non essersi promesso di ottemperare alle disposizioni.
'(I) believe not (to) HAVE-SI promised to obey the instructions.'

This is still another context in which Italian non-finite clauses contrast with Italian finite clauses (85) and are parallel to Romanian finite clauses ((54), repeated here as (86)):

(85) a. In certi studi basati su fenomeni linguistici, si è cercato di ricostruire la storia politica e sociale.
in certain essays based on linguistic phenomena, SE-has tried to reconstruct the political and social history
b. Se espera llegar al final del camino.
SE hopes to arrive at the end of the road
c. Si è cominciato a prendere in considerazione le esigenze di tutti.
SE-has started to take into account everybody's needs
d. Si è promesso di seguire le istruzioni.
SE-has promised to obey the instructions

(86) a. *In unele studii s-a încercat a reface, pe baza unor fenomene lingvistice, istoria politică şi socială.
In certain essays based on linguistic phenomena, SE-has tried to reconstruct the political and social history
b. *Se speră a ajunge la capătul drumului.
SE hopes to arrive at the end of the road
c. *S-a început a ține seama de nevoile tuturor.
SE-has started to take into account everybody's needs
d. *S-a promis a respecta dispozițiile
SE-has promised to obey the instructions

The data in (84) are surprising under Cinque's (1988) analysis relying on nominative SE, but expected if nominative SE is disallowed in Italian non-finite clauses; in examples such as (84), *si* can only be analyzed as a middle-passive accusative *si*, which is not a legitimate syntactic controller.[47]

4.2 Dobrovie-Sorin's (1998) analysis

4.2.1 Nominative clitics and agreement features

According to Dobrovie-Sorin (1998), Cinque's +arg nominative SE is a passivizing accusative SE. Because passivization cannot apply to the copula, passives or unaccusatives, the examples in (64) cannot be analyzed as relying on a passivizing accusative SE, but could only rely on nominative SE (which is free to combine with any kind of verb). However, this possibility is itself ruled out, because nominative *si* is not allowed in Italian non-finite clauses, an impossibility that Dobrovie-Sorin attributes to the empirical generalization stated in (87):[48]

(87) Nominative clitics must be identified by overt subject agreement morphemes.[49]

This generalization explains why examples of the type in (64) are ungrammatical. The examples in (65), on the other hand, are grammatical, because they can be analyzed as relying on a passivizing accusative SE (which can combine with unergatives; see section 2.4 above).

4.2.2 Middle-passive SE in control infinitivals

The main empirical data that led Burzio (1986) and Cinque (1988) to believe that passivizing SE needed nominative Case was the ban on passivizing SE in control configurations ((68), repeated here as (88–89), and (66), repeated here as (90)):

(88) *Sarebbe meglio scoprirsi il colpevole.
(it) would be better (to) discover SI the culprit
'It would be better for the culprit to be discovered.'

(89) *Quei prigionieri$_i$ vorrebero [PRO$_i$ essersi già liberati e$_i$].
those prisoners would want have SI already released
'Those prisoners would want to have been already released.'

(90) *Sarebbe meglio lavorarsi un po' di più.
(it) would be better (to) work SI a bit more
'It would be better to be worked a bit more.'

Following Burzio (1986: 44), Cinque (1988) attributes the ungrammaticality of (88–90) to a violation of the Case filter: *si* requires nominative Case, which cannot be assigned in control configurations. Compare Aux-to-Comp contexts (see (67)), in which nominative Case can be assigned. This explanation is not available within Dobrovie-Sorin's (1998) analysis, according to which the *si* in (88–90) is marked with accusative Case. Dobrovie-Sorin proposes that the ungrammaticality shown in (88–90) is due to three distinct constraints, none of which requires *si* itself to be marked with nominative Case.

4.2.2.1 Case

Case assignment is relevant only in example (88): *il colpevole* is an overt DP, which as such needs Case. But nominative Case cannot be assigned in this type of Italian infinitivals; *il colpevole* cannot take accusative Case either, because it is *si* itself that needs accusative Case.

4.2.2.2 A semantic constraint on control

Nominative Case is not needed in (89), since there is no lexical DP in the infinitival clause. Dobrovie-Sorin suggests that the relevant factor is a semantic constraint, which is in fact suggested by Cinque's (1988) own observation that control is compatible with *si* if the property reading is forced:

(91) a. La luce gialla ha il vantaggio di vedersi bene anche nella nebbia più fitta.
the yellow light has the advantage of see SI well even in the thickest fog
'The yellow light has the advantage of being able to be seen even in the thickest fog.'

b. Certe lingue hanno la proprietà di impararsi con più facilità di altre.
certain languages have the property of acquire SI more easily than others.
'Certain languages have the property of being more easily learnable than others.'

(= Cinque 1988: (187a–b))

According to Cinque, the examples in (91) are grammatical because the property reading relies on middle *si*, which is accusative. Compare the ungrammaticality of (89), constructed with an impersonal passive *si*, which according to Cinque requires nominative Case. Since there is, however, no conclusive evidence in favor of the Case distinction between passive and middle *si*, Dobrovie-Sorin assumes only one type of passivizing *si*, marked with accusative Case, which allows either an eventive passive or a middle reading, depending on the position of the overt DP-argument (see section 5 below). Examples such as (89) are

ungrammatical because the verb *volere* 'want' requires the embedded clause to refer to a particular event, but the eventive passive reading of SE-verbs is blocked in controlled clauses. This constraint on the reading of SE-verbs is a particular case of a broader empirical generalization, to be examined in section 5 below: the eventive passive reading is blocked if the subject DP sits in Spec, IP.

4.2.2.3 Passive SE unergatives and the argument status of PRO

We are left with (90), repeated as (92a). Dobrovie-Sorin's explanation relies on the parallellism with (92b), the ungrammaticality of which is itself comparable to that of (93a–c) in English:

(92) a. *Sarebbe meglio [PRO_i lavorarsi$_i$ e_i un po' di più].
(it) would be better [PRO_i (to) work SI_i e_i a bit more]
b. *Sarebbe meglio [PRO piovere un po' di più].
(it) would be better [PRO (to) rain a bit more]

(93) a. *PRO to rain tomorrow would be a tragedy.
b. *PRO to arrive a man would be marvelous.
(cf. For there to arrive a man . . .)
c. *PRO being likely that . . . , we didn't go.
(cf. It being likely that . . . , we didn't go.)
d. PRO to arrive late would be an offense.
(cf. For us/you . . . to arrive late . . .)

According to Chomsky (1981: 325–327) and Rizzi (1982), the ungrammaticality of (93a–c) is due to the generalization stated in (94):

(94) [A chain headed by] arbitrary [non-controlled] PRO is necessarily an argument.

Examples (93a–c), as well as (92b), are ungrammatical because weather verbs and impersonal constructions must be constructed with quasi-argumental and expletive subjects, respectively, which conflicts with the argument status of PRO (see (94)). Compare the example in (93d), which is grammatical, because there PRO takes a fully referential reading.

This analyis also accounts for (92a): the (PRO, e) chain on which (92) relies counts as an argument, and this conflicts with the selectional requirements imposed by middle-passive unergatives (cognate objects are not fully referential arguments).

This account predicts the grammaticality of middle-passive *si* unergatives in Aux-to-Comp configurations (65a–b), repeated here as (95)):

(95) a. Ritengo non essersi provveduto alle sue necessità con la dovuta solerzia.
(I) believe not (to) HAVE-SI taken care of his needs with due zeal
'(I) believe his needs have not been taken care of with due zeal.'

b. non essendosi provveduto alle sue necessità con la dovuta solerzia
not HAVING-SI taken care of his needs with due zeal
'his needs not having been taken care of with due zeal'

Since nominative Case can be assigned here (by the Aux raised to Comp), these examples can be analyzed as relying on chains of the type (pro, e), which are not subject to the constraint in (94), and therefore can function as cognate objects, licensed by the quasi theta-role assigned by unergatives to their objects.

The distribution of SE unergatives is thus completely parallel to the distribution of weather verbs as described and analyzed by Rizzi (1982):

(96) Essendo piovuto per tutto il pomeriggio, non siamo usciti.
'Having rained for the whole afternoon, (we) didn't go out.'

(97) Suppongo [esser molto improbabile che Mario ci aiuti].
'(I) consider (it) (to) be very unlikely that Mario help us.'

In sum, the fact that *si* V_{unerg} sequences are allowed in Aux-to-Comp contexts and disallowed in control configurations is not due to the fact that *si* needs nominative Case, but rather to the interpretive constraint in (94), which holds for PRO as opposed to *pro*.

5 The interpretation of SE-verbs and the position of their subject

In this section we will examine a well-known constraint on the passive reading of SE: it can only obtain in those contexts in which the subject (corresponding to the underlying internal argument) occupies a VP-internal position; in case it occupies the canonical subject position, the passive reading is unavailable, the only possible interpretation being the middle reading. We will show that this generalization, established for French by Stéfanini (1962) and Ruwet (1972), subsumes Raposo and Uriagereka's (1996) generalization regarding European Portuguese. We will, however, question Raposo and Uriagereka's explanation, which was based on Cinque's (1988) hypothesis that passive SE is a subject-like clitic.

5.1 French: the choice between the middle and the passive readings depends on the S-structure position of the overt argument

Stéfanini (1962) and Ruwet (1972) have established that:

(98) French SE-verbs with preverbal subjects allow the middle reading, but cannot take the eventive passive reading (see (99)),[50] which is allowed only in *il*-impersonals (see (100)).

(99) a. Ce livre s'achète par correspondence.
this book SI buys by mail
'This book can be bought by mail.'
b. *Ce livre s'est acheté hier.
this book SI HAS bought yesterday
'This book was bought yesterday.'
c. *Les prisonniers se libéreront la semaine prochaine/le plus rapidement possible.
the prisoners SE will release next week/as soon as possible
'The prisoners will be released next week/as soon as possible.'

(100) a. Il se boira beaucoup de vin ce soir.
it SE will drink a lot of wine this evening
'A lot of wine will be drunk this evening.'
b. Il s'est bu beaucoup de whisky à la réception.
it SE HAS drunk much whisky at the reception
'A lot of whisky was drunk at the reception.'

The eventive meaning is indicated by the compatibility with temporal adverbials and the incompatibility with the manner adverbs characteristic of middles (Obenauer 1970: 62):

(100) c. * Il se reboise pas mal de terrains difficilement.
it SE reforests quite a number of grounds difficultly
'Quite a number of grounds are difficult to reforest.'

Since the postverbal DP of French *il*-impersonals occupies the object position, the French data can be summarized as follows:

(101) a. Subject DP in Spec, IP ⇒ middle and habitual passive readings of [acc] SE.
b. subject DP in VP-internal position ⇒ eventive passive reading of [acc] SE.

5.2 European Portuguese

5.2.1 Raposo and Uriagereka's (1996) generalization

Raposo and Uriagereka (1996) established that in European Portuguese (eventive-)passive configurations, the preverbal subject is not in (Spec, IP), but instead occupies a left-peripheral position (Topic or Focus, depending on the inherent properties of the DP):[51]

(102) a. $[_{specIP}$DP$]$ $[_{I'}$ se V . . . $]] \Rightarrow$ *passive SE.
b. $[_{specTopP}$DP$]$ $[_{IP}$ $[_{I'}$ se V . . . $]] \Rightarrow$ OK passive SE.

Inflected infinitivals provide evidence in favor of this analysis. Thus, both an analytic passive and a SE-passive may occur as inflected infinitives with the agreeing DP in the *post*verbal position (all the following examples are European Portuguese):

(103) a. Vai ser difficil [*pro* serem aceites [**os documentos**]]. (analytic passive)
will be difficult to-be-3pl accepted the documents
'It will be difficult for the documents to be accepted.' (SE-passive)
b. Vai ser difficil [*pro* aceitarem-se [**os documentos**]].
will be difficult (to)-accept-3pl-SE the documents
'It will be difficult for the documents to be accepted.'

However, an eventive-passive SE, in contrast with analytic passives, is ungrammatical if the DP is in the *pre*verbal position:

(104) a. Vai ser difficil [[**os documentos**]$_i$ serem aceites t_i]. (analytic passive)
will be difficult the documents to-be-3pl accepted
'It will be difficult for the documents to be accepted.'
b. *Vai ser difficil [[**os documentos**]$_i$ aceitarem-se t_i]. (SE-passive)
will be difficult the documents SE-to-accept-3pl

In embedded infinitivals, preverbal subjects can only occupy the Spec, IP position, since the Spec, Top position is not available there:

(105) *Vai ser dificil [[**esses documentos**], os tribunais aceitarem(-nos) *ec*].
(it) will be difficult those documents, the courts (to) accept-3pl(-them)
'It will be difficult those documents, for the courts to accept (them).'

Since the Spec, IP position, blocks the eventive-passive reading of SE-verbs (by virtue of the generalization in (102a)), this reading is unavailable in (104b).

Another relevant context is Aux-to-Comp: the position immediately on the right of Aux is of necessity Spec, IP, which can be occupied by the subject of analytic passives, but not by the subject of SE passives:

(106) a. Eu penso [terem$_j$[[os presos]$_i$ t_j sido fuzilados t$_i$]]. (copula passive)
(I) think (to)-have-3pl the prisoners been shot
'I think the prisoners were shot.'
b. *Eu penso [terem-se$_j$ [[os presos]$_j$ t_j fuzilado t_j]. (passive SE)
(I) think (to) have-3pl-SE the prisoners shot

Raposo and Uriagereka furthermore show that in eventive SE passives, the Topic DP cannot bind a trace in (Spec, IP). The argument relies on the distribution of bare NPs. As is well known, in Romance pro-drop languages, bare NPs (BNPs) cannot occupy the preverbal subject position (Spec, IP):

(107) a. O Nestor compra salsichas no talho Sanzot. (BNP in object position)
the Nestor buys sausages at-the butcher-shop Sanzot
'Nestor buys sausages at the Sanzot butcher-shop.'
b. *Salsichas sao compradas no talho Sanzot. (BNP in Spec, IP)
sausages are bought at-the butcher-shop Sanzot
'Sausages are bought at the Sanzot butcher-shop.'
c. *Salsichas custam caro no talho Sanzot. (BNP in Spec, IP)
sausages cost expensive at-the butcher-shop Sanzot
'Sausages are expensive at the Sanzot butcher-shop.'

Dislocated bare NPs are allowed only if they bind the object position (see (108a)). The ungrammaticality of (108b–c) indicates that the dislocated subjects (marked by the comma intonation) of analytic passives and of unergatives bind a trace in [Spec, Infl], which is illegitimate:

(108) a. Salsichas, o Nestor compra **ec** no talho Sanzot. (trace in object position)
sausages, the Nestor buys at-the butcher-shop Sanzot
'Sausages, Nestor buys at the Sanzot butcher-shop.'
b. *Salsichas, **ec** sao compradas *t* no talho Sanzot. (intermediate trace in Spec, IP)
sausages, are bought at-the butcher-shop Sanzot
'Sausages, (they) are bought at the Sanzot butcher-shop.'
c. *Salsichas, **ec** custam caro no talho Sanzot. (intermediate trace in Spec, IP)
sausages, cost expensive at-the butcher-shop Sanzot
'Sausages, (they) are expensive at the Sanzot butcher-shop.'

The grammaticality of (109b) indicates that the dislocated subject of SE passives does not necessarily bind a trace in (Spec, IP), but may be directly coindexed with the object position:

(109) a. Vendem-se salsichas no talho Sanzot. (BNP in obj position)
sell-3pl-SE sausages at-the butcher-shop Sanzot
'Sausages are sold at the Sanzot butcher-shop.'
b. Salsichas, vendem-se **ec** no talho Sanzot.
sausages, sell-3pl-SE at-the butcher-shop Sanzot.
'Sausages, (they) are sold at the Sanzot butcher-shop.'

Further evidence in favor of Raposo and Uriagereka's generalization is provided by parasitic gaps (which we do not review here), and by the position of the subject DP relative to other left-peripheral DPs. The left periphery of European Portuguese contains at least three positions, as indicated in (110). Each one of these slots may, but need not, be instantiated:

(110) $[_{\text{specTopP}}$ **def DP** . . . $[_{\text{specFocP}}$ ***wh*-phrases** . . . $[_{\text{specIP}}$ **canonical subject**]]]

With the eventive-passive SE, the preverbal subject cannot occupy the Spec, IP position (see (111b)); it is either in [Spec, Top], as in (111a), or in (Spec, Foc), as in (112), depending on whether it is a definite DP or a focused constituent (*wh*-phrase, emphatic operator):

(111) a. $[_{specTopP}$**[Esses livros]**$_i$ $[_{specFocP}$[so numa loja]$_k$ $[_{IP/I'}$ se vendem ec$_i$ ec$_k$]]].
those books only at-one store SE-sell-3pl
'Those books only at a (particular) store are sold.'
b. *$[_{specFP}$[So numa loja]$_k[_{specIP}$ **[esses livros]**$_i$ se vendem ec$_i$ ec$_k$]].
only at-on store those books SE-sell-3pl

(112) a. $[_{specTopP}$ A Maria, $[_{spec\ FP}$ **[quantos presentes]**$_i$ $[_{spec\ IP}$ [se deram ec$_i$]]]]?
to-the Mary, how-many presents SE-gave-3pl
'To Mary, how many presents were given?'
b. $[_{specTopP}$ A Maria, $[_{specFP}$**[muitos presentes]**$_i$ $[_{specIP}$ [se deram ec$_i$]]]].
to-the Mary, many presents SE-gave-3pl
'To Mary, many presents were given.'

The example in (111c) shows that the subject of analytic passives can occupy Spec, IP:

(111) c. $[_{specFP}$So numa loja $[_{specIP}$ **esses livros** sao vendidos]].
only at one store those books are sold (subject of copula passive SE in Spec, IP)

In sum, Raposo and Uriagereka provide clear evidence showing that the preverbal subject of eventive-passive SE does not sit in (Spec, IP), nor does it bind a trace in (Spec, IP). It sits in a left-peripheral position and entertains a direct relation with a VP-internal position. This behavior of passive SE contrasts with analytic passives, as well as with SE-reflexives.

5.2.2 Middle SE

The behavior of middle SE was not examined by Raposo and Uriagereka. One may simply guess that middle SE contrasts with passive SE and behaves on a par with reflexives. By using the tests provided by Raposo and Uriagereka themselves, it can indeed be shown that middle SE allows its subject to sit in Spec, IP.

In contrast with eventive-passive SE, middle SE allows its subject to be in the preverbal position in inflected infinitivals, and this position can only be analyzed as being Spec, IP (compare example (104b)):

(113) a. vai ser dificil esta luz ver-se de longe
(it) will be difficult this light see(inflected)- SE from afar
b. vai ser dificil este lindo vestido lavar-se facilmente
(it) will be difficult this beautiful dress wash-SE easily
(examples provided by Joao Costa, p.c.)

Note furthermore that the preverbal subject of middle SE may occur to the right of an extracted adjunct, in which case it can only sit in (Spec, IP). Middle SE thus patterns with reflexives and analytic passives and contrasts with eventive passive SE:

(114) a. [$_{specTop}$Em que momento do espectáculo] [$_{specIP}$a luz] se viu bem?
at what moment of the show the light SE saw well
(Joao Costa, p.c.)

b. [$_{specTop}$Em que momento da operaçao] [$_{specIP}$os especialistas] se consultaram?
at what moment of the operation the specialists consulted each other
≠ at what moment of the operation the specialists were consulted

Given the data just reviewed, Raposo and Uriagereka's generalization should be revised as follows:

(115) **Revision of Raposo and Uriagereka's generalization:**
a. [$_{specIP}$DP] [$_{I'}$ se V . . . []] ⇒ OK middle, *eventive-passive
b. [$_{specTopP}$DP] [$_{IP}$ [$_{I'}$ se V . . . []]] ⇒ OK eventive passive

5.3 A unifying analysis of European Portuguese and French

The data in European Portuguese summarized in (115a–b) bring to mind Ruwet's generalization (see (101)):

(116) Just as in French, a preverbal DP sitting in (Spec, IP) triggers the middle/generic reading of passive SE constructions. The eventive-passive reading is blocked.

Because European Portuguese is a pro-drop language, preverbal subjects do not necessarily sit in Spec, IP, but may be in Spec, Top or Spec, Focus instead. These positions do not induce the interpretive constraint characteristic of Spec, IP. We may thus conclude that French and European Portuguese illustrate two particular instantiations of one and the same constraint on passive SE configurations.

5.3.1 Raposo and Uriagereka's explanation

Raposo and Uriagereka's explanation basically amounts to the idea that the Spec, IP position is made unavailable by the eventive-passive SE. Raposo and Uriagereka follow Cinque (1988) in assuming that the eventive-passive SE is marked as +arg and is an '[NP, IP]' clitic, which as such fills – at some point in the derivation – the [NP, IP] position: SE goes to (Spec, v') and from there to (Spec, IP), thus rendering this position unavailable for the internal argument to raise to. This

account is problematic insofar as it basically amounts to assuming that a passivizing morpheme, here SE, is a subject clitic (see sections 3.4 and 4 above).

The contrast between the middle and the eventive-passive reading is not explicitly brought up by Raposo and Uriagereka. Within their account, the behavior of middle SE can only be analyzed as being due to its inherent features: in contrast with passive SE, middle SE does not need to go to Spec, IP. Thus, in order to account for the contrast between passive and middle SE, Raposo and Uriagereka would have to postulate lexical homophony: passive SE and middle SE would be two inherently distinct elements, much as in Cinque (1988).[52] The problem is that there is no evidence – other than the data we try to explain – in favor of a distinction between passive and middle SE. In particular, they both trigger 'agreement with the object' (this is Raposo and Uriagereka's term, which in fact refers to the overt subject, corresponding to an underlying Theme), which is the criterion that Raposo and Uriagereka choose for distinguishing eventive-passive (their 'indefinite') SE from the 'impersonal' (i.e., nominative) SE.

5.3.2 *An alternative line of inquiry*

Dobrovie-Sorin (2004, forthcoming) proposes an explanation based on the idea that the 'syntactic activity' of the Agent (which is necessary for the passive reading to obtain) of SE-verbs is possible only if the internal argument occupies the object position. Under this view, the passive reading of accusative SE is blocked not because passive SE itself goes to Spec, IP, but rather because this position must remain empty in order for the Agent to be present at Logical Form.

NOTES

1 To this day, Kayne (1975) and Burzio (1986) remain the best references on the problem stated in (i), both for the detail of the empirical description and for insights regarding the analysis. For (iii) the reader is referred to Giorgi (1991).

2 Zubizarreta (1987) and Belletti (1982) distinguish reflexives from middle-passive SE: the latter, but not the former, would absorb the external theta-role. Burzio (1986) analyzes middle-passive SE as a particular instantiation of subject/nominative SE. Cinque adopts this analysis for impersonal and habitual passive SE (*Dans cette maison, la Bible se lit tous les jours* 'In this house, the Bible SE reads every day'), but departs from Burzio in assuming that the property interpretation of middles (*Ce livre se lit facilement* 'This book SE-reads easily') relies on accusative SE. Within Cinque's typology, impersonal passives (including habitual passives) rely on a nominative +arg SE, whereas middles rely on an accusative –arg SE.

3 The morphological identity shown by passives, anticausatives, and reflexives is widespread across unrelated language families, such as Indo-European, Uto-Aztecan, Athapaskan, Turkic, Ethiopian Semitic, and Dravidian (Haspelmath 1987, 1990; Kemmer 1993; Geniušenė 1987).

4 Perlmutter's (1978) unaccusatives were called 'ergatives' by Burzio (1981, 1986). Because it may cause confusion (by unduly bringing to mind 'ergative' languages), this terminology will be avoided here.

5 In order to simplify the glosses, the verb *être* 'be' will be translated as *have* whenever it functions as a perfect auxiliary.

6 For the claim that unergatives and unaccusatives can be distinguished in terms of internal/external causation see also Levin and Rappaport (1995), who attribute the main insight to Smith (1970).

7 Labelle further assumes that in SE-inchoatives the external role (the one to which is attributed 'responsibility' for the change) is discharged by SE itself, which would be generated in the (Spec, VP) position, leaving the Spec, IP slot available for the externalization of the internal argument (1992: 395). This proposal, which suffers from the problems brought up in section 3 below, is not crucial for Labelle's main proposal.

8 Crucial to Burzio's view is the idea that SE is not a pronoun, but rather an unaccusativity marker. The 'affixal' nature of SE is less central: being an unaccusativity marker does not force a given element to be an affix (completely bound morpheme), but is compatible with it being a clitic ('semi-bound' morpheme, or 'syntactic affix' in Anderson's 1992 terms), or a weak pronoun (cf. Dutch *zich*-anaphors). Conversely, affixes (e.g., agreement morphemes on the verb) may function as pronouns, by virtue of binding an empty category of type *pro*.

9 In Italian, the embedded verb may be interpreted as reflexive in the absence of SE:

(i) Questo farà [$_{VP}$pentire Giovanni]
this will make [repent John]
'This will make John repent himself.'

(ii) Maria ha fatto [$_{VP}$accusare Piero]
Mary has made [accuse Peter]
'Mary made Peter accuse himself.'

The fact that SE cannot surface in Italian examples such as (i–ii) thus seems to be due not to a constraint on the compatibility between the syntactic operations underlying causatives and reflexives, but rather to a morphological constraint on SE-placement in Italian causatives. Pesetsky (1995: 99–100) suggests that the disappearance of SE in Italian causatives and the disappearance of SE in nominalizations (in all Romance languages) are due to the same constraint. The generalization would be that the lexicalization of the +reflexive feature is blocked by derivational morphemes. French and Spanish causatives, which allow reflexives, would have to be analyzed as syntactic causatives, whereas their Italian counterparts would be morphological causatives.

10 According to Burzio (1986: 140, 406), the verb *be* as a perfect-marker is triggered, in both French and Italian, by the co-indexation relation that holds between SE and the subject position. Because both accusative SE and dative SE are co-indexed with the subject position, *be* is used as a perfect marker in both cases. Note, however, that dative SE differs from accusative SE in not allowing agreement on the past participle, despite *be*-selection. With accusative SE, past participle agreement is *obligatory* (compare the optional agreement triggered by accusative clitics):

(i) Marie s'est décrite aux enfants.
Mary SE HAS described-femin. to the children

(ii) Marie l'a décrite aux enfants.
Mary her has described-femin. to the children

(iii) Marie s'est souvenu/*souvenue de Jean.
Mary SE-HAS recalled-unmarked/*recalled-fem. of John

(iv) Marie s'est dit/*dite qu'elle n'aimait plus Jean.
Mary SE-HAS said-unmarked/*said-femin that she no longer loved John

(v) Marie s'est maudite/*maudit d'avoir laisser mourir Jean.
Mary SE-HAS blamed-unmarked/*blamed-femin. for having let die John

The dissociation between *be*-selection and past participle agreement is analyzed by Burzio as indicating that past participle agreement is not triggered by the co-indexation between SE and the subject, but rather by the presence of an NP-chain. Accusative SE relies on an NP-movement chain, but dative SE does not (Burzio 1986: 406).

11 Burzio (1986) shows that dative SE cannot be subsumed under the unaccusative analysis, but functions instead as an object clitic.

12 According to Burzio (1986), middle-passive SE is not an unaccusativity marker, but rather a particular type of subject clitic. Evidence against this view will be presented in sections 3.4 and 4 below.

13 Zubizarreta's (1987) proposal is a mixed lexicalist-syntactic approach, according to which SE is a verbal operator that is inserted either at L-R (the lexico-syntactic level of lexical representation, to be kept distinct from the lexico-semantic level, notated S-R) or at S-structure, which would result in middle and reflexive interpretations, respectively. Although Zubizarreta herself assimilates SE to A'-operators, this hypothesis does not seem to play any role in her approach, and in fact her notion of 'verbal operator' seems closer to that of voice-marker or argument-change marker.

14 Note that given the unergative analysis of SE-reflexives advocated by Reinhart and Siloni (2004), the representations in (19a) and (19a') should be viewed as pertaining to a level of representation other than S-structure.

15 The particular choice that predicates make between (19a) and (19b) is a matter of lexical semantics: some verbs may take the option in (19a), others the one in (19b) and yet other verbs may allow either option (cf. *aimer* 'love', *casser* 'break', and *laver* 'wash', respectively).

16 Note that French *il*-impersonals do not rely on the chain configuration in (19b):

(i) Il_j s_i'est traduit trois $romans_i$.
IL SE HAS translated three novels
'Three novels were translated.'

Dobrovie-Sorin (1994b, 1998) suggests that a chain of the type in (19b) is formed at LF, after expletive replacement (required by Chomsky's 1986a Full Interpretation Principle) by the raised DP.

17 Dobrovie-Sorin (1998) suggests that her characterization of SE can be restated in reflexivity terms (Reinhart and Reuland 1993). SE can be assumed to be a reflexive marker if the definition of reflexive predicates is changed: a reflexive predicate would be one in which two argument *positions* (rather than two theta-roles) are co-indexed. This suggestion is, however, problematic, because the notions of reflexive marker and reflexive predicate are designed in such a way that they are distinct from 'simplex expression anaphors' such as *zich*. Now, although SE differs from *zich* in being unable to be long-distance bound, it resembles *zich* insofar as both SE and *zich* can be

markers of 'inherent reflexivity' (in Everaert's 1986b terms) or 'unaccusativity', unlike *zichself*. A careful rethinking of the properties of SE in terms of reflexivity theory remains to be developed.

18 We will leave aside the 'intensifying' use of dative SE, which is found in colloquial Spanish:

(i) Juan se baila tangos, rumbas, chotis: lo que sea.
John SE dances tangos, rumbas, chotis: whatever there is

(ii) Juan se escribe cien versos al dia.
John SE writes (one) hundred verses a day

This type of SE is subject to a syntactic constraint that also holds for benefactives: it can be used only if a direct object is present.

19 Note, however, that (the trace of) *îşi* cannot be bound by the subject of raising verbs:

(i) *Copiii tăi îşi păreau să fie fericiți.
your children SE_{dat} seemed that [they] be happy

(ii) ?*Copiii tăi îşi păreau fericiți.
your children SE_{dat} seemed happy

This ungrammaticality might be due to a different constraint: a reflexive dative and its antecedent must be co-arguments.

20 The Romanian data are somewhat complex, due to the use of prepositional accusatives and clitic doubling, which are both obligatory for proper names. These phenomena are irrelevant here.

21 The correlation between being a pro-drop language and having nominative SE was suggested by Belletti (1982). This correlation holds for French but not for Romanian.

22 The German example in (41) has a generic reading, whereas the Romanian examples in (40) refer to particular events. Note, however, that the impossibility of particular time reference is not peculiar to the *sich* that combines with unergatives, but characterizes the passivizing use of *sich* in general:

(i) *Dieses Buch hat sich gestern gelesen.
this book HAS SICH yesterday read

(ii) Dieses Buch liest sich angenehm.
this book reads SICH with pleasure

23 A conceptually similar analysis can be found in Perlmutter (1978), who argues against the spontaneous demotion of the Agent and proposes instead that impersonal passives rely on the advancement of a dummy, an operation that is the relational grammar counterpart of the NP-movement of a null object in GB theory.

24 Under this view, unergatives do not differ from transitives by their subcategorization properties (both types of verbs may, but are not obliged to, take a direct object), but only by their selectional requirements: unergatives select a cognate object, which as such need not be projected in the syntax, whereas transitives normally select fully referential objects, which must be syntactically realized; some transitives can be

construed as having prototypical objects (e.g., *eat*, *drink*, *write*, etc.), which are not lexicalized; those transitives that do not allow for prototypical objects must lexicalize their object (e.g., *observe*, *consider*, *discover*, etc.). In sum, the borderline between unergatives and transitives is less clear cut than is usually assumed, which explains why this distinction is not grammaticalized in well-described languages (compare the *be/have* alternation that distinguishes unaccusatives on the one hand from transitives and unergatives on the other hand).

25 Dummy null cognate objects may be assumed to be assigned a quasi theta-role (see Dobrovie-Sorin 1998).

26 Depending on the particular definition of passivisation that one may adopt, the reason may be that (i) the 'absorption' of accusative Case – which is imposed by passivisation – cannot apply vacuously (Jaeggli 1986a) – in other words, passivisation cannot apply because there is no accusative Case to absorb; or (ii) unaccusatives have no external role, and passivization can apply only if there is an external role to be suspended.

27 Similar contrasts between Romanian and French arise regarding verbs that take idiomatic and sentential complements. The French examples in (iia–c) have the same glosses as the Romanian examples in (ia–c):

(i) a. S-a luat loc imediat.
SE-has taken place immediately
'Place was taken immediately.'
b. Li s-a dat apă la moară.
to-them SE-HAS given water to the mill
'They were given favorable evidence.'
c. S-a spus/descoperit/declarat că Ion e nebun.
SE-has said/discovered/declared that John is crazy
'It was said/discovered/declared that John was crazy.'

(ii) a. *Il s'est pris place immédiatement.
b. *Il s'est donné de l'eau à leur moulin.
c. *Il s'est dit/découvert/déclaré que Jean était irresponsable.

For lack of space we restrict our attention to the contrast concerning unergatives. A detailed discussion of the other data can be found in Dobrovie-Sorin (1994b, chapter 5).

28 The reader may have noticed that the examples in (49) are constructed with unergatives that subcategorize a PrepP. With unergatives that do not subcategorize PrepPs, the passive is somewhat less acceptable (the presence of a modifier is obligatory):

(i) ?Ensuite, il a été couru jusqu'à la gare.
then, IL was run to the station

(ii) ?Mais, il a été dormi dans ce lit récemment.
but, IL has been slept in this bed recently

For discussion see Dobrovie-Sorin (1994b).

29 Haider (1985b), Haider and Rindler-Schjerve (1987), and Dobrovie-Sorin (1986, 1994b, 1998) are isolated exceptions.

30 French SE-verbs are ambiguous between passive and middle readings. Adverbs such as *facilement* 'easily' are only compatible with the middle reading, which in turn is

incompatible with control into a final clause. If *facilement* is suppressed, the example becomes grammatical, but it loses the middle reading.

31 See also Williams (1985) and Lasnik (1988), who argue that the PRO subject of final clauses need not be controlled by a DP argument, but may be controlled by an event.

32 These examples become grammatical if the embedded verb undergoes SE-passivization:

(i) În unele studii s-a încercat a se reface istoria politică şi socială.
in certain essays SE has tried to SE reconstruct the political and social history.
'In certain essays it was tried for the political and social history to be reconstructed.'

(ii) Se speră a se ajunge la capătul drumului.
SE hopes to SE arrive at the end of the road
'It is hoped that the end of the road will be arrived at.'

(iii) S-a început a se ține seama de nevoile tuturor.
SE-has started to SE take into account everybody's needs
'It was started that everybody's needs be taken care of.'

(iv) S-a promis a se respecta dispozițiile.
SE-has promised to SE obey the instructions
'It was promised that the instructions will be obeyed.'

As indicated by the glosses, both occurrences of SE are interpreted as SE-passives. No ungrammaticality arises, since the verb in the main clause does not function as a control verb: as for any passivized verb, its external argument is suspended and its only argument is the embedded clause itself. We may now wonder why a similar analysis is ruled out for the examples in (54): why is it not possible to analyze the SE in the main clause as an instance of passive SE? The answer is that the embedded verb is in the active form, and as such projects a null subject, which needs to be controlled, a requirement that cannot be satisfied because passive SE cannot function as a legitimate controller. Compare (i–iv), where the embedded clause contains a SE-passive: the external argument has been suspended, thus suspending the need for control.

33 Cinque tries to solve this problem by assuming that his [+arg] nominative SE binds a non-referential trace in Spec, IP, which as such is unable to function as a syntactic controller. This peculiarity of [+arg] nominative SE conflicts with the currently observed behavior of nominative clitics, which qualify as syntactic controllers. This is indeed what we find with Cinque's –arg nominative SE, which according to Dobrovie-Sorin (1988) is the only truly nominative SE (see section 4 below).

34 Pronominal clitics exist that are specified for a designated grammatical function (e.g., nominative, dative, or accusative), but not for a particular theta-role.

35 Adopting a suggestion by Chomsky (1986a: 217), Cinque argues that the two chains in (57) are allowed to overlap because they belong to distinct types: one of them is a theta-chain, whereas the other is an expletive–argument pair. One can thus maintain the ban on overlapping theta-chains, while allowing overlapping CHAINs (this notion covers both expletive–argument pairs and theta-chains).

36 This proposal unduly identifies the absorption of the external theta-role by a nominative clitic – which is in fact a particular kind of syntactic realization of the external

role, a process that *does not suspend* accusative Case – with the suspension of the external theta-role by a passivizing morpheme, which blocks the syntactic realization of the external role in the canonical subject position and correlates with the suspension of accusative Case. To make this point clear, consider nominative clitics or even agreeement morphemes. One may assume that they absorb/retain/withhold the external theta-role, but one must ensure that the (Spec, IP) position vacated by nominative clitics/agreement morphemes is *not* available for a DP that carries the Theme-role (correlatively, accusative Case *is* available). Otherwise, we would expect nominative clitics, as well as subject-agreement morphemes, to function (at least optionally, but maybe necessarily) as passivizing morphemes, which they do not. In sum, nominative clitics cannot be passivizers because they are syntactic realizations of the external role, which blocks the externalization (encoded as NP-movement in GB theory) of the internal role.

37 Burzio (1986: 144–148) himself observes that French middle-passive *se* contrasts with Italian nominative *si*: whereas the latter behaves as a pronominal subject clitic, the former behaves as a lexical affix (cf. inchoative and inherent SE), which as such cannot be affected by subject raising:

(i) *Il se semble construire beaucoup d'immeubles. French
it SE seems (to) build many buildings

38 A detailed review of Cinque's (1988) analysis can be found in Dobrovie-Sorin (1998). Let us simply mention here that Cinque differs from Burzio insofar as Cinque distinguishes between middle and passive SE, which would be marked as accusative and nominative, respectively.

39 Although Burzio (1986) himself is of course fully aware of Restructuring phenomena, he does not subsume examples of *si*-raising under Restructuring.

40 Mendikoetxa and Battye (1990) assume that nominative and accusative SE head AGRsP and AGRoP, respectively. However, the Spec positions of these projections are not related to SE, since these authors assume that the external role is not absorbed, but merely suspended by SE.

41 The idea that passives involve a null pronoun in Spec, VP is not integral to McGinnis's work on reflexives. In fact, she discarded this idea in later work: McGinnis (1998, 2004) does not treat passives as involving a 'pro' external argument.

42 The two authors differ regarding the nature of the empty category controlled/identified by SE (PRO for Kayne and pro for Guéron), as well as regarding the position of this empty category. Both Kayne and Guéron allow the empty category identified by SE to be VP-adjoined, but they disagree on a further possible position: according to Guéron, subject SE binds a pro in a right-hand-generated (Spec, IP) position, whereas Kayne assumes that SE may occupy (Spec, VP). Since for Kayne's views we can only rely on lectures of the 1980s and on a short (1986) abstract, we will concentrate here on the syntactic side of Guéron's (1991) analysis, leaving aside its semantic part, which was not taken up in the subsequent literature on SE.

43 The fact that a dative-marked reflexive does not trigger passivization is clearly indicated by Romanian. Examples such as (i), which contain dative reflexives, can only be interpreted as containing goal or benefactive reflexive pronouns:

(i) Ion îşi trimite cărţi poştale.
John SE_{Dat} sends postcards

Conversely, a dative reflexive cannot appear in the Romanian counterparts of French examples of the type in (63):

(ii) Merele se mănîncă toamna.
apples-the SE_{Accus} eat in [the] autumn

(iii) *Merele îşi mănîncă toamna.
apples-the SE_{Dat} eat in [the] the autumn

44 There seems to be no reason to believe that in an example such as (i), the Friulan subject clitic *al* is ambiguous (between the [+arg] and the [–arg] features), whereas in (ii–iii) it is non-ambiguous (being compatible only with the [–arg] feature). The examples are due to Poletto (1991, 1993):

(i) Al duar.
'He sleeps.'

(ii) Al ven duman.
'He will come tomorrow.'

(iii) Al e staat vist.
'He has been seen.'

The only plausible analysis is that in all these examples *al* is a referential clitic. Compare (iv–vi), where *al* is quasi-argumental or expletive:

(iv) Al pluof.
'It rains.'

(v) al par che . . .
'it seems that.'

(vi) Al ven Toni.
'There will come Toni.'

It thus seems clear that Cinque's [+arg]/[–arg] distinction cannot be identified with the well-established distinction between referential and expletive subject clitics.

45 Given this analysis, Italian examples of the type *SE* V_{unerg} (see (71)) are indeed ambiguous, as suggested by Cinque himself, but the ambiguity is not one between two types of nominative SE but rather one between a nominative SE and a passivizing accusative SE.

46 Cinque's assumption that a nominative passive *si* exists can be traced back to Burzio's (1986: 48)) proposal, to the effect that certain passive *si*s bear both accusative and nominative Case.

47 Regarding control into adjunct clauses, see section 3.2 above.

48 Existing analyses of nominative clitics, bearing in particular on Italian dialects, do not provide any counter-example to this generalization, which has, however, not been derived as a consequence of theoretical principles.

49 That overt agreement morphology rather than finiteness is required by nominative SE is clear when one considers Portuguese: it is because this language has infinitivals inflected for AGR features that the Portuguese counterparts of the examples in (64) are grammatical (see Cinque 1988: 531–533).

50 The generalization in (98) has to be qualified in view of some French examples due to Zribi-Hertz (1982):

(i) a. La question s'est discutée hier dans la salle du conseil.
the issue SE HAS discussed yesterday in the council hall
'The issue was discussed yesterday in the council hall.'
b. Le crime s'est commis ce matin.
the crime SE HAS committed this morning
'The crime was committed this morning.'
c. L'opération s'est effectuée hier.
the operation SE HAS carried out yesterday
'The operation was carried out yesterday.'
d. Le point s'est soulevé hier à la réunion.
the point SE HAS raised yesterday at the meeting
'The point was raised yesterday at the meeting.'

We will leave these exceptions aside.

51 Raposo and Uriagereka furthermore show that in order for the eventive passive reading to survive, the topicalized DP should not transit through Spec, IP.

52 Although Raposo and Uriagereka do not follow Cinque in characterizing passive SE as a nominative clitic, it is difficult to see how an '[NP, IP]' clitic, which 'must go to Spec, IP', could avoid being marked with nominative Case.

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57 Secondary Predicates in Australian Languages

EVA SCHULTZE-BERNDT

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1 Introduction

1.1 Overview

Secondary predicates pose a challenge for syntactic theories because they partake in two (potentially syntactic) relationships. The first relationship is generally considered to be an instance of adjunction to a projection of V. The second relationship holds between the secondary predicate and one of the arguments of the main predicate, the controller. This relationship is usually held to be an instance of predication: the secondary predicate ascribes a condition or state to the controller. Consider the secondary predicates *alive* in (1) and *wanka* in (2), the near-equivalent of (1) in the Australian language Martuthunira. In both examples, the controller is the object, and the secondary predicate expresses a state which holds of the controller at the time of the event expressed by the main predicate (i.e., the mouse was alive when the snake ate it):

(1) The snake ate the mouse alive.

(2) Martuthunira (Ngayarda, Pama-Nyungan):
Nhula miyu mungka-rnuru wajupi-i wanka-a-l.
DEM cat(NOM) eat-PRS grasshopper-ACC alive-ACC-THEN
'That cat eats grasshoppers alive.' (Dench 1995: 182)

While both the adjunct status and the argument-oriented nature of *alive* in examples such as (1) and (2) seem obvious, no generally accepted definition of secondary predicates exists to this day. Consequently, both the range of constructions that are considered secondary predicates and their analysis vary considerably, even in the literature devoted to secondary predicates in a single language, English. For example, following Halliday (1967), both depictives (such as *alive* in (1) and (2)) and resultatives (such as *dead* in *Joy shot the bird dead*) are generally regarded as secondary predicates. However, the question of whether resultatives really fall under the same construction type as depictives has been the matter of some debate in the literature (see chapter 58). Cross-linguistically, resultative notions are often expressed by complex predicates, not adjunct constructions. This is true for the Australian language Warlpiri (Simpson 2005), and also for English and German – at least this has been argued by Dowty (1979), and is the central claim in Winkler (1997). Since the input of Australian languages into the discussion on secondary predication has mainly been in the domain of depictive secondary predicates, only this construction type will be considered here.

Controversial issues also include the level of adjunction of secondary predicates, and the grammatical and semantic restrictions on both the main predicate and the secondary predicate. Furthermore, it has been a matter of debate whether the relationship between the secondary predicate and its controller is truly a relationship of predication, and if it is, how it is to be represented (see chapter 58). Moreover, while most authors consider secondary predicates to be adjuncts,

it is often difficult to distinguish (obligatory) predicative complements – often analyzed as small clauses – from (optional) depictives (cf. Halliday 1967; Plank 1985; Aarts 1995; Schultze-Berndt and Himmelmann 2004: 65).

Another problem in the definition of depictives, which is discussed more rarely, is the word class and the internal structure of the secondary predicate. Most discussions of depictive secondary predicates in English focus on adjectival secondary predicates such as *alive* in (1). But a number of authors, including Aarts (1995: 79–80) and Nichols (1978: 124), also consider prepositional phrases such as *in tears* in (3) as depictives:

(3) We found him in tears. (Aarts 1995: 80)

Example (3) also illustrates the notorious difficulty of distinguishing depictives and adverbials. Many adjuncts, e.g., adjuncts of manner or quantification, can be given both an event-oriented and an argument-oriented interpretation, as has been pointed out by many authors including Jackendoff (1972), McConnell-Ginet (1982), Geuder (2000), and Maienborn (2001) (see also chapter 4). Consider *reluctantly* in *Joy ate the meat reluctantly*, which semantically is argument-oriented (it is Joy who is reluctant). While in English, *reluctantly* is formally marked as an adverbial by the suffix *-ly*, no corresponding formal difference exists between depictives and simple adjectival adverbs in a language like German, and in many languages, including some Australian languages, corresponding manner expressions are formally marked in the same way as depictives (see sections 2.5.3 and 3.3).

The problem of establishing a universally valid definition of secondary predicates is thus aggravated when languages with a very different grammatical and lexical structure are considered. For example, Larson (1991) proposes a unified analysis for secondary predicate constructions and serial verbs (see chapter 59). On the other hand, some authors subsume under secondary predicates noun phrases which are coreferential with pronominal arguments in head-marking languages, and therefore have a very different pragmatic function from secondary predicates in a language like English (see section 3.1). If these proposals are taken together, the range of expressions that could be identified as secondary predicates goes far beyond the clear cases that are comparable to example (1) in English.

Studies of Australian languages have made important contributions to the theory of secondary predication, but these languages also pose a number of problems which still remain to be solved, and raise the question of how secondary predicates can be delimited from other construction types. Australian languages are interesting for the theory of secondary predication in a number of ways. First, many of them have a rich case system, with secondary predicates obligatorily agreeing in case. The range of agreeing adjuncts, however, often goes far beyond the range of expressions that are generally regarded as secondary predicates in a language like English (see sections 2.5 and 3.3).

Second, some Australian languages have a lexical structure which is rather different from that of the better-known European languages, and this also has

consequences for the analysis of secondary predicates in these languages. For example, it has been claimed for some Australian languages that the restriction of secondary predicates to stage-level predicates does not hold (see section 2.5.1). It has further been reported that some languages have word classes restricted to depictive function, or a special word class of predicative elements which may be used as parts of complex predicates or secondary predicates, but not as main predicates (see section 2.5.3).

Third, many Australian languages belong to the so-called non-configurational type, and secondary predication has figured prominently in attempts to propose unified phrase structure representations for configurational and non-configurational languages (see section 3.1.1). In non-configurational languages which allow discontinuous noun phrases, the additional problem arises of whether and how these should be distinguished from secondary predicate constructions (see section 3.1.2). Australian languages often also exhibit a certain type of external possession construction involving body parts and other part expressions, for which likewise analyses in terms of secondary predication structures have been proposed (see section 3.2).

1.2 *A brief introduction to Australian languages*

It is important to note that Australian languages do not form a homogeneous group either in terms of their genetic relationship or in terms of their typological characteristics. Research on the genetic subgrouping of Australian languages is still in progress; it is made more difficult by the complete lack of records dating before the invasion of Europeans, and the scarcity of documentation of the languages in some areas. Of the estimated 200–250 Australian languages at the time of first European contact (Walsh 1991, 1997), more than half are no longer spoken, and most of the remaining languages are severely endangered, especially if they are no longer acquired by children. The number of speakers rarely exceeds a few hundred people, and often only a dozen or fewer fluent speakers remain.

The by now widely accepted genetic division (cf. Blake 1988; Evans 1988 – but see Dixon 1997, 2002) is between the relatively coherent genetic group of Pama-Nyungan (henceforth PN) languages, covering most of the continent, and around 25 other language families – each comprising only a few languages – which are subsumed under the label Non-Pama-Nyungan (henceforth NPN) languages.

With regard to their morphological structure, most Australian languages are agglutinating with varying degrees of fusional characteristics, but some NPN languages, like Mayali (see example (4)), are strongly polysynthetic. Most languages are 'non-configurational' in the sense that the order of phrases is conditioned by pragmatic rather than syntactic factors. Word order within phrases may be restricted to varying degrees (see section 3.1). Most NPN languages have bound pronominals which are prefixed to the verb. Prefixing is only attested for very few PN languages; usually, these either lack bound pronominals altogether, or feature pronominal suffixes or enclitics (see section 3.1.1).

Australian languages have played a prominent role in the debate on ergativity – cf. Dixon (1979, 1994), Silverstein (1976), Bittner and Hale (1996a, 1996b), among many others. The majority of languages are indeed morphologically (but not necessarily syntactically) ergative. However, there are also languages of the accusative type, and in polysynthetic languages like Nunggubuyu (Heath 1984), core arguments are often unmarked for case (cf. also Baker 1996: 130–131).

The discussion in the remaining sections draws on a sample of languages from several language families with varying typological characteristics. Section 2 presents an overview of the morphological and syntactic properties of depictive secondary predicates in Australian languages. Section 3 reviews the contrasting ways in which the term 'secondary predication' has been applied in the analysis of Australian languages, and outlines some of the problems of delimiting secondary predicates from other construction types.

2 Morphological and syntactic properties of depictive secondary predicates in Australian languages

In the following subsections, only depictives that are adjuncts (in the traditional sense, not in the wider sense introduced in section 3.1.1) will be considered. Note, however, that in some of the polysynthetic NPN languages of northern Australia, such as Mayali, argument-oriented elements may be incorporated into the main predicate and in this case are constituents of a complex predicate rather than adjuncts. In (4a), the predicate *nga-rrarrkid-ma-ng* is a single phonological and grammatical word consisting of the verb stem and the incorporated predicate nominal *-rrarrkid* 'alive', which semantically predicates on the object. In (4b), the nominal *yau* 'child' is incorporated and may be interpreted as a secondary predicate ('as a child'):

(4) Mayali (Gunwinyguan, NPN):
   a. Ka-rrarrkid kaluk nga-rrarrkid-ma-ng.
      3-alive FUT 1.SBJ/3.OBJ-alive-pick.up-NPAST
      'It's alive, I'll pick it up alive.' (Evans 1997: 400)
   b. an-yau-bawo-ng kure bedda
      3.SBJ/1.OBJ-child-leave-PAST.PERF LOC 3PL
      'My mother left me with them as a child.' (Evans 1997: 422)

2.1 Syntactic position

Little is known about the precise syntactic properties of depictive secondary predicates in Australian languages. While in English, depictives are usually analyzed as constituents of the VP and there is some controversy regarding the level of adjunction, e.g., of subject and object depictives (see chapter 58), many

Australian languages lack evidence for the existence of a phrasal category verb phrase, and the word order of both arguments and adjuncts is rather variable. These properties have been subsumed under the label 'non-configurationality' (see section 3.1). The lack of a fixed position of the secondary predicate is in many Australian languages compensated for by extensive agreement; that is, the depictive indicates the relationship to its controller by agreement rather than position (see section 2.2).

In any case, an analysis in terms of syntactic position can only capture the status of the secondary predicate as an adjunct, but does not directly capture the relation between the secondary predicate and its controller (although it has been claimed for English that the position varies depending on whether the controller is a subject or an object). This second relation has sometimes been described in terms of dependency, e.g., by Mel'cuk (1988), Nichols (1978), and, with reference to Australian languages, by McGregor (1997: 54–56, 2005), who regards it as an attributive relationship. The nowadays more widely accepted analysis of depictives is that developed within the framework of predication theory. Here, the relationship between controller and depictive is analyzed as an instance of predication, which is considered to be an irreducible syntactic relationship (see chapter 58).

2.2 *Agreement*

Because of their argument-oriented nature, depictive secondary predicates are reminiscent of attributive modifiers in an NP. Therefore, in many languages a marking device that is typically used to establish coherence between the constituents of a noun phrase – agreement – is used to link a depictive to its controller (which does not have to be overtly expressed; see section 2.4). This phenomenon is well known from Ancient Greek and the Slavic and Romance languages (cf., e.g., Napoli 1975; Nichols 1978; Legendre 1990).

Many Australian languages also show extensive agreement of depictives with their controllers (this type of agreement has been termed 'referential agreement' by Dench and Evans 1988: 14–16). In ergative languages like Warlpiri, the depictive takes ergative marking if the controller is an actor in a transitive clause (5a), and absolutive marking (usually zero) if the controller is an undergoer in a transitive clause (5b), or the sole argument of an intransitive clause (cf. Simpson 1991: 199–214; Hale et al. 1995):

(5) Warlpiri (Ngumpin-Yapa, PN):

a. Maliki-rli$_i$ ka marlu wajilipi-nyi mata-ngku$_i$.
dog-ERG PRS kangaroo(ABS) chase-NPAST tired-ERG
'The dog is chasing the kangaroo tired.' (Hale 1994: 192)

b. Maliki-rli ka marlu$_i$ wajilipi-nyi mata$_i$.
dog-ERG PRS kangaroo(ABS) chase-NPAST tired(ABS)
'The dog is chasing the kangaroo (and the latter is) tired.'
(Hale 1994: 192)

In accusative languages like Martuthunira, agreement distinguishes depictives controlled by the (unmarked) nominative subject, as in (6), from those controlled by the accusative object, as in (2). Agreement is also attested for depictives with controllers in oblique cases (see section 2.4):

(6) Martuthunira (Ngayarda, PN):
Manku-marni ngunhaa$_i$ pungka-lha-rru nhurnti-rru$_i$.
grab-CONTR that.NOM fall-PAST-NOW dead(NOM)-now
'I would have grabbed [it] but it fell down dead.' (Dench 1995: 264)

Since many Australian languages allow double case marking (Dench and Evans 1988; Plank 1995), case agreement is possible even if an adjunct already takes a case marker indicating its thematic role, such as the similative marker in (7). Here the phrase *dimana-marraj* 'like a horse' is marked as a depictive secondary predicate through agreement; in other words, it is construed as a predication on the man. A paraphrase that captures this relationship is 'the man eats as if he was a horse (at the time of eating)':

(7) Jaru (Ngumpin-Yapa, PN):
Jalu mawun-du mangarri ngany-an dimana-marraj-ju.
that man-ERG plant.food eat-PRS horse-SIMIL-ERG
'That man eats food like a horse.' (Tsunoda 1981: 231)

Double case marking resulting from agreement is also found on constituents which one might be inclined to analyze as adverbials, not as secondary predicates, on semantic grounds; for example, *manyi-nhingi-ngga* 'after food' in (8):

(8) Gooniyandi (Bunuban, NPN):
Yiganyi wardjawinbirra manyi-nhingi-ngga.
uncertain they:might:take:you food-ABL-ERG
'They could take you after (they have eaten) food.' (lit.: 'from food')
(McGregor 1990: 342)

Languages with extensive agreement on adjuncts thus raise the question whether agreement should be regarded as the major criterion for the status of an adjunct as a secondary predicate. In this case, even adjuncts like the one in (8) have to be regarded as secondary predicates. Alternatively, it may be possible to distinguish secondary predicates and adverbials on the basis of other formal properties (see section 3.3). A further problem arises in languages which allow discontinuous noun phrases, since depictive secondary predicates exhibiting agreement can no longer be distinguished from modifiers in a discontinuous noun phrase by word order alone (see section 3.1.2).

2.3 Secondary predication and switch-reference

Warlpiri and several other Australian languages exhibit a particular type of argument-oriented subordinate clause which has received some attention in the literature

(cf. Austin 1981b; and for Warlpiri: Hale 1982: 290–294, 1986: 245–247; Simpson and Bresnan 1983; Simpson 1988, 1991: 314ff.; Hale et al. 1995). It is headed by a non-finite verb form (see also section 2.5.2) or (more rarely) by a nominal, followed by a suffix which simultaneously encodes relative tense (e.g., a simultaneous, anterior, or subsequent/purpose clause) and serves to identify the controller of the subordinate clause. Example (9) illustrates subordinate clauses interpreted as simultaneous (SIM) to the matrix clause in Warlpiri. In (9a), the subject complementizer (SCOMP) *-karra* indicates that the controller is a subject; in addition, the complementizer is here followed by the ergative case in agreement with a transitive subject. In both (9b) and (9c) the subordinate clause is controlled by the object of the matrix clause. The subordinate clause in (9b) does not take an overt agreement suffix because the controller is an unmarked absolutive object, but in (9c), it takes dative case in agreement with the dative object. Note that the 'object complementizer (OCOMP)' suffix *-kurra* in Warlpiri is identical to the allative case. This is not an accidental coincidence, because the use of the allative as a marker of object control is an areal feature which is also found in other northern Australian languages which are not necessarily related to each other, including Wardaman (Merlan 1994: 287–289; see example (23)), Jaminjung (Schultze-Berndt 2000: 112–113), Kaititj (Austin 1981b: 326), and Bilinarra (Nordlinger 1998: 165):

(9) Warlpiri (Ngumpin-Yapa, PN):

a. Wati-ngki$_i$ marlu nya-ngu parnka-nja-karra-rlu$_i$.
man-ERG kangaroo(ABS) see-PAST run-INF-SCOMP.SIM-ERG
'The man saw the kangaroo (while the man was) running.'
(Hale et al. 1995: 1442)

b. Wati-ngki marlu$_i$ nya-ngu nguna-nja-kurra$_i$.
man-ERG kangaroo(ABS) see-PAST lie-INF-OCOMP.SIM
'The man saw the kangaroo lying.' (Hale et al. 1995: 1442)

c. Punta-rni ka-rla tala-patu [jaja-nyanu-ku
take.away-NPAST PRS-3.IO money-PL grandmother-self-DAT
wiyarrpa-ku]$_i$ [jarda-nguna-nja-kurra-ku]$_i$.
poor-DAT sleep-lie-INF-OCOMP.SIM-DAT
'He takes money from his poor grandmother (while she is) asleep.'
(Simpson 1991: 394)

Since these constructions are restricted to controllers in a specific function, they have been used as evidence of grammatical relations (subject and object) in languages like Warlpiri (see section 2.4). Moreover, the additional agreement marking suggests that subordinate clauses of the type illustrated in (9) function as depictive secondary predicates. This is indeed the analysis proposed by Simpson (1988, 1991), Laughren (1992), Hale (1994), and Hale et al. (1995). They choose the term 'eventive' secondary predicate (as opposed to stative secondary predicate) for this construction because of the additional component of relative tense (in this case, simultaneity). This component is clearly contributed by the suffix, not by the fact that the predicate is a deverbal form, as shown in (10), where the subordinate clause is headed by a nominal. Only (10a), where the

secondary predicate is unmarked in agreement with the absolutive controller, and not (10b) can be interpreted as stating that the controller (the woman) is in a sick state. The object complementizer suffix *-kurra* in (10b) enforces an 'eventive' reading, captured in the translation as 'involved with the sick one':

(10) Warlpiri (Ngumpin-Yapa, PN):
  a. Wati-ngki karnta$_i$ nya-ngu nyurnu$_i$.
  man-ERG woman(ABS) see-PAST sick
  'The man saw (that) the woman (was) sick.' (Hale et al. 1995: 1442)
  b. Wati-ngki karnta$_i$ nya-ngu nyurnu-kurra$_i$.
  man-ERG woman(ABS) see-PAST sick-OCOMP.SIM
  'The man saw the woman involved with the sick one.'
  (Hale et al. 1995: 1442)

A number of authors, including Austin (1981b), Hale (1982, 1994) and Simpson and Bresnan (1983), on the other hand, have analyzed the same set of constructions as a same-subject construction and a different-subject construction (also termed 'obviative') in a switch-reference system. The subordinate clause marked by *-karra* indicates that its controller is the main clause subject, i.e., the two clauses have the same subject, whereas the subordinate clause marked by *-kurra* has a subject which is different from the main clause subject (i.e., a main clause object). In addition, Warlpiri also has two further contrasting markers of simultaneous subordinate clauses (Hale 1986). The first (*-ngkarni/-rlarni*, here simply glossed as SIM) allows a free choice of controller, although usually the controller is not a subject or object (11a). The second (*-rlajinta*, identical to the comitative case) may have the same subject (as in (11b)) or a different subject compared with the matrix clause, but encodes a simultaneous event which is, as it were, 'accidentally' simultaneous, and not ascribed to an argument in the main clause event (Simpson and Bresnan 1983: 60). Consequently, the first but not the second construction shows (optional) case agreement with the controller (compare (11b), with no ergative agreement, with (9a) above):

(11) Warlpiri (Ngumpin-Yapa, PN):
  a. Ngarrka-ngku ka-rla kurdu-ku$_i$ karli
  man-ERG PRS-3.IO child-DAT boomerang(ABS)
  kaji-jarnti-rni manyu-ngkarni(-ki)$_i$.
  BEN-trim-NPAST play-SIM-(DAT)
  'The man is trimming the boomerang for the child (while it is) at play.'
  (Hale 1982: 299)
  b. Ngarrka-ngku-nyanu ramparl-paju-rnu karli
  man-ERG-REFL mistake-cut-PAST boomerang(ABS)
  jarnti-rninja-rlajinta.
  trim-INF-COMIT
  'The man accidentally cut himself while trimming the boomerang.'
  (Hale 1982: 292)

In functional terms, we are therefore dealing with a switch-reference system which does not just show a binary contrast between 'same-subject' and 'different-subject', but distinguishes between same-subject (*-karra*), subject = object (*-kurra*), and free-subject (*-ngkarni/-rlarni)* categories. In addition, these are in opposition to a non-controlled simultaneous clause (*-rlajinta)*. Formally, the first three categories can also be analyzed as depictive secondary predicates controlled by the subject, the object, and a free controller, respectively, while the fourth type of subordinate clause, which does not exhibit a necessary relationship to a controller, is an adverbial. Thus, the analyses of Warlpiri non-finite subordinate clauses as switch-reference constructions and depictive constructions are complementary rather than contradictory. A similar system, where a switch-reference system can be seen as emerging from the contrast of various subordinate clause types with different control properties, is described for Martuthunira by Dench (1988, 1995: 240–262).

The secondary predicate analysis of a subordinate clause of this type is only warranted, however, when it is obligatorily controlled, i.e., when it cannot have its own subject. A true same-subject construction which is not a secondary predicate but an adverbial clause is found in the central Australian language Arrernte, although arguably the same-subject marker *-le* (which is identical to the ergative marker) represents a generalized former agreement marker (Wilkins 1988). Considering only (12a), one might be tempted to analyze the subordinate predicate as a true depictive secondary predicate which is followed by the ergative marker *-le* in agreement with the subject of the clause, just as in the Warlpiri example in (9a). However, (12b) shows that the subordinate predicate is not obligatorily controlled, since in the first line of (12b) it appears with its own subject:

(12) Mparntwe Arrernte (Arandic, PN):
   a. Artwe-le [alye-lhe-me-le] kere ite-ke.
      man-ERG sing-DETRANS-SIM-SS meat(ABS) cook-PAST.PERF
      'The man cooked the meat while singing.' (Wilkins 1988: 147)
   b. [Ayenge urrkape-tyekenhe ne-me-le], the [pmere-le
      1SG.NOM work-NEG be-SIM-SS 1SG.ERG camp-LOC
      ne-rlane-me-le] ampe kweke arntarntare-tyerte.
      be-CONTIN-SIM-SS child(ABS) small(ABS) look.after-PAST.HABIT
      'When I wasn't working, I used to stay at home and look after the baby.'
      (Wilkins 1988: 153)

2.4 *The syntactic function of the controller*

In English, depictives can be controlled by the subject of an intransitive or transitive predicate and by the object of a transitive predicate (cf., e.g., Aarts 1995: 76). This has sometimes been claimed to reflect a universal syntactic restriction, or alternatively, a restriction on the thematic role of potential controllers (e.g., to theme, agent, and patient; see chapter 58). However, languages differ considerably with regard to which arguments are easily accessible as controllers. For example,

Finnish regularly allows oblique controllers (Nichols 1978: 120–121). Some variation in the restrictions on potential controllers is also found in Australian languages (cf. Dench and Evans 1988: 15), although it has to be said that in-depth research on these issues has been carried out only for very few languages. A number of Australian languages with a rich case system and obligatory agreement of secondary predicates also allow datives and other oblique arguments as controllers. In the Warlpiri example in (13), the controller is a dative object; agreement unambiguously signals that the locative phrase encodes the location of the baby, not the food (for locative phrases as secondary predicates, see also section 3.3):

(13) Warlpiri (Ngumpin-Yapa, PN):
Karnta-ngku ka-rla kurdu-ku$_i$ miyi yi-nyi
woman-ERG PRS-3.IO baby-DAT food(ABS) give-NPAST
parraja-rla-ku$_i$.
coolamon-LOC-DAT
'The woman gives food to the baby in the coolamon (carrier dish).'
(Simpson 1991: 206)

Similarly, example (14) shows that in Diyari, a locative-marked oblique argument can be the controller of a depictive: it is the child spoken to, not the speaker, that is described as having no clothes on:

(14) Diyari (PN):
Kupa-nhi$_i$ nganhi yatha-na warra-yi [kathi pani-nhi]$_i$.
child-LOC 1SG.SBJ speak-PART AUX-PRS clothes none-LOC
'I spoke to the child with no clothes on.' (Austin 1981a: 44)

In (15a), from Martuthunira, the controller is a directional adjunct marked with the allative case. Here the presence of the temporal clitic *-l* enforces a predicative reading of the phrase *kupuyu-mulyarra*; in other words, (15a) cannot just mean 'I used to go to the little town'. The controller of the manner depictive in (15b) is the demoted agent in a passive construction, as indicated by the 'effector' case which in Martuthunira marks passive agents:

(15) Martuthunira (Ngayarda, PN):
a. Ngayu puni-wayara thawun-mulyarra$_i$ kupuyu-mulyarra-l$_i$.
1SG.NOM go-HABIT town-ALL little-ALL-THEN
'I used to go to town (when it was a) small (place).' (Dench 1995: 59)
b. Nhiyu thuur.ta kanyja-rnu juwayu-la kartarr-u paju.
this.NOM fruit(NOM) hold-PASS.PART hand-LOC tight-EFF really
'This fruit has been held in hand really tightly.' (Dench 1995: 234)

Data from Australian languages thus raise problems for the claim that restrictions on the controllers of secondary predicates are universal. It seems more likely that the potential for functioning as a controller follows the accessibility hierarchy for grammatical relations (Keenan and Comrie 1977), as has been

suggested by Nichols (1978: 120). The conditions under which oblique arguments and adjuncts can function as controllers remain a matter for further investigation.

Example (15b) also shows that the controller – in this case, the demoted agent – does not have to be overtly expressed. On the basis of comparable Warlpiri data, Laughren (1992) argues that the secondary predicate does not enter a predicative relation to a surface constituent of the clause, but rather to an argument in Lexical Conceptual Structure. Note that this observation is not restricted to Australian languages; in languages like German and English, likewise, depictives without overt controllers can be found, for example when the controller is an argument in an infinitival construction (e.g., in *not to be eaten raw*).

The conclusion that the controller is a semantic rather than a syntactic argument is further supported by the observation that agreement of secondary predicates, even in the case of overtly expressed controllers, is not simply a surface phenomenon resulting in identical case marking of two surface constituents. The case marking on the depictive reflects the semantic role of the controller rather than the marking of the corresponding NP constituent. For example, since ergative marking of agents in a transitive clause is optional in Gooniyandi (McGregor 1992b, 1998), the subject NP *goornboo* 'woman' in (16) is unmarked, whereas the depictive controlled by the subject takes ergative case:

(16) Gooniyandi (Bunuban, NPN):
Goornboo$_i$ thirri gardboowoona yoowooloo-jangi-ngga$_i$.
woman fight she:belts:them man-SIMIL-ERG
'The woman fights like a man.' (McGregor 1990: 346)

Secondary predicates – more precisely non-finite subordinate clauses of the type discussed in section 2.3 – have also been used as one of the tests for the existence of grammatical relations like subject and object in the languages in question (in particular Warlpiri), including dative objects as in (9c). First, the non-finite subordinate clause is marked differently according to whether the controller is a subject, an object, or neither; and second, the non-overt, controlled argument always has to be the subject of the subordinate clause (cf. Hale 1982: 294, 1994; Simpson and Bresnan 1983; Simpson 1988, 1991: 314; Laughren 1989: 330–336, 1992: 202; Speas 1990: 160–162). Having clear syntactic tests for grammatical relations is, of course, important in languages where subject and object are identified neither by their syntactic position (because of the 'non-configurational' nature of the language in question) nor directly by case marking (because the language is, like Warlpiri, morphologically ergative).

2.5 *Word class and internal structure of depictive secondary predicates*

Depictive secondary predicates can be classified according to their marking (e.g., agreement – see section 2.2 – or marking for control and relative tense – see section 2.3), but they can also be subdivided according to their word class and

internal structure. In this respect, too, one is forced by data from Australian languages to reconsider the range of constructions to be analyzed as secondary predicates.

2.5.1 Nominal and adjectival secondary predicates

In the standard examples found in the literature, e.g. (1), depictives are simple adjectives, and occasionally adjectival phrases. Not surprisingly, in Australian languages we also find corresponding examples where the secondary predicate is adjectival in that it encodes a temporary state or condition; examples are (2), (5), and (6).

It has often been claimed that only (adjectival) predicates encoding a temporary state, not predicates encoding a permanent quality or property, may function as depictives. Following Carlson (1977a), Stump (1985), and Kratzer (1995), the two types of predicates are also known as *stage-level* vs. *individual-level predicates* (see chapter 58). Compare (17a) and (17b):

(17) a. The snake ate the mouse alive. (stage-level predicate)
b. ??The snake ate the mouse bony. (individual-level predicate)

In many Australian languages, though, there is no clear morphosyntactic distinction between adjectives, nouns, and adverbs, which are just subclasses of nominals. Consequently, both stage-level predicates and individual-level predicates, e.g., common nouns, can be used as depictives (cf. Hale 1983; Simpson 2005). In (18), the nominal *ngarrka* 'man' predicates on the object of a perception verb. As Hale (1983: 32) states, this interpretation "is perfectly natural in a variety of situations, including, for example, that in which the speaker sees a male person (formerly 'a boy') after his initiation (now 'a man'. . .)":

(18) Warlpiri (Ngumpin-Yapa, PN):
Ngarrka ka-rna nya-nyi.
man(ABS) PRS-1SG.SBJ see-NPAST
'I see him as a man.' (Hale 1983: 31–32)

In English, as the translation of (18) shows, an NP has to be marked with *as* in order to serve as a secondary predicate. According to Stump (1985: 272–277), the predicative marker *as* is an explicit device turning individual-level predicates into stage-level predicates. Warlpiri, however, appears to lack this strict stage-level/individual-level distinction. (Note that the restriction of depictives to stage-level predicates has to be given up in any case if the version of the pronominal argument hypothesis is adopted according to which all lexical expressions are secondary predicates, or if 'part' expressions are also analyzed as depictives; see sections 3.1.1 and 3.2).

In addition to simple nominals and adjectivals, there are good reasons for also analyzing many types of case-marked noun phrases and adpositional phrases as secondary predicates; these are discussed in section 3.3.

2.5.2 *Deverbal secondary predicates*

In many languages, not only nominals but also non-finite verb forms can serve as depictive secondary predicates. This is well known for the so-called participles of English and many other European languages, which function just like adjectives in that they can be used as attributes, as main predicates, and as adjuncts (consider *Joy arrived drunk*, with a past participle functioning as secondary predicate). For non-finite verb forms which are restricted to adjunct function (but which cannot be used as attributes), the term *converb* has been suggested in the literature (cf. Haspelmath and König 1995).

Some Australian languages have a wide range of converb constructions. (Other languages do not have non-finite verb forms at all.) These converb constructions include not only simple deverbal predicates, but also more complex constructions, i.e., subordinate clauses. A subset of these can be identified as secondary predicates: first, by the fact that they are obligatorily controlled, i.e., they do not allow their subject to be overtly expressed; and second, by case agreement with their controller. However, in grammatical descriptions and theoretical accounts of these deverbal constructions, they are variously analyzed as adverbials, depictive secondary predicates, or subordinate clauses with switch-reference marking (see also section 2.3).

A possible objection to the analysis of obligatorily controlled converbs and converb clauses as secondary predicates is based on the fact that these deverbal forms typically express 'relative tense', e.g., simultaneity or anteriority. Standard depictives, on the other hand, express a temporary condition or state. In order to analyze converb constructions – especially when they show agreement with a controller – as depictive secondary predicates, one therefore either has to show that they encode a state despite the relative tense marking, or extend the notion of secondary predication.

Some authors recognize certain converb clauses as secondary predicates and use the term 'eventive' secondary predicate, e.g., for subordinate clauses in simultaneous interpretation (see section 2.3). A simultaneous converb, just like the present participle *laughing* in *Joy left the party laughing*, can be interpreted as encoding a state – the state of being in the process of (simultaneously) performing an event.

Similarly, an anterior deverbal predicate (such as the English past participle *drunk*) or a clause headed by an anterior form can be regarded as encoding a post-state of the event which is denoted by the lexeme from which it derives. This post-state holds simultaneously to the event encoded by the main predicate, and it is ascribed to the controller. In many Australian languages, anterior deverbal forms (just as in Latin and other Romance languages) agree in case with a controller. For example, in Kayardild, anterior deverbal predicates are formed by adding both a resultative suffix and a nominalizer ('NR') to the verb stem. The resulting forms can be used as simple depictives, as in (19a), and as heads of non-finite clauses functioning as depictives, as in (19b) (Evans 1995: 476–480):

(19) Kayardild (Tangkic, NPN):
   a. Nga-l-da wara-tha niwan-ji dara-thirri-n-ji.
      1-PL-NOM send-ACTUAL 3SG.OBJ break-RESULT-NR-OBJ
      'We sent him away circumcised.' (Evans 1995: 333)
   b. Dathin-a dulk-a mirra-a [kajakaja-na
      that-NOM place-NOM good-NOM daddy-ABL
      wukuwa-thirri-n-d].
      work-RESULT-NR-NOM
      'That place (garden) is lovely (having been) worked on by daddy.'
      (Evans 1995: 479)

Subordinate (converb) clauses encoding subsequent or intended events which show case agreement are also found in some Australian languages, including Kayardild (Evans 1995: 419–420), Yukulta (Keen 1983: 247), Warlpiri (Hale 1982: 281–289; Nash 1986: 261), and Yankunytjatjara (Goddard 1985). Most of these languages distinguish a purposive form marking personal intent (with agreement) from a general purposive (without agreement), which is used to indicate conventional, socially recognized purposes, and which is also found in 'different subject' expressions. The difference is illustrated in (20) for Yankunytjatjara. The general purposive marker *-ku* is shown in (20a) in 'different subject' function (the people who pour the petrol are not identical with the people who intend to return). In contrast to the general purposive, the 'intentive' marker *-kitja* always triggers agreement marking with the subject in absolutive or ergative case, respectively. It is used when the purpose of an activity is ascribed to the subject, and when, at the same time, this purpose is not obvious, i.e., when it is not conventionally recognized, but rather ascribed to the personal motivation of the agent. Thus, the 'intentive' indicates that getting firewood in (20b) and taking off the water pump in (20c) are the agent's personal intentions, non-obvious for others:

(20) Yankunytjatjara (Western Desert, PN):
   a. Munu tjuti-ra yunga-nyi kurlpa-nytja-ku.
      and pour-SERIAL give-PRS return-INF-PURP
      'And he will pour (us) some (petrol) for returning (i.e., so that we can go home).' (Goddard 1985: 164)
   b. Wati ya-nu waru urra-ntji-kitja.
      man(ABS) go-PAST fire(ABS) get-INF-INTENT
      'The man went off (because he wanted) to get firewood.'
      (Goddard 1985: 159)
   c. Carburettor-rna arra-rnu water pump-kitja-ngku.
      carburettor(ABS)-1SG take.off-PAST water pump-INTENT-ERG
      'I took off the carburettor wanting the water pump (e.g., mistakenly removed the carburettor, or removed the carburettor to get at the water pump).' (Goddard 1985: 131)

The semantic contrasts involved suggest that the constituents marked by the specific 'intention' markers in Yankunytjatjara and other languages, but not those marked by the general purposive markers, are depictive secondary predicates. Semantically, it is the intention to bring about an event that is predicated on the controller, as indicated by agreement. Thus, while the event represented by the noun phrase or subordinate clause is in a sense subsequent to the event represented by the main predicate, the intention clearly holds simultaneously with the event expressed by the main predicate. The parallel behavior of nominalized verbs (20b) and underived nominals (20c) lends further support to a parallel analysis of nominal and deverbal depictives. (Note that intentive expressions of this type are analyzed as 'subject-oriented NPs' rather than as secondary predicates by Dench and Evans 1988: 17–18; however, the authors do not give clear reasons for the distinction, nor do they indicate which other expression types should be analyzed as subject-oriented NPs.)

2.5.3 Secondary predicates from other word classes

Australian languages also feature secondary predicates that are neither nominal nor (de)verbal. For some languages – e.g., Kayardild (Evans 1995: 231), Martuthunira (Dench 1995: 53), and Yankunytjatjara (Goddard 1985: 57–58) – a nonverbal word class restricted to predicative function has been described. Because its members take nominal inflections in agreement with a controller, these are sometimes subsumed under the class of nominals or adjectives. However, if nominals and adjectives are defined as a class of words that may be used in referential and attributive function, respectively, this term does not apply to the category in question, which is restricted to predicative use without showing the formal characteristics of verbs. Most of these predicates express a condition or a posture. An example from Kayardild is *mibulka* 'asleep', used as a depictive in (21) (the second depictive in this clause, *malangarrba* 'drunk', is a true adjective which may also be used attributively):

(21) Kayardild (Tangkic, NPN):
Mibulk-i kurdala-tha kajakaja-y malangarrba-y.
asleep-OBJ spear-ACTUAL daddy-OBJ drunk-OBJ
'He speared your daddy (who was) asleep and drunk.' (Evans 1995: 333)

In addition, Kayardild has a small class of lexemes which are not only inherently predicative, but restricted to depictive function. That is, words from this class are always used as adjuncts, and in this respect resemble adverbs, but they also obligatorily agree in case with one argument of the clause (Evans 1995: 227–229). Lexical items with similar properties have been described for Warlpiri (Hale 1982: 279–280) and Diyari (Austin 1981a: 107–108), although they are simply considered a subset of nominals by some authors (e.g., Hale 1983; Simpson 1991: 125–129). Semantically, they mainly comprise notions of manner. An example is *parraparra* 'loud, energetic' in Diyari, illustrated in (22):

(22) Diyari (PN):
  a. Wata yini parraparra pithi-ya.
  not 2SG.SBJ energetic(ABS) fart-IMP
  'Don't fart loudly!' (Austin 1981a: 107)
  b. Nhulu karna-li kirra parraparra-li warra-yi.
  3SG.NONF person-ERG boomerang(ABS) energetic-ERG throw-PRS
  'The man throws the boomerang energetically.'
  (Austin 1981a: 107)

A second type of nonverbal predicate constituting a distinct part of speech is also found in (mainly northern) Australian languages, including Warlpiri (Nash 1982; Simpson 1991), Jaru (Tsunoda 1981), Gija (Kofod 1996), Jaminjung (Schultze-Berndt 2000), Wardaman (Merlan 1994), and Wagiman (Wilson 1999). Predicates of this type, termed 'coverbs', 'preverbs', or 'verbal particles' in the literature, form an open class with possibly thousands of members. These differ in morphology and distribution from inflecting verbs (the latter form a closed class in most of these languages). They cannot form the main predicate of an independent main clause, and they only occur as part of a complex predicate together with an inflecting verb, or as the main predicate in a subordinate clause. Some of these subordinate clauses, in turn, can be analyzed as depictive secondary predicates. An example from Wardaman is given in (23). In (23a), the unmarked positional verbal particle *mugurn* 'lie, sleep' forms a complex predicate with an inflecting verb (which happens to be roughly synonymous). In (23b), the same verbal particle takes the allative case, which here, as in Warlpiri (see section 2.3), has an object complementizer function. The resulting expression is a subordinate clause functioning as an object-controlled depictive:

(23) Wardaman (NPN):
  a. Mugurn ya-gurrgba nana bangbun.
  lie/sleep 3SG-sleep.PRS that(ABS) woman(ABS)
  'The woman is sleeping.' (Merlan 1994: 441)
  b. Ngon-mowojba-rri mugurn-garr.
  3SG.SBJ:1SG.OBJ-sneak.away-PAST lie/sleep-ALL/OCOMP.SIM
  'He left me sneakingly (while I was) asleep.'
  (Merlan 1994: 287)

To summarize: in Australian languages, parts of speech found in secondary predicate function include not only nominals and adjectivals, but also deverbal predicates, the verbal particles (or preverbs/coverbs) found in the northern area, and, in some languages, a class of 'manner nominals' which show obligatory case agreement but only appear in adjunct position and can therefore be analyzed as a distinct part of speech restricted to depictive function. Likewise, the internal complexity of the secondary predicate may vary; there is some evidence that case-marked NPs or adpositional phrases and subordinate clauses should be considered depictives.

3 What counts as secondary predication?

3.1 Secondary predication and non-configurationality

Australian languages, and in particular Warlpiri, have played a prominent role in discussions of non-configurationality, e.g., Blake (1983), Hale (1983, 1989, 1992, 1994), Jelinek (1984), Heath (1986), Nash (1986), Laughren (1989), Speas (1990), Simpson (1991), Austin and Bresnan (1996), Baker (1996, 2001), and Austin (2001). Many Australian languages have properties which contrast sharply with the properties of configurational languages such as English: they have free word order, they freely allow zero anaphora (i.e., omission of lexical arguments), and clauses have a 'flat' syntactic structure (i.e., there is no evidence for a category verb phrase). While it has recently been recognized that non-configurationality is not a unified phenomenon (cf. Austin and Bresnan 1996; Baker 2001), these features were originally conceived of as being in correlation. The formulation of a Configurationality Parameter (Hale 1983) was based on languages like Warlpiri where these features do in fact coincide.

Jelinek (1984) proposes to link free word order and zero anaphora, as well as a number of other phenomena such as split case marking, to the presence of clitic pronominals in Warlpiri. According to Jelinek's proposal, known as the pronominal argument hypothesis, bound or clitic pronominals have argument status in non-configurational languages, while the corresponding noun phrases are analyzed as adjuncts which are licensed by the pronominal arguments but which do not have argument status themselves. Building on this analysis, it has occasionally been argued that the adjunct noun phrases are in fact secondary predicates (section 3.1.1).

Languages which exhibit another feature often associated with non-configurationality – the possibility of discontinuous expressions – pose a further problem for the theory of secondary predication. This is the problem of distinguishing between attributes in a discontinuous noun phrase and depictive secondary predicates (section 3.1.2).

3.1.1 The status of nominal expressions in non-configurational languages

Jelinek (1984) suggests that in head-marking non-configurational languages like Warlpiri, only the clitic pronominals – which in (24) are attached to the tensed auxiliary – have argument status, not the nominal expressions (e.g., *maliki ngaju-nyangu* 'my dog' and *kuyu* 'meat' in (24)). Under this analysis, a configurational structure for a clause like (24) can be maintained:

(24) Warlpiri (Ngumpin-Yapa, PN):
[Maliki ngaju-nyangu-ku] ka-rna-rla kuyu yi-nyi.
dog 1SG-GEN-DAT PRS-1SG.SBJ-3SG.IO meat(ABS) give-NPAST
'I am giving meat to my dog.' (Hale 1994: 189)

Jelinek's proposal has later been modified (e.g., by Baker 1996) to the effect that the real arguments are empty categories (*pro*) which license agreement of the bound or clitic pronominals. Under both versions of the pronominal argument hypothesis, various solutions have been proposed for the status of the overt nominal expressions. Jelinek (1984) originally analyzed them as adjuncts which are 'ad-argumental' because they are co-indexed with a (pronominal) argument. Speas (1990: 165–170) then suggests – again, with reference to Warlpiri – that they could be analyzed as secondary predicates, conceived of as modifiers undergoing theta-merger of their argument with one of the arguments in the verbal grid. This analysis relies on the presence of case markers – considered as argument-taking predicates – in Warlpiri and related languages.

Baker (2001) defends the secondary predicate analysis of overt nominal expressions in non-configurational languages, at least for languages of the Warlpiri type, which he distinguishes from languages whose non-configurational properties result from scrambling or dislocation. One of Speas's and Baker's main arguments in support of the secondary predicate analysis is that this type of structure is needed, in any case, in order to account for the use of nominals as secondary predicates in Warlpiri in examples like (18). Baker (2001: 428–433) further claims that because of the lack of a distinction between nouns and adjectives in Warlpiri (see section 2.5.1), all nominals are really adjectival, i.e., "good predicates" and "bad arguments." He explicitly recognizes that this proposal extends the notion of secondary predication far beyond the traditional notion (note that in this approach, *maliki ngaju-nyangu* 'my dog' and *kuyu* 'meat' in (24) are assigned the same status as *alive* in *the snake ate the mouse alive*). Consequently, the restriction that only stage-level predicates can function as depictive secondary predicates (see section 2.5.1) has to be given up. Baker also recognizes that in this account depictive secondary predicates in English and in Warlpiri differ strikingly in their pragmatic function and communicative effect.

Speas's and Baker's analysis therefore deviates from Hale's. Hale (1983) explicitly distinguishes the predicative and the referential or "argumental" use of nominal expressions (thus, he states that (18) also has a second reading 'I see a man'). He also states that the class of nominals/adjectives spans a continuum from items that are more likely to be used referentially (such as determiners or free pronominals) to items that are more likely to be used predicatively, even though he also remarks that the predicative use is much more pervasive in Warlpiri than in English. Nordlinger (1998: 40–41) also cites the existence of "nominals" restricted to secondary predicate function (see section 2.5.3) as evidence against the secondary predicate analysis of all nominal expressions.

Austin and Bresnan (1996), Nordlinger (1998: 34–43), and Austin (2001) raise several other objections to the adjunct analysis of overt nominal expressions. One is that in some languages at least, some types of overt nominals are obligatory (and hence cannot be adjuncts), e.g., dative indirect objects of verbs like *ayani* 'search' in Wambaya, which, as (25) shows, are not cross-referenced by a bound pronominal:

(25) Wambaya (West Barkly, Mirndi, NPN):
Ayani gi-n babanya juwa-nka.
search 3SG.SBJ.PRS-PROG sister(ABS) man-DAT
'(My) sister is looking for a man.' (Nordlinger 1998: 35)

It seems that despite the advantages of the secondary predicate analysis of nominal expressions in non-configurational languages, the ramifications of this proposal for the theory of secondary predication have to be given more careful consideration.

3.1.2 Depictives vs. attributes in a discontinuous noun phrase

Under one definition of non-configurationality, the phenomenon of discontinuous noun phrases is considered an important characteristic of non-configurational languages (cf. Hale 1983). As Austin and Bresnan (1996) have shown, though, not all Australian languages that allow free order of phrases also allow discontinuous noun phrases. In those that do, this raises a problem for the distinction between depictive secondary predicates and attributive modifiers, since it can no longer be drawn in terms of word order alone (Dench and Evans 1988: 14; Schultze-Berndt and Himmelmann 2004: 81–84).

A widely accepted proposal, at least in the Australianist literature, was pioneered by Hale (1981a). This is that attributes in discontinuous noun phrases may have either a 'merged' (i.e., restrictive) or an 'unmerged' (i.e., non-restrictive) reading. Both are illustrated in (26):

(26) Warlpiri (Ngumpin-Yapa, PN):
Maliki-rli 0-ji yarlku-rnu wiri-ngki.
dog-ERG PERF-1.OBJ bite-PAST big-ERG
a. 'The/a big dog bit me.' (merged interpretation)
b. 'The/a dog bit me and it was big.' (unmerged interpretation)
(Hale 1983: 38)

A number of authors, including Nash (1986), Simpson (1991), and Nordlinger (1998), have proposed that non-restrictive attributes should be analyzed just like secondary predicates. It is, however, also possible that the two types of constructions can be distinguished by prosodic means. Austin (1981a: 108) claims that the Diyari clause in (27) with sentence stress on *nganhthi* has the attributive reading, but with a slight intonation break after *nganhthi* and stress on *thungka*, it has the secondary predicate reading. Similar suggestions have been made by McGregor (1992a: 316) and Hale (1994: 193):

(27) Diyari (PN):
Nhawuya nganhthi thungka parni-yi.
DEM.3SG.NONF meat(ABS) rotten(ABS) smell-PRS
a. 'This rotten meat smells.' (attribute)
b. 'This meat smells rotten.' (secondary predicate) (Austin 1981a: 108)

The prosodic properties of discontinuous modifiers in comparison with depictives, and the distinction between non-restrictive modifiers and depictive secondary predicates, remain a matter for further investigation.

3.2 *Part–whole expressions*

There exists a further construction type that has been analyzed as an instance of secondary predication by some authors. In many Australian languages, the preferred way to express the idea that a body part is involved in an event is to treat its 'possessor' as a core argument, i.e., as an external possessor (cf. Dixon 1980: 293; McGregor 1985, 1999; Blake 1987: 94ff.; and several contributions in Chappell and McGregor 1996). The body part (understood in a wide sense, i.e., including other inalienable part–whole relations like names, shadows, etc.) is represented as an additional noun phrase which shows case agreement with the possessor expression. In languages with bound pronominals or pronominal clitics, the possessor can be identified as the core argument or 'syntactically active' argument in that it triggers pronominal agreement. The phenomenon is illustrated in (28) with data from Warrwa for a transitive and an intransitive verb, respectively:

(28) Warrwa (Nyulnyulan, NPN):
a. Dab nandiny-ngayu nimala.
touch 3SG.SBJ:caught-1SG.OBJ hand(ABS)
'He touched me on the hand.' (lit.: 'he touched me hand')
(McGregor 1999: 433)
b. Ngayu nga-lma bingbal nga-nyjan.
1SG(ABS) 1SG.POSS-head(ABS) sore 1SG.SBJ-say/do
'I've got a sore head.' (lit.: 'I do/am sore my-head')
(McGregor 1999: 434)

The grammatical status of the 'part' expression in constructions like these (e.g., *nimala* 'hand' in (28a) and *nga-lma* 'my head' in (28b)) has been a matter of debate in the literature. It has been described both as part of the same noun phrase as the 'whole' expression, and as a separate constituent (cf. Blake 1987: 95ff.). Of those authors who consider the 'part' expression a separate constituent, some follow Hale (1981b) in the view that it functions as a secondary predicate (e.g., Hale 1983: 39–40; Laughren 1992; Ogawa 2001). Indeed, a property that 'part' expressions in this type of construction share with secondary predicates in the narrow sense is the existence of a semantic relationship between an argument of the main predicate and the additional constituent. In the Australian languages under discussion, this semantic relationship is also formally reflected by case agreement.

However, there are also good reasons for distinguishing 'part' expressions and secondary predicates. The secondary predicate analysis has been most explicitly criticized by McGregor (1985), who raises the objection that a 'part' expression can never serve as a main predicate, and is thus not, intuitively, a predicate (the

paraphrase 'he touched me and I am a hand' is as semantically deviant in the Australian languages in question as it is in English). Moreover, what is true of the part is not necessarily true of the whole; in other words, the 'part' expression is not optional, as in the case of true secondary predication. Rather, according to McGregor (1985: 210), the 'part' expression "specifies the EXTENT or LOCUS of the argument's involvement in the action." Harvey (1996) and Schultze-Berndt (2000: 184–186) also reject the secondary predicate analysis of 'part' expressions. Dench and Evans (1988: 13–18), likewise, distinguish the two construction types, although both are subsumed under constructions showing "referential agreement."

3.3 Depictives vs. adverbials

3.3.1 Manner expressions

As shown in sections 2.1 and 2.2, the traditional notion of secondary predication has been extended in a number of ways in order to account for phenomena in Australian languages. Another problem encountered in the analysis of Australian languages is the difficulty of drawing a borderline between adverbials and secondary predicates. For example, in a number of languages expressions which would normally be classified as manner adverbials on semantic grounds belong to a word class restricted to predicative function or even secondary predicate function and show obligatory case agreement (see section 2.5.3). An example of a manner secondary predicate from Diyari is given in (22); another example, from Yankunytjatjara, is given in (29):

(29) Yankunytjatjara (Western Desert, PN):
Wati-ngku wala-ngku / puriny-tju kati-nyi.
man-ERG quickly-ERG/ slowly-ERG take-PRS
'The man is taking it quickly/slowly.' (Goddard 1985: 57)

Dench and Evans (1988: 14–15) distinguish "ascriptive" and "adverbial" secondary predicates, on the basis of the semantic type of adjunct expression and whether it can, in principle, serve as the main predicate in a non-verbal clause. Schultze-Berndt and Himmelmann (2004) and Himmelmann and Schultze-Berndt (2005) present a cross-linguistic survey of adjunct types which have the properties of depictives at least in some languages. On the basis of agreement phenomena in Australian and other languages, they conclude that many expression types may be construed as either argument-oriented (and consequently encoded as secondary predicates) or event-oriented (and consequently encoded as adverbials). In addition to manner expressions and also those types of subordinate 'adverbial' clauses discussed in section 2.3, there are several other expression types that are encoded as secondary predicates in at least some Australian languages. These include quantifiers (McGregor 2005), comitative phrases, (30–31), similative phrases, (7) and (16), locative and directional phrases, (32–33), and even

temporal phrases, (34). All examples illustrate agreement of the adjunct constituent in question with one argument of the main predicate, usually the subject.

3.3.2 Comitative expressions

Comitative expressions, when construed as secondary predicates, e.g., by agreement marking, make explicit the relationship between the comitative argument and the argument of the clause that is said to be accompanied (usually, but not necessarily the subject). An example is (30) from Warlpiri:

(30) Warlpiri (Ngumpin-Yapa, PN):
Kurdu-ngku ka ngurlu kipi-rni karnta-ngkajinta-rlu.
child-ERG PRS mulga.seed(ABS) winnow-NPAST woman-COMIT-ERG
'The child, with the woman, is winnowing mulga seed.' (Hale 1982: 272)

For Kayardild (Evans 1995: 420) and the related language Yukulta (Keen 1983: 247–248; Evans 1995: 421), agreement even extends to the 'theme' participant of verbs of transfer (i.e., the transferred entity) in some cases. The verbs of giving and deprivation in these languages allow for a number of case frames, among them one where the 'theme' takes proprietive case (a marker of concomitance). As shown in (31), this is followed by ergative marking in agreement with the transitive subject. According to Evans (1995: 420), this case frame "stresses the ownership by SUBJ of the thing transferred, either before ('give') or after ('deprive') the transfer":

(31) Yukulta (Tangkic, NPN):
Kunawuna-nganda wuu-ja kulthangarr-urlu-ya.
child.ACC-1SG.SBJ:PAST give-ACTUAL flying.fox-PROP-ERG
'I gave the child a flying fox.' (lit.: 'I presented the child with a flying fox')
(Keen 1983: 248)

3.3.3 Locative and directional expressions

The fact that locative expressions are not necessarily event-oriented (in that they indicate the location of an event as a whole), but can also have an argument-oriented reading (in that they indicate the location of only one of the arguments in an event), has occasionally been noted in the literature, e.g. by Müller-Bardey (1990), Takezawa (1993: 55), and Maienborn (2001). In Warlpiri, a locative expression may (optionally) show case agreement with a controller, as illustrated in (13) and (32). In (32), the man and the boomerang are in the same place, but the location is ascribed to the man, probably because he corresponds to the more prominent argument:

(32) Warlpiri (Ngumpin-Yapa, PN):
Ngarrka-ngku ka jarnti-rni karli ngurra-ngka-rlu.
man-ERG PRS trim-NPAST boomerang(ABS) camp-LOC-ERG
'The/a man is trimming the boomerang in the/a camp.'
(Simpson and Bresnan 1983: 57)

Not only locative expressions but also directional expressions can be understood as predicating on one of the arguments of the main predicate. In (33), the interpretation is that the man is in the state of being oriented in the direction of the sandhill:

(33) Walmatjarri (Ngumpin-Yapa, PN):
Jilji-karti-rlu ma-nya wanyjani yapa-warnti nganpayi-rlu.
sandhill-ALL-ERG AUX-3PL.OBJ leave:PAST child(ABS)-PL man-ERG
'The man left the children on his way to the sandhill.'
(Hudson 1978: 35–36)

3.3.4 Temporal expressions

Temporal expressions constitute the perhaps most puzzling case of expressions whose formal make-up, in at least some languages, suggests an analysis as depictive secondary predicates. Temporal expressions are generally considered a paradigm case of event-oriented adverbials. Still, it is well known that they may agree with an argument of the main predicate in Ancient Greek and in Latin. Some Australian languages, too, have a class of temporal nominals which, at least optionally, agree with the subject in (ergative or absolutive) case. In Warlpiri, this class contains, among others, the terms *jalangu* 'today' and *pirrarni* 'yesterday' (cf. Hale 1982: 281). The latter is illustrated in (34):

(34) Warlpiri (Ngumpin-Yapa, PN):
Ngayi luwa-rnu marlu pirrarni-rli.
just shoot-PAST kangaroo(ABS) yesterday-ERG
'He just shot a kangaroo yesterday.' (Hale 1994: 204)

With regard to Warlpiri examples such as (34), Simpson (1991: 208–209) and also Nordlinger (1998: 118–121) maintain that the temporal expressions are adjuncts which modify the whole clause and do not stand in a depictive relation to the subject. These authors claim that the ergative case on these expressions merely indicates that the clause as a whole contains an ergative subject. Hale (1982: 281), on the other hand, suggests that temporal expressions of this type could be analyzed as depictives, considering that "an entity can be located in a time as well as in a place."

4 Conclusion

If one considers all models and proposals that have been put forward in the analysis of Australian languages, the label 'secondary predicate' has been used for a wide range of construction types, including lexical nominal expressions coreferential with the 'pronominal arguments' in non-configurational languages, 'part' expressions in external possession constructions, and many types of adjuncts (including subordinate clauses) which exhibit case agreement with one

of the arguments of the main predicate. These include a number of expressions that are traditionally analyzed as adverbials on semantic grounds. Australian languages, thus, provide a good test case for any theory of secondary predication, and show particularly clearly that despite the considerable research efforts in recent years, we still lack a universally applicable definition of secondary predicates.

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58 Secondary Predication

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1 Introduction: overview and historical background

1.1 Background and basic data

The study of secondary predicates is important not only because of our interest in adequate descriptive grammars, but because of its theoretical relevance to at least two areas of grammatical theory: predication relations and aspect. This chapter will focus on secondary predication in English, where the construction is constrained in such a way as to make theoretical implications explicit. Where possible, reference will be made to studies in other languages and we will formulate the questions that these studies raise.

Secondary predicates are of two kinds: the so-called depictive predicates, illustrated in (1), and resultatives, illustrated in (2) (where the terminology comes from Halliday 1967):

(1) a. John$_i$ drove the car *drunk*$_i$.
b. Mary ate the carrots$_i$ *uncooked*$_i$.

(2) a. Jane painted the house$_i$ *red*$_i$.
b. Bill wiped the table$_i$ *clean*$_i$.

A depictive predicate attributes a property to its subject which holds of that subject all the time that the event denoted by the matrix verb is going on. Resultatives attribute a property to their subject which holds of that subject at the point that the event denoted by the matrix verb ends or culminates. Thus (1a) asserts that John drove the car and was drunk all the time that the driving event was going on, while (2a) asserts that Jane painted the house and at the end of the painting activity, the house was red. It has been suggested (Simpson 1983) that there is a third kind of secondary predicate, the circumstantial, but this seems essentially to reduce to a depictive predicate under the scope of a modal operator.

Although the existence of what are essentially secondary predicates had been noticed by a variety of grammarians (see, e.g., Jespersen 1954–1958), the earliest detailed description of the phenomenon seems to be in Halliday (1967). In his taxonomy of the grammatical constituents of a sentence, Halliday lists the 'attributive element' (see section 3 of his paper), which is essentially the Adjective Phrase. Among the grammatical uses of the attributive AP that he mentions is the function of ascribing a property to a participant in a process, the nature of which is determined by the meaning of a (non-copula) matrix verb. He makes the crucial distinction, which is expressed morphologically in English by the absence or presence of the adverbial inflection, between an adverb, which gives a property of the process itself, and the attributive (usually adjectival) modifier, which gives a property of a participant in the process; contrast the depictive predicate in (3a) with the adverbial in (3b):

(3) a. John left the room angry.
b. John left the room angrily.

For (3a) to be true requires John to be angry at the time that he left the room, while (3b) is compatible with John leaving the room in an angry fashion, though not actually being angry himself. 'John left the room angrily, although he was actually faking his displeasure' is perfectly felicitous. 'John left the room angry, although he was actually faking his displeasure' is infelicitous. (Secondary predicates can also be semantically distinguished from adverbs which are oriented toward a particular thematic participant, such as *reluctantly*. See discussion in Jackendoff 1972; Napoli 1975; McConnell-Ginet 1982; Geuder 2000; Rothstein 2004.)

Secondary predicates are most characteristically APs, although PP predicates are often found, and there is a restricted set of nominal predicates (examples of both are given in (4)). However, non-adjectival secondary predicates seem more often to be found as resultatives than as depictives:

(4) a. She reached the house out of breath.
b. He left the hospital a shade of his former self.
c. John broke the vase into pieces.
d. He painted the house a violent shade of scarlet.

There appear to be no VP secondary predicates, although it has been suggested that at least some participial modifiers, such as the one in (5), should be treated as secondary predicates:

(5) She walked down the street searching for her wallet.

Depictive and resultative predicates can be distinguished from each other by several syntactic and semantic properties, and attempts to explain these properties have been at the root of most studies of secondary predication.

Depictives can be subject- or object-oriented, as the indexing in (1) indicates, while resultatives can (usually) only be object-oriented. Thus there is no resultative reading of (6) with the meaning that John painted the house and when the house was painted he was tired:

(6) John_i painted the house tired_i.

As was pointed out by Jespersen and Halliday, resultatives in English allow so called 'fake reflexives' in which both intransitive and detransitivized verbs (such as the single-argument form of *drunk*) can take a reflexive object which is not their thematic argument and which is the subject of a resultative predicate, as in (7):

(7) a. He drank himself under the table.
b. The baby cried herself asleep.

(7a) means roughly 'He drank and at the culmination of the drinking event he was under the table' (i.e., too drunk to sit on a chair), and (7b) means roughly 'The baby cried until she was asleep.' These arguments are considered non-thematic because of the ungrammaticality of (8a, b) as opposed to (9) (where (9) should be compared with the examples in (2)):

(8) a. *He drank himself.
b. *The baby cried herself.

(9) a. Jane painted the house.
b. Bill wiped the table.

Further, these non-thematic arguments need not be reflexive:

(10) a. John sang the baby asleep.
b. The audience laughed the players off the stage.

Depictive predicates cannot be predicated of non-thematic subjects; thus (11) cannot have the reading 'John drove while he/Mary was crazy':

(11) John drove himself/Mary crazy.

A fundamental question is whether secondary predication structures are derived through syntactic or lexical operations. An obvious way to describe the semantic effect of secondary predication is that it results in the formation of a complex predicate. Thus whatever operation forms the secondary predication structure in (1a), it results in the formation of a complex predicate *drive the car drunk* which is applied to the subject *John.* Similarly, in (1b), a complex discontinuous predicate *ate . . . uncooked* is applied to the argument *the carrots*, while in (2a) *painted . . . red* is applied to the argument *the house.* However, the complex predicate formation operation can in principle be a lexical or a structural operation, with the complex predicate resulting either from a word-formation rule, or from an operation on either syntactic or semantic structures, applied during the construction of the sentence. Syntacticians (with some notable exceptions, indicated below) have tended to assume a syntactic adjunction structure, based in part on the fact that verb and predicate are never adjacent and never form a constituent (unlike verb–particle pairs), in part on the data in (29a), which indicate that the secondary predicate subject-oriented depictive is not part of the V', and in part on the desire to maintain a unified analysis for all the constructions illustrated above. Semantic analyses (e.g., Dowty 1979) have often assumed a lexical predicate formation rule for resultatives, and remained agnostic about depictives, although Wunderlich (1997a) treats both kinds of secondary predicate constructions as the output of a lexical operation.

1.2 Early generative discussion of secondary predication

Resultative predication became a topic of interest for generative formal semanticists in the 1970s (see, e.g., McCawley 1970; Dowty 1972, 1979; Green 1972). Resultatives were discussed in the context of analyses of the underlying structure of accomplishment verbs. In an aspectual characterization of verbs, 'process' events were divided by Vendler (1967a) into activity verbs heading atelic VPs, such as *run* and *push the cart*, and accomplishment verbs heading telic VPs, such as *paint the room* and *build the castle*. Dowty (1979: 91–99) summarized and developed the arguments for analyzing accomplishment verbs as decomposable into an underlying logical structure [ϕ CAUSE ψ], where ϕ is an activity sentence and ψ contains a sentence embedded under the predicate BECOME. (This is the

so-called 'bisentential analysis of CAUSE'.) Under this analysis, (9a) is analyzed roughly as in (12a), and by analogy (10a) would be analyzed as (12b):

(12) a. [[Jane did some painting to the house] [CAUSE [BECOME [the house painted]]]].
b. [[John did some singing] [CAUSE [BECOME [the baby asleep]]]].

Resultative phrases in general, and non-thematic resultatives in particular, were seen to support this analysis of accomplishments, since (i) sentences such as those in (10) seem to indicate explicitly that the grammatical template ϕ CAUSE[BECOME ψ]] is available in the language, and (ii) non-thematic reflexives show that the template could be used in an overt lexical operation which derives a phrasal accomplishment from an activity verb and an independent resultative predicate.

The intuition that non-thematic resultatives involve the construction of non-lexical accomplishment verbs is at the heart of many later analyses of resultative predication, and a great deal of research into resultatives since Dowty (1979) can be seen as an attempt to make this intuition precise, and to examine its syntactic consequences. Section 3 below discusses this issue in detail.

While interest in secondary predication in the 1970s was semantic, and focused on resultative predication, syntactic interest in secondary predication built up around the beginning of the 1980s. Syntacticians analyzed depictive and resultative predication as different instantiations of the same phenomenon.

Edwin Williams's seminal (1980) paper "Predication" explicitly made the leap of recognizing secondary predication as an instantiation of the same relation that is involved in clausal predication, and opened the way for discussion of what exactly that relation is and how secondary and primary predication differ. Williams (1980) implicitly, and Simpson (1983) followed by Rothstein (1983) explicitly, followed Halliday (1967), who argued that resultative and depictive predication are themselves two instantiations of the secondary predication relation. In this they differed from, e.g., Dowty (1979, 1982a), who argued that resultative predication is the result of a lexical operation of complex verb formation, while depictive predication is adjunct predication.

The syntactic questions about secondary predication which interested syntacticians centered on questions of licensing, and for those working in a Government-Binding framework, the discussion focused, at least initially, on depictive predicates. The questions asked were: (i) where subject-oriented and object-oriented predicates are generated, and (ii) whether the predicate is a sister of its apparent subject, or whether it forms a small clause with a PRO subject, where PRO is obligatorily controlled by the apparent subject. Thus (13b, c) were competing structures for the object-oriented reading of (13a):

(13) a. John met Mary$_i$ angry$_i$.
b. John [met Mary$_i$ angry$_i$]$_{VP}$.
c. John [met Mary$_i$] [PRO$_i$ angry]$_{SC}$.

Co-indexing in (13b) indicates predication, while in (13c) it indicates obligatory control. (Since we will not discuss the issues involved in determining the categorial status of small clauses here, I purposely do not indicate either the syntactic position or the categorial properties of small clauses, but label them 'SC'. See also the discussion in section 3.1 below.)

Government-Binding theory in the early 1980s, following the lead of Chomsky (1981), essentially came down in favor of (13c), with the exceptions being the work of Williams (1980, 1983a, and succeeding papers), Rothstein (1983), and Schein (1995). The point of contention was the status of the theta-criterion, i.e., the constraint on the assignment of thematic roles. Chomsky (1981) argued that the theta-criterion was essentially to be formulated as follows:

(14) **Theta-criterion** (Chomsky 1981):
   (i) Every argument must be assigned one and only one thematic role.
   (ii) Each thematic role must be assigned to one and only one argument.

This formulation rules out the possibility of one nominal argument being simultaneously the argument of more than one lexical head, and thus (13b) is immediately an illegal structure. Linguists who argued in favor of (13b) were forced to reformulate the theta-criterion in such a way as to allow double theta-marking in the case of secondary predication. Williams (1983a) argued that the domain of the theta-criterion should be the argument structure of the lexical head, ruling out the possibility of an argument being assigned two thematic roles by a single head, but allowing two separate heads to share an argument. Similar proposals were explored by others.

Linguists who accepted the theta-criterion as in (14) and thus adopted structure (13c) were forced to deal with a different problem, namely what position in the tree would allow the PRO subject of the small clause to be ungoverned. The difficulty in answering this question led some (including Chomsky himself) to argue that there were cases in which PRO was not ungoverned. Discussion of depictive predicates focused on these structural issues, although there was some discussion also of the semantic constraints on depictive predication, in particular of the apparent constraint that the depictive has to denote a 'transitory' or possibly stage-level property (Rothstein 1983; Rapoport 1991, 1999b). For the most part, however, discussion of depictive predicates centered on the structural issues, while discussion of resultatives stayed mostly in the domain of lexical semantics. It was argued that the 'direct object restriction' on resultatives could not follow from purely structural considerations, but must follow from aspectual considerations, such as the role of the direct object in 'measuring out' or determining the telic point of the event denoted by the verb, and the role of the resultative itself in delimiting the verb. See Tenny (1987, 1994), Levin and Rappaport Hovav (1995), and others.

Work in the 1990s began to discuss the semantic relationship between depictives and resultatives, moving the discussion of secondary predication as a general phenomenon back from the domain of predication theory to the domain of theories of aspect.

The structure of this chapter is as follows. Section 2 discusses the syntactic issues raised by secondary predication. This section is largely about secondary predicates and predication theory in general. Section 3 focuses on syntactic discussion of depictive predication, and section 4 on resultatives. Section 5 discusses some more recent developments in theories of secondary predication, which bring the topic squarely back into the domain of theories of aspect.

2 Secondary predication as a form of predication

2.1 Williams's theory of predication

Williams (1980) is a crucial point in the development of the theory of predication in general. He argues that predication is a relation between a maximal projection and a nominal argument, and that the relation is to be defined in terms of thematic role assignment:

(15) A predicate α is a maximal projection which assigns an external theta-role. The subject of a predicate α is that NP which is assigned a thematic role by α.

He furthermore claims that there is a strict structural relation between subject and predicate, namely that the subject must c-command and be c-subjacent to the predicate, where α c-commands β if every branching node which dominates α also dominates β, and α does not dominate β, and where α is c-subjacent to β if β is dominated by no more than one branching node which does not dominate α. Thus, Williams proposes that the predication relation should be defined in terms of thematic relations which themselves can be regulated by configurational relations. He makes several predictions about possible distribution of secondary predicates; in particular, the configurational c-command constraint rules out the possibility of prepositional objects being the subjects of secondary predication, and thus predicts the contrasts in (16) and (17), as well as others (on the assumption, which is supported by syntactic arguments, that the secondary predicate in (16b) is not inside the PP):

(16) a. I presented it to John dead.
b. *I presented John with it dead.

(17) a. John loaded the wagon full with hay.
b. John loaded the hay into the wagon green.
c. *John loaded the wagon with hay green.
d. *John loaded the hay onto the wagon full.

Examples like (18), however, indicate that there are thematic constraints on what the subject of a depictive can be, since (18b) is as unacceptable as (18a). On the basis of this kind of example, Williams argues that within the VP the secondary predicate is predicated of the theme:

(18) a. *John gave the book to $Mary_i$ $sick_i$.
b. *John gave $Mary_i$ the book $sick_i$.

2.2 *Rothstein (1983) and syntactic predication*

Rothstein (1983) argues that the predication relation is a essentially a non-thematic relation, and that this shows up in the fact that predicates can be predicated of pleonastic subjects, as in the small clause in (19):

(19) a. John considers it unlikely that they will arrive on time.
b. They made it impossible for anyone to win the lottery.

Rothstein argues that secondary predication is an instantiation of the same relation as clausal, or primary, predication, but that for reasons to do with licensing, there must also be a thematic relation between the secondary predicate and its subject. Primary predicates form a constituent with their subjects, and this constituent is licensed either by being tensed, or by being theta-marked, as in the case of small clauses such as those illustrated in (19). Secondary predicates do not form a constituent with their subjects (following the structure in (13b)), and are essentially adjuncts. The adjunct is licensed because it is predicated of an argument which is independently licensed as the thematic argument of another head.

2.3 *Are secondary predicates constituents of small clauses?*

The general syntactic issue discussed in Government-Binding theory concerns whether or not a secondary predicate is generated as the daughter of a small clause. The issue concerns both depictive and resultative predicates, but for the most part, discussion in the GB literature has centered on depictives. Chomsky (1981: chapter 2.6) briefly discusses depictive predicates in the context of the correct formulation of the theta-criterion. As noted above, *Lectures on Government and Binding* proposes that the theta-criterion, or condition on thematic role assignment, is a bi-uniqueness condition, formulated as in (14), repeated here as (20):

(20) **Theta-criterion** (Chomsky 1981):
(i) Every argument must be assigned one and only one thematic role.
(ii) Each thematic role must be assigned to one and only one argument.

Chomsky notes that Williams's examples of secondary predicates (from Williams 1980) are a problem for this principle, and proposes that in order to maintain the bi-uniqueness of the theta-criterion, the secondary predicate should be predicated of a PRO subject, and the correct interpretation of the subject should be given by the theory of control. Examples are given in (21), where (21b) is ambiguous between a subject-oriented and an object-oriented reading:

(21) a. John [left the room]$_{VP}$ [PRO angry].
b. John [met Mary]$_{VP}$ [PRO angry].

Chomsky distinguishes structurally between secondary predicates, which occur in adjunct small clauses, as in (21), and small-clause complements, such as those in (22) where the subject of the small clause is not the thematic argument of the matrix verb, and where the subject cannot be PRO:

(22) a. John considers [Mary a genius].
b. *John considers [PRO a genius].

Since (22b) is ruled out by the condition that PRO must be ungoverned, the structures in (21) require the small clause containing the depictive to be in an ungoverned position. As section 3.1 shows, there is strong evidence that secondary predicates in general must be inside the VP, with object-oriented predicates generated under V′. This means that under standard definitions of government, in which a head α governs everything which α m-commands (i.e., which is dominated by the maximal projection which α heads), it is impossible for the small clause to be in a non-governed position (see discussion in McNulty 1988). Chomsky does not discuss this in detail, but he raises the possibility that while theta-marked small clauses are transparent for government, and thus cannot have a PRO subject, non-theta-marked small clauses are opaque for government, so that their subject position is not governed and allows PRO. The position that (21) is the correct structure for secondary predicates is held also by Safir (1983), Stowell (1983), Hornstein and Lightfoot (1987), and, more recently, Franks and Hornstein (1992), who draw on data from Russian, and Legendre (1997), who draws on data from French to argue that secondary predicates are constituents of small clauses that are projections of the functional head Gender, and that the small clause is thus a Gender Phrase.

Williams (1980, 1983a, 1987), Schein (1995), and Rothstein (1983, 1995, 2001a) all reject the structural proposal in (21), and assume that the secondary predicate is generated without a subject, as a daughter of some projection of the V. Williams (1983a) argues explicitly against small clauses in either the cases illustrated in (21) or the ECM verbs represented by *consider* in (22). Schein takes the same position, while Rothstein (1983, 1995) argues that (22) is the correct structure for thematically marked small-clause complements of ECM verbs, but that there is no small clause in the case of adjunct predicates. The authors bring several arguments in against (21). Williams (1983a) argues that the correct way to capture the thematic independence of the secondary predicate from the main predicate is not to give it a PRO subject, but to revise the theta-criterion so that it states that no argument may be theta-marked more than once by the same head. Schein (1995) argues that non-thematic resultatives such as those illustrated in (23), where the argument of the secondary predicate is not theta-marked by the verbal head, presumably form small clauses with their subjects on Chomsky's theory, yet

although these small clauses are not theta-marked, they cannot have PRO subjects, as (24) shows:

(23) a. John ran the soles off his shoes.
b. Bill sang the baby asleep.

(24) a. *John ran PRO off his shoes.
b. *Bill sang PRO asleep.

Rothstein argues that there is good reason to assume that small clauses must be licensed by theta-marking, and that in (21), there is no way to license the small clauses. She uses the structural distinction between adjunct predication and complement small-clause predication to argue for the distinction between primary and secondary predication; primary predication occurs when the subject and predicate form a constituent, and it is a condition on primary predication that the subject is not theta-marked outside the constituent in which it occurs. On this account, (21) is inadequate, since it makes it impossible to distinguish between primary and secondary predication. (She discusses the problem of how to license the small clauses in (23) in Rothstein 2001a.) Other linguists have argued for and used a non-small-clause analysis of secondary predication; these include Roberts (1988a), Napoli (1989), Speas (1990), Carrier and Randall (1992), and Neeleman (1994a), who argues that in Dutch the predicate and the verbal head form a complex predicate. Obviously, studies of secondary predication within a framework such as Lexical Functional Grammar (e.g., Simpson 1983), which do not allow empty categories, have assumed a non-small-clause analysis throughout.

3 Depictives

3.1 Where are depictive predicates located in the tree?

Early syntactic work on secondary predicates for the most part followed Halliday in identifying depictives and resultatives as instantiations of the same mechanism. (As already mentioned, formal and generative semanticists differed from this in arguing from the beginning that resultative predication is the result of a lexical word-formation rule, while depictive predication is the result of syntactic complex predicate formation during the process of derivation. See, e.g., Dowty 1972, 1979, 1982a.) However, syntacticians tended to discuss the syntax of the two phenomena independently. Studies of depictive predication centered on two questions, one syntactic and one semantic. The syntactic question concerns where depictive predicates, and in particular, subject-oriented predicates, occur in the tree (i.e., under V', under VP, or not in the VP at all), and the related issue of the relevance of the mutual c-command constraint (i.e., that subjects and their predicates must c-command each other). This question does not arise with resultatives, since they appear to be predicates of direct objects, or subjects which

have been raised from direct object position (but see the discussion in section 5 below). The issue of syntactic position is independent of the issue of whether secondary predicates have a PRO subject or not, although it is related. If the subject of secondary predicate is PRO and the predicate and subject are part of a small clause, then they by definition c-command each other, and the question of interpreting PRO reduces to control theory. For that reason, the question of whether subject-oriented predicates are within the VP and the apparent conflict between VP-internal predicates and the c-command constraint has most concerned those who argue against a small-clause approach. However, the c-command constraint is also at stake in the analysis of secondary predicates and prepositional objects, as discussed in section 3.2. below. The semantic question focuses on what the semantic restrictions on the choice of depictive predicates are, but this has so far received much less attention in the literature.

Williams (1980) argues that the structural relation between subject and (secondary) predicate is based on c-command: the subject must c-command the predicate and be c-subjacent to it, where α is c-subjacent to β iff β is dominated by no more than one branching node which does not dominate α. Rothstein (1983) argues that the relevant relation is mutual c-command. It is fairly straightforward to argue that an object-oriented depictive is generated under the V′ as a sister to the V and its direct object, as in (25):

(25) Mary $[[\text{ate}]_{V}\ [\text{the carrots}]_{DP}\ [\text{raw}]_{AP}]_{VP}$.

However, the situation is more complicated with subject-oriented predicates as in (26):

(26) John drove the car drunk.

Rothstein (1983) claims that the mutual c-command condition predicts that these subject-oriented predicates are outside the VP, and Schein (1995) proposes the same structure. Schein bases his arguments on facts about agreement in Russian, described in Pesetsky (1982), and on quantifier-variable facts. The Russian data discussed by Pesetsky show that an adjunct predicate which has instrumental case can only be predicated of a direct object, while subject-oriented predicates must be in the nominative form. Schein argues that, under the assumption that instrumental case is assigned under government by V, this implies that a subject-oriented predicate cannot be governed by V, and thus must be outside the VP. Strictly speaking, though, it shows only that instrumental case must be assigned within VP and not that nominative case cannot be assigned to a VP-internal predicate. (See also Franks and Hornstein 1992 and Filip 2001 for more discussion of case-assignment facts with respect to Russian secondary predicates.) Schein also discusses the contrasts in (27):

(27) a. Everyone$_i$ left Mary angrier at herself than he$_i$ thought.
b. *Mary left everyone$_i$ angrier at herself than he$_i$ thought.

In (27a) the pronoun can be bound by *everyone* but in (27b) it cannot, indicating that when the secondary predicate is predicated of the subject, it is higher than the direct object.

However, tests for placement of adverbials presented in Andrews (1982) indicate clearly that these secondary predicates should be part of the VP although placed higher than the object-oriented predicates. This was pointed out in McNulty (1988), Rapoport (1991), Rothstein (1995, 2001a), and others. Andrews uses VP preposing, *though*-movement, and clefting tests, and applied to secondary predicates, the tests show that the secondary predicate is part of the VP:

(28) a. John_i said he would drive the car drunk_i and drive the car drunk_i he_i did.
b. Drive the car drunk_i though he_i did . . .
c. What John_i did was drive the car drunk_i.

However, (29a) shows that subject-oriented depictives may be stranded by pseudoclefting, while (29b) shows that in object-oriented depictives, this is not possible:

(29) a. What John_i did drunk_i was drive the car.
b. *What John did raw_i was eat the carrots_i.

In sum, the data show that a subject-oriented predicate can, but need not, be stranded by pseudoclefting, while an object-oriented predicate may not be stranded. Since, as is well known, pseudoclefting can target either the VP or the V′ constituent, the conclusion to be drawn from (27–29) is that the object-oriented predicate is the daughter of V′, while the subject-oriented predicate is daughter of VP. As such, the subject-oriented predicate will be higher than the direct object and the contrast in (29) will be explained.

Roberts (1988a) uses these facts to argue for VP-internal subjects. He shows that positing the structures in (30) allows one to maintain the mutual c-command constraint on predication, and to put subject-oriented secondary predicates inside the VP, where Andrews's tests predict that they should be:

(30) a. $[\text{e } [\text{Mary}_i \text{ [left the room]}]_{V'} \text{ angry}_i]_{VP}]_{IP}$
b. $[\text{e } [\text{Mary}_i \text{ [ate the carrots}_i \text{ raw}_i]_{V'}]_{VP}]_{IP}$

Rothstein (1995, 2001a) solves the conflict between the mutual c-command condition on predication and the evidence that subject-oriented predicates are VP internal in a different way. She argues that predicates which do not c-command a subject are absorbed into the predicate which dominates them by a syntactic process of complex predicate formation. In the case of *left the room angry, angry* is absorbed into the VP headed by *left* and the whole complex predicate is predicated of the subject. She argues that this is a better solution than Roberts's (1988a), since it applies also to subcategorized predicates, as in (31), which must be included in the V′:

(31) Mary $[[\text{feels happy}]_{V'}]_{VP}$

3.2 The c-command restriction and objects of prepositions

Williams (1980) argues that the c-command restriction rules out predicating secondary predicates of prepositional objects, as in the examples given in (16–17) above and repeated here as (32–33):

(32) a. I presented it to John dead.
b. *I presented John with it dead.

(33) a. John loaded the wagon full with hay.
b. John loaded the hay into the wagon green.
c. *John loaded the wagon with hay green.
d. *John loaded the hay onto the wagon full.

Williams notes the potential counter-example in (34), and argues that in this case *think of* has been reanalyzed as a single verb:

(34) He thought of John as silly.

Since V+P reanalysis is what is assumed to take place in pseudo-passives, we might well expect to get a correlation between prepositional objects which can host secondary predicates and prepositional objects which can be passivized, as in (35):

(35) John was thought of as silly.

In case-marking languages, the restriction that (non-reanalyzed) prepositional objects cannot host secondary predicates seems to be transferred to oblique marked objects. Levin and Simpson (1981) and Pesetsky (1982) argue that oblique objects cannot host secondary predicates. Schein (1995) argues that oblique case and prepositions should thus both be represented as P, and then in case-marking languages too, the restriction will reduce to the c-command constraint. However, examples like (36) indicate that the constraint may be thematic rather than structural. (36b) is as unacceptable as (36a) (both repeated from (18) above):

(36) a. *John gave the book to Mary_i sick_i.
b. *John gave Mary_i the book sick_i.

The dative direct object in (36b) can be the antecedent for an anaphor in VP, as in (37), and this supports the hypothesis that the restriction is thematic and not structural, and indeed, Williams claims that within the VP the secondary predicate is predicated of the theme:

(37) a. ??John gave the book about herself to every girl.
b. John gave every girl a book about herself.

Demonte (1987) brings interesting data from Spanish into the discussion. She is responding to arguments by Bresnan (1982d) and Zubizarreta (1987), who claim that the distribution of secondary predicates should be reduced to the theory of control. Demonte argues that Romance, specifically Spanish, makes a distinction between true prepositions and dummy case-marking prepositions. She shows that DP complements of dummy case-marking prepositions can host secondary predicates, while complements of true prepositions cannot. She argues that this is because true prepositions head PP phrases, while dummy prepositions are invisible to X-bar theory and do not project PPs. This still does not show unequivocally that the constraint is structural rather than thematic, since it is plausible that true prepositions and not dummy prepositions introduce thematic roles. Demonte's argument is the converse of Schein's: Schein proposes that oblique case is represented as P, while Demonte argues that dummy case-marking prepositions should be invisible for the calculation of c-command relations. The discussion of oblique objects is further complicated by work by Nichols (1978) and Simpson (1991) (cf. chapter 57), who report that in Finnish and Warlpiri respectively, oblique arguments may host secondary predicates. It is clear that much more work must be done on the relation between oblique case, oblique arguments, prepositions, and thematic marking before we can make progress on understanding this issue.

3.3 What are the semantic constraints on depictives?

Rothstein (1983) points out that there are semantic constraints on depictive predicates. It seems to be the case that the depictive must express a property which is non-inherent. Thus there are contrasts such as (38):

(38) a. Mary met John drunk.
b. *Mary met John tall.
c. I eat tomatoes fresh.
d. *I eat tomatoes non-synthetic.

Clearly the restrictions are context-dependent:

(39) a. ??I bought the blouse green.
b. I bought the blouse green but then I dyed it black.

There has been some, but not much, discussion of this in the literature, mainly in the context of the investigation of the contrast between stage- and individual-level predicates (see, e.g., McNally 1993), with attempts being made to explain (38) as a restriction that secondary predicates must be stage-level. Rapoport (1991) offers an essentially semantic explanation in terms of linking event arguments of the verbal and adjectival predicates, based on Kratzer's (1995) proposal that stage-level predicates have an event argument and individual-level predicates do not (see also Rapoport 1999b). However, work on adjectival modification

(Condoravdi 1992; Greenberg 1998) has shown that the stage/individual-level distinction is unlikely to correlate with the presence or absence of an event argument. Condoravdi argues that there are individual-level predicates which can be used as secondary predicates, for example (40), and that the restriction in (38) is pragmatic rather than semantic.

(40) He was born a Republican and he died a Republican.

Another area which remains to be investigated is the relation between secondary predication and APs used as absolutives, as discussed in Stump (1985) and illustrated in the construction in (41), which are adjuncts with a much freer semantic distribution than secondary predicates:

(41) Drunk, he walked down the street.

4 Resultatives

4.1 General issues

The two crucial syntactic properties which characterize resultative predication in English are: (i) the apparent object-orientedness of the predicates, as illustrated in (42); and (ii) the fact that resultatives can be predicated of an argument which is not a thematic argument of the matrix verb, illustrated in (43):

(42) a. John painted the house$_i$ red$_i$.
b. *John$_i$ painted the house tired$_i$.

(43) a. Bill ran the soles of his shoes$_i$ thin$_i$.
b. The audience laughed the actors$_i$ off the stage$_i$.
c. John ate himself$_i$ sick$_i$.

In (43a, b) the matrix verb is an intransitive, which is nonetheless case marking the subject of the resultative (as discussed in Rothstein 1992), while in (43c) the matrix verb is a transitive verb, which is no longer assigning the normal thematic role to its syntactic object. Thus while (42a) entails that John painted the house, the examples in (43) do not entail that Bill ran the soles of his shoes, that the audience laughed the actors, or that John ate himself. An obvious syntactic question is whether transitive and intransitive (or non-thematic) resultatives have the same syntactic structure. Syntactic research into resultatives has centered on these questions, but it has been apparent from the beginning that resultative predication is an aspectual phenomenon, and that the syntactic constraints will not be understood without understanding the lexical and semantic issues involved (see, e.g., Dowty 1979 and Hoekstra 1988, who both come to this conclusion from radically different theoretical assumptions). In particular, linguists have tried to derive the so-called 'direct object restriction' and the facts about non-thematic

resultatives from intuitions about the aspectual function of resultatives, as for example in the work of Bach (1980), Tenny (1987, 1994), Hoekstra (1988), Levin and Rapoport (1988), and Rapoport (1991), to name but a few.

The first relevant fact here is that resultatives can be added freely to transitive verbs without changing their meaning or aspectual properties only if the verb is an accomplishment. Thus (42a) contrasts with (44), where the matrix verb denotes an activity where (44a) is ungrammatical and (44b) is marginal, and requires interpreting the V + resultative as a complex telic verb with the meaning 'stir *x* until *x* is liquid':

(44) a. *John pushed the cart broken.
b. ?John stirred the soup liquid.

The second relevant fact is that intransitive resultatives illustrated in (43) involve reinterpreting an intransitive atelic activity-denoting verb as a verb denoting a telic event whose end-point is determined in some sense by the resultative.

In addition to these issues, there are a number of other questions concerning resultatives which have been noted, and which it is hoped that a general theory of the construction will explain. For example, Levin and Rappaport Hovav (1995) and Tortora (1998) discuss the apparent incompatibility of resultatives with verbs of inherently directed motion, and (as discussed below) it becomes clear that in some cases there is in fact no clear agreement on whether a predicate phrase is really a resultative. Another fruitful area of research has been cross-linguistic comparison of constraints on resultatives, in particular Napoli's (1992) comparison of resultatives in Italian and English, Neeleman's (1994a; Neeleman and Weerman 1993) work on resultatives in Dutch, and Kim and Maling's (1997) papers on Korean resultatives.

4.2 The syntactic structure of resultatives

On the assumption (which has been questioned: see below) that resultative predication is restricted to taking a direct object as subject, the mutual c-command constraint causes no problems. The syntactic issue has instead revolved around what structure should be assigned to intransitive resultatives, and whether transitive and intransitive resultatives should be assigned the same structure. Prima facie, the structure of (42a) should be as in (45):

(45) John [[painted [the house]$_i$ [red]$_i$]$_{V'}$]$_{VP}$.

This structure correctly implies that the nominal *the house* is the thematic argument of the matrix verb, and that the AP is an adjunct of some kind. Dropping the adjunct does not affect the grammaticality of the structure, and this correlates with the semantic fact that (42a) entails that John painted the house. On the assumption that all resultatives have the same grammatical function, and that all are adjuncts, the structure for (43a) should be (46):

(46) Bill [[ran [the soles of his shoes]$_i$ [thin]$_i$]$_{V'}$]$_{VP}$.

But this incorrectly implies that the adjunct *thin* is optional in this structure, and that (43a) entails that Bill ran the soles of his shoes. A more convincing structure for (43a) is (47), where the resultative predicate and its subject form a small clause, indicating that the predicate is necessary to license the nominal argument:

(47) Bill [ran [the soles of his shoes$_i$ thin$_i$]$_{SC}$]$_{VP}$.

There are three possible approaches to take to this issue. One is that both transitive and intransitive resultatives have the same 'flat' structure as in (45–46) and that the difference in entailments follows from the assignments of thematic roles: in case the matrix verb does theta-mark the direct object, the entailment holds, and if the theta-marking relation doesn't occur, then the entailment doesn't hold either. This is the position adopted by Williams (1980) and succeeding papers, and, most notably, Carrier and Randall (1992). The second approach is to assign both transitive and intransitive resultative constructions the small clause structure in (47). Thus (42a) would be assigned the structure in (48):

(48) John [painted [the house$_i$ red$_i$]$_{SC}$]$_{VP}$.

This line of argument is associated with Hoekstra (1988, 1992), who builds on the similarities between the resultative construction and verb–particle constructions. He shows that the small-clause analysis he gives parallels the analysis of verb–particle constructions given by Kayne (1984a). The difference in entailments between transitive and intransitive resultatives is derived from the workings of a lexical-semantic operation which integrates the verb and the resultative predicate into a complex which denotes a single event.

The third approach is to assume that transitive and intransitive resultatives have different structures. This is argued by Rothstein (1992, 2001a), although in recent work (Rothstein 2003, 2004) she presents an analysis of the semantics of resultatives which is compatible both with her earlier assumptions and with the assumption that all resultatives have the structure in (45).

Yet another approach to the syntactic structure of resultatives is taken by Neeleman and Weerman (1993) and Neeleman (1994a), with respect to Dutch. They argue that in Dutch, resultatives are adjoined to the V at D-structure. Like Hoekstra, they observe the similarities between resultatives and particles, but they observe also differences in behavior which lead them to analyze particles as elements which are adjoined to V in the morphological component rather than the syntax. Explicit differences between the syntax of Dutch and English, such as the fact that V + resultative may move as a constituent in Dutch but not in English, mean that their analysis is not easily applicable to the English data. Yet a different approach is taken in Winkler (1997), who argues for a complex predicate analysis of resultative constructions.

4.3 The 'direct object' restriction in resultatives, and non-thematic resultatives (including so-called 'fake' reflexives)

The facts about resultatives, as has already been discussed above, are that they can normally be predicated only of direct objects and can take neither oblique objects nor sentential subjects as their subject. The exceptions have been subjects of passive sentences and subjects of verbs which have been argued to be unaccusative, such as *freeze*. On the assumption that passives and unaccusatives involve syntactic movement to subject position, leaving a co-indexed trace in object position, the relevant resultative constructions are given in (49):

(49) a. The house$_i$ was painted t$_i$ red$_i$.
b. The river$_i$ froze t$_i$ solid$_i$.

Assuming a movement analysis of unaccusatives and passives thus allows the preservation of the 'direct object' restriction; Levin and Rappaport Hovav (1995) use the distribution of 'subject-oriented' resultatives to argue for a syntactic (i.e., movement) analysis of unaccusativity. They argue that in the context of the direct object restriction, a movement account of apparently unaccusative verbs in English, together with a movement account of passive, is the best way to explain when subject-oriented resultatives are possible (but see below in section 5 for a revision of this opinion). The direct object restriction is clearly related to the distribution of so-called 'fake' reflexives, the intuition being that inserting a reflexive after an intransitive verb and predicating the resultative of this reflexive is a way to circumvent the restriction on predicating resultatives directly of subjects. This is illustrated in (50):

(50) a. *John laughed sick.
b. John laughed himself sick.

However, examples such as (51), where the non-thematic argument is not a reflexive but a nominal with independent lexical content, indicate that the fake reflexive construction is more than a 'last resort' mechanism:

(51) They laughed John off the stage.

Simpson's (1983) principle that the controller (i.e., subject) of a resultative must be a grammatical direct object at some level of structure covers the data descriptively, but does not explain why the direct object restriction holds, or how the reflexive in (50) or the accusative-marked nominal in (51) can be introduced as objects. Rothstein (1992) suggests that these objects are case-marked by the matrix verb and thematically licensed by the resultative, but this leaves open the question of why a subject-oriented resultative is not generally possible. Dowty

(1979) already made it clear that the principles governing the introduction of resultatives are to be found in an understanding of how aspectual classification works. He shows that resultatives can be introduced with accomplishment verbs, in which case they give information about the telic point of the accomplishment, or they can be introduced with activity verbs, in which case they force the derivation of a complex verb constructed out of V + resultative predicate which has the meaning of an accomplishment. Based on the templates in (12) above, a lexical accomplishment like *x build y* means roughly something like '*x* does an activity of building *y* and this causes *y* to become built' – a complex accomplishment derived out of an activity; and a resultative like *x sing y asleep* means roughly '*x* does a singing activity and this causes *y* to become asleep'. The difference between the lexical and the derived complex accomplishment is thus that in the latter the activity and the result are specified by different lexical items, while in the former both are specified by the same lexical item. Similar approaches include, e.g., Hoekstra (1988, 1992), Levin and Rapoport (1988), Tenny (1987, 1994), Pustejovsky (1991), and van Valin (1990).

Tenny (1987, 1994) is explicit about how this relates to the direct object restriction on resultatives. Following Dowty (1979, 1991), Krifka (1992), and others, Tenny discusses how the function of the direct object in accomplishments is to 'measure out' the progress of the eventuality, with the telic point being reached when the direct object, or theme, is intuitively 'used up'. Thus an event of painting a house is over when the house is all painted, and an event of eating an apple is over when the apple is eaten up. Tenny argues that themes are delimiters ('incremental themes' in Dowty's 1991 terminology), and that the restriction is that delimiters are within V'. Since the function of the resultative is also to delimit, it too should be part of the V'.

Discussion of resultatives took a new turn around 1997, with a series of works which argue against the direct object restriction on resultatives. These include Wechsler (1997), Verspoor (1997), and Rappaport Hovav and Levin (2001), who all claim that there exist some genuine subject-oriented resultatives (i.e., resultatives whose subject-orientation cannot be reduced to deep structure object-orientation). (Kim and Maling 1997 claim that subject-oriented resultatives are possible in Korean too.)

The relevant examples include the following ((52a–b) are from Wechsler 1997, (52c) from Verspoor 1997, and (52d) from Rappaport Hovav and Levin 2001, who cite similar examples from Hoekstra 1988):

(52) a. The wise men followed the star out of Bethlehem.
b. The sailors caught a breeze and rode it clear of the rocks.
c. John walked the dog to the store/across the park.
d. The elevator creaked to the ground floor.

Both Wechsler (1997) and Rappaport Hovav and Levin (1999) give explanations in terms of the relations that different types of eventualities may have to their results. Wechsler argues that only 'canonical results' may be subject-oriented,

while Rappaport Hovav and Levin argue that subject-oriented resultatives are possible only if the event denoted by the resultative and the event denoted by the matrix verb can be conflated, by which essentially they mean that the temporal development of the two events is parallel. These papers have brought to the fore a number of examples which have been insufficiently discussed in the literature, though it still remains unclear whether they are to be analyzed as genuine resultatives. Rothstein (2004), for example, argues that since all apparent subject-oriented resultatives are locative expressions (whether PPs or, much more rarely, APs), they are better analyzed as denoting incremental path arguments in the sense of Krifka (1998a). This group of papers revives the very basic issue about when a predicate is to be analyzed as a resultative, a question which is also raised by Tortora (1998), who argues that, contra Levin and Rappaport Hovav (1995), the achievement + PP in (53) should also be analyzed as a resultative:

(53) John arrived at the station.

5 Conclusion: recent developments

A relatively recent development in the study of secondary predication has been a renewed interest in attempts to give a unified explicit semantics for depictives and resultatives, and in relating this to more general constraints on complex predicate formation. This has resulted in, among others, papers by Cormack and Smith (1994, 1999) and Rothstein (2003, 2004), which analyze secondary predication as an operation of predicate conjunction, where the conjunction operation is constrained in a way in which it is not in ordinary conjunction, such as is expressed by the operator *and*. Cormack and Smith hypothesize that secondary predication is an operation which essentially shares the properties of serial verb formation, a hypothesis which is also put forward by Larson (1991) and Collins (1997a). Cormack and Smith claim that secondary predication (both depictive and resultative) and serial verb formation involve an asymmetric conjunction operator, with differing constraints on event structure deriving the differences between different constructions such as depictive and resultative predication. Collins (1997a), in the context of the debate about argument sharing in serial verb constructions, argues that serial verb formation necessarily involves internal argument sharing between predicates, and that Ewe serial verbs and English resultatives are both to be analyzed as control structures, where the second predicate incorporates into the first at LF. The difference between Ewe and English then essentially reduces to categorial restrictions on the second predicate – in English it cannot be verbal and thus the output is not, in English, a serial verb. Rothstein (2003, 2004) argues that both depictive and resultative predication are the result of a summing operation which sums a verbal and a non-verbal predicate, each denoting events, where the denotation of the predicates is related via the relation 'time–participant connected'. Two events e and e' are time–participant connected under the condition that e and e' have the same running time, and that

they share a thematic participant. Depictives differ minimally from resultatives: with depictives the two events which must be time–participant connected are the event denoted by the verbal predicate and the event denoted by the secondary predicate, while with resultatives the relation holds between the event which is the culmination of the event denoted by the verb, and the event given by the secondary predicate. The relation between this work and the papers by Cormack and Smith and Collins has yet to be explored, but the connection between serial verb formation and secondary predication seems a fruitful avenue to explore, and it places the study of secondary predication squarely in the domain of verb aspect and complex predicate formation in the verbal domain.

Another area in which much research is going on is secondary predication in languages other than English. For example, there have been a number of recent papers examining secondary predication in Japanese (Takezawa 1993; Koizumi 1994; Miyamoto 1996), in Korean (Kim 1993; Kim and Maling 1997; Washio 1997, 1999; Wechsler and Noh 2001), and in Russian (Filip 2001; Strigin and Demjjanow 2001; Demjjanow and Strigin 2003); These have of course raised the question of what properties of secondary predication in English are shared cross-linguistically, and what properties characterize secondary predication cross-linguistically which do not show up in English. The papers on Russian have raised the issue of the syntactic constraints on and semantic relevance of case assignment in secondary predicate constructions. Wechsler and Noh (2001) have argued, contra Kim and Maling (1997), that the direct object restriction does hold in Korean resultative secondary predication, and that apparent counter-examples occur because resultatives can also be expressed via a non-predicative construction involving clause linking.

The issue of whether secondary predication is the result of a lexical or a structural operation has also received renewed attention in the last few years, especially in Neeleman (1994a), Winkler (1997), and Wunderlich (1997a). Differences between Germanic (i.e., German, Dutch, and closely related languages) and English also raise the possibility that what is a structural operation in one language may be a lexical operation in the other. Further cross-linguistic work on both the syntactic structure and semantic interpretation of secondary predication constructions should deepen our understanding of these issues.

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59 Serial Verbs

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1 Introduction

The phenomenon of verb serialization has been informally characterized as "a row of verbs one after another . . . [in which] the verbs stand next to each other

without being connected" (Westerman 1930: 126). Serial verb constructions typically have the following format:

(1) $NP_1\ V_1\ NP_2\ V_2\ (XP_3)$ (X = N, P)

Defined in such a way, the notion of verb serialization is rather vague. Many scholars, therefore, have tried to make this notion more precise (cf. Jansen et al. 1978; Sebba 1987; Muysken 1988; Baker 1989; Seuren 1991; among many others). Several syntactic and, to a lesser extent, semantic criteria have played a role in the discussion on the definition of serial verb constructions. It must be noted beforehand that it has never led to much agreement.

Depending on the criteria chosen, serial verbs are either (i) a particular family of constructions, restricted to some language families, or (ii) a phenomenon found to some extent in all languages. Besides the classical examples in the Greenberg–Kwa languages of Niger-Congo (cf. Awóyalé 1988), and in creole languages in the Caribbean (Jansen et al. 1978; Sebba 1987), the construction is also arguably present in Chinese, Japanese, and Korean (Chinese: C. Li and Thompson 1973; Y. Li 1990b, 1993, 1998; Sybesma 1992; Zou 1993, 1994a, 1994b; J. Li 1997; Japanese: Kuno 1973c; Kageyama 1993; Nishiyama 1998; Korean: Lee 1994), and at the limit in Germanic languages (so-called fake-coordinate VPs in which both verbs agree in the tense specification without an overt subject before V2 – see for English: Carden and Pesetsky 1977; Goldsmith 1985; Lakoff 1986; Swedish: Anward 1988; Norwegian: Åfarli and Creider 1987; Den Dikken 1991a, 1991b). In addition, Schiller (1991) has found serial verb constructions in the following language families: Hmong-Mien (Court 1985), Mon-Khmer (Phillips 1973; Kuhn 1990), Oceanic (Durie 1988, 1997), Tai-Kadai (Thepkanjana 1986), Papuan (Pawley 1980), and Semitic (Hussein 1990).

To start, we confine our discussion to examples from Saramaccan, a creole language spoken in Suriname, making supplementary reference to facts from other Atlantic creoles and from some of the better-studied languages of Greenberg–Kwa.

Serial verb constructions display a wide variety of readings, as can be seen from the following illustrative examples:

(2) a. A tjá hen gó a dí dáata.
3SG carry 3SG go LOC DET doctor
'He went to the doctor with her.'
b. A sindjó nján.
3SG sit.down eat
'He sat down and ate.'
c. A náki hen kíi.
3SG hit 3SG kill
'He hit it dead.'

In (2a) the verb *tjá* introduces a comitative; (2b) expresses two sequential events; and (2c) translates as a resultative construction. Cf. the following:

(3) a. A bígi pása mi.
3SG big exceed 1SG
'He is bigger than me.'
b. A wáka lóntu dí wósu.
3SG walk surround DET house
'He walked around the house.'
c. A téi dí fáka kóti dí beée.
3SG take DET knife cut DET bread
'He cut the bread with the knife.' [approx.]

(3a) is an example of a comparative construction; in (3b) the verb *lóntu* specifies the location/direction of the event of the first verb; and in (3c) the verb *téi* introduces an instrumental adjunct. In all cases in (2) and (3) one can say that the two verbs together express a single (albeit complex) event, which is assigned one truth-value.

In most studies, the underlying assumption has been that verb serialization is a unified phenomenon. This is, however, not an entirely uncontroversial position (cf. Veenstra 1989; Den Dikken 1991a, 1991b). The question is whether verb serialization as such constitutes a valid domain of investigation. Muysken (1988: 65) observes that it may be the case that "in the face of new and apparently contradictory data sets on serial verb constructions becoming available, . . . a unified phenomenon is fractured into odd bits and pieces."

The most interesting question serial verb constructions pose for grammatical theory is, in our opinion, how their lexical and syntactic properties interact. On the one hand, they appear to be lexically determined: (i) the combinatory possibilities are partly lexically restricted, e.g., only verbs of movement can be followed by *gó* 'go' and *kó* 'come' expressing direction away from or toward a point of reference established in the discourse; (ii) they can form idiomatic expressions, e.g., the combination *láfu* NP *kíi* 'laugh DP kill' takes on the meaning of 'deride DP'; and (iii) they often appear to undergo thematic restructuring to form complex predicates (which in most cases give rise to the phenomenon of 'argument sharing'), a potential example being (2c). On the other hand, the individual verbs are clearly separate verbs assigning cases and thematic roles to intervening arguments. Also, the different verbs may denote different subevents, as in (2b). Several interrelated issues, therefore, arise in the analysis of serial verb constructions, among which the following will be touched upon in this chapter:

(4) a. **Lexicon/syntax and argument sharing:** Is verb serialization a syntactic process or should it be accounted for by lexical operations on argument structure? How to account for 'argument-sharing' effects?
b. **Concatenation:** If serial verb constructions form chains, what are their concatenation principles, and what is the structural configuration involved?
c. **Correspondence:** To which constructions in non-serializing languages do serial verb constructions correspond?

d. **Typological correlates:** How do we account for the difference between serializing and non-serializing languages?

Crucial to (4a) is the issue of argument sharing. Is argument sharing taken care of in the lexicon, as it would be in a lexical analysis, or is the argument-sharing effect mediated through empty categories in serial verb complements, as it would be in a syntactic analysis?

With respect to (4b), three possible concatenation principles are suggested in the literature: coordination (e.g., Hale 1991), subordination (e.g., Jansen et al. 1978; Sebba 1987), and adjunction (e.g., Bickerton and Iatridou 1987; Larson 1991; Law and Veenstra 1992).

The correspondence issue of (4c) has received ample attention. Possible candidates that have been mentioned are asymmetric coordinations (e.g., Den Dikken 1991a, 1991b; Déchaine 1993; Corne et al. 1996), verb–preposition combinations (e.g., Muysken 1988), and secondary predication constructions (e.g., Muysken 1988; Den Dikken 1991a; Larson 1991; Law and Veenstra 1992).

If there exists something like a serializing language type (4d), we would expect a number of typological correlates (i.e., co-occurring linguistic features) of serial verb constructions. The following have been put forward as possible correlates: absence of verbal (derivational or inflectional) morphology; non-distinctiveness of verbs and prepositions (in terms of verbs as either additional Case markers – e.g., Bickerton 1981; Byrne 1987 – or additional markers of thematic roles – e.g., Sebba 1984), and separation of verbs from INFL (e.g., Muysken 1988; Larson 1991; Law and Veenstra 1992; Déchaine 1993).

In addition, does the difference between serializing and non-serializing languages come about by means of different options of a single parameter or through different ways of doing syntax and morphology? The parametric option is argued for by Baker (1989, 1991b) and Collins (1995a), while Larson (1991), Law and Veenstra (1992), and Déchaine (1993), among others, argue for a modular approach to verb serialization.

Here we will try to give a first inventory of these constructions and of the analytical problems that they raise, and discuss some of the analyses proposed so far. In section 2 we present a first definition, and in section 3 an enumeration of frequently occurring types of serial verb constructions. In section 4 we discuss the different possible structures proposed for the serial verb constructions and section 5 is dedicated to the problem of 'shared arguments': one noun phrase sometimes appears to belong to different verbs. Section 6 is aimed at the problem of typology and parameterization: what makes serial verb constructions possible in a language?

2 Definition

In the study of serial verb constructions, several criteria are implicitly used for what a serial verb construction really is. Generally they amount to something like the following. A serial verb construction contains two verbs which have:

(5) a. only one grammatical subject;
b. at most one grammatical object;
c. one specification for tense/aspect:
– often only on the first verb;
– sometimes on both verbs, but agreeing in the specification given;
– sometimes only on the second verb;
d. only one possible negator;
e. no intervening coordinating conjunction;[1]
f. no intervening subordinating conjunction;
g. no intervening pause.[2]

We will illustrate each characteristic with examples from Saramaccan.

(5a) says that only one NP in the verbal chain that can be interpreted as a subject, i.e., is overtly realized in a subject position. (5b) refers to the 'object-sharing' phenomenon first observed by Stewart (1963) on the basis of Twi. This is exemplified in (6):

(6) Dí kambósa bì tá sibá dí óto wán kíi.
DET concubine TNS ASP curse DET other one kill
'The concubine was calling down a curse upon the other concubine.'

The DP *dí kambósa* is interpreted as the subject of both verbs and the DP *dí óto wan* is interpreted as the object of both verbs, although both DPs are only (overtly) realized as the argument of the first verb.

Patterns of tense and aspect marking in serial verb constructions in Saramaccan are quite complex. We first discuss tense marking and then aspect marking.

In Saramaccan (but not in all languages with serial constructions) tense is marked only once in the string. It can only occur in front of the first verb, as shown in (7a–b). Consecutive tense marking is also not grammatical (7c):

(7) a. A bì jáka en púu.
3SG TNS chase 3SG remove
'He had chased him away.'
b. *A jáka en bì púu.
3SG chase 3SG TNS remove
c. *A bì jáka en bì púu.
3SG TNS chase 3SG TNS remove

Aspect normally is only marked on the first verb (8a). It then expresses non-punctual – i.e., durative, habitual, or iterative – aspect and has scope over all subevents. If aspect is only marked on the second verb, as in (8b), it expresses durative aspect and has scope only over the second subevent. If, on the other hand, aspect is marked on both verbs, it can express durative and iterative aspect (8c). The iterative reading is preferred, however:

(8) a. A tá fáa páu túe.
3SG ASP chop tree throw
'He is felling a tree/the tree/trees.'
b. A fáa páu tá túe.
3SG chop tree ASP throw
'He is felling the tree (i.e., at this very moment the tree is falling).'
c. A tá fáa páu tá túe.
3SG ASP chop tree ASP throw
'He is (constantly) felling trees.'

Of these three ways of marking aspect in a serial verb construction, the second option, in which aspect is marked only on the second verb, is the least common.

Negation can be marked only once in the string and appears in front of the first verb and not in front of the second verb. This is shown in (9):

(9) a. De á bì héngi en peeká a dí lakwa-páu.
3PL NEG TNS hang 3SG nail LOC DET cross
'They didn't crucify him.'
b. *De bì héngi en á peeká a dí lakwa-páu.
3PL TNS hang 3SG NEG nail LOC DET cross

If an overt coordinating conjunction is present, not only the subject in the second conjunction has to be present but also the 'shared' object. This is impossible in serial verb constructions (cf. criteria in (5a–b)). The set of coordinating conjunctions includes *hén* 'and' and *ma* 'but'. Relevant examples are given below:

(10) a. A náki en hén a kíi en.
3SG hit 3SG and.then 3SG kill 3SG
'He hit it and he killed it.'
b. *A náki en hén kíi en.
3SG hit 3SG and.then kill 3SG
c. *A náki en hén a kíi.
3SG hit 3SG and.then 3SG kill

Negation can occur in front of the second verb in this case:

(11) A náki en ma á kíi en.
3SG hit 3SG but 3SG=NEG kill 3SG
'He hit it, but he didn't kill it.'

Furthermore, the subject of the second conjunct does not have to be coreferential with the subject of the first conjunct. In other words, subject sharing is not obligatory:

(12) A náki en hén mi kíi en.
3SG hit 3SG and.then 1SG kill 3SG
'He hit it and (then) I killed it.'

A subordinating conjunction also cannot appear in the string. If it is present, an overt subject is possible before the second verb (cf. also Bickerton and Iatridou 1987); either referential as in (13b), or disjoint in reference from the matrix subject as in (13c):

(13) a. A téi fáka u kóti dí beée.
3SG take knife FOR cut DET bread
'He took the knife in order to cut the bread.'
b. A téi fáka faa kóti dí beée.
3SG take knife FOR=3SG cut DET bread
'He took the knife in order to cut the bread.'
c. Dí wómi téi fáka fu dí mujée kóti dí beée.
DET man take knife FOR DET woman cut DET bread
'The man took the knife for the woman to cut the bread.'

Examples (13a–b) show that the subject in front of the second verb can be optionally realized.

Semantic criteria have received much less attention in the study of verb serialization than the syntactic ones. One (obvious) reason for this is that, as we will see below, serial verb constructions do not form a homogeneous class from a semantic point of view.

Because they are by definition monoclausal, serial verb constructions necessarily express one proposition, assuming that a proposition is a (simple or complex) predication linked up to a single tense (cf. Rothstein 1983). Thus, a predication is the core of a proposition, as in *Mary walks*, where *walks* is predicated of *Mary*. Here *walks* is the (primary) predicate of the clause, and is anchored by the finiteness of the verb (in this case present tense).

An argument often cited in the literature (e.g., Jansen et al. 1978) for this assertion is the fact that a serial verb construction has one truth-value assigned to it, and no subpart of the construction can be independently negated by means of an adversative tag. Thus, the classical contrast is the following:[3]

(14) a. *A téi fáka kóti dí beée ma á kóti en.
3SG take knife cut DET bread but 3SG=NEG cut 3SG
'He took a knife and cut the bread (but he did not cut it).' [approx.]
b. A téi fáka fu kóti dí beée ma á kóti en.
3SG take knife FOR cut DET bread but 3SG=NEG cut 3SG
'He took a knife (in order) to cut the bread (but he did not cut it).'

In sentences containing a subordination conjunction (14b), it is possible to negate the second VP independently. In a serial verb construction, on the other hand, it is not, as can be seen in (14a).

Serial verb constructions display a variety of readings, ranging from conjunctive and modificatory to causative (Muysken 1988; Larson 1991). It is possible to construct a scale of readings which runs from coordination to subordination (based on Fugier 1988):

(15)	Coordination	Enumeration of two distinct events
	I	Two distinct events in tight juxtaposition
	II	One event and its consequence
	III	One event and the aim toward which it tends
	IV	Two concomitant events
	V	One event and its reformulation
	VI	One event and the way it is realized
	Subordination	One event, and the second one on the occasion of the first one

A similar classification can be found in the work of Bámgbósé (1974, 1986).

Although interesting in themselves for descriptive purposes, such schemes in general lack explanatory power. Awóyalé (1988) underscores this observation and makes a case for a semantic template of event composition that underlies and, in part, determines the limits on verb serialization in Yoruba. This template consists of three terms: a core event predicate that can be modified by modality and state predicates (Awóyalé 1988: 9). Modality predicates indicate how events are carried out or the manner in which events occur, and state predicates signify the outcome of events:

(16) MODALITY* EVENT* STATE*

The following combinations are predicted to exist by the template: [modality event], [event event], [event state], and [state state] (see Awóyalé 1988: 20–25 on the non-availability of [modality modality] and [modality state]). The following Saramaccan examples are given to clarify the different possibilities:

(17) a. A [$_M$ tjá en] [$_E$ gó a dí dáata]. (modality event)
3SG carry 3SG go LOC DET doctor
'He went to the doctor with her.'

b. A [$_E$ sindjó] [$_E$ nján]. (event event)
3SG sit.down eat
'He sat down and ate.'

c. A [$_E$ náki en] [$_S$ kíi]. (event state)
3SG hit 3SG kill
'He hit it dead.'

d. A [$_S$ bígi] [$_S$ pása mi]. (state state)
3SG big exceed 1SG
'He is bigger than me.'

Although this is the most useful division so far into different semantic types of serial verb constructions, it remains to be seen what the implications are for the (structural) analysis of the construction. Is there one (semantic) analysis for the whole class of serial verb constructions or does every semantic type require its own analysis? Likewise, does every single semantic type correspond to a distinct syntactic structure, or is there one syntactic structure underlying all semantic types?

3 Classification

As noted above, the principal problem that serial verb constructions seem to pose for grammatical theory is how their lexical and their syntactic properties interact. On the one hand, they are clearly lexically constrained: verbs in a serial chain are in part lexically restricted, and they often appear to undergo thematic restructuring to form complex predicates. On the other hand, the individual verbs in the chain are clearly separate verbs assigning cases and thematic roles to intervening objects. What are the semantic relations between the verbs? How do the different verbs in the chain interact? Two possibilities come to mind:

(18) a. The verbs undergo thematic restructuring and become one predicate semantically.
b. All verbs in the chain are separate predicates and the relation between them is one of adverbial modification.

There are several ways in which to approach this issue. On the basis of a surface-oriented taxonomy about the number of Infls in serial verb constructions, Awóyalé (1988) proposes to set up a division between (i) languages with clausal serial verb constructions (IP-serials), exhibiting relatively more independence between the different subevents denoted by the separate verbs and free lexical selection, and (ii) languages with phrasal serial verb constructions (VP-serials), exhibiting relatively less independence or thematic restructuring and a limited set of participating verbs. The set of languages with clausal serial verb constructions would include Saramaccan and Berbice Dutch. The set of languages with phrasal serial verb constructions would include Haitian and Papiamentu (cf. Déchaine 1993 on Haitian, Bendix 1972 on Papiamentu):

(19) a. IP-serializing: Igbo, Izi, Anyi, Ijo, Saramaccan, Berbice Dutch
b. VP-serializing: Yoruba, Igala, Ogori, Ebira, Ewe, Igede, Twi, Haitian, Papiamentu

There are two observations to make with respect to this division. First, languages with clausal serial verb constructions also have phrasal serial verb constructions. Thus, Saramaccan-type languages constitute a superset, exhibiting both types (phrasal, clausal) of serial verb constructions, and Haitian-type languages are a subset, exhibiting only one type (phrasal) of serial verb constructions. The set of serializing languages with only the clausal type is not attested in the literature.

Second, the two factors to distinguish the different types of serial verb constructions – i.e., more vs. less independence between the different subevents, and free vs. restricted lexical selection – should give rise to four logically possible types of serial verb construction instead of the two mentioned. These four logical possibilities are schematically represented in (20):[4]

(20)

	Less independence between subevents	More independence between subevents
Lexically constrained	Type 1 (phrasal)	Type 2
Lexically free	Type 3	Type 4 (clausal)

The notion 'restricted lexical selection' refers to the fact that in many cases of verb serialization, we tend to find that one verb in the construction is drawn from a certain semantic or aspectual class and occurs in a 'fixed' position. The notion 'free lexical selection' refers to constructions in which there are no such restrictions.

The rather vague notion 'more or less independent subevents' refers to the event composition of the construction. Couched in Awóyalé's (1988) terms, it means that 'less independent subevents' involve combinations of modality or state predicates and event predicates and also combinations of two state predicates, while 'more independent subevents' involve combinations of event predicates only.

Within type 1/type 2 serial verb constructions, four major groups of meanings can be distinguished: directional, argument-introducing, aspectual, and degree-marking serial verbs. These four are arranged very roughly in the order of frequency in which these semantic categories are marked by serial verbs in different groups of creole languages. Then, within each semantic category, the typical verbs are listed, again in order of frequency, which encode a specific type of meaning. In the overview in (21) only the 'fixed' verb in serial verb constructions is mentioned:

(21)

Function	**Verb**	**Meaning**
Directional	go	Direction away
	come	Direction toward
	surround	Around
	be	Locative
Argument-introducing	give	Benefactive, dative
	take	Instrumental, comitative, object
	say	Finite complementizer
Aspectual	finish	Perfective
	return	Iterative
	be	Continuative
Degree	pass	Comparative, too much
	suffice	Enough

Next to the specific verbs in (21), in different languages yet other verbs can occur sometimes in serial verb constructions.

We will now turn to a description of the four types of serial verb constructions in Saramaccan.

3.1 Type 1 constructions

With regard to type 1, the following verbs in Saramaccan can be used non-initially in this sense:

(22)

Type	Token	Gloss	Meaning
Directional	gó	go	Direction away
	kó	come	Direction toward
	lóntu	surround	Circumvention
	kumútu	come out	Origin
	dóu	arrive	End-point
Argument-introducing	dá	give	Goal/recipient, benefactive, experiencer, source
	táa	say	Finite complementizer
Aspectual	kabá	finish	Completive
	káá	finish	Already
Degree	pása	pass	Comparative
	móo	more	Comparative
	pói	spoil	Excessive

Most of these verbs (the directionals are a notable exception) are susceptible to grammaticalization and/or reanalysis.

3.1.1 Directional

The verbs *gó* 'go' and *kó* 'come' in non-initial position are used to mark direction away from or toward a point of reference established in the discourse, which in most cases happens to be the speaker (Sebba 1987). They are in most cases used in combination with verbs of movement, Yoruba being a notable exception (cf. Awóyalé 1988). They can be accompanied by a locative PP, but need not be:

(23) a. A kúle gó
3SG run go
'He ran away.'
b. A wáka kó a mi písi
3SG walk come LOC 1SG yard
'He walked to my yard.'

There is no restriction on the type of verb they combine with. In addition to non-ergative verbs (as in the previous example), ergative and transitive verbs can also occur in this position:

(24) a. A kaí gó a dí baáku.
3SG fall go LOC DET hole
'He fell into the hole.'

b. A túe dí súndju gó a dí mátu.
3SG throw DET dirt go LOC DET woods
'He threw the dirt into the woods.'

The verb *lóntu* also specifies the direction of the action of the first verb:

(25) a. Mi wáka lóntu dí wósu
1SG walk surround DET house
'I walk around the house.'
b. A bì hái dí dóti zuntá lóntu dí kólo gogó
3SG TNS haul DET dirt bring together surround DET cabbage base
'He had put earth around the base of the cabbage.'

The verb *kumútu* marks the location where the participant comes from. The verb *dóu* signifies the termination and/or the end-point of the action described by the foregoing verbs. The usage of these verbs is exemplified in (26):

(26) A wáka kumútu a mi písi gó a fóto dóu
3SG walk come.out LOC 1SG yard go LOC city arrive
'He walked out of my yard to the city (and arrived there).'

Although direction is prototypically expressed by general movement verbs of the ergative type, like *gó* and *kó*, other verbs, specifically transitive ones, can also indicate direction. In those cases the direction expressed is more specific. For illustration, consider the following examples:

(27) a. A kándi dí wáta gó
3SG tilt DET water go
'He poured the water.'
b. A kándi dí wáta túe a dí fája
3SG tilt DET water throw LOC DET fire
'He poured the water onto the fire.'
c. A kándi dí wáta butá a dí báta
3SG tilt DET water put LOC DET bottle
'He poured the water into the bottle.'

Different verbs in the second position are used to distinguish different senses of the notion 'pour'. Thus, the notion 'pour' in a general sense is expressed with *gó* as the second verb, the more specific notion 'pour onto' with the transitive verb *túe* as the second verb and 'pour into' with the locative verb *butá* in second position.[5]

3.1.2 Argument-introducing

The argument-introducing group consists of two verbs: *dá* 'give' and *táa* 'say'. They always appear in non-initial position.

Dá 'give' can introduce Goal/Recipient (GOAL), Benefactive (BEN), Experiencer (EXP), and Source (SOURCE) arguments. This is shown in the next set of examples, respectively:

(28) a. A tjá sondí kó dá dí Faánsi sèmbè GOAL.
3SG carry thing come give DET French man
'He presented something to the Frenchman.'
b. Séi wan ijsie dá mi! BEN.
sell DET ice-cream give 1SG
'Sell an ice-cream for me!'
c. De maá dí fáka dá mi EXP.
3PL sharpen DET knife give 1SG
'They sharpened the knife for me.'
d. De píndja dí móni dá hen pikí-pikí SOURCE.
3PL pinch DET money give 3SG small-small
'They cheated a little money out of him.'

Táa, the suppleted form of the verb *táki* 'say', introduces finite clauses. It follows verbs of speech, cognition, and perception:

(29) a. A táki táa á búnu.
3SG say say 3SG=NEG good
'He said that it is not good.'
b. Mi sábi táa á búnu.
1SG know say 3SG=NEG good
'I know that it is not good.'
c. Mi sí táa dí wómi kumútu a dí wósu.
1SG see say DET man come.out LOC DET house
'I saw that the man had come out of the house.'

It can also mark direct speech:

(30) Mi táki táa sáka hen búta!
1SG say say lower 3SG put
'I said: put it down!'

In addition, it can be followed by *fu* 'for', as in the following example, which may be best characterized as a subjunctive complementizer:

(31) I táki táa faa náki dí dágu.
2SG say say FOR=3SG hit DET dog
'You told him to hit the dog.'

3.1.3 Aspectual

The aspectual subgroup consists of two elements: the verb *kabá* 'finish' and *káá*, a suppletive form of *kabá*. They both come as the non-initial verb in the construction. *Kabá* marks completive aspect. *Káá* has been reanalyzed as an adverb meaning

'already', and always appears at the right (most) periphery of the clause/sentence, the prototypical position for adverbs in Saramaccan:

(32) a. Mi jabí dí dóo kabá.
1SG open DET door finish
'I have finished opening the door.'
b. Mi jabí dí dóo káá.
1SG open DET door finish
'I already opened the door.'

3.1.4 Degree

The degree subgroup has three members: *pása* 'pass', *moó* 'more', and *pói* 'spoil'. *Pása* and *moó* are used in comparative constructions and *pói* is used to mark excessive degree.

Pása as well as *moó* in the comparative construction can be combined with both intransitive and transitive verbs, with no (detectable) difference in meaning:[6]

(33) a. A fátu pása/moó mi.
3SG fat pass/more 1SG
'She is fatter than me.'
b. A bebé daán pása/moó mi.
3SG drink rum pass/more 1SG
'He drinks more rum than me.'
c. A bebé daán pása/moó watá.
3SG drink rum pass/more water
'He drinks more rum than water.'

It depends on the object of *pása/moó* whether the subject or the object of the higher verb is the object of comparison, as can be seen from (33b, c).

If *pása* follows a verb of movement, it retains its original meaning:

(34) Mi wáka pása hen.
1SG walk pass 3SG
'I walked past him.'

Arguably, these constructions are instances of directional serial verb constructions.

Moó, in addition, can also be used as a degree modifier inside DPs:

(35) Dí moó hánse wan mi ké.
DET more beautiful one 1SG want
'The more beautiful one I want.'

Pói 'spoil' mainly functions as a degree marker:

(36) A fátu pói dá mi.
3SG fat spoil give 1SG
'She is too fat for me.'

When combined with transitive verbs it can, in addition, retain more of its original meaning, as shown in (37):

(37) De bì náki hen pói.
3PL TNS hit 3SG spoil
A: 'They had beaten him excessively.'
B: 'They had beaten it and it turned bad.'

The structure that makes the B-reading possible presumably is a type 3 construction.

The comparative construction with *pása* and *móo* has been fully grammaticalized and the verbs have lost most (if not all) of their verbal characteristics.

3.2 Type 2 constructions

Turning now to type 2 serial verb constructions, they also have a verb in a fixed position, but in contrast with type 1 constructions their event composition is more loosely interpreted. In Saramaccan such constructions are formed with causative verbs used in non-initial position, and the verb *téi* 'take' is used in first position:

(38)

Type	**Token**	**Gloss**	**Meaning**
causative	mbéi	make	(Direct) causation
	dá	give	(Indirect) causation
argument-introducing	téi	take	Instrument, direct object, comitative

Like type 1 serial verb constructions, these are also susceptible to grammaticalization. Causative verbs *mbéi* and *dá* have been reanalyzed as complementizers. *Téi*, on the other hand, has not been reanalyzed.

The verb *téi* can introduce Instrumental, Comitative, and Theme arguments of the following verb. This is shown in (39):

(39) a. A téi dí páu náki hen gbóó túe káá.
3SG take DET stick hit 3SG ideophone throw finish
'He already had taken a stick and beaten him down with it.'
b. Mi téi hen gó a dí sikóutu.
1SG take 3SG go LOC DET police
'I took it and went to the police with it.'
c. Me téi dí búku butá alá.
1SG=NEG take DET book put there
'I didn't take the book and put it there.'

Causative constructions with *mbéi* 'make' as the second verb express direct causality:

(40) Dí tjúba tá kái mbéi hen uwíi munjá tooná kó bè.
DET rain ASP fall make 3SG hair wet turn come red
'It is raining so that her hair becomes wet and turns red.'

(41) Egbert bebé daán hía pói mbéi a fiká a wósu.
Egbert drink rum much spoil make 3SG stay LOC house
'Egbert drank too much rum, so that he stayed home.'

Thus, in (40) the fact that her hair becomes wet (and subsequently turns red) is caused (directly) by the rainfall. In all these cases, *mbéi* links two events each of which is expressed by a verb.

Causative constructions with *dá* as the second verb express indirect causality:

(42) a. Dí mujée mbéi te dá dí míi bebé.
DET woman make tea give DET child drink
'The woman made tea for the child to drink.'
b. A butá hen-seéi dá a fón ku schaak.
3SG put 3SG-self give 3SG beat with chess
'He let himself be beaten by her at a game of chess.'

The action of the first verb creates a situation in which the action of the verb following *dá* can occur. Like *mbéi*, it also links two events.

3.3 Type 3 constructions

Resultative serial verb constructions constitute type 3 constructions. They partly correspond to particle–verb combinations in Germanic languages (cf. Sebba 1987). Although the position of the result-denoting verb is also more or less fixed (a non-initial position), they differ from type 1 constructions in that the list of participating verbs is (in principle) open-ended.

A non-exhaustive list of verbs that can occur in this position is: *kíi* 'kill', *fáu* '(make) unconscious', *téi* 'take', *túe* 'throw', *butá* 'put', *hói* 'hold', *púu* 'pull', *paajá* 'separ- ate', *jabí* 'open', and *kísi* 'catch'. Some illustrative examples are:

(43) a. De hói hen butá.
3PL hold 3SG put
'They kept him under control.'
b. AIDS kísii hen kíi.
AIDS catch 3SG kill
'He died from AIDS.'
c. Mi kísi dí fii otó téi a mámate.
1SG catch DET FOR=2SG story take LOC morning
'I recorded your story in the morning.'
d. A boóko hen púu.
3SG break 3SG pull
'He broke it off.'

Although the list of lexical verbs that participate in the construction is in principle open-ended, there is a kind of parallellism constraint on the transitivity of participating verbs, i.e., only the combination of two transitive or unaccusative verbs is possible (Veenstra 2004). The generalization with respect to possible verb combinations in the resultative construction in Saramaccan amounts then to the following:

(44) a. NP_1 V_{TRANS} NP_2 V_{TRANS} (= 45a)
b. *NP_1 V_{TRANS} NP_2 V_{UNACC} (= 45b)
c. *NP_1 V_{UNACC} V_{TRANS} (= 45c)
d. NP_1 V_{UNACC} V_{UNACC} (= 45d)

(45) a. De sikópu hen kíi.
3PL kick 3SG kill
'They kicked him dead.'
b. *De fáa dí páu kaí.
3PL chop DET tree fall
c. *De kaí kíi.
3PL fall kill
d. Dí wósu boóko kaí.
DET house break fall
'The house is fallen apart.'

This type of constraint has not been documented for any of the serializing Kwa languages (see for Edo: Stewart 1998; Ewe: Collins 1993; Yoruba: Déchaine 1993; Akan: Campbell 1996a).

3.4 Type 4 constructions

In type 4 (*clausal*) constructions, anything goes as long as it is semantically and/or pragmatically apt. There are no restrictions on the list of participating verbs or on their position in the string:

(46) A kísi dí fou náki kíi limbó bói njan.
3SG catch DET bird hit kill clean cook eat
'He caught the bird, struck it dead, cleaned, cooked, and ate it.'

(47) A súti hen fulá pása gó náki dí sitónu hén mi téi hen.
3SG shoot 3SG pierce pass go hit DET wall and.then 1SG take 3SG
'He shot him and the bullet went through him and into the wall and then I took it.'

(46) illustrates a quite complex sequence of (five) events in which all the verbs share their arguments with the first verb (and with each other). This argument sharing is not obligatory, as shown by (47), which describes a shoot-out in

Saramacca Street between a police officer and a criminal and the picking up of the bullet by a by-stander. Although the bullet is only overtly realized as the object of *téi*, it is interpreted as the subject of the verbs *pása*, *gó*, and *náki*.

4 Structure

4.1 Hierarchical relations

The hierarchical relations between the different NP arguments in a serial verb construction have received little attention so far and the discussion has been based only on data from Haitian. In this section we present data on the three types of serial verb constructions to show that the same hierarchical relations hold between the NPs in Saramaccan as in Haitian. But first we discuss the Haitian facts.

Veenstra (1997), partly based on Déchaine (1988b), discusses the relation between NP_2 and XP_3 in serial verb constructions in Haitian, and shows that this relation is asymmetrical: NP_2 asymmetrically c-commands XP_3. The tests to show the relation between the arguments are taken from Barss and Lasnik's (1986) seminal paper on double object constructions in English. They involve anaphor binding, quantifier binding, and the so-called 'each . . . the other' construction.

The first test involves anaphoric binding.[7] In the following examples an asymmetry arises. The NP in the NP_2-position can bind an anaphoric element in the XP_3-position. The reverse, however, is not possible:

(48) a. M pran $Mari_i$ montre tet-li_i/li_i nan glas la.
1SG take Mary show HEAD–3SG/3SG LOC mirror DET
'I showed Mary herself in the mirror.'
b. *M pran tet-li_i/li_i montre $Mari_i$ nan glas la.
1SG take HEAD-3SG/3SG show Mary LOC mirror DET

The upshot is that the difference in grammaticality is due to the asymmetrical c-command relation that holds between NP_2 and XP_3.

The second test involves quantifier binding and gives the same result. In order for a pronoun to be bound by a quantified NP, it must be in the structural domain of that NP. Otherwise we have a weak crossover configuration and the bound pronoun reading is not possible:

(49) a. M pran chak liv_i montre mèt l_i.
1SG take each book show owner 3SG
'I showed each book to its owner.'
b. *M pran liv l_i montre chak $elev_i$.
1SG take book 3SG show each student

The last test, based on the 'each . . . the other' construction, only reinforces the point made above that there is an asymmetrical relation between the two object

positions. The NP containing 'the other' must be in the domain of the NP containing 'each'. The reverse is ungrammatical (cf. Déchaine 1988b):

(50) a. M pran chak timoun voye paran lot la.
1SG take each child send parent other DET
'I sent each child to the other's parent.'
b. *M pran chek lot la voye chak neg.
1SG take check other DET send each person

The tests above all point toward the same conclusion, namely that XP_3 is in the domain of NP_2 and that NP_2 is outside the domain of XP_3. In other words, an asymmetrical c-command relation holds between the two object positions in serial verb constructions (of the *take*-type) in Haitian.

Turning now to different types of serial verb constructions in Saramaccan, we show that the same generalization holds for all types. The test that we use in each case involves quantifier binding. In the following examples it is shown that a quantified NP occupying the NP_2-position can bind a pronoun in the XP_3-position (the (a)-examples). The reverse situation is not possible (the (b)-examples). (51) is a directional serial verb construction:

(51) a. Mi mandá híniwan ómi-miíi$_i$ gó a dí tatá f'én$_i$.
1SG send each man-child go LOC DET father for=3SG
'I have sent each son to his father.'
b. *Mi mandá hén$_i$ tatá gó a híniwan ómi-miíi$_i$.
1SG send 3SG father go LOC each man-child

The following examples are both *take*-serials. In (52) the object of *téi* is the Theme argument of the second verb, and in (53) it is interpreted as the Instrument of the second verb:

(52) a. Mi téi híniwan búku$_i$ mánda gó a dí sikífi-ma f'én$_i$.
1SG take each book send go LOC DET write-MA FOR=3SG
'I have sent each book to its writer.'
b. *Mi téi hén$_i$ búku mánda gó a híniwan sikífi-ma$_i$.
1SG take 3SG book send go LOC each write-MA

(53) a. Mi téi híniwan búku$_i$ náki dí sikífi-ma f'én$_i$.
1SG take each book hit DET write-MA FOR=3SG
'I took each book and hit its writer with it.'
b. *Mi téi hén$_i$ búku náki híniwan sikífi-ma$_i$.
1SG take 3SG book hit each write-MA

The conclusion we draw from these data is that in serial verb constructions the different arguments stand in an asymmetric relation to one another, in a left-to-right fashion, i.e., NP_2 (asymmetrically) c-commands XP_3.

4.2 Concatenation principles

Three possible concatenation principles involved in the analysis of serial verb constructions have been formulated in the literature: subordination, adjunction, and coordination.[8]

4.2.1 Subordination

The possibility that verb serialization involves some form of subordination was mentioned as early as the mid-1970s. Schachter (1974), Jansen et al. (1978), and Sebba (1987), among others, couched their analysis in terms of subordination. More recent analyses, like Baker (1989, 1991b), Lefebvre (1991), and Sybesma (1997), also adhere to this way of relating the different VPs in serial verb constructions. Arguments for this supposition are the extractability of arguments and the (sometimes) close semantic relationship between the verbs in serial verb constructions, which quite often seems to be comparable to the relation between verbs and prepositions in [V PP]-constructions.

An argument against this hypothesis is constituted by the arrangement of the verbs in a serial verb construction. How are the verbs in the chain placed in a specific order? In the case of subordination an arrangement determined by the Head Parameter would be a plausible answer. The comparison of serial verb constructions in Sranan and Ijo suggests that the matter must be more complicated. (54) shows that Ijo is head-final:[9]

(54) a. keni bila eri mi [[NP V] I]
an elephant see TNS
'saw an elephant'

b. bele bi o nama tua mi [[[[NP P] NP] V] I]
pot DET in meat put TNS
'put meat in the pot'

c. Ari u di yo-koo bo mi. [[[IP C] V] I]
1SG 3SGM look.at in.order.to come TNS
'I came in order to see him.'

The same direction holds for [NP V] in (54a), for [[PP NP] V] in (54b), and for [CP V] in (54c). Note also that temporal marking is completely to the right in all cases, thus [VP I].

Sranan is a strict head-initial language:

(55) a. koti a brede [V NP]
cut DET bread
'cut the bread'

b. poti a brede a tafra tapu [V [NP [P NP]]]
put DET bread LOC table top
'put the bread on the table'

c. Eddy e koti a brede fu nyan en [I [V [C IP]]]
Eddy ASP cut DET bread FOR eat 3SG
'Eddy is cutting the bread in order to eat it.'

Nonetheless it turns out that the order of the verbs in serial verb constructions in both languages is the same, in a number of constructions. Take first of all the *take* serial verb constructions in (56) and (57), which also illustrate the very extensive possibilities of use of this construction:

(56) aki V Ijo

a. Ye aki u bee.
thing take 3SGM say
'Say something to him.'

b. Aru bi aki tin kaka.
canoe DET take tree tie
'Tie the canoe to a tree.'

(57) teki V Sranan

a. No teki baskita tyari watra.
NEG take basket carry water
'Don't carry water with a basket.'

b. Teki dia poti na brakoto.
take deer put LOC barbecue
'Put the deer on the grill.'

The same holds for the *give* serial verb constructions in (58) and (59):

(58) V piri Ijo

a. Duma tun-ni a piri.
song sing 3SGF give
'Sing a song for her.'

b. Egberi gba-ni u piri.
story sing 3SGM give
'Tell him a story.'

(59) V gi Sranan

a. Seni wan boskopu gi tigri.
send DET message give tiger
'Send a message to Tiger/send Tiger a message.'

b. prani a karu gi yu
plant DET corn give 2SG
'plant the corn for you'

Furthermore, degree-marking serial verb constructions, such as the comparative serial, involve the same order of the verbs in both languages:

(60) V deni Ijo

bani saramo tobou demi mi
run fast child surpass TNS
'ran faster than the child'

(61) V moro/pasa Sranan
Kofi bigi moro Kwasi.
Kofi big surpass Kwasi
'Kofi is bigger than Kwasi.'

Finally, directional serial verb constructions involve the same order as well:

(62) V bo Ijo
Eri waii bo mi.
3SGM turn come TNS
'He returned, he came back.'

(63) V kon Sranan
A waka kon.
3SG walk come
'S/he walked this way.'

The fact that the arrangement of the elements in the serial construction is independent of the Head Parameter suggests that there is no relation between the verbs stated in terms typical of subordination.

In addition, in a subordination-type analysis the first verb would select the second VP. Thus, a semantic relationship should hold between V_1 and VP_2. But with respect to resultative serial verb constructions, it is not all clear how the first verb in any relevant way would semantically select the second VP. We here revert to Saramaccan examples:

(64) a. Mi náki hén kíi.
1SG hit 3SG kill
'I struck him dead.'
b. Mi sáka dí lái butá alá.
1SG lower DET load put over.there
'I have put the load over there.'

It is difficult to conceive of the type of semantic role that *náki* in (64a) or *sáka* in (64b) would assign, respectively, to *kíi* or to *butá alá*. Moreover, such a move would mean that practically all verbs in Saramaccan (or any other serializing language for that matter) have the ability to select a predicate in addition to a nominal argument, presumably an unwarranted complication of the lexicon (and grammar) of serializing languages.

If one assumes that the first verb selects a constituent consisting of NP_2 and VP_2 (cf. Den Dikken 1991a; Sybesma 1997), moreover, several other problems arise:

(65) A téi [dí beée kóti].
3SG take DET bread cut
'He cut the bread.'

Semantically, the verb *téi* 'take' (in the sense of *seize* and *physically grasp*) does not take a proposition-denoting category as a complement. One does not seize or physically grasp a proposition. Although some verbs may take an argument that has some specific semantic property, regardless of its category, the verb *téi* 'take' in Saramaccan is arguably not one of them. For example, the verb *ask* in English takes either a clausal or a nominal argument, and both of them are of the same semantic type, namely a question (cf. Grimshaw 1979) (*the time* in (66) is also known as a concealed question):

(66) a. John asked Mary what time it was.
b. John asked Mary the time.

The verb *téi*, in contrast, can syntactically take a nominal argument, as shown in (67) (in which it is not a serial verb construction):

(67) A téi dí fáka.
3SG take DET knife
'He took the knife.'

but the nominal argument of the verb *téi* is clearly not something that denotes a proposition. Therefore, if the verb may take an XP which is either a VP as suggested in (65) or an NP as in (67), with the two categories being of different semantic types, then it seems unavoidable that we have to posit two different verbs *téi* in the lexicon of Saramaccan.

4.2.2 Adjunction

The second possible candidate is adjunction. In this type of analyses the second VP is adjoined to the first. Such structures have been proposed by Bickerton and Iatridou (1987), Larson (1991), Seuren (1991), and Law and Veenstra (1992).

Evidence for the adjunct status of the non-initial VP is its optionality, as shown below:

(68) a. A téi dí páu tjá gó butá a dí wósu.
3SG take DET stick carry go put LOC DET house
'He took the stick, carried it away and put it in the house.'
b. A téi dí páu tjá gó.
3SG take DET stick carry go
'He took the stick and carried it away.'
c. A téi dí páu.
3SG take DET stick
'He took the stick.'

Hence, the third VP is not selected by the second verb and the second VP is not selected by the first verb.

Larson (1991) also makes some semantic observations that lend plausibility to analyses that treat serial verb constructions as adjoining structures. In particular, he notes that serial verb constructions in many cases form series of secondary predications with a basic modificatory status, and have similar readings as adverbial conjuncts involving 'until' or expressing purpose and temporal adverbials. Adverbials presumably have an adjunct status. Moreover, he notes that such structures can accommodate the semantic templates of Awóyalé (1988).

Veenstra (1993) builds an argument for adjunction on patterns of argument and adjunct extraction. In contrast to arguments, adjuncts cannot be extracted from the non-initial VP in serial verb constructions (cf. also Lawal 1993 on Yoruba). He shows that these facts can be accommodated in an adjunction structure without the need of additional assumptions, unlike an analysis in term of subordination. Moreover, he shows that serial verb constructions pattern differently than small clause and perception verb complements (instances of subordination structures) with respect to *wh*-extraction. In conclusion, a good case can be made for adjunction as the guiding principle for the stacking of VPs in serial verb constructions.[10]

4.2.3 Coordination

Coordination structures come in four varieties. Two factors discriminate the four varieties: syndetic vs. asyndetic and symmetrical vs. asymmetrical.

Syndetic coordinations contain a conjunction and asyndetic coordinations do not. As already shown in section 3, serial verb constructions cannot contain (coordinating) conjunctions. This rules out the possibility that serial verb constructions are instances of syndetic coordinations. It leaves open the possibility, however, that they are asyndetic coordinations.

Symmetrical coordinations do not show sequential effects and asymmetrical ones do. A frequently cited argument in favor of a coordination analysis is that in (some) serial verb constructions there is a temporal ordering between the different actions (or subevents):

(69) a. Mi wáka gó a dí wósu.
1SG walk go LOC DET house
'I walked to the house.'
b. *Mi gó a dí wósu wáka.
1SG go LOC DET house walk

(70) a. Mi téi dí fáka kóti dí beée.
1SG take DET knife cut DET bread
'I took the knife and cut the bread.'
b. *Mi kóti dí beée téi dí fáka.
1SG cut DET bread take DET knife

(71) a. Mi náki hén kíi.
1SG hit 3SG kill
'I struck him dead.'

b. *Mi kíi hén náki.
1SG kill 3SG hit

The sequential effect shows up in all three types. These data rule out an analysis of serial verb constructions in terms of symmetrical coordination. They leave open the possibility that these constructions are asymmetrical coordinations. The conclusion, therefore, is that if serial verb constructions have a coordinate structure, they are asyndetic asymmetric coordinations (cf. Déchaine 1993).

A coordinate analysis has been argued against by Jansen et al. (1978) and Sebba (1987). They show that serial verb constructions never show the island effects that have been associated with coordinate structures since Ross (1986). In particular, all the VPs in serial verb constructions are transparent with respect to argument extraction:

(72) Na-un-sé$_i$ a wáka gó t$_i$?
LOC-Q-side 3SG walk go
'Where did he walk to?'

(73) a. Andí$_i$ a téi t$_i$ kóti dí beée?
what 3SG take cut DET bread
'What did he cut the bread with?'
b. Andí$_i$ a téi dí fáka kóti t$_i$?
what 3SG take DET knife cut
'What did he cut with the knife?

(74) Ambé$_i$ a náki t$_i$ kíi?
who 3SG hit kill
'Who did he strike dead?'

However, the argument is not as strong as it appears to be at first sight. The Coordinate Structure Constraint (CSC) of Ross (1986) is enforced for those coordinations that are (semantically) symmetric. No extraction is allowed out of the conjuncts, unless it is in an Across-the-Board (ATB) fashion, i.e., simultaneous extraction out of all conjuncts. We have already pointed out above that if serial verb constructions are anything like coordinations, they are asymmetric coordinations. Thus, the absence of island effects is not a direct argument against an analysis in terms of asymmetric coordination.

The pattern of extraction out of asymmetric coordinations is as follows (cf. Williams 1994). Extraction out of the second conjunct is allowed. Extraction out of the first conjunct is not possible, unless it happens in an ATB fashion. Relevant examples from English are given in (75):

(75) a. What$_i$ did John go to New York and buy t$_i$?
b. *What city$_i$ did John go to t$_i$ and buy a gun?

An example of an ATB extraction out of an asymmetric coordination structure in English is (76):

(76) Who_i did you see t_i and imitate t_i?

Schematically, we can represent the different extraction possibilities out of asymmetric coordination structures and serial verb constructions as follows:

(77) **Asymmetric coordination:**
a. WH_i $[_{VP1}$ V XP$]$ $[_{VP2}$ V $ec_i]$
b.* WH_i $[_{VP1}$ V $ec_i]$ $[_{VP2}$ V XP$]$
c. WH_i $[_{VP1}$ V $ec_i]$ $[_{VP2}$ V $ec_i]$

(78) **Serial verb construction:**
a. WH_i $[_{VP1}$ V NP$]$ $[_{VP2}$ V $ec_i]$
b. WH_i $[_{VP1}$ V $ec_i]$ $[_{VP2}$ V XP$]$

In an asymmetric coordination analysis of serial verb constructions, the pattern in (78b) constitutes the problem. Contrary to our expectations, you can extract out of the first conjunct.

Suppose now that we reduce this pattern to the pattern in (77c) by positing an empty category in the non-initial conjunct coreferent with the object in the initial conjunction. Then, (78b) rewrites as (79):

(79) WH_i $[_{VP1}$ V $ec_i]$ $[_{VP2}$ V ec_i XP$]$

Thus, what looks like extraction out of the first conjunct only is in fact a form of ATB extraction. The conclusion, therefore, is that serial verb constructions can be reduced to asymmetric coordination structures iff there is an empty category present in the second VP coreferent with the object of the first verb.

Arguments for the presence of an empty category inside the non-initial predicate of serial verb constructions have been presented by Bickerton and Iatridou (1987), Carstens (1988), Larson (1991), Law and Veenstra (1992), DeGraff (1993), Collins (1993, 1997a), Veenstra (1993, 1996), Da Cruz (1994), Campbell (1996a), Stewart (1998), and Hagemeijer (2000).

Munn (1992) argues that ATB constructions should be reduced to parasitic gap constructions. Although coordinate structures behave differently from structures supporting parasitic gaps, the point he makes is that multiple gap constructions in both structures are best analyzed in terms of null operator binding and chain composition. He notes that a consequence of such an analysis is that "coordinate structures are in fact adjunction structures with a hierarchical and therefore asymmetric structure" (Munn 1992: 1). This conception of coordinate structures tallies nicely with the analyses of serial verb constructions put forward by Larson (1991) and Law and Veenstra (1992), in which the second predicate is an adjunct to the first predicate and in which the argument-sharing effect is obtained through null operators.

The conclusion, therefore, is that a good case can be made for the analysis of serial verb constructions in terms of asyndetic asymmetric coordination structures (cf. Corne et al. 1996 for a similar conclusion), with coordination being syntactically analyzed in terms of an adjunction structure, with the provision that it can be shown that an empty category is present inside the non-initial predicate that is adjoined to the first predicate.

5 Argument sharing

An observation that goes back to Stewart (1963) is that overt objects in serial verb constructions are semantically related to both verbs, i.e., the verbs share their internal arguments. Thus, in (80a) the object *dí búku* 'the book' is an object of *téi* 'take' as well as of *léi* 'show':

(80) a. Mi téi dí búku léi dí wómi.
1SG take DET book show DET man
'I showed the book to the man.'
b. Mi téi dí fáka kóti dí beée.
1SG take DET knife cut DET bread
'I cut the bread with the knife.'

For example, in (80b) it has been argued that *dí fáka* 'the knife' is the Instrument object of the second verb *kóti*.

The question is whether the (semantic or syntactic) sharing of arguments is obligatory in verb serialization. Sebba (1987) discusses the following minimal pair and argues that only if the verbs share their object is it possible to speak of a serial verb construction:

(81) a. A náki hén kíi.
3SG hit 3SG kill
'She hit him dead.'
b. A náki hén kíi hén.
3SG hit 3SG kill 3SG
'She hit him and killed him.'

Sebba argues at length that (81b) involves a coordinate structure and displays a distinct behavior from that of (81a).

The most explicit answer to the question of the obligatoriness of object sharing has been formulated in the work of Baker (1989, 1991b). For him, the sharing of arguments is one of the defining properties of the construction. Moreover, this sharing is not at random, but is thematically restricted; i.e., in serial verb constructions with more than one internal argument, as in (80), the order in which arguments appear obeys the following thematic hierarchy:

(82) Ag < Instr < . . . < Th < Go < Loc

If the second verb selects a Theme and an Instrument, it is only the Instrument that can be shared with the first verb. Similarly, if the second verb is a regular triadic verb, it is the Theme that is shared with the first verb rather than the Goal. This restriction might cover in principle the observed facts for some serializing languages, such as Yoruba and Gokana. Relevant examples are given in (83) and (84), taken from Baker (1989) and Wagner (1985), respectively:

(83) a. Olú mú òbe gé búrédi.
Olu take knife cut bread
'Olu cut the bread with the knife.'
b. *Olú mú búrédi gé òbe.
Olu take bread cut knife

(84) a. mín è tú kpá nè pábia.
child TNS take book give woman
'The child gave the book to the woman.'
b. *mín è tú pábia nè kpá.
child TNS take woman give book

On the other hand, it is too restrictive for other languages, such as Haitian, Sranan, and Saramaccan (cf. Law and Veenstra 1992; Veenstra 1993). The following data, which are direct counter-examples to the thematic restriction on argument sharing in verb serialization, suffice to make the point:

(85) a. Mi téi dí fáka kóti dí beée.
1SG take DET knife cut DET bread
b. Mi téi dí beée kóti ku dí fáka.
1SG take DET bread cut with DET knife
'I cut the bread with the knife.'
c. *Mi téi dí beée kóti dí fáka.
1SG take DET bread cut DET knife

(86) a. A téi dí fóto léi hen.
3SG take DET picture show 3SG
a. A téi hen léi dí fóto.
3SG take 3SG show DET picture
'He showed the picture to him.'

Thus, it appears that the cross-linguistic variation with respect to the ordering of arguments in serial verb constructions is rather due to language-specific constraints than to universal ones on the process of serialization.

6 Parameterization and typological correlates

As noted in section 1, if there exists something like a serializing language type we would expect a number of typological correlates (i.e., co-occurring linguistic

features) of serial verb constructions. The following have been put forward as possible correlates: word order, non-distinctiveness of verbs and prepositions, absence of verbal (derivational or inflectional) morphology, and separation of verbs from INFL.

6.1 Word order

This is not promising. The Caribbean creole languages are all SVO languages, but many West African serializing languages are underlyingly SOV (as shown in work inspired by Koopman 1984), and some are SOV on the surface as well, like Ijo. Malagasy is verb-initial, and in the Pacific and Sino-Tibetan cases we find both SOV and SVO languages.

6.2 Non-distinctiveness of verbs and prepositions

Proposals that verb serialization is correlated with non-distinctiveness of verbs and prepositions come into two guises: verbs are seen either as additional Case markers (e.g., Bickerton 1981; Byrne 1987) or as additional markers of thematic roles (e.g., Sebba 1984). With respect to the latter proposal, Bruyn et al. (1999) have shown that (virtually) all creole languages have double object constructions, thereby casting doubt on Sebba's (1984) claim that verbs in serializing languages can select only one internal argument at the time. The former proposal assumes that serializing languages do not have prepositions and that this gap is taken over by verbs. Problems with this type of approach are manifold. First, serial verbs allow stranding, just like verbs; prepositions (in Sranan and Haitian) generally do not:

(87) a. San Edgar **koti** ___? Sranan
what Edgar cut
'What did Edgar cut?'
b. San Edgar **teki** ___ koti a brede?
what Edgar take cut DET bread
'What did Edgar cut the bread with?'
c. *A nefi san a e koti a brede **nanga** ___?
DET knife that 3SG ASP cut DET bread with

Second, (some) serial verbs allow predicate cleft, just like verbs, and prepositions never do:

(88) a. Na **koti** Edgar **koti** a brede. Sranan
BE cut Edgar cut DET bread
'Edgar really cut the bread.'
b. Na **teki** Edgar **teki** a nefi koti a brede.
BE take Edgar take DET knife cut DET bread
'Really with the knife Edgar cut the bread.'

c. *Na **nanga** Edgar koti a brede **nanga** a nefi.
BE with Edgar cut DET bread with DET knife

Third, some creole languages (e.g., Principense) distinguish oblique (assigned by P) from objective case (assigned by V). Fourth, all creole languages have a number of prepositions without verbal properties. Finally, serial verbs are also used non-prepositionally.

6.3 Absence of verbal morphology and separation of verbs from INFL

For Saramaccan, and creole languages in general (for West African languages the issue is not as clear), we want to suggest that absence of verbal morphology (or the inertia of it, if present, as in some West African languages) and the separation of verbs and INFL are interrelated. In general, creole languages lack verbal morphology (i.e., verbs do not inflect for tense, number, and person). They also lack V-to-I movement. It could be argued that the absence of V-to-I movement sets serializing languages, apart from non-serializing languages, which have V-to-I movement in overt syntax or at LF.

The discussion in section 4 led to the conclusion that all serial verb constructions are to be analyzed as right-adjoined structures, i.e., the second predicate is adjoined to the first predicate. If there is no verb movement to INFL in serializing languages because of the lack of tense/agreement morphology on the verb, then, as a result, the verb in the second predicate of a serial verb construction need not move to INFL. In other words, the structure of serial verb constructions, as given in (89), is legitimate in serializing languages (omitting details irrelevant for the discussion at hand):

(89) $[NP_i\ [t_i\ V_1\ [_{VP1}\ NP_2\ t_1\ [_{VP2}\ V_2\ XP_3]]]]$

The question of why non-serializing languages like English and French do not have serial verb constructions now hinges on the question of why they disallow the structure in (89). Notice that non-serializing languages usually have richer inflectional morphology in terms of tense, number, and person agreement than serializing languages. Suppose that the verb in languages with some verbal inflection must move to INFL (via Tense) to pick up inflectional morphology in overt syntax or at LF, then in the structure in (89), movement of the second verb out of the second predicate would violate Travis's (1984) Head Movement Constraint (HMC):

(90) **Head Movement Constraint:**
An X^0 may only move to the Y^0 which properly governs it.

In the structure in (89), the second verb heads a complement neither to the first verb nor to Tense. Therefore, there are two possible reasons why serial verb

constructions are not possible in non-serializing languages: either because the second verb fails to get inflectional morphology, if it does not move out of the second VP, or because the movement of the second verb to INFL to get inflectional morphology would violate the HMC, since the trace left by movement of the second verb is not properly governed.

This account of the availability of serial verb constructions in languages fares better than the account given by Larson (1991). He proposes that serializing languages differ from non-serializing ones in that in the former set of languages, secondary predicates are essentially non-nominal (either [–N] or [+V] but not [+N, –V]) in nature, while in the latter set, secondary predicates are non-verbal (either [+N] or [–V] but not [–N, +V]) in nature (see Larson 1991: 205–207 for more details and argumentation). One clear-cut prediction of his proposal is that serializing languages do not have secondary predicates headed by nouns, e.g., NP predicates in small clauses. (91) gives direct counter-examples:

(91) a. Mi féndi en bumbúu sèmbe.
1SG find 3SG good person
'I consider him a good person.'
b. A tá lúku mi ógi-wójo.
3SG ASP look 1SG evil-eye
'She looks at me angrily.'

These accounts (i.e., Larson 1991; Law and Veenstra 1992) assume a modular solution to the issue of why certain languages have serial verb constructions and others do not have them.

Baker (1989, 1991b), on the other hand, opts for a parametric approach. He starts out by discussing the Head-Licensing Condition (HLC) of Chomsky (1986b). The HLC requires a head to be linked to a single maximal projection. This gives way to the possibility of one maximal projection licensing two head positions. Consequently, Baker proposes that the key difference between serializing and non-serializing languages lies in the exploitation of this possibility. He recasts it in the following parameter (Baker 1989: 519):

(92) **Generalized Serialization Parameter:**
VPs {can/cannot} count as the projection of more than one distinct head.

Languages such as Saramaccan and Haitian allow for a positive value of this parameter and, therefore, have serial verb constructions, while languages such as French and English do not and, as a consequence, do not have serial verb constructions. One of the main problems of this approach is that it has to posit parametric differences in specific phrase structure rules, contra the spirit of Stowell (1981) and later work.

Collins (1995a) relates the possibility of having serial verb constructions to a parameter on the feature-specification of Tense. If the V-feature of Tense is [+multiple], it is a serializing language. The V-feature of Tense in non-serializing languages is

[–multiple]. Such an approach would account for the same range of facts as the approach advocated by Law and Veenstra (1992). It would lose the correlation with lack of verb movement (in overt syntax and at LF), however. In a multiple feature-specification type of analysis the verb still has to move at some point in the derivation to Tense to check off the V-feature.[11]

It appears, then, that the difference between serializing and non-serializing languages derives from differences between languages with respect to the availability/richness of tense/agreement morphology. In this way parametric variation is reduced to different properties of functional categories and their interaction with independently motivated assumptions concerning verbal syntax, a desirable result in view of the task of acquiring language (Ouhalla 1991).

NOTES

1 Williams (1971: 48–9) observes for Krio that "a large number of serial strings . . . [can] occur with an inserted conjunction . . . [with] little or no apparent difference in meaning." Dudley Nylander (p.c.), on the other hand, disclaims Williams's observation for Krio. Hyman (1971) and Déchaine (1989) cite examples from Igbo of serial constructions containing a 'consecutivity' marker. Lord (1975), on the other hand, argues that such consecutive constructions differ from serial verb constructions. As will be shown below, the presence or absence of coordination markers is relevant for serial verb constructions in Saramaccan. See Sebba (1987) on Sranan, Déchaine (1988a) on Haitian, and Veenstra (1990) on Jamaican Creole for its relevance for serial verb constructions in these languages.

2 See Givón (1991) for a comprehensive study on pause phenomena in serial verb constructions. We will not go into a discussion of this matter.

3 In some (West African) languages the contrast is not as clear. Thus, although the result of this negation test is denied for Yoruba by Bámgbosé (1986), Awóyalé (1988: 3, fn. 3) points out that all actions expressed in serial verb constructions are already performed.

4 Déchaine (1993) also comes to a division into four types of serial verb constructions on the basis of a comparative study of Yoruba, Haitian, and Igbo: dative, instrumental, resultative, and multi-event serial verb constructions. Her classification comes close to the one presented here, though it is not identical in spirit.

5 It may be the case that the latter two instances are type 3 serial verb constructions. If that is the case, it only shows that strict boundaries between different types of serial verb constructions are hard to draw.

6 Byrne (1987) notes two examples in which *pása* and *moó* cannot be used interchangeably: *A píki moó/*pása mi* 'He is smaller than me', and *A kóni moó/*pása dí wómi* 'She outsmarted the man.'

7 Binding facts are rather complex in Haitian due to competing forms of anaphoric elements (*tet-li* HEAD–3SG, *ko-li* BODY–3SG, *li* 3SG) and dialectal variation (cf. Carden and Stewart 1988; Déchaine and Manfredi 1994). The form *li* can be an anaphoric element as well as a pronominal element and accordingly may be either bound or free in its local domain. The body part reflexives sometimes retain their literal meaning in addition to their reflexive interpretation. Which form of the reflexive is chosen depends on the verb it is the object of, among other things.

8 In Chomsky's (2001a) terminology, subordination is created by the operation *set–merge*, while adjunction and coordination are created by the operation *pair–merge*.

9 We do not assume the antisymmetry framework of Kayne (1994), in which there is only one branching direction (leading to languages being analyzed as uniformly head-initial).

10 This proposal is different from the adjunction analysis by Awóyalé (1988), which requires two direction of adjunctions (leftward as well as rightward). The data in (52) and (53) above show that 'precondition states' (instrumentals) and 'postcondition states' (resultatives) pattern alike with respect to the hierarchical relation between the different arguments in serial verb constructions. As such, this argues against assigning these two types of serials a different syntactic structure. See Veenstra (1997) for elaboration of this point.

11 We could speculate that there are actually two types of serializing languages. In one type serialization is the result of lexicalization of INFL and absence of verbal morphology (Law and Veenstra 1992), while in the other type it is the result of the feature-specification of the Tense node in INFL (Collins 1995a). In the latter type, there would still be verbal morphology and V-to-I movement, but not in the former. Creole languages may be examples of the first type, while Akan, for instance, may be one of the second type. Akan has tense morphology on both verbs in serial verb constructions (cf. Schachter 1974):

(i) Mey*EE* adwuma mem*aa* Amma.
1SG=do=TNS work 1SG=give=TNS Amma
'I worked for Amma.'

We leave this speculation for future research, but note that it is not a priori necessary that all serializing languages should form a natural class.

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60 Sluicing

JASON MERCHANT

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1 Introduction

Sluicing is the ellipsis phenomenon illustrated in (1), in which the sentential portion of a constituent question is elided, leaving only a *wh*-phrase remnant:

(1) a. Jack bought something, but I don't know what.
  b. A: Someone called.
    B: Really? Who?
  c. Beth was there, but you'll never guess who else.
  d. Jack called, but I don't know {when/how/why}.
  e. Sally's out hunting – guess what!
  f. A car is parked on the lawn – find out whose.

The sluices in (1) should be compared to their non-elliptical counterparts in (2), with which they are synonymous:

(2) a. Jack bought something, but I don't know what he bought.
  b. A: Someone called.
    B: Really? Who called?

c. Beth was there, but you'll never guess who else was there.
d. Jack called, but I don't know {when/how/why} he called.
e. Sally's out hunting – guess what she's out hunting!
f. A car is parked on the lawn – find out whose is parked on the lawn.

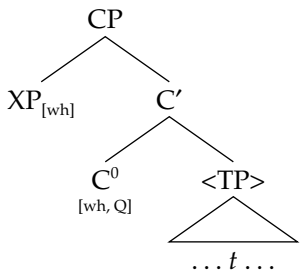
Sluicing appears to be widespread cross-linguistically (unlike VP ellipsis), and may in fact be found in some form or another in every language (like nominal ellipses, gapping, stripping, and fragment answers). It is found in at least English, Frisian, Icelandic, Swedish, Norwegian, Danish, Irish, Greek, German, Dutch, Russian, Polish, Bulgarian, Serbo-Croatian, Slovene, Persian, Hindi-Urdu, Catalan, Spanish, French, Italian, Romanian, Hebrew, Arabic, Basque, Japanese, Chinese, Korean, Finnish, and Hungarian.

Situated as it is at the intersection of two of the best-studied and most intriguing areas of generative research, namely ellipsis and *wh*-movement, it comes as no surprise that sluicing has been extensively discussed since it was first investigated (and named) in Ross (1969b). Following the divisions in general for the analysis of ellipses, there are two general schools of analysis for sluicing: either the understood material is present at some level of syntactic structure or it is not. The first school, which takes sluicing to be a subspecies of ellipsis, is represented by the majority of analyses, beginning with Ross (1969b), and continuing with Chao (1988), Lobeck (1991, 1995), Chung et al. (1995), Lasnik (2001), and Merchant (2001), among several others. Non-structural analyses of sluicing in particular have been pursued by van Riemsdijk (1978a) and Ginzburg and Sag (2000), who posit that a clausal node immediately and exhaustively dominates the *wh*-phrase.

2 Movement vs. non-movement approaches

Among the analyses that posit structure internal to the ellipsis site, two approaches can be identified. The first, originating with Ross (1969b) and pursued more recently by Lasnik (2001) and Merchant (2001), among others, analyzes sluicing as involving movement of a *wh*-phrase out of a sentential constituent (S, IP, or TP), followed by deletion of that node. This derivation is schematized in (3), where angled brackets represent deletion (or, more neutrally, enclose unpronounced material):

(3)



For an example like (1a), then, the structure would be the following:

(4) Jack bought something, but I don't know [$_{CP}$ what$_1$ C^0 <[$_{TP}$ he bought t_1]>].

The primary support for such a derivation comes from connectivity effects. The *wh*-phrase 'remnant' in sluicing shows similar behavior across a wide range of grammatical dependencies to its *wh*-phrase counterpart in fully sentential, non-elliptical structures. These connectivity effects range from case-matching effects and preposition-stranding parallelisms to binding phenomena.

First, as noted in Ross (1969b), the sluiced *wh*-phrase must bear the case that its counterpart in a non-elided structure would bear. This is illustrated for German below:

(5) Er will jemandem schmeicheln, aber sie wissen nicht, {*wer / *wen / wem}.
he wants someone.DAT flatter but they know not who.NOM who.ACC who.DAT
'He wants to flatter someone, but they don't know who.'

(6) Er will jemanden loben, aber sie wissen nicht, {*wer / wen / *wem}.
he wants someone.ACC praise but they know not who.NOM who.ACC who.DAT
'He wants to flatter someone, but they don't know who.'

Compare these to their non-elided counterparts:

(7) Sie wissen nicht, {*wer / *wen / wem} er schmeicheln will.
they know not who.NOM who.ACC who.DAT he flatter wants
'They don't know who he wants to flatter.'

(8) Sie wissen nicht, {*wer / wen / *wem} er loben will.
they know not who.NOM who.ACC who.DAT he praise wants
'They don't know who he wants to praise.'

Similar facts are found in all case-marking languages that relevant data are available for: English, Greek, Dutch, Finnish, Hungarian, Russian, Polish, Czech, Slovene, Hindi, Basque, Turkish, and Korean.

Second, there is a correlation between the availability in a given language for preposition-stranding *wh*-movement and the possibility for sluicing a *wh*-phrase without a preposition which corresponds to a correlate marked by a preposition. In general, a language *L* will allow preposition stranding under sluicing if *L* allows preposition stranding under regular *wh*-movement. The relevant facts are given here for selected languages of both kinds.

Preposition-stranding languages:

(9) English:
a. Peter was talking with someone, but I don't know (with) who.
b. Who was he talking with?

(10) Frisian:
a. Piet hat mei ien sprutsen, mar ik wyt net (mei) wa.
Piet has with someone talked but I know not with who
b. Wa hat Piet mei sprutsen?
who has Piet with spoken

(11) Norwegian:
a. Per har snakket med noen, men jeg vet ikke (med) hvem.
Per has talked with someone but I know not with who
b. Hvem har Per snakket med?
who has Per spoken with

(12) Danish:
a. Peter har snakket med en eller anden, men jeg ved ikke (med) hvem.
Peter has talked with one or another but I know not with who
b. Hvem har Peter snakket med?
who has Peter spoken with

Non-preposition-stranding languages:

(13) Greek:
a. I Anna milise me kapjon, alla dhe ksero *(me) pjon.
the Anna spoke with someone but not I.know with who
b. *Pjon milise me?
who she.spoke with

(14) German:
a. Anna hat mit jemandem gesprochen, aber ich weiß nicht, *(mit)
Anna has with someone spoken but I know not with
wem.
who
b. *Wem hat sie mit gesprochen?
who has she with spoken

(15) Yiddish:
a. Zi hot mit emetsn geredt, ober ikh veys nit *(mit) vemen.
she has with someone spoken but I know not with who
b. *Vemen hot zi mit geredt?
who has she with spoken

(16) Russian:
a. Anja govorila s kem-to, no ne znaju *(s) kem.
Anja spoke with someone, but not I.know with who
b. *Kem ona govorila s?
who she spoke with

(17) Slovene:
a. Anna je govorila z nekom, ampak ne vem *(s) kom.
Anna AUX spoken with someone but not I.know with who
b. *Kom je govorila Anna s?
who AUX spoken Anna with

(18) Bulgarian:
a. Anna e govorila s njakoj, no na znam *(s) koj.
Anna AUX spoken with someone but not I.know with who
b. *Ko e govorila Anna s?
who AUX spoken Anna with

(19) Serbo-Croatian:
a. Ana je govorila sa nekim, ali ne znam *(sa) kim.
Ana AUX spoken with someone but not I.know with who
b. *Kim je govorila Ana sa?
who AUX spoken Anna with

(20) Persian:
a. Ali ba kasi harf mi-zad, ʔama ne-mi-dan-am *(ba) ki.
Ali with someone talk PROG-hit.3sg but not-PROG-know-I with who
b. *Ki Ali ba harf mi-zad?
who Ali with talk PROG-hit.3sg

(21) Hebrew:
a. Dani katav le-mishehu, aval ani lo yode'a *(le-)mi.
Dani wrote to-someone, but I not know to-who
b. *Mi Dani katav le?
who Dani spoke with

(22) Basque:
a. Ana-k norbait-ekin hitzegin zuen, baina ez dakit nor- *(ekin).
Ana-ERG someone-with talk.to AUX but not know who- with
b. *Nor hitzegin zuen -ekin?
who talk.to AUX with

Third, binding of elements in *wh*-phrase remnants is possible, as Lasnik (2001) shows:

(23) Every linguist$_1$ criticized some of his$_1$ work, but I'm not sure how much of his$_1$ work <every linguist$_1$ criticized *t*>.

(24) Each of the linguists criticized some of the other linguists, but I'm not sure how many of the other linguists <each of them criticized *t*>.

These parallels in distribution are immediately and straightforwardly accounted for by the deletion theory of sluicing, since the grammatical constraints that regulate case on *wh*-phrases, the possibility of extracting a *wh*-phrase from a PP, binding into *wh*-phrases, and scope will be operative uniformly in both elliptical and non-elliptical structures.

The second strand of analyses of sluicing which posit structure internal to the ellipsis site is represented by Lobeck (1995) and Chung et al. (1995). For these authors, ellipses consist of a designated null category drawn from the lexicon which is replaced after S-structure/Spell-Out by a phrase marker copied from the antecedent by LF. For an example like (1a), then, the derivation would contain the following structures, where the elliptical *e* in (25a) has been replaced by the boldface material in (25b):

(25) a. At Spell-Out:
Jack bought something, but I don't know [$_{CP}$ what C^0 [$_{TP}$ *e*]].
b. At LF:
Jack bought something, but I don't know [$_{CP}$ what C^0 [$_{TP}$ **Jack bought something**]].

These analyses posit no movement of the *wh*-remnant: it is base-generated in Spec, CP and comes to bind a variable (supplied by the indefinite internal to the copied TP) only at LF. The primary motiviation for such a movementless approach comes from the fact, noted by Ross (1969b), that sluicing appears not to respect islands – more accurately, that the *wh*-phrase in sluicing can be associated with (bind) a variable which corresponds in position to a correlate internal to an island in the antecedent TP.

Examples for the major kinds of syntactic islands are given (occasionally with non-elliptical controls) in (26–34):

(26) **Relative clause island:**
a. They want to hire someone who speaks a Balkan language, but I don't remember which.
b. *I don't remember which *(Balkan language) they want to hire someone [who speaks___]*.

(27) **Left-branch (attributive adjective case):**
a. She bought a big car, but I don't know how big.
b. *I don't know how big *she bought [a ___ car]*.

(28) **Derived position islands (subjects, topicalizations):**
   a. A biography of one of the Marx brothers is going to be published this year – guess which!
   b. *Guess which *(Marx brother) [a biography of ___] is going to be published this year.*

(29) **COMP-trace effects** (cf. Chung et al.'s 1995: (90), (91a); Perlmutter 1971: 112):
   a. It appears that someone will resign, but it's not yet clear who.
   b. Sally asked if somebody was going to fail Syntax One, but I can't remember who.

(30) **Coordinate Structure Constraint:**
   a. They persuaded Kennedy and some other Senator to jointly sponsor the legislation, but I can't remember which one. (Chung et al.'s 1995: (88b))
   b. Bob ate dinner and saw a movie that night, but he didn't say which.

(31) **Adjuncts:**
   a. Ben will be mad if Abby talks to one of the teachers, but she couldn't remember which.
   b. *Ben will be mad if Abby talks to one of the teachers, but she couldn't remember which *(of the teachers) Ben will be mad [if she talks to __].*
   c. Ben left the party because one of the guests insulted him, but he wouldn't tell me which.

(32) **Complement to nouns** (Chung et al.'s 1995: (84c)):
The administration has issued a statement that it is willing to meet with one of the student groups, but I'm not sure which one.

(33) **Sentential subject** (Chung et al.'s 1995: (84b)):
That certain countries would vote against the resolution has been widely reported, but I'm not sure which ones.

(34) **Embedded question** (Chung et al.'s 1995: (84a)):
Sandy was trying to work out which students would be able to solve a certain problem, but she wouldn't tell us which one.

In (26a), for example, the *wh*-phrase *which* has moved out of the relative clause, interpretationally parallel to its unelided but ungrammatical counterpart in (26b). Similar remarks apply to the remaining islands.

If island sensitivity arises only from movement structures, as is usually assumed, the non-movement approaches (employing either LF-copying as above or eschewing structure at all, as Ginzburg and Sag 2000 do) have an immediate account of the absence of islands effects in sluicing.

3 Theoretical consequences

It is fair to say that the greater part of the work on sluicing has been devoted to various attempts to make theoretical sense out of the conundrum presented above: how to account for the connectivity effects (which seem to implicate movement structures) as well as the lack of island effects (which seem to implicate the opposite). The following two subsections explicate the tacks that have been taken.

3.1 Non-movement approaches

For non-movement approaches such as Lobeck (1995), Chung et al. (1995), and Ginzburg and Sag (2000), the primary explicandum is the connectivity effects, since the absence of island effects is directly captured. Chung et al. (1995) propose that at LF, a kind of co-indexing applies to the *wh*-phrase in Spec, CP and the correlate inside the copied TP, yielding structures like the following:

(35) Jack bought something, but I don't know [$_{CP}$ what^{x} C^{0} [$_{TP}$ **Jack bought something**^{x}]].

If this co-indexing can be made to impose case uniformity, then the case connectivity effects can be accounted for. The P-standing facts are more problematic: it is unclear just how to rule out the following:

(36) *I Anna milise me kapjon, alla dhe ksero [$_{CP}$ pjon^{x} [**i Anna milise me kapjon**^{x}]].
the Anna spoke with someone but not I.know who

One possibility, explored in Merchant (2000), is to require movement in the antecedent clause, prior to LF-copying: scoping the correlate (here *kapjon* 'someone') would require stranding a preposition at LF, and if Bayer (1996) is correct, this is impossible in these languages, so the requisite structure for resolution of the ellipsis at LF would be unavailable. Such a solution requires positing an additional Chain Uniformity condition that imposes category uniformity on all elements in a chain (even derived); see Merchant (2000) for the definition of such a condition.

Similar remarks hold for Ginzburg and Sag's (2000) account of the connectivity effects. For them, sluices like the ones discussed thus far are introduced by the phrasal type *sluiced-interrogative-clause*, which is a subtype of *headed-fragment-phrase* (among others). Such phrases are subject to a constraint (call it the 'uniformity' constraint; Ginzburg and Sag 2000: 304, (17)) that they dominate a phrase (the *wh*-phrase) whose CATEGORY and CONTENT values are the same as (are co-indexed with) the CATEGORY and CONTENT values of a phrase (the correlate) provided by the context. (The grammatical information of the correlate is introduced into the sign of the fragment phrase by a feature designed for this purpose, called SAL-UTT.) Since case and phi-features are subsorts of CATEGORY and CONTENT respectively, this constraint will ensure that the case and phi-features of the

remnant and the correlate match. Ginzburg and Sag's uniformity constraint and Merchant's Chain Uniformity condition are quite comparable in formulation and functioning. Neither condition, however, straightforwardly rules out (36). For Merchant's condition, this is because nothing rules out co-indexing *pjon* with *kapjon*, the latter embedded unmoved in a PP (it is for this reason that the correlate must be assumed to move as well). Similarly, nothing in Ginzburg and Sag's formulation rules out *pjon* being the head of a *hd-frag-ph* whose SAL-UTT value is the local value of *kapjon*. There is no obvious way to state the requirement that in some languages (e.g., Greek) but not others (e.g., English), correlates cannot be DPs selected by Ps.

3.2 Movement approaches

Movement approaches deal easily with the connectivity facts, since nothing novel need be said. For them, however, the lack of island sensitivity is the primary explicandum. We can identify two main approaches to dealing with this fact. The first is to reanalyze the movement involved in sluicing as one that does not in fact cross an island boundary. This strategy is pursued for those islands which include a propositional proper subdomain, such as relative clauses, clausal adjuncts, and sentential subjects, by Merchant (2001) (see also Baker and Brame 1972 for a related suggestion, and Fukaya 2003). On this view, the apparent extraction out of an island such as the relative clause in (37a), with the putative (ill-formed) source in (37b), does not in fact occur:

(37) a. They want to hire someone who speaks a Balkan language, but I don't remember which.
b. *I don't remember which *(Balkan language) they want to hire someone [who speaks___]*.

Instead, the extraction is local, and the desired reading is generated by interpreting the elided pronoun (whose correlate is the trace of the relative operator) as an E-type pronoun:

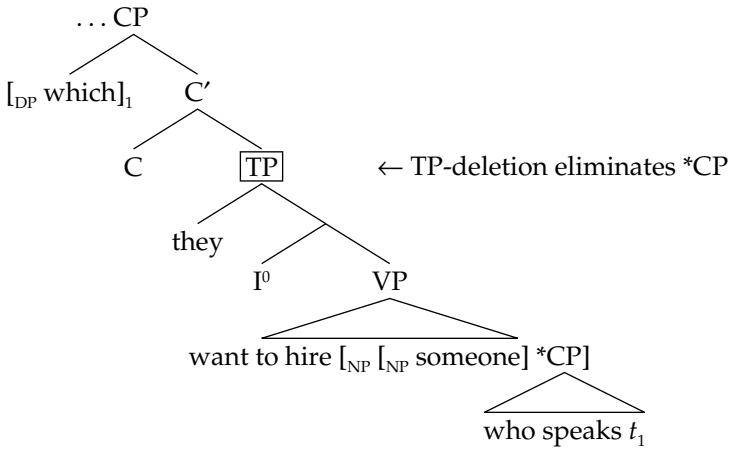
(38) They want to hire someone who speaks a Balkan language, but I don't remember which$_1$ <he$^{E\text{-}type}$ should speak t_1>.

Even if such an approach works for propositional islands (though Lasnik 2001 presents evidence that raises certain difficulties), there remains a subset of islands that are unaccounted for: left-branch extractions, derived-position islands, COMP-trace effects, and coordinate structures. For these, movement approaches from Ross (1969b) and Chomsky (1972b) to Lasnik (2001) and Merchant (2001) have posited that the source of the island violation is the pronunciation of the island. For Ross, this meant that island violations were calculated across the derivation, with island violations that remained at surface structure relatively worse than those that were targeted by deletion. Chomsky (1972b) proposed that crossing an island left a feature (a '*') which could be eliminated by a later

deletion operation. Lasnik and Merchant pursue this idea in various forms, essentially reviving the idea and coding it as a feature of crossed island nodes or of traces (non-head copies in a *wh*-chain): deletion, however construed (either as an operation, as in older accounts, or as a mere reflex of the PF-interpretation of the featural content of the ellipsis-licensing head), will have the effect that at PF, the offending feature will not be present in the representation. These two latter possibilities are illustrated in the two trees in (39) and (40), respectively:

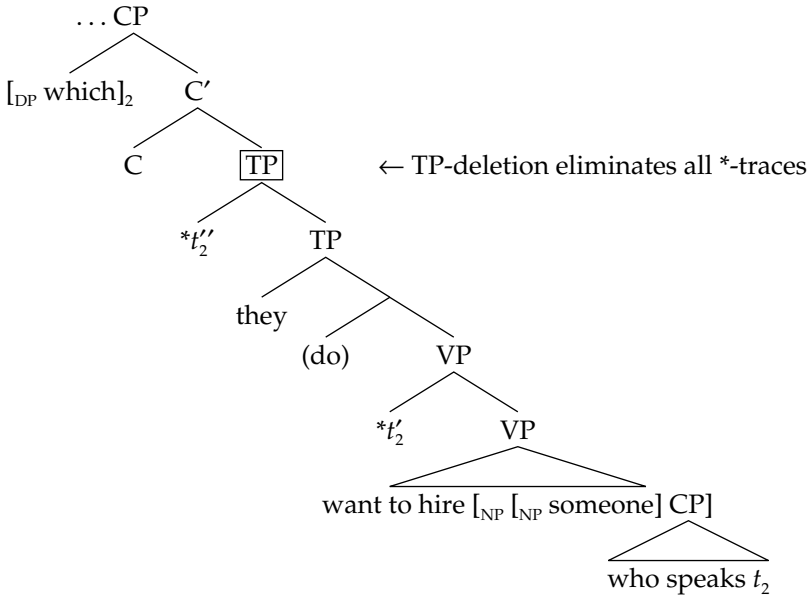
(39) a. They want to hire someone who speaks a Balkan language, but I don't remember which.

b.



(40) a. They want to hire someone who speaks a Balkan language, but I don't remember which.

b.



The central idea in both these implementations is that islands are essentially a PF phenomenon, and that ellipsis can repair an otherwise grammatically deviant structure. This notion is has proven fruitful in a number of other domains in ellipsis, and in sluicing in particular.

4 Puzzles and prospects

The domain of sluicing, more so perhaps than any other ellipsis construction, seems to have more open questions than widely accepted conclusions. Far more so than with nominal ellipses or VP-ellipsis in particular, the data that fall under sluicing give rise to a host of puzzling phenomena, the majority of which have never received systematic attention in the literature, let alone theoretically satisfying explanations. This last section is devoted to enumerating these puzzles, along with various approaches to them, and in showing where fruitful areas for further research may be found.

Broadly speaking, the puzzles divide into two kinds: movements or elements which exceptionally *cannot* occur in the presence of sluicing (the sluicing-COMP puzzles), and movements which exceptionally *can* occur with sluicing (sluicing in *wh*-in-situ languages, multiple sluicing, and swiping).

4.1 Sluicing-COMP generalization puzzles

Given the most generally accepted picture of sluicing, namely that it consists of a *wh*-phrase remnant in Spec, CP with the sentential constituent (TP) unpronounced, several puzzles emerge immediately, which can be grouped under the following generalization:

(41) **The sluicing-COMP generalization:**
In sluicing, no non-operator material may appear in COMP.

The term 'operator' here refers to the phonological exponence of the *wh*-phrase itself, and 'COMP' means, as usual, all material dominated by CP but not dominated by TP. The generalization in (41) rules out any elements in sluicing that are not part of the *wh*-phrase itself: moved elements like clitics, auxiliaries, etc. (whether they attach to C or to the *wh*-phrase) as well as base-generated elements like complementizers themselves.

The first set is illustrated by the lack of subject–auxiliary inversion in matrix sluicing in the Germanic languages, as in (42), which gives the data from English, Frisian, German, Dutch, Danish, Norwegian, Swedish, Yiddish, and Icelandic, in that order:

(42)	a.	A: Max has invited someone.	B: Really?	Who (*has)?
	b.	A: Jelle hat ien útnoege.	B: Soa?	Wa (*hat)?
	c.	A: Max hat jemand eingeladen.	B: Echt?	Wen (*hat)?
	d.	A: Max heeft iemand uitgenodigd.	B: Ja?	Wie (*heeft)?

e.	A: Max har inviteret en eller anden.	B: Ja?	Hvem (*har)?
f.	A: Anna har invitert noen.	B: Ja?	Hvem (*har)?
g.	A: Anna har bjudit någon.	B: Ja?	Vem (*har)?
h.	A: Moyshe hot emetsn ayngelodn.	B: Nu?	Vemen (*hot)?
i.	A: Anna hefur boðið vini sínum.	B: Er að?	Hverjum (*hefur)?
	Anna has invited friend her	is that?	who has

A simple solution to this fact would be to order T-to-C movement after sluicing: the deletion of the TP node would bleed the raising of the auxiliary into C. Approaches that eschew additional structure under the CP node also fare well with these facts. For other approaches, these facts are taken as a window on the mechanisms of satisfaction of feature strength: Lasnik (2001) and Merchant (2001) suggest that these facts indicate either that feature movement alone is possible (just in case the host is deleted, avoiding a PF crash) or that the strong feature that drives T-to-C movement is located on T: a strong feature internal to an ellipsis site need not move, since, by economy, it will not trigger a PF crash due to the deletion of a constituent containing it.

A similar puzzle comes from the Wackernagel clitics in South Slavic languages such as Slovene; these clitics are usually argued to cliticize onto the (first) *wh*-phrase in Spec, CP, as in (43a). Under sluicing, however, such clitics are obligatorily absent, as seen in (43b):

(43) a. Peter se je spraševal, [$_{CP}$ kako$_1$ je$_2$ [$_{TP}$ Špela t_2 popravila t_1]].
Peter REFL AUX asked what AUX Špela fixed
'Peter wondered what Špela fixed.'

b. Špela je popravila nekako, a nisem vprašal,
Špela AUX fixed something but NEG.I.AUX asked
[$_{CP}$ kako (*je) <>].
what AUX
'Špela fixed something, but I didn't ask what.'

Lobeck (1995: 59) shows that parallel facts hold for complementizer agreement in Germanic varieties such as Bavarian, where subject features can be found as a clitic on material in COMP, unless sluicing applies:

(44) Du woidd-st doch kumma, owa mia wissn ned wann-st (du)
you wanted-2sg PRT come but we know not when-2sg you
kumma woidd-st.
come wanted-2sg
'You wanted to come, but we don't know when you wanted to come.'

(45) Du woidd-st doch kumma, owa mia wissn ned wann (*-st).
you wanted-2sg PRT come but we know not when -2sg
'You wanted to come, but we don't know when.'

The range of solutions possible for accounting for such facts seems to be similar to those proposed for the lack of subject–auxiliary inversion in Germanic.

The second set of facts that fall under the sluicing-COMP generalization concern base-generated elements, in particular complementizers. These are found in many languages, including Danish, Norwegian, Frisian, Dutch varieties, Slovene, and Irish. I give the data here from Irish only:

(46) Cheannaigh sé leabhar inteacht ach níl fhios agam céacu
bought he book some but not.is knowledge at.me which
ceann (*a / *ar).
one C_{trace} / C_{pro}
'He bought a book, but I don't know which.'

Although a complementizer (either *aL* or *aN*) is obligatorily present in non-elliptical contexts in Irish, complementizers are obligatorily absent in sluicing. Two possibilities arise: first, there may be no structure other than the *wh*-phrase present, or second, the complementizer may have been incorporated into the sentential domain prior to deletion. The second possibility can be fleshed out in a variety of ways: several authors have proposed that complementizers (at least in Irish and Hebrew) cliticize onto a host internal to TP – such cliticization, clearly, would feed deletion.

Finally, I note that there are apparent exceptions to the sluicing-COMP generalization as stated, in particular from Hungarian and Japanese. It is surely no accident that these languages are commonly analyzed as not having movement into Spec, CP overtly in questions, an issue we turn to now.

4.2 Sluicing in clause-internal wh *languages*

If sluicing is contingent upon *wh*-movement into Spec, CP, then it comes as some surprise that what appears to be sluicing is found in languages in which *wh*-phrases do not front to Spec, CP, including both *wh*-in-situ languages like Japanese, Chinese, and Korean, and languages in which *wh*-phrases surface in a designated clause-internal position (often a focus position preceding the verb), such as Hungarian, Turkish, and Hindi. I give here data from Japanese and Hungarian:

(47) Abby-ga dareka-o mi-ta ga, watashi-wa dare ka wakaranai.
Abby-NOM someone-ACC see-PAST but I-TOP who Q know.not
'Abby saw someone, but I don't know who.'

(48) A gyerekek találkoztak valakivel de nem emlékszem, hogy
the children met someone.with but not I.remember that
kivel.
who.with
'The kids met with someone, but I don't remember who.'

The Japanese data in particular have been the subject of a number of studies. Two approaches can be identified. The first, proposed by Takahashi (1994), is to claim that Japanese sluicing involves a kind of movement to a clause-peripheral position (perhaps *wh*-movement to Spec, CP, perhaps merely a kind of A'-scrambling), followed by deletion of the sentential node, as in English. The second assimilates the Japanese facts to a kind of reduced cleft structure, a structure I have called 'pseudosluicing'; under these approaches (found in Shimoyama 1995; Kuwabara 1996; Nishiyama et al. 1996; Merchant 1998; Kizu 2001; Hiraiwa and Ishihara 2002; Fukaya 2003; and for another sort of sluicing, Fukaya and Hoji 1999), the unpronounced material in (47) is not due to ellipsis of a TP, but rather simply to the fact that Japanese allows a null copula and a null 'expletive' subject:

(49) watashi-wa [$_{CP}$ [$_{TP}$ *pro* dare *copula*] ka] wakaranai
I-TOP it who Q know.not
'I don't know who <it was>.'

Such a pseudosluicing analysis has many merits for the Japanese facts, but it has never been pursued for the Hungarian-type languages. For these languages, one suggestion that has been made is that a scrambling-type movement may create the input structures for deletion, or that whatever constraint prevents overt movement into Spec, CP is ameliorated by the deletion itself, however such an idea is implemented. (One possibility, following the reasoning concerning T-to-C movement above, would be to claim that the traces of *wh*-movement in these languages would trigger some kind of PF crash that deletion repairs, for example.) Another possibility, following recent work by Simpson and Bhattacharya (2003) on Bangla, is that these languages in fact do have *wh*-movement to Spec, CP, but that other factors in their grammars mask this movement; if such an analysis is correct, the fact that sluicing is possible would indicate that deletion can bleed the other movements involved in non-elliptical clauses.

4.3 Multiple sluicing

Multiple sluicing refers to structures in which more than one *wh*-phrase form remnants of sluicing, as in (50):

(50) ?Everyone brought something, but I couldn't tell you who what.

While such examples have a marginal status in English for some speakers (and even for those who accept them, such as myself and Bolinger 1978, they require a generator in the antecedent, giving rise to an obligatory pair-list reading: *Someone hit someone first, but we couldn't determine {who hit who first/*who who}.*), they appear to be fully acceptable in a number of other languages, including German, Dutch, and Greek:

(51) a. Jemand hat was gesehen, aber ich weiß nicht, wer was.
someone has something seen but I know not who what
(lit.) 'Someone saw something, but I don't know who what.'
b. Iemand heeft iets gezien, maar ik weet niet wie wat.
someone has something seen but I know not who what
(lit.) 'Someone saw something, but I don't know who what.'
c. Kapjos idhe kapjon, alla dhe ksero pjos pjon.
someone.NOM saw someone.ACC but not I.know who.NOM who.ACC
(lit.) 'Someone saw someone, but I don't know who whom.'

The immediate question that such structures give rise to concerns the nature of the movement involved in fronting the *wh*-phrases out of the clause, given that these languages allow only a single *wh*-phrase to front in non-elliptical contexts. It seems most plausible that the application of deletion to the clausal host of multiple *wh*-movement in these cases repairs whatever goes wrong in the non-elliptical cases; essentially, one would like to give an analysis to multiple sluicing that is parallel to the analysis of multiple *wh*-fronting in languages like Bulgarian, which permit it in non-elliptical contexts. Expectedly, then, the analytical options that have been pursued run the gamut of those that have been proposed for multiple *wh*-fronting. These are the following: (i) either all *wh*-phrases front by *wh*-movement into Spec, CP (adjoining to each other there or tucking in; Rudin 1986; Richards 2001), or (ii) the initial *wh*-phrase moves by *wh*-movement into Spec, CP with the non-initial *wh*-phrases moving to distinct clause-peripheral positions (Rudin 1986; Bošković 2002; Grohmann 2003), or (iii) the *wh*-phrases form a *wh*-cluster and front together (Grewendorf 2001).

Multiple sluicing gives rise to superiority effects, which is expected under all three of the options above (illustrated here for English and Greek); these facts are more puzzling for base-generation accounts of sluicing:

(52) a. *Everyone brought something (different) to the potluck, but I couldn't tell you what who.
b. *Kapjos idhe kapjon, alla dhe ksero pjon pjos.
someone-NOM saw someone.ACC but not I.know who.ACC who.NOM
(lit.) 'Someone saw someone, but I don't know whom who.'

There are restrictions on the *wh*-phrases that can be found in multiple sluicing that do not follow merely from positing movement, and which support options (ii) and (iii) above over (i). In particular, multiple sluicing is more sensitive to locality than simple *wh*-movement is: the initial and non-initial *wh*-phrases must be local to one another, where 'local' is roughly equivalent to 'clause mate', as pointed out in Takahashi (1994), Nishigauchi (1998), Heck and Müller (2000), and Merchant (2001: 113):

(53) *Everybody said Lucy'd bring something different to the potluck, but I can't remember who$_1$ what$_2$ <t_1 said Lucy'd bring t_2 to the potluck>.

'Clause mate', however, is not exactly the right notion; cross-clausal multiple sluicing in German is much better across restructuring verbs like *versuchen* 'try' than across non-restructuring verbs like *zögern* 'hesitate' (Sauerland 1999b):

(54) Irgendjemand hat {versucht /?*gezögert} irgendetwas zu klauen, aber
someone has tried hesitated something to steal but
ich weiss nicht, wer was.
I know not who what
(lit.) 'Someone {tried/hesitated} to steal something, but I don't know who what.'

In fact, even finite, tensed, non-restructuring CP boundaries can sometimes be crossed in multiple sluicing, as long as the embedded subject is bound by the matrix subject:

(55) Everybody$_i$ said he$_i$'d bring something different to the potluck, but I can't remember who$_1$ what$_2$ <t_1 said he$_1$'d bring t_2 to the potluck>.

This set of restrictions is highly reminiscent of the set found in gapping, as discussed in detail by Johnson (1996), and to the availability of multiple-pair answers to multiple questions in English, as Dayal (2002) discusses. All of this evidence seems to point to locality restrictions on the movement found in multiple sluicing, a movement which is possible only if the host of movement is subject to ellipsis (parallel, in other words, to the repair effects found for the scrambling-like movements posited by Johnson 1996, 2001, and Richards 2001 for gapping and pseudogapping). This is not to say that multiple sluicing is a subspecies of gapping, of course, since gapping is restricted to local conjunctions and disallows backwards application in right-branching languages, while multiple sluicing is not limited to conjunctions (Romero 1997b) and does occur preceding its 'antecedent' clause (as Hoyt and Teodorescu 2003 show: *I don't know who with who, but I am sure everyone will get hooked up with someone*).

Multiple sluicing is also found in Japanese, Bulgarian, Turkish, and Romanian, among other languages:

(56) a. Sono toki, dareka-ga nanika-o (Nishigauchi 1998: 146, (70))
that time someone-NOM something-ACC
mise-ta. Sikasi, dare-ga nani-o ka omoidase-nai.
showed but who-NOM what-ACC Q remember-not
'At that moment, someone showed something (to me). (lit.) But I can't remember who what.'

b. Njakoj e vidjal njakogo, no ne znam koj kogo.
someone AUX seen someone but not I.know who whom
'Someone saw someone, but I don't know who saw who.'

c. Biri bir şey gördü ama, kim ne bil-mi-yor-um.
someone something saw but who.NOM what.ACC know-NEG-PROG-1sg
(lit.) 'Someone saw something, but I don't know who what.'

d. Ion a dat cuiva ceva (Hoyt and Teodorescu 2003: 2, (7a))
Ion has given someone something
şi vreau să ştiu cui ce.
and I.want SUBJ I.know whom what
(lit.) 'Ion gave something to someone and I want to know what to whom.'

The analytical questions raised by these languages are somewhat different than those above. For multiple *wh*-fronting languages like Bulgarian, Russian, Serbo-Croatian, and Romanian, the existence of multiple sluicing is expected. In Japanese, the same questions arise as did in the previous section; because Japanese allows multiple focus structures with the copula, however, a solution similar to that proposed for single sluicing seems possible. There is reason to believe that these apparently similar facts across these languages do not submit to a uniform analysis, however: see Hoyt and Teodorescu (2003) for a careful examination of the differences between multiple sluicing in Romanian and that in Japanese.

4.4 Swiping

Monomorphemic *wh*-words selected by certain (generally 'simplex') prepositions can undergo a surprising inversion in sluicing, as illustrated by the following data:

(57) a. Abby was talking, but I don't know who to.
b. They were arguing; God only knows what about.
c. A: She got a package in the mail.
B: Really? Who from?
d. He'll be at the Red Room, but I don't know when till.
e. Bees are getting into the house, but we can't figure out where from.

This phenomenon, known as *swiping* (for sluiced *wh*-word inversion with prepositions (in Northern Germanic)), has been discussed by Ross (1969b), Rosen (1976), Van Riemsdijk (1978a), Chung et al. (1995), Culicover (1999), Richards (2001), Merchant (2002), and Van Craenenbroeck (2004). It is also found in Danish, and, for about 50 percent of speakers consulted, in Norwegian; it is found too, with variations, in some Dutch dialects, as described in Van Craenenbroeck (2004):

(58) a. Danish:
Per er gået i biografen, men jeg ved ikke hvem med.
b. Norwegian:
% Per gikk på kino, men jeg veit ikke hvem med.
Per is gone/went to cinema but I know not who with
'Per went to the movies but I don't know who with.'

Swiping exhibits a number of puzzling properties. It is limited to a small set of *wh*-words (*who*, *what*, *where*, *when*, and variably across speakers, *how long*, *how much*, *how many*), excluding all phrasal *wh*-XPs as well as *which* and *whose*. It is found only in sluicing (not gapping or pseudogapping, for example). And though aggressively non-D-linking modifiers such as *the hell* or *on earth* are generally excluded from sluicing (**Somebody broke it and I want to know who the hell!*), these modifiers become possible just in case swiping applies: *They were arguing, but God only knows what the hell about.*

Ross (1969b) (and Rosen 1976 following him) analyzed swiping as a result of a non-constituent deletion rule, formulated in (59):

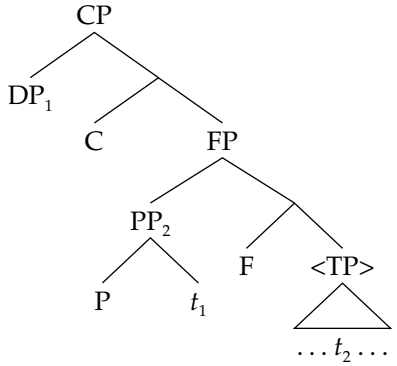
(59) $\ldots [_{CP}\ XP_{[+wh]}\ [_{IP}\ \alpha - (P) - \beta] \ldots$
$\Rightarrow_{OPT}$
1 2 3 4
1 Ø 3 Ø

Van Riemsdijk (1978) proposed to assimilate swiping to R-pronoun inversion, found in Dutch and other continental West Germanic varieties (an idea endorsed in Lobeck 1995 and Chung et al. 1995 as well):

(60) Waarmee wou je het doen?
wherewith wanted you it do
'What did you want to do it with?'

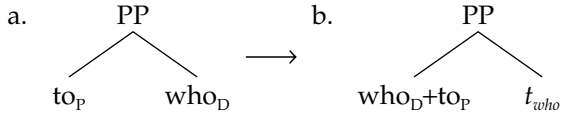
Richards (2001: 139–140) suggests that swiping is a case of stranding in an intermediate Spec, FP, an analysis championed on new and persuasive cross-linguistic grounds in Van Craenenbroeck (2004):

(61)



Merchant (2002) analyzes swiping as head-to-head movement of the *wh*-word into P^0, a kind of incorporation during the derivation from Spell-Out to PF:

(62)



Finally, Culicover (1999) claims that swiping is "*sui generis*," and that the PP is exhaustively dominated by a CP node ("radically violating standard X'-theory" 1999: 138).

All of these proposed analyses succeed in capturing some but not all of the relevant facts, and several require fairly substantial departures from widely accepted tenets of grammatical analysis as well. As such, swiping remains one of the more recalcitrant puzzles in the sluicing arena.

5 Conclusion

Sluicing remains an area of active research, primarily for two reasons: first, it sits at the intersection of ellipsis and *wh*-movement, two areas which continue to generate enormous research activity, and second, it raises so many fascinating puzzles. Some of these puzzles were illustrated in the last section, which was concerned primarily with the curiosa from sluicing's cabinet, phenomena which occur in conjunction with sluicing and which are anomalous from a variety of perspectives. As such, they form part of the outstanding issues for future work to address, and it can be hoped that they might shed light on other areas of the grammar, in particular on the nature of repair and the PF interface.

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61 Specificational Copular Sentences and Pseudoclefts

MARCEL DEN DIKKEN

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This is a case study on specificational copular sentences, including specificational pseudoclefts. Before we can embark on a discussion of the specifics of these constructions, we first of all need to delineate a number of terminological domains. Section 1 will address the typology of copular sentences in some detail, laying out the various types of copular constructions identified in the literature and highlighting their properties and differences. Section 2 will repeat the typological exercise of section 1 with specific reference to a subtype of copular sentence referred to as the pseudocleft construction. Sections 3 and 4 will subsequently home in on specificational copular sentences (pseudocleft and non-cleft alike) and discuss their characteristics, sections 5 and 6 addressing questions arising specifically in the context of specificational pseudoclefts and discussing the various analyses proposed in the literature.

1 Introduction: types of copular sentences

1.1 Copular sentences: preliminaries

In this work, by copular sentence in the broad sense of the term we understand any sentence type of the general schema in (1):

(1) *General format of copular sentences:*
XP *be* YP [where YP ≠ participial VP]

The schema in (1) gives us a variety of different types of copular sentences, some examples of which are given in (2–12) (see Blom and Daalder 1977: 115; Safir 1983; Den Dikken 1987; Neeleman 1997: 106–110 on examples of the type in (5–7), featuring what Safir has called 'Honorary NPs'; Blom and Daalder and Den Dikken propose to analyze such subjects as elliptical NPs, but we will not take a stand on this matter, which is orthogonal to our concerns in this work):

(2)	My colleagues are nice people.	XP = NP	YP = NP
(3)	My colleagues are nice.	XP = NP	YP = AP
(4)	My colleagues are at the office.	XP = NP	YP = PP
(5)	Under the bed is a good hiding place.	XP = PP	YP = NP
(6)	Down the hill is easier than up the hill.	XP = PP	YP = AP
(7)	Bashful is a terrible thing to be.	XP = AP	YP = NP
(8)	That they lost is an unfortunate thing.	XP = CP	YP = NP
(9)	That they lost is unfortunate.	XP = CP	YP = AP
(10)	What happened was they lost the game.	XP = CP/NP	YP = IP
(11)	What they did was lose the game.	XP = CP/NP	YP = VP
(12)	Lose the game is what they did.	XP = VP	YP = CP/NP

Exemplification is not exhaustive here, and certain non-trivial questions are raised already at this elementary stage – for instance, concerning the analysis of constructions like (10–12), particular types of pseudocleft construction; and about the accidental or principled non-existence of certain XP/YP combinations in some or all languages. (In particular, we need to exempt from the schema in (1) constructions in which YP is a participial VP – these are either passives (if the

V-head is a past participle) or progressives (where the V-head is a gerund or present participle), neither 'auxiliary construction' generally being included in the set of copular sentences; we will follow standard practice here.)

At this elementary stage in the discussion these questions need not concern us. We will return to the former question (sections 3 and 6); the latter will not play a role in the discussion to follow at all.

Note that although the schema in (1) is presented as a linear string, we make no *a priori* claims here about the word order of copular sentences. Indeed, one of the things we will have occasion to discuss in great detail in this work is the fact that a specific subtype of copular sentence, the specificational copular sentence, allows its major constituents to 'change places': one often finds that in such sentences each can be on either side of the copula.

Specificational copular sentences are just one of a variety of copular sentence types distinguished in the literature on copular sentences. Before we will be able to properly address the specifics of these specificational constructions, we will first of all need to outline the typology of copular sentences, which will serve as a backdrop to the discussion to follow. Thus, in sections 1.2 and 1.3 we will go through increasingly more detailed typologies of (largely double-NP) copular sentences, then proceeding to attempts at reducing the fine-grained typologies to a simpler pattern (section 1.4), and finally (section 1.5) raising the question of whether the typology of copular sentences (however coarse- or fine-grained) should be given shape: in terms of properties of the copula or in terms of properties of the structure/derivation/major constituents of the constructions in question.

1.2 Types of copular sentences (I): a basic two-way split

That not all copular constructions are of the same type is not a contentious claim. There is a general consensus that at least two types need to be distinguished. Basing themselves typically on the referentiality of the second, or post-copular noun phrase in a 'straight' or 'canonical' double-NP copular sentence of the general format NP_1 *is* NP_2 (cf. (13) for an example), scholars have made a general distinction between double-NP copular sentences in which NP_2 is non-referential and ones in which NP_2 is referential. Even when it comes to this simple two-way split, however, terminological proliferation is rampant. The overview in (14), which aims to be representative rather than exhaustive, gives the reader a glimpse of the kinds of labels assigned to the two types of copular sentence, with references to their inventors in the right-hand column. In what follows we will use the boldface labels **predicational** (*food for the dog* in (13) predicates a property of *his supper*) and **specificational** (*food for the dog* specifies what *his supper* consists of), due to Akmajian (1979):

(13) His supper is food for the dog.
  a. **predicational**: 'His supper serves as food for the dog.'
  b. **specificational**: 'He eats food for the dog for his supper.'

(14) A basic two-way split:

a. NP_2 = non-referential	b. NP_2 = referential	
classifying	identifying	Kruisinga and Erades (1953)
intensive	extensive/ equative	Halliday (1967), Huddleston (1971)
non-equational	equational	Bolinger (1972b)
ascriptive	equative	Lyons (1977)
attributive	identificational	Gundel (1977)
predicational	**specificational**	Akmajian (1979)
predicational	specificational(ly identifying)	Declerck (1988)

All scholars referred to in (14) essentially agree that the difference between the two types of copular sentences in (14a, b) turns on the referentiality of the post-copular noun phrase, though individual authors disagree on the precise notion of referentiality that they avail themselves of (see Keizer 1992: ch. 2 for a detailed précis).

1.3 Types of copular sentences (II): more fine-grained typologies

While the Greek philosophers of classical antiquity (Aristotle, Plato) already recognized the versatility of the copula and the many sides of 'being', it was not until Higgins (1979) that the linguistics literature was introduced to syntactic and semantic grounds for distinguishing more than just the two basic types of copular sentence in (14). Higgins (1979) proposed a four-way distinction in the realm of copular sentences, adopting the basic split in (14) and enriching it with two additional types (of which the fourth is often referred to as the equative construction as well). In his reappraisal of Higgins's seminal work on copular sentences, Declerck (1988) once again recognizes four basic types (though the criteria used for distinguishing them differ from those employed by Higgins, and concomitantly the definitions of the various types are not exactly the same either). Declerck also considers the possibility that there might be even more types of copular sentences, highlighting in particular the 'definitional copular sentence' in (16e):

(15)

		NP_1	NP_2
a.	predicational	referential	predicational
b.	specificational	superscriptional	specificational
c.	identificational	referential	identificational
d.	identity statement	referential	referential

(Higgins 1979)

(16)				
	a.	predicational	referring	non-referring
	b.	specificational(ally identifying)	weakly referring (attributive)	strongly referring
	c.	descriptionally identifying	strongly referring	strongly referring or non-referring
	d.	identity statement	referring	referring
	e.	definitional	non-referring	?

(Declerck 1988)

For both Higgins and Declerck, the typology of double-NP copular sentences is in large measure a function of the referentiality of the two noun phrases that constitute them, as well as the discourse function of the various copular sentences (usable as answers to questions, list readings, focus/presupposition), their syntactic properties (reversibility etc.; see section 4) and their intonational properties. Higgins and Declerck disagree on the proper definition of 'referential', however. Higgins follows Strawson (1950) and Geach (1970b) in taking 'referentiality' to be about 'what a proposition is about'. Declerck, on the other hand, avails himself of a subtler approach to referentiality, making distinctions not just between referring and non-referring NPs but also, within the set of referring NPs, between weakly and strongly referring NPs (the former corresponding to Donnellan's 1966 'attributive'). (Declerck does not make the referential status of NP_2 in definitional copular sentences explicit.)

Higgins explicitly rejects a classification of the NP_1 of specificational copular sentences (his 'superscriptional' NP) as 'attributive' in Donnellan's sense (but see Declerck 1988: 48–49 for a repartee of Higgins's counterarguments). For Higgins neither NP_1 nor NP_2 of a specificational copular sentence can be referential (since specificational copular sentences are not 'about' either of the two NPs); he therefore needs to introduce additional terminology to label the constituents of specificational sentences (as 'superscriptional' (defining the heading of a list) and 'specificational' (specifying the content of the list)). Apart from drawing a connection with lists (or 'colon constructions'; cf. *the winner is: John Johnson* or *the winners are: John Johnson, Jack Jackson, Dick Dixon, . . .*), however, Higgins never makes it entirely clear what it means for an NP to be 'superscriptional'.

Examples of the various types of copular sentences distinguished in (15) and (16) are given in (17–21), along with a summary of their most important characteristics (largely adapted from Declerck 1988, to whose work the page references in (17–21) refer; cf. also Keizer 1992: ch. 2):

(17) *Predicational double-NP copular sentences:*
   a. John is a teacher
   b. Mary is a pretty girl
      - are "not felt to answer a question asking for specificational (identifying) information"; in fact, "not felt to answer a question at all" (p. 55, *q.v.* for further discussion);

- do not alternate with *it*-clefts (**It is a teacher that John is*), which are "always specificational" (p. 69);
- are not reversible (**A teacher is John*).

(18) *Specificational(ly identifying) double-NP copular sentences:*
a. The bank robber is John Thomas.
b. The only people that can help you are the Prime Minister and the Queen herself.
- exhaustively specify the candidates ("values") for the "variable" (*the bank robber* in (18a)); "list reading," "exhaustivity" – section 3.2.2;
- alternate with *it*-clefts (*It is John Thomas that is the bank robber*) and put focus on the "value" NP (*John Thomas* in (18a));
- are reversible (*John Thomas is the bank robber*).

(19) *Identificational/descriptionally identifying double-NP copular sentences:*
a. That (man) is John's brother.
b. That (place) is Boston.
- are not meant to specify a value for a variable (p. 95) and are not exhaustive or contrastive;
- do not alternate with *it*-clefts (**It is that (man) that is John's brother*, **It is John's brother that is that (man)*);
- are not reversible (**John's brother is that (man)*).

(20) *Identity statements:*
a. The Morning Star is the Evening Star.
b. Dr Jekyll is Mr Hyde.
- are typically used to correct the hearer's assumption that two different descriptions apply to two different referents;
- do not alternate with *it*-clefts (**It is the Morning Star that is the Evening Star*);
- are reversible (*The Evening Star is the Morning Star*).

(21) *Definitions:*
a. A motor car is a vehicle that has four wheels and is propelled by an internal combustion engine.
b. A pyramid is what the Egyptians built to bury their pharaohs in.
- though a paraphrase of the form "NP_1 is the following: NP_2" ("list") is possible, they lack the exhaustivity typical of specificational sentences;
- do not alternate with *it*-clefts (**It is a vehicle that has four wheels and is propelled by an internal combustion engine that a motor car is*);
- are not reversible ("That is to say, switching the places of the subject NP and the predicate nominal in [(21a, b)] results in a sentence that is not ungrammatical, but which no longer counts as an example of a definition" – p. 113).

Copular sentences are often several ways ambiguous on paper. Thus, Higgins (1979: 266–267) presents the example in (22) as a three-ways ambiguous copular construction:

(22) The girl who helps us on Friday is my sister.

a.	*Predicational*	Answers the question of how the referent of NP_1 is related to the speaker; no exhaustivity implied.
b.	*Specificational*	Provides an exhaustive list in answer to the question *Who is the girl who helps you on Friday?*
c.	*Identificational*	Identifies the referent of NP_1 as the speaker's sister (cf. *That is my sister*).

1.4 Reducing the typology

Higgins (1979) notes that his identity statements and identificational copular sentences are potentially reducible to one single type, depending on one's interpretation of 'referentiality': if one insists "that referentiality is a property of expressions, not of the use of expressions, then one might also want to insist that [an identificational copular sentence] is an identity statement" (p. 263). (He himself uses 'referentiality' with reference to the use of expressions, however, so he keeps the two types of copular sentence distinct.)

Taking Higgins's typology as her starting point, Verheugd (1990) has attempted to reduce the four types of copular sentence in (15) to the two basic ones in (14), once again making crucial use of the notion 'referentiality'. Verheugd's objective is to reduce Higgins's five NP types (referential, specificational, superscriptional, predicational, identificational) to just two: referential and non-referential. With particular reference to specificational copular sentences and Higgins's notion of superscriptional NPs, she argues that such NPs can be treated as underlying predicates. She thus treats specificational sentences like *The culprit is John* as inverse copular sentences: copular sentences with a surface word order derived via inversion of the underlying subject-predicate order (see sections 4.2 and 4.3 below for details concerning the properties of copular inversion).

In the principles-and-parameters framework, Moro (1987, 1988) was the first to attempt a reduction of Higgins's typology of copular sentences, proposing an analysis of specificational sentences as inverse copular constructions (see Moro 1997 for a fully developed analysis along lines originally laid out in Moro 1987, 1988). Heggie (1988) took the same tack in her study of the syntax of copular sentences. Heggie and Moro present a variety of syntactic arguments to support a transformational derivation of such inverse copular sentences – though they differ with respect to the way they implement the analysis. We will return to the details in the discussion of inversion (once again, see sections 4.2 and 4.3 below).

By analyzing specificational copular sentences as inverse copular constructions, the principles-and-parameters analyses by Verheugd, Heggie, and Moro continue the line of thought initiated by Blom and Daalder (1977), who likewise claim that there are just two types of copular sentence (the predicational and

specificational types) and that as far as the underlying relationship between two NPs in predicational and specificational copular sentences is concerned there is no difference between the two sentence types: in both, one of the two NPs is the predicate of the other; underlyingly, then, both types of copular construction are predicational. Blom and Daalder take their cue from the intonational contour of copular sentences (focal stress in particular), and give the following characterizations of specificational and predicational copular sentences:

(23) a. In a *specificational* copular sentence, the *focused* element is contained in the *hyponym = Theme = deep structure subject*.
b. In a *predicational* copular sentence, the *focused* element is **not** contained in the *hyponym = Theme = deep structure subject*.

Of these two claims, the former is undisputed; that predicational copular sentences demand that the focus not be on/in the subject is a controversial claim, however (see Heycock 1994a, 1998).

Blom and Daalder (1977) (who express their indebtedness to Den Hertog 1973) are perhaps the most rigid and explicit champions of the idea that all copular sentences are underlyingly represented as predications, with one of the two NPs functioning as the hyperonym (Lyons's 1977 'superordinate'; cf. 'predicate') of the other (the hyponym). They even extend their hyponym/hyperonym (or subject/predicate) approach to identity statements of the type in (20), saying that the post-copular noun phrase in such constructions is the hyponym of the pre-copular NP. They argue as follows (p. 76; my somewhat liberal translation):

> In an example such as [(20a)], [*the Morning Star*] is presented as the more narrowly described element, while [*the Evening Star*] is a non-directly-identifying expression. Put differently, "being the evening star" is a property which is ascribed to something, in this case to what is referred to as [*the Morning Star*].

Since this treatment of identity statements entails that of the two NPs in (20) only the pre-copular one is referential, they add (p. 77, translation mine; original italics):

> The necessary "referential" knowledge, the knowledge that we are dealing here with what are called "definite descriptions", can be taken to be of a different nature than knowledge of the content of a grammatical construction. We would therefore like to claim that the referential knowledge in the case of an interpretation which goes beyond the grammatical interpretation is *added* to the hyperonym relationship expressed in the grammatical construction.

For Blom and Daalder, in other words, 'referentiality' is less basic when it comes to the *grammatical* classification of copular sentences than it is for the other scholars referred to in the foregoing: a predicate nominal, while quintessentially non-referential, can nonetheless be interpreted referentially on the basis of the language user's non/extra-grammatical knowledge.

Blom and Daalder's predicational approach to equative copular sentences/identity statements is controversial;[1] and since, as far as their syntactic properties are concerned, identity statements have more in common with (inverse) specificational copular sentences than with their predicational counterparts (cf. especially Heycock and Kroch 1999; also Guéron 2001; cf., e.g., section 4.3.2 below), it may be better (if one wants to treat them as underlyingly predicational in the first place) to try to analyze equatives along the lines of inverse specificational constructions. Be that as it may, even when we confine our attention to specificational copular sentences (for which inversion accounts have been proposed not just by Blom and Daalder but by Heggie, Moro, and Verheugd as well) the idea that the relationship between the two NPs is one of hyponym/hyperonym or subject/predicate is controversial.

Thus, Declerck (1988: 93) dismisses the approach, stressing that "[s]pecificational sentences do not express a hyponymy relation." In defense of his position, Declerck draws on Higgins (1979) and Halliday (1967, 1968): Higgins points out that the essence of the specificational relationship is that the contents of the concept expressed by the superscriptional NP are specified, which "naturally means that the NP denoting the concept and the NP specifying its contents cannot differ in generality or specificity" (Declerck 1988: 92–93); and Halliday argues that the two NPs of specificational sentences have "the same degree of specificity, and that this is precisely the reason why such sentences are reversible" (Declerck 1988: 93, n. 98).[2]

In what follows, we will not take a stand on the question of whether the four or five types of copular sentences enumerated in (15) and (16) qualify as primitives or whether they are instantiations of two or even just one 'macrocategory' of copular constructions, noting simply that if one wants to reduce the various types of copular sentence to one underlying structure, this will be the structure most directly represented by copular sentences of the *predicational* type: a subject-predicate structure (cf. Blom and Daalder 1977; Heggie 1988; Verheugd 1990; Moro 1997 for representatives of this general perspective).

1.5 A typology of copulas?

In sections 1.2 and 1.3 we have seen that there is good reason, at least descriptively (for the possibility of reducing the typology from a theoretical perspective, see section 1.4), to distinguish between a number of different types of copular construction (cf. (14–16)). There are two ways, in principle, of thinking of such a typology of copular constructions (cf. (24)). We refer to Keizer (1992: section 2.1) and Moro (1997: Appendix) for careful discussion, which we will summarize briefly in this section.

(24) a. *One 'be', different structures/derivations*
[e.g., Montague 1973; Stowell 1981; Dik 1983; Partee 1986, 1999; Heggie 1988; Moro 1997]

b. *Multiple 'be's*
[e.g., Huddleston 1971; Akmajian 1979; Safir 1985b; Seuren 1985; Rapoport 1987; Higginbotham 1987; Zaring 1996]

The 'classical' position in this debate is the one represented by Aristotle and Plato – the idea that 'be' is a polysemous lexical item with a variety of different meanings (corresponding to the different types of copular sentence enumerated in the foregoing). Modern philosophers have generally followed this venerable tradition in assigning *be* a variety of different meanings (cf., e.g., Mill 1856: 86; Russell 1903: 64).

In early generative work, the multiplicity of the copula seems to have been assumed more or less as a matter of course: thus, Huddleston (1971: 241), in making a distinction between predicational and specificational pseudoclefts, refers to the dichotomy in terms of the different types of *be* used in them: 'intensive *be*' vs. 'equative *be*'; elsewhere in the book he also distinguishes an identificational *be*. In making this three-way distinction among types of *be*, Huddleston follows Halliday's (1967: 66) typology of copulas. Likewise, Bolinger (1972b: 98) casts his typology of copular constructions in terms of a typology of *be*'s, recognizing an equational *be*, a locational *be* and a non-equational *be*. Akmajian (1979) similarly talks in terms of two species of *be*, as does Higgins (1979: 191) ("the verb *be* is the identity"); but Higgins (1979: 161–163) also takes care to point out that "other verbs that permit a meaning relation similar to speci- fication," like *lie in*, *consist in*, *constitute*, *amount to*, *entail*, *involve*, *have to do with* (also *justify*) behave the same way when it comes to one of the key properties of specificational sentences: connectivity.

More recently, Seuren (1985b: 299) has also felt the need to "begin by distinguishing a separate verb *be*, distinct from the ordinary predicative *be* . . . and distinct also from the *be* of identity" – a type of *be* that he labels 'specifying *be*', used in specificational pseudoclefts. And in the principles-and-parameters framework, Safir (1985b: 116) stands out as an example of the multiple-*be* approach, distinguishing at least two lexical entries for *be*: an identificational and a predicational one. In a rather different vein, Guéron (1992) argues that, while otherwise meaningless, the copula is an 'identificational operator' in inverse (specificational) copular sentences at the level of *commentaire*.[3] For a recent principles-and-parameters study of copular constructions (with special reference to Hebrew), the use of *be* in predicative and identity sentences in English, and the meaning of 'the verb *be*', see Rothstein (2001a).

The generative literature has generally tended, however, toward the one-*be* approach, ascribing the semantic variability of copular sentences to the structures involved, not to the semantics of *be*.[4] In fact, most authors in this framework agree that a key property of *be* is that it has no meaning at all – it is a functional element, linking the major constituents of copular sentences (cf. Stowell 1981; Heggie 1988; Den Dikken 1995b; Moro 1997). Even generativists who believe in the existence of a separate category of equative copular sentences alongside predicative copular constructions (cf. Heycock and Kroch 1999 for a recent

defense of this position; see also Adger and Ramchand 2003 and Pereltsvaig 2001 for discussion) routinely hasten to add that they do not take this to imply the existence of a separate 'equative *be*': there is only one copula, a 'linker', as its name suggests; the difference between equative and predicational copular sentences lies in the structures of the constructions (for Heycock and Kroch 1999, the internal structure of the small clause in the complement of *be* – see section 4.1.1 for brief discussion; for Pereltsvaig 2001, the distinction between *be* as a realization of I or *v*).

In denying the copula a meaning of its own and assigning it the status of a semantically void functional category (Partee's 1999 'non-lexical *be*'), the generative work referred to in the previous paragraph is in perfect agreement with Dik (1983), which represents a Functional Grammar perspective (for more FG-based studies on copular sentences, see Hengeveld 1992 and Keizer 1992; we will not address these further here).

In what follows we will follow (24a), the one-*be* approach to copular constructions – in the light of Higgins's (1979: 161–163) point about equivalents of *be*, and the fact that in the absence of an explicit demonstration of the polysemy (or, in fact, the 'semy', i.e., the meaningfulness) of the copula, one should proceed on the assumption that all of the semantics of copular sentences derives from (i) its major constituents and (ii) their syntactic structure and derivation.

2 Types of pseudocleft sentences

2.1 *Pseudocleft sentences: preliminaries*

A particular kind of copular sentence which has attracted a great deal of specific attention in the generative linguistic literature is the so-called pseudo(-)cleft construction.[5] Quintessential representatives of the class of pseudoclefts are copular sentences featuring a *wh*-clause, typically with *what* (less often *where*, *when*, *why*, *how*; even more rarely *who*), as one of their major constituents. Examples of such pseudoclefts are given in (25–33) (cf. esp. Akmajian 1979: 18–19):[6]

(25) What John does not eat is food for the dog.

(26) What John is is a good teacher.

(27) What John is is tall.

(28) What we need is Jerry drunk.

(29) Where John finally ended up was in Berkeley.

(30) When John arrived was at five o'clock.

(31) Why John went to the bookstore was to buy a book about pseudoclefts.

(32) How John did it was by using a decoder.

(33) %Who John visited was Bill.

Not all types of specificational pseudocleft illustrated in (25–33) are found in all languages (Ross 1999 notes, for instance, that Japanese and Kitchangana (Bantu) seem not to have the counterpart of (27)). Even in English, as Akmajian (1979: 83, n. 1) notes, "[m]any speakers find sentences such as [(33)] unacceptable (or less acceptable than sentences [(25–32)]) but judge as acceptable sentences [(25–32)]." In his corpus-based study, Collins (1991) found not a single example of a *who*-cleft, while of all the tokens of pseudoclefts with *wh*-words other than *what*, only one had the order illustrated in the examples above (with the *wh*-clause preceding the copula – see also Geluykens's 1984 corpus-based study for the rarity of this type, attested just once in his corpus as well; cf. also Heggie 1988: 352–353), all other cases involving the reverse order – but even then, their total incidence is not anywhere near that of *what*-clefts. Higgins (1979: 2) explicitly sets aside all pseudoclefts with *wh*-elements other than *what*; we will not, though most of our examples will indeed be of the *what* type.

The unbalanced distribution of *what* vs. pseudoclefts with other *wh*-words disappears once we include in the class of pseudocleft constructions examples featuring a headed relative instead of a *wh*-clause, illustrated in (35–39). All examples on this list are equally acceptable.

(34) The things John does not eat are food for the dog.

(35) The place where John finally ended up was in Berkeley.

(36) The time at which John arrived was at five o'clock.

(37) The reason why John went to the bookstore was to buy a book about pseudoclefts.

(38) The way John did it was by using a decoder.

(39) The {%one/√person} who John visited was Bill.

Most scholars agree that '*th*-clefts' (to borrow Collins's 1991 term; see also his '*all*-clefts': *All John ever eats is food for the dog*) should be treated on a par with '*wh*-clefts' (an alternative for the term 'pseudoclefts') – but Hankamer (1974) warns that the two, though similar, should not be identified (on account of the fact that "the allowable subjects of ['*th*-clefts'] are very restricted"; Hankamer 1974: n. 9); see also (175–176)). In this work, we follow the general trend of assimilating '*th*-clefts' to '*wh*-clefts'.

The term 'pseudocleft' seems to be a terminological innovation that we have generative linguistics to thank for – as Higgins (1979: 1) puts it, "this term is relatively new and seems to have arisen within the transformational-generative tradition, its formation emphasizing the formal and semantic kinship of the construction concerned to what Jespersen termed the 'cleft' construction". Jespersen's (1909) term 'cleft sentence' applies to such constructions as *It was Bill that John visited yesterday*, featuring the pronoun *it* in pre-copular position and a relative clause to the right of the copula. In early work on '*wh*-clefts', they occasionally were referred to simply as 'clefts' (cf. Jacobs and Rosenbaum 1968: 39). The parallels and differences between *it*-clefts and pseudoclefts will not be discussed here in any detail; that the two cannot be identified is clear, for instance, from the fact that there is no *it*-cleft counterpart to our earlier example in (28) (cf. **It is Jerry drunk that we need*).[7]

2.2 Types of pseudocleft I: a basic two-way split

Just as there are several types of copular sentence, the literature has also found occasion to distinguish different kinds of pseudocleft construction – where 'pseudocleft' is understood in the sense of section 2.1: as a copular sentence featuring a *wh*-clause or a corresponding (light-)headed relative clause construction as one of its major constituents (on a substantially narrower interpretation of the term 'pseudocleft', see section 2.4). Thus, Higgins (1979) distinguishes between two types, as in (40) (cf. the typology of copular sentences in (14)). The difference between the two can be illustrated with the aid of the ambiguity of the example in (25) (adapted from Clifton 1969; cf. (13), above): here *food for the dog* may be taken to denote a property ascribed to the referent of *what John does not eat* ('the things that John does not eat serve as food for the dog'), in which case we are dealing with a predicational pseudocleft; alternatively, we can take *food for the dog* to be a specification of what it is that John does not eat ('John does not eat the following: food for the dog'), in which case we are confronted with a specificational pseudocleft:

(40) *A basic two-way split* (Higgins 1979):
   a. predicational (25): 'The things John does not eat serve as food for the dog.'
   b. specificational (25): 'John does not eat (the following:) food for the dog.'

2.3 Types of pseudocleft II: more fine-grained typologies

In section 1.3 we have seen that a more microscopic investigation of copular sentences has turned up a number of additional types of such constructions (cf. (15) and (16)). In the light of the proliferation of copular sentences in general and the fact that pseudoclefts are unquestionably copular sentences themselves, one might therefore reasonably expect there to exist more than just two types of pseudocleft construction. And indeed, a more elaborate typology of pseudoclefts has been argued to exist. The one in (41) is due to Declerck (1988: 70):

(41) *A more refined typology of pseudoclefts:*
a. predicational
b. specificational
c. identity
d. definitional

(41a, b) are familiar from the foregoing discussion; examples of pseudoclefts identity statements and definitional pseudoclefts are given in (42) and (43), respectively (from Declerck 1988):

(42) *Pseudocleft identity statements:*
a. What I did was what you told me to do.
b. The one who is drinking the martini is Mr Brown.

(43) *Definitional pseudocleft sentences:*
A pyramid is what the Egyptians built to bury their pharaohs in. (cf. (21b))

Declerck's (1988) typology of double-NP copular sentences in (16) raises the expectation that a fifth type of pseudocleft construction might exist: descriptionally identifying pseudoclefts (cf. (16c); or Higgins's 1979 identificational pseudoclefts, (15c)). Though Declerck does not discuss this, it does indeed seem possible to find pseudocleft counterparts to examples of the type in (19) above: sentences of the type in (44) would appear to instantiate this type:

(44) *Identificational/descriptionally identifying pseudoclefts:*
a. That is what I need.
b. This is how I did it.

The examples in (44) seem parallel to the examples of identificational/descriptionally identifying double-NP copular sentences given in (19) – a parallelism which extends to the fact that reversal of the word order of (44b) is impossible (**How I did it is this*).[8] Collins (1991) includes (44) type examples in his set of specificational pseudoclefts and consequently finds overwhelmingly more XP < *wh* orders than *wh* < XP cases in his corpus.

For constructions of the type shown in (44b), with proximal *this* rather than distal *that*, it does not seem generally impossible, however, to reverse word order: with 'colon intonation' following *this* and a following specification, examples like *What I'm looking for is this: a crowbar and a wrench* are perfectly acceptable. Constructions such as this are most certainly specificational (as is revealed by their characteristic 'colon intonation' and their 'list reading'; cf. Higgins 1979 on the latter as a defining property of specificational sentences). One might actually go so far as to hypothesize that this *this* is a quintessential ingredient of specificational copular sentences: one might suggest that it is this *this* (which would have a null incarnation in all specificational sentences in which it does not surface overtly) that functions as the predicate of specificational sentences,

with the other two major constituents functioning as subject and 'specifier' of this predicate.

The typology in (41)/(44) mimics the typology of copular sentences presented in section 1.3. A more microscopic typology (developed in Declerck 1988: 220ff.) zooms in on specificational 'clefted sentences' (a cover term for *it*-clefts and specificational pseudoclefts), and primarily uses the information-structural properties (for more on these, see section 3.2.2, below) and concomitant intonational characteristics of the constructions as diagnostics:

(45) *A typology of* ***specificational*** *pseudoclefts:*
   a. contrastive pseudoclefts (or 'stressed-focus') (cf. (46))
   b. unaccented-anaphoric-focus pseudoclefts (cf. (47))
   c. discontinuous pseudoclefts (cf. (48))[9]

(46) a. Who broke the window? – The one who did it was John.
   b. Who broke the window? – John was the one who did it.

(47) a. It turns out that there is interesting independent evidence for that rule, and that evidence is what we must now turn to.
   b. Why is everybody so interested in uranium? – Because uranium is what you need to produce atomic power.

(48) a. My dear friends, what we have always wanted to know but what the government has never wanted to tell us, is what exactly happens at secret conferences like the one you have been reading about in the papers this week; there is one man, however . . .
   b. Those apples are good, aren't they? – So they are! What keeps me from eating all of them is that mother would be furious if I left none for the others.

These three types of specificational clefted sentences have the following key properties (cf. Declerck 1988: 224):

(49)

	(45a)	(45b)	(45c)
New/old info	focus new; clause old	focus old; clause new but represented as old	both focus and clause new
Accent	focus: heavy; clause: weak	focus: weak; clause: normal	both focus and clause normal
Contrast focus	strongly	not strongly	not strongly
Word order	both orders good	*wh*-clause post-copular	both orders good

As far as word order is concerned, Declerck's (1988) 'unaccented-anaphoric-focus' pseudoclefts (45b) are special in that they allow only the XP < *wh* order – cf. the 'identificational/descriptionally identifying pseudoclefts' of (44); see also Collins

(1991) on the differences between pseudoclefts with *wh* < XP word order and their congeners with XP < *wh* orders. What this shows is that, when one is talking about pseudoclefts, one should be careful to keep an eye on their word order.

The role of word order is also emphasized by Den Dikken *et al.* (2000), who make a distinction, within the class of specificational pseudoclefts, between 'Type A' and 'Type B' constructions:

(50) *Den Dikken et al. (2000):*
  a. 'Type A' specificational pseudoclefts
    - feature as their major constituents a *wh*-clause and a **full IP** (which is subject to optional ellipsis);
    - have *wh* < XP orders only;
    - exhibit connectivity effects for negative polarity.
  b. 'Type B' specificational pseudoclefts
    - feature as their major constituents a *wh*-clause and some XP (X ≠ I);
    - have XP < *wh* orders;
    - do not exhibit connectivity effects for negative polarity.

As the characterizations of the two types in (50) suggest, Den Dikken et al.'s (2000) two-way split within the class of specificational pseudoclefts is based largely on the behavior of pseudoclefts with full-IP 'value-XPs'[10] (cf. (51); see, e.g., Ross 1972a for discussion) and pseudoclefts featuring connectivity effects with respect to the licensing of negative polarity items in the 'counterweight' of the *wh*-clause (cf. (52)):

(51) a. What John bought was he bought some wine.
  b. *He bought some wine was what John bought.

(52) a. What John didn't buy was (he didn't buy) *any* wine.
  b. **Any* wine was what John didn't buy.

We will have occasion to discuss these two properties of ('Type A') specificational pseudoclefts in more detail further below. (See especially section 3.4 for discussion of the role of word order in the domain of specificational pseudoclefts.)

In what follows, we will not be concerned in any detail (except when it comes to contrastive analyses) with pseudoclefts of any type other than the specificational ones.

2.4 The scope of the term 'pseudocleft'

There is considerable confusion and disagreement in the literature on pseudocleft constructions concerning the meaning and scope of the term 'pseudocleft'. To quote Higgins (1979: 1–2) on this point:

> Unfortunately, the domain of application of the term is not completely clear, and there is much confusion in the literature. There are two features of the pseudo-cleft construction which are by many authors taken as defining features: (i) a semantic

> kinship to cleft sentences, and a consequent semi-formal requirement that pseudocleft sentences should have a bipartite form, looking like a broken-up form of a simple sentence, with a "focal" constituent which in some sense is being emphasized, and a remainder; (ii) a formal requirement that the sentence is a copular sentence having a subject that consists of a clause introduced by a *Wh*-item, usually *what*, this subject clause constituting the remainder of the simple sentence, and a portion which follows the copula and constitutes the focal constituent, the constituent which is being emphasized.

While some scholars use 'pseudocleft' as a cover term (in the way we did in section 2.1; cf. also Declerck 1988), others confine its reference in one or more of the following ways:

- to distinguish between examples with a *wh*-clause and examples featuring a headed relative (with *the one/thing/reason/time/way/ . . .* [cf. (33–39)], or *all*, as in *All John eats is food for the dog*; cf. Prince 1978, who uses the term '*wh*-cleft' in this narrow sense);
- to single out one particular type of pseudocleft construction: the specificational pseudocleft (see, e.g., Akmajian 1979, who uses the term 'pseudocleft' in this narrow sense);
- to single out pseudocleft constructions with *wh* < XP word orders (see the above quote from Higgins 1979 – these are Den Dikken et al.'s 'Type A' pseudoclefts).

Following, for instance, Akmajian (1979) and Collins (1991), we will include in this study not just (i) those pseudoclefts featuring a *wh*-clause ('*wh*-clefts') but also what Collins (1991) calls (ii) '*th*-clefts' and (iii) '*all*-clefts'. Unlike Akmajian (1979), but instead following, for instance, Higgins (1979) and Declerck (1988), we will not confine the term 'pseudocleft' to specificational constructions; to refer to such pseudoclefts we will use the term 'specificational pseudoclefts'. Though the emphasis will be on specificational pseudoclefts in what follows, we will contrast these with their predicational congeners in various places to properly delineate the set of specificational pseudoclefts.

3 Specificational copular sentences and pseudoclefts: an inventory of properties

3.1 Characterizing specificational pseudoclefts

What unites the examples in (25–39) (with (25) read specificationally) and sets them apart from other copular sentences is (as Akmajian 1979: 19 puts it) "that the initial clause of the pseudo-cleft contains what is essentially a semantic variable, a semantic 'gap' which must be 'filled' or specified by the focus item." Even pseudoclefts with a headed relative as NP_1 are different from specificational copular

sentences of the type discussed in section 1: they "contain relative clauses whose heads function as variables ranging over given semantic classes." We may therefore rephrase our characterization of specificational pseudoclefts as follows:

(53) *Specificational pseudoclefts* consist of:
- a constituent containing a variable (also called identified (Huddleston 1971));
- a constituent (exhaustively) specifying the value for that variable (also called identifier (Huddleston 1971), focus (Akmajian 1979, Higgins 1979), highlighted constituent (Collins 1991), counterweight (Heycock and Kroch 1999));
- a form of the copula linking the two major constituents.

In what follows, we will refer to the constituent containing the variable simply as 'the variable' (or 'the *wh*-clause', in the discussion of pseudoclefts), and to the constituent specifying the value as 'the value-XP'.

(i) *Connection between specificational pseudoclefts and question-answer pairs* The recipe in (53) is advantageous in two respects. First of all, it allows us to see the connection between specificational pseudoclefts and question-answer pairs (cf. (54)).[11] In both we find a constituent containing a variable (the *wh*-clause in (54i)) and a constituent (exhaustively) specifying the value for that variable (the focus of the post-copular constituent/answer in (54ii)); the two construction types are obviously different in that the copula is obligatorily present in the former, but absent from the latter:

		(i)		(ii)
(54)	a.	what John did	was	(John) read the newspaper
	b.	what did John do? –		(John) read the newspaper

The links between specificational pseudoclefts and question-answer pairs are stressed in many works on pseudocleft constructions (cf., e.g., Clifton 1969; Faraci 1971; Huddleston 1971; Ross 1972a, 1997, 1999; Akmajian 1979; Higgins 1979; Seuren 1985; Declerck 1988; Den Dikken et al. 2000). We will return to them in detail in section 5.

3.2 *Properties distinguishing specificational from predicational copular sentences*

3.2.1 Syntactic properties

(ii) *Reversibility* The second respect in which the recipe in (53) is beneficial is that it makes no reference to word order. And indeed, a key property which specificational pseudoclefts share with specificational copular sentences (cf. section 1.3) is their reversibility (cf. (55–56)):

(55) a. What John contributed to the conference was his best speech ever. (ambiguous: predicational or specificational)
b. His best speech ever was what John contributed to the conference. (specificational only)

(56) a. John's contribution to the conference was his best speech ever. (ambiguous: predicational or specificational)
b. His best speech ever was John's contribution to the conference. (specificational only)

While the a-examples in (55) and (56) allow a reading for *his best speech ever* according to which it predicates a property of the pre-copular constituent alongside a specificational reading which says that John contributed his best speech ever to the conference, only the latter reading survives in the b-examples.

It should be borne in mind that reversibility is not a foolproof diagnostic for specificational status – there are specificational copular sentences that are not reversible. The restrictions on reversal are largely of a categorial nature:

- if the value is an adverbial, the value < variable order is typically poor (though not entirely impossible); cf. (57) (Declerck 1988: 40; Heggie 1988: 371; Collins 1991):

  (57) a. The usual method of solving this problem is by firing the coach.
  b. ??By firing the coach is the usual method of solving this problem.

- if the value is not an expression containing an iota operator, a variable and a domain of individuals, it cannot precede the variable; cf. (58) (Guéron 1992 has the most explicit discussion of this constraint):[12]

  (58) a. Bill is {captain of the team/a doctor/a friend of mine/the best doctor in town/my best friend}.
  b. {*Captain of the team/*a doctor/*a friend of mine/the best doctor in town/my best friend} is Bill.

- if the value is a full IP (possible only in pseudoclefts), it cannot precede the variable if the verb in the *wh*-clause is substantive (rather than *do*); cf. (59) (Ross 1999, 2000; Den Dikken et al. 2000):[13]

  (59) a. What John {did/bought} was he bought some wine.
  b. He bought some wine was what John {did/*bought}.

- if the value is an AP and the verb in the *wh*-clause (of pseudoclefts) is not the copula, it must precede the variable; cf. (60) (Heggie 1988: 352–353):[14]

  (60) a. *How John likes his women is rather plump.
  b. Rather plump is how John likes his women.

Most of these constraints on reversal are not very well understood. These constraints aside, the general rule is that specificational sentences are reversible.[15] This seems to lead to a paradox when combined with the parallel between specificational sentences and question-answer pairs highlighted under (i), above. After all, question-answer pairs are not reversible (i.e., the answer does not normally precede the question). Den Dikken et al. (2000) address this question and distinguish two types of specificational pseudocleft, 'Type A' and 'Type B' constructions (cf. (50), above): it is only the 'Type A' cases that (thanks to their full-IP 'value') are on a par with question-answer pairs; and concomitantly, a hallmark of 'Type A' constructions is that they are not reversible (cf. (59b)).

With these caveats in place, we will now continue down the list of definitional properties of specificational copular sentences (see Akmajian 1979; Higgins 1979; and Declerck 1988 for the provenance of many of the following arguments, acknowledged wherever distinctive).

(iii) *Connectivity/connectedness effects* A property of specificational constructions which has preoccupied much of the discussion of these sentences in the generative literature is the fact that they exhibit connectivity/connectedness effects (cf. (61) for initial illustration). (The terms 'connectivity' and 'connectedness' are used interchangeably, the latter being the older term (cf. Akmajian, Higgins); however, to avoid confusion with the technical term 'connectedness' introduced by Kayne (1984a), in what follows we will avail ourselves of the label 'connectivity'.)

(61) a. What *John* treasures most is a book about *himself*/**him*.
b. *John*'s greatest treasure is a book about *himself*/**him*.

As (61) shows, connectivity (here with respect to anaphor–antecedent relationships) is a property of specificational sentences in general, not just specificational pseudoclefts. Indeed, "[s]pecificational sentences are the only type of copular sentences that show 'connectedness'" (Declerck 1988: 51) – as a consequence, connectivity effects can be used as a disambiguator of otherwise ambiguous pseudoclefts, as Higgins shows: while (62) is ambiguous between a specificational and a predicational reading, (63a) with anaphor connectivity is unambiguously specificational and (63b) is predicational only.

(62) What John is is important.
a. specificational: 'John is important.'
b. predicational: 'What John stands for is important.'

(63) a. What *John* is is important to *himself*. (specificational (Higgins))
What *John* is is important to *him*. (predicational)

Connectivity effects come in a variety of subtypes, listed and briefly discussed here.

(iii.a) *Reflexive connectivity* (See (63); cf. Higgins 1979).

(iii.b) *Reciprocal connectivity* (See (64); cf. Declerck 1988: 52)):

(64) a. What *they* did was kiss *each other*. (specificational)
b. *What *they* did was surprising to *each other*. (*predicational)

Reflexive and reciprocal connectivity, taken together, have served from the very beginning of the theoretical discussion of pseudocleft constructions as a key argument for somehow relating the specificational pseudocleft to the simple clause that paraphrases it (for (64a): *they kissed each other*, with *in situ* focus). The argument is simple and clear: specificational pseudoclefts reproduce 'across the copula' the binding properties characteristic of simple clauses.

The argument has never been water-tight, however. As Blom and Daalder (1977: 54) point out (cf. (65)), anaphor connectivity breaks down in Dutch when the anaphor is itself the post-copular constituent of the pseudocleft (rather than being contained in it); note, though, that English examples rendering things like (65a) are generally judged grammatical in the literature – see, e.g., Akmajian's 1979: 125 *The one that I shaved was myself* and *The one that you cheated was yourself*, and below on emphatic reflexives in English; we are not aware of any reported English counterparts to Dutch (65b), featuring the reciprocal, but they seem perfectly grammatical: *What they most detested was each other* (Caroline Heycock, p.c.)).

(65) a. ?*Wie *hij* op het oog heeft is *zichzelf*.
who he on the eye has is se-self
'Who is *he* thinking of is *himself*.'
b. *Wie *zij* tartten was/waren *elkaar*.
who they pestered was/were each other

Note also that pseudoclefts (and *it*-clefts as well) behave 'anomalously', from the simple clause perspective, in a number of contexts, as noted by Akmajian (1979: 125) and Hankamer (1974: 231–2, n. 6) (cf. also Sharvit 1997a; Den Dikken et al. 2000: 74, n. 29) – see (66a), from Akmajian, and (66b), adapted from an example of Hankamer's attributed to Stephen Anderson. Akmajian points out in a footnote (n. 10 on p. 153) that the reflexives used in examples of this kind "cannot be interpreted as normal reflexives, since they form the *foci* of their containing sentences" (original emphasis); this is certainly true, but the fact remains that the non-cleft counterparts of example like (66a, b) remain unacceptable even with heavy focal stress on the reflexive; cf. (67):

(66) a. The one who *John* claimed had been cheated was *himself*.
b. What was staring up at *John* out of his soup was *himself*.

(67) a. **John* claimed that *himself* had been cheated.
b. **Himself* was staring up at *John* out of his soup.

The status of anaphor connectivity as an argument for a transformational relationship of some sort between specificational pseudoclefts and their corresponding non-cleft paraphrases is less than crystal clear, therefore.

We note here that anaphor connectivity is unaffected by the linear word order of specificational sentences: that is, (63a) and (64a) remain grammatical with the relative order of variable and value inverted, as in (68):

(68) a. Important to *himself* is what *John* is.
b. Kiss *each other* is what *they* did.

In this respect, anaphor connectivity effects in specificational sentences are different from a third case of binding connectivity attested by specificational constructions (iii.c).

(iii.c) *Principle C connectivity ('anti-reconstruction')* (See (69); cf. Heycock and Kroch 1999; Den Dikken et al. 2000: 84, n. 35):

(69) a. *What *he* had said to Mary was that she had been lying to *John*. (specificational)
b. What *he* had said to Mary was an embarrassment to *John*. (predicational)

The facts in (69) are as expected, in the light of the anaphor connectivity effects noted above. Interestingly, however (cf. Den Dikken et al. 2000: 84, n. 35), (70), which has XP < *wh* order, is grammatical, in contradistinction to the *wh* < XP case in (69a):

(70) *Peter*'s picture of Mary is what *he* covets most.

Den Dikken et al. suggest that perhaps "such sentences are not SPCs [specificational pseudoclefts, MD] at all, or are ambiguous between an SPC and some other sentence type, e.g. an equative sentence."

(iii.d) *Negative polarity item connectivity* (See (71); cf. Ross 1972a; Halvorsen 1978; Akmajian 1979):[16]

(71) a. What I have *never* noticed is *any* signs of dissatisfaction. (specificational)
b. *What I had *never* noticed was noticed by *any* of us. (*predicational)

(72) a. What John hasn't done is leave *yet*/**already*.
b. What I doubt is that *anyone*/**someone* needs this money.
(cf. What I don't doubt is that **anyone*/*someone* needs this money.)
c. What John doesn't want is *ever* to be left alone.

Higgins (1979: 23–24) acknowledges the NPI connectivity effect noted by Ross and Akmajian (along with a number of other connectivity effects listed here) but

decides not to address it, saying that of the connectivity effects canvassed by Akmajian "the only one . . . that carries any great weight is the reflexive pronoun case." His rationale is as follows: "the rule is more clearly defined and the phenomenon better understood than, for instance, that governing *some/any* alternations." Heggie (1988: 325, n. 5) also explicitly sets aside NPI connectivity in her otherwise detailed discussion of specificational pseudoclefts. As Den Dikken et al. (2000) argue in detail, however, the distribution of NPI connectivity effects does indeed give us clear insights into the analysis of (a subtype of) specificational pseudoclefts.

We note in the context of negative polarity connectivity in specificational pseudoclefts that Blom and Daalder (1977: 24–25) present two types of example, from Dutch, in which such connectivity breaks down in these constructions. (They in fact draw the general conclusion that specificational pseudoclefts exhibit no NPI connectivity effect (in Dutch), but this is too strong a claim: Dutch counterparts to examples of the type in (71a) are grammatical, as shown in (73).)

(73) Wat ik nog *nooit* opgemerkt heb is *ook maar enig* teken van
what I yet never noticed have is also but any sign of
ontevredenheid.
dissatisfaction
'What I have never noticed is any sign of dissatisfaction.'

The first type of example discussed by Blom and Daalder is illustrated by the pair in (74). Blom and Daalder note (with a reference to the discussion of *any* in Klima 1964) that (74a) allows for a (salient) reading in which *ieder* behaves like English *any*: what (74a) then says is that he refused and would refuse any medicine at all that one offered or would offer him. That reading (which we may call the polarity reading of (74a))[17], Blom and Daalder point out, is unavailable for the pseudocleft in (74b); the example in fact has no reading at all: it is unacceptable as a reflex of a general ban on QPs as the post-copular constituent of pseudoclefts (be they predicational or specificational; see also the text accompanying (115) below for discussion).

(74) a. Hij weigerde ieder geneesmiddel.
he refused every medicine
b. *Wat hij weigerde was ieder geneesmiddel.
what he refused was every medicine

The lack of connectivity in (74b) is paralleled by the unavailability in (75b) of the inference which presents itself in (75a): that he gets upset about *any* joke at all (cf. Fauconnier 1975; like (74), we present this under the rubric of 'negative polarity' – cf. n. 17). We share Blom and Daalder's judgment; though we are not aware of any discussion of this phenomenon in the literature on English pseudoclefts, the facts seem transposable to English, with the same net result: a lack of parallelism/connectivity between specificational pseudoclefts and their simple clause counterparts.

(75) a. Hij trekt zich het onschuldigste grapje aan.
he pulls se the most-innocent joke prt
'He gets upset about (even) the most innocent of jokes.'
b. Wat hij zich aantrekt is het onschuldigste grapje.
what he se prt-pulls is the most-innocent joke
'What gets him upset about is the most innocent of jokes.'

The failure of polarity connectivity in examples of the type in (75b) is presumably connected to the fact that, systematically, NPI connectivity breaks down in specificational pseudoclefts whenever special NPIs (like *not . . . until*; Clifton 1969; Higgins 1979: 44; Sternefeld 1997) and idiom chunks are involved:

(76) a. *What John did*n't* do was (he did*n't*) leave *until 6 p.m.*
b. *What did*n't* John do? – (he did*n't*) leave *until 6 p.m.*

(77) a. *What John did*n't* have was (he did*n't* have) *a red cent*.
b. *What did*n't* John have? – (he did*n't* have) *a red cent*.

Den Dikken et al. (2000: 80) address this point and observe (i) that the ban on special NPIs and negatively polar idiom chunks as the 'value'-XP of specificational pseudoclefts rears its head in question-answer pairs as well (cf. the b-examples in (76) and (77)), and (ii) that this ban manifests itself even when the 'value'-XP or answer is a full IP containing a local licenser for the negative polarity item. The deviance of the examples in (76) and (77) (and presumably that of (75) on its idiomatic reading as well) should be sought, Den Dikken et al. suggest, in the lack of interpretive parallelism between the *wh*-clause and the 'value'/answer (manifest also in the oddity of a question-answer pair such as *What did John take? – ??He took a picture*): while the 'value'/answer is idiomatic, there is no choice but to read the *wh*-clause literally, which yields a clash.

(iii.e) *Quantifier connectivity* (See (78); cf. Hankamer 1974: 223):

(78) a. What *the little bastards* did was *all* get in the tub at the same time.
b. *What *the little bastards* did was *all* surprising to us.

This once again highlights the parallel between specificational pseudoclefts and their simple clause paraphrases (cf. *The little bastards all got in the tub at the same time*). If 'floating quantifiers' (like *all* in (78a)) are taken to be stranded by movement of the quantified noun phrase (cf. Sportiche 1988), the distribution of *all* in (78) might be construed as an argument for a transformational analysis of specificational pseudoclefts (cf. section 6 for discussion of transformational approaches). The stranding analysis of floating quantifiers is controversial, however (see Bobaljik 1998 for a critical assessment).

(iii.f) *Scope connectivity* (See (79); cf. Declerck 1988: 53; Den Dikken et al. 2000):

(79) a. ?What I *want* to marry is *a Swedish girl*.
b. What he *wanted* to find was *a nice Swedish girl* to marry.

An example of the type in (79) allows a reading of *a Swedish girl* on which it is in the scope of the intensional verb *want*, but such a reading is available only on the specificational reading of the sentence, not on the predicational one.

Scope connectivity also comes to the fore in the examples in (80), which show that the 'value'-XP of a specificational pseudocleft allows for the same *de dicto/de re* ambiguity (customarily treated in terms of scope) as does the object of the corresponding simple clause:

(80) a. What John seeks is a unicorn. (*de dicto* or *de re*)
b. John seeks a unicorn. (*de dicto* or *de re*)

(iii.g) *Selectional connectivity* (See (81–82); cf. Peters and Bach 1968; Hankamer 1974; Heggie 1988):

(81) What John counted was the pigeons/*the pigeon.
cf. John counted the pigeons/*the pigeon.

(82) a. What John wondered was whether/*that it was raining.
cf. John wondered whether/*that it was raining.
b. What he's {asking/not saying/*saying} is whether there will be any beer.
c. What {that depends/*John counts} on is whether there is enough beer.
d. What she wouldn't say (*to me) was why she ate them all at once.[18]

For reasons inherent in the lexical selectional properties of the verb *count*, a plural countable object (or a mass term, not illustrated here) is needed in combination with this verb. As (81) shows, this selectional restriction imposed by *count* carries over into specificational pseudoclefts featuring this verb in the *wh*-clause. Likewise, the fact that *wonder* selects a *wh*-clause complement asserts itself in the pseudocleft in (82a) as well. (Of course, (82) involves specificational pseudoclefts for trivial reasons, *wh*-questions not being construable as predicates.)

(iii.h) *Emotive should connectivity* (See (83–84); cf. Higgins 1979: 139–140; Bošković 1997a; Heycock and Kroch 1999.) Another reflex of selection which we may mention here under the general rubric of connectivity effects is what we will call 'emotive *should* connectivity':

(83) a. The *odd* thing is that he *should* have managed to do this all by himself.
b. What is *odd* is that he *should* have managed to do this all by himself.

(84) It is *odd* that he *should* have managed to do this all by himself.

As Higgins (1979: 139–140) first noted, the 'value'-XP of a specificational copular sentence may contain so-called 'emotive *should*' as a reflex of a selectional

property of a subconstituent of the 'variable' constituent. Predicates like *odd* can trigger the use of *should* in the clause that they select (cf. (84)); this selectional property of the predicates in question is preserved in specificational copular sentences, despite the fact that a direct link between *odd* and the clause containing *should* is not establishable in (83).

We add in the context of 'emotive *should*' (even though this does not obviously have anything to do with connectivity) that the presence of 'emotive *should*' in specificational pseudoclefts may also be triggered by a predicate outside the pseudocleft construction altogether – and that, when this happens, 'emotive *should*' will show up either in the root clause or in the *wh*-clause if the word order of the pseudocleft is XP < *wh* but may surface only in the *wh*-clause if the order is *wh* < XP (see Higgins 1979; also Bošković 1997a: 271; Heycock and Kroch 1999):

(85) a. It is a pity [that [proud of himself] *should* be [what John is]].
b. It is a pity [that [proud of himself] is [what John *should* be]].

(86) a. *It is a pity [that [what John is] *should* be [proud of himself]].
b. It is a pity [that [what John *should* be] is [proud of himself]].

For Bošković (1997a) and Heycock and Kroch (1999) the facts in (86) are an indication that specificational pseudoclefts of this type are 'reconstructed' into their simple clause counterparts in the semantic component of the grammar. See especially Bošković (1997a: 271) for careful discussion, as well as for the observation that the distribution of 'emotive *should*' is a diagnostic for distinguishing specificational and predicational pseudoclefts: in the latter, 'emotive *should*' never shows up in the *wh*-clause in such contexts as (87):

(87) a. It is a pity [that [what John is] *should* be [worthwhile]].
b. *It is a pity [that [what John *should* be] is [worthwhile]].

(iii.i) *Case connectivity* (See (88–90); cf. Bošković 1997a; Iatridou and Varlokosta 1998). One last connectivity effect that we will discuss here involves Case. Iatridou and Varlokosta (1998) point out that the 'value'-XP of specificational pseudoclefts is Case-dependent on the verb in the *wh*-clause; that of predicational pseudoclefts is not. The German pair in (88) shows this most clearly, thanks to the morphology on the post-copular noun phrase:

(88) a. Was Hans essen wollte war *einen* Apfel.
what Hans eat wanted was an(acc.) apple
b. Was Hans essen wollte war *ein* Apfel.
what Hans eat wanted was an(nom.) apple

Den Dikken et al. (2000: 73, n. 27) point out that Iatridou and Varlokosta have overstated the case: (88b) is not unambiguously predicational; it allows a specificational

interpretation as well (as is shown by connectivity effects, which are reproducible in these kinds of sentences; see Sharvit 1997 for a similar observation about Hebrew). Be that as it may, (88a) is certainly unambiguously specificational (moreover, it is grammatical only with a *wh* < XP word order, a 'Type A' diagnostic; see Den Dikken et al. 2000 for discussion). It shows that the 'value'-XP can get its Case from the verb in the *wh*-clause: a case of Case connectivity.

That the 'value'-XP is Case-dependent on the verb in the *wh*-clause is shown also by facts presented by Bošković (1997a: 250). While *ask* and *wonder* both semantically select a question, it is only *ask* which allows this question to take the form of a noun phrase; this follows from the fact that only *ask* is a Case assigner. The distribution of CP and DP complements seen in the simple clauses in (89) is mimicked perfectly in the corresponding specificational pseudoclefts in (90).

(89) a. I asked {what the time was/the time}.
b. I wondered {what the time was/*the time}.

(90) a. What I asked was {what the time was/the time}.
b. What I wondered was {what the time was/?*the time}.

(Bošković 1997a: 253 presents similar facts for *hope* and *inquire*.)

The examples in (91) and (92) (both taken from corpus-based studies: Geluykens 1984: Appendix and Collins 1991: 45, respectively) make a similar point. In both cases, the fact that the post-copular 'value'-XP does not want Case seems to be responsible for the absence of the preposition which the verbs in the *wh*-clauses would select in the presence of a Case-dependent DP. Bošković's (1997a: 253, n. 20) constructed examples in (93) (which he calls "degraded" yet better than the corresponding *wh*-questions: **What is John afraid?*, **What does it seem?*) fit into this general picture as well. (See Bošković 1997a: 253, n. 20 for discussion of why his examples in (93) are degraded.)

(91) What I am convinced is that we shall not do anything unless departments cooperate.

(92) Now what I'm fascinated is to know that communists and fascists are such bad shots.

(93) a. ??What John is afraid is that Mary will leave.
b. ??What it seems is that Mary will leave.

For Bošković, the above examples show, in addition, that the *what* inside the *wh*-clause apparently is not Case-dependent. This seems to be contradicted, however, by familiar facts of the type in (94–96) (cf. Heggie 1988: 340, 343). Here, the distribution of *of* indicates that *what* does indeed demand Case – the *what* of specificational pseudoclefts imposes the exact same restrictions on the complement of the verbs in these examples which unmistakable DPs also impose:

(94) a. What did you persuade him *(of)?
b. You persuaded him (*of) [that he should try harder]/[to try harder].
c. What you persuaded him *(of) was [that he should try harder]/[to try harder].

(95) a. What did he agree *(to)?
b. He agreed (*to) [that he would work harder].
c. What he agreed *(to) was [that he would work harder].

(96) a. What are you wondering (about)?
b. John is wondering *(about) DP.
c. What John wonders (about) is [whether he can succeed].

Notice that these data seem to confirm the parallelism between specificational pseudoclefts and question-answer pairs (cf. (i), above; also see section 5, below), while the ones in (91–93) seem to pose a problem for such a connection.

(iv) *Agreement effects* The whole battery of connectivity effects reviewed in the foregoing as a group sets apart specificational sentences (double-NP as well as pseudocleft varieties) from predicational copular sentences. Similar in spirit and effect are the (iv) agreement effects. These come in three types, the third of which deserves comment here (on (iv.a) see section 4.2).

(iv.a) *Phi-feature agreement* (See (97); cf. Declerck 1988: 79):

(97) a. What you have bought *is* fake jewels. (specificational)
b. What you have bought *are* fake jewels. (predicational)

(iv.b) *Aspectual agreement* (See (98); cf. Declerck 1988: 52):

(98) a. What he was do*ing* was work*ing* in the garden.
b. *What he was do*ing* was work in the garden.
c. *What he did was work*ing* in the garden.

(iv.c) *Temporal agreement/congruence* (See (99); cf. Akmajian 1979: 168–169):

(99) a. What you are holding in your hand *is* a small brown butterfly. (pred/spec)
b. What you are holding in your hand *was* a small brown butterfly. (predicational)
c. What you are holding in your hand *will be* a small brown butterfly. (predicational)

As Akmajian points out (p. 169), of the examples in (99) only the a-sentence has a specificational reading; the other two are unambiguously predicational. In concert

with this observation, Akmajian also shows that of these three examples only the a-example is reversible (cf. (100); see property (ii)):

(100) a. A small brown butterfly *is* what you are holding in your hand.
b. *A small brown butterfly *was* what you are holding in your hand.
c. *A small brown butterfly *will be* what you are holding in your hand.[19]

Akmajian (1979: 169–170) points out that "while the phenomenon illustrated by the sentences of [(99)] has been viewed in terms of tense agreement, it is in fact part of a deeper phenomenon," characterizable as "temporal congruence": cf. the fact that it rears its head also in non-cleft specificational copular sentences of the type in (101), conditioned by the adjective *old* in the pre-copular NP:[20]

(101) a. His old job *was* building radars at Lincoln Labs.
b. *His old job *is* building radars at Lincoln Labs.
c. *His old job *will be* building radars at Lincoln Labs.

This once again confirms the intimate connection between specificational pseudoclefts and specificational copular sentences in general.

While the preceding examples suggest that tense agreement/congruence is obligatory in specificational pseudoclefts, we should note that Declerck (1988: 81–82) points out that tense in specificational pseudoclefts is "determined by two different and independent systems": (i) "the tense depends on the relation between the chosen deictic centre and the time implied by the variable NP," or (ii) "the tense of the copula is neutralized" (with the copula systematically occurring in the present tense). We have come across examples illustrating (i) in the foregoing; examples of the second type are given in (102) (from Declerck 1988: 82), which are grammatical only "if there is 'present tense relevance', i.e., if the past act of specification is still felt to be relevant" (p. 83):

(102) a. The reason he did it *is* that he is a coward.
b. What he would not say *is* when it will happen.

We note also that there may be an effect of word order on the temporal agreement facts: though this does not seem to have been discussed in detail in the literature, Heggie's (1988) pairs in (103–104) suggest that it is only specificational pseudoclefts with *wh* < XP order which are subject to strict tense agreement restrictions:

(103) a. Where John met Mary *was* in the park.
b. In the park *is* where John met Mary.

(104) a. Who I gave the book to *was* John.
b. John *is* who I gave the book to.

Under the rubric of temporal agreement/congruence, we may also draw attention to a number of restrictions on specificational sentences in general, and specificational

pseudoclefts in particular, when it comes to tense. The reader familiar with Higgins (1979) may have assumed that Akmajian's examples reproduced here as (99c) and (100c) are ungrammatical (as specificational pseudoclefts) regardless of tense agreement/congruence – after all, Higgins (1979: 310) claims that the tense of the copula in specificational pseudoclefts may only be simple present or past tense (see also Heggie's 1988: 315 statement that "sentences like *The boss must be Joe Horn* are always equative"). Declerck (1988: 81) takes issue with Higgins's claim, however, pointing out that a specificational pseudocleft of the type in (105a) is grammatical. Ross (1999) gives additional examples (cf. (105b–d)) that contradict Higgins's claim in this domain, and help further emphasize the requirement of temporal agreement. The facts in (105c, d) are complicated, and will not be dissected in detail here; what (105c) shows particularly clearly, however, is that the agreement requirement refers to tense, not aspect: the perfect in the *wh*-clause need not be matched in the copular main clause, but the present tense form of *has* in the *wh*-clause *must* be matched by a present tense form in the matrix:

(105) a. The one who *will* win *will be* one of us.
b. What Sandy *might have been* reading {*might have been/might be/*has been*} Tolstoy
c. What Sandy *has been* reading {**might have been*/?**might be/has been/is/*was*} Tolstoy.
d. what *could have been* happening {*could have been/could be/*was/is*} that she {**has been/could have been/was/is*} working at home.

Declerck (1988: 85) also dismisses Higgins's (1979: 242) statement that *used to be* can replace *be* in predicational sentences only (a statement which is apparently correct for sentences like (106)) with reference to the grammatical examples in (107):

(106) (The one who was) the murderer of Tom *was/*used to be* John.

(107) a. The colour that she preferred *used to be* blue.
b. The one who did most of the work *used to be* John.

Declerck (1988: 85) concludes that (107) is grammatical since "the variable NP is such that different values can be assigned to it at different times," while such is impossible in (106). Even with this correction to Higgins (1979) in place, though, it remains true that with respect to the restrictions on tense (including *used to*), all specificational copular sentences (cleft and non-cleft alike) behave on a par and are to be distinguished from their predicational counterparts.

(v) *Extraction restrictions* (See (108–109); cf. practically all of the literature on specificational sentences – in particular, Heggie 1988; Moro 1997; Heycock and Kroch 1999). This is another important property covering the entire spectrum of specificational sentences.

(108) a. I believe that the cause of the riot was a picture of the wall.
b. *Which picture do you believe that the cause of the riot was *ec*?
c. *Which wall do you believe that the cause of the riot a picture of *ec*?
d. *Which riot do you believe that the cause of *ec* was a picture of the wall?
e. *The cause of which riot do you believe *ec* was a picture of the wall?

(109) a. I believe that what caused the riot was a picture of the wall.
b. *What do you believe that what caused the riot was *ec*?
c. *What do you believe that what caused the riot was a picture of *ec*?
d. *What do you believe that what caused *ec* was a picture of the wall?

Grosu (1972) presents the opacity of the post-copular 'value' constituent of specificational pseudoclefts as an argument for the so-called extraction analysis of these constructions (see section 6.2, below); however, the fact (which he notes himself) that specificational copular sentences generally have this property makes it highly unlikely that the extraction restrictions in (109) constitute an argument for an analysis of specificational pseudoclefts that derives them from their corresponding simple clause counterparts (or vice versa; on the latter, see Bošković 1997a, and the discussion in section 6.4.1). What is needed is an account of the data in (108) and (109) which generalizes over all specificational copular sentences and sets them apart from predicational copular sentences (which do allow extraction from and of the post-copular constituent; cf. (110)):

(110) a. I believe that the cause of the riot was a big surprise to us all.
b. How big a surprise do you believe the cause of the riot was *ec*?
c. Who do you believe that the cause of the riot was the biggest surprise to *ec*?
d. *What do you believe that the cause of *ec* was a big surprise to us all?

The above five traits of specificational copular sentences (including specificational pseudoclefts) are the most important syntactic distinctive features of these constructions (on interpretive hallmarks of these constructions, see section 3.2.2 below). In addition to these, we may mention a number of somewhat more microscopic ways in which predicational and specificational copular sentences differ.

(vi) *Negation* (See (111); Higgins 1979: 321; Declerck 1988: 166):

(111) a. What John is isn't important to him. (predicational)
b. *What John is isn't important to himself. (specificational)
c. *Smith's murderer isn't John.

As Higgins (1979: 321) points out, "the copula in a Specificational pseudo-cleft cannot have a 'straight' negation of the predicate, but at best only some kind of contradiction negation" – that is, (111b), while bad in isolation, could be salvaged

by contrasting *important to himself* with some other value of the variable in the *wh*-clause (cf. *What you need is not a doctor but a wife*; see also Ross's (2000) *Though what I like is not pizza, what he likes is*, which is likewise contrastive, though not with respect to the value). Declerck (1988: 166) broadens the scope of Higgins's observation to include specificational copular sentences in general; cf. (111c), which likewise is good only on a 'contradiction reading'. (On restrictions on adverbial modification other than negation, see (xx), below; this is a domain in which the facts are substantially less clear, and where, moreover, specificational pseudoclefts diverge from other specificational copular sentences.)

(vii) *Copula contraction* (See (112); cf. Kaisse 1979: 708–709). This is another domain in which all specificational copular sentences differ *en bloc* from their predicational pendants:

(112) a. What I eat's important to me. (predicational)
*What I want's an avocado. (specificational)
c. *The culprit's Chuzzlewit.
cf. Chuzzlewit's the culprit.

As (112) shows, only predicational copular sentences allow the copula to contract onto the pre-copular constituent.

(viii) *Degree modification of the post-copular term* (Cf. (113); Akmajian 1979: 164; Heggie 1988).[21] Predicational copular sentences are also singled out by restrictions on degree modification of the post-copular term.

(113) What *John* is is **somewhat/very/more** important to *him*/**himself* (than . . .).

For both Akmajian and Heggie, the impossibility of this kind of construction counts as evidence that the post-copular AP in specificational pseudoclefts like this is not a predicate – modification is a property limited to predicates.

(ix) -ever *and quantificational restrictions* (Huddleston 1971: 242; Heggie 1988; Declerck 1988.) A further peculiarity of pseudoclefts which has been made out to be reducible to a property of predicates (predicate nominals, to be more specific) concerns *-ever* and quantificational restrictions:

(114) Whatever she wrote was a novel. (predicational/*specificational)

(115) a. *John is every teacher.
b. *Bill's tie is whatever Mary hates.

The example in (114), from Bolinger (1972b), is unambiguously predicational, whereas its counterpart without *-ever* is perfectly ambiguous between a predicational and a specificational interpretation.[22]

Heggie links the unavailability of a specificational reading for (114) and the ungrammaticaticality of her (115b) to a general ban on predicate nominals: they resist universal quantification, as is shown by Williams's (1983b) example in (115a). Iatridou and Varlokosta (1998) take essentially the same tack, analyzing the ungrammaticality of examples like (115b) by analyzing the *wh*-clause of specificational pseudoclefts as a free relative functioning as a predicate nominal. Heggie and Iatridou and Varlokosta thus construe the facts in (114) and (115) as an argument for an analysis of the *wh*-clause of specificational pseudoclefts as an underlying predicate.

Their point is not well taken, however. For in specificational sentences *both* major constituents are in fact subject to quantificational restrictions – not just the *wh*-clause (as the *-ever* facts show) but the 'value' NP as well (cf. Gundel 1977; Seuren 1985: 297; Declerck 1988: 87–88; Moro 1997; Heycock and Kroch 1999); cf. also Blom and Daalder's 1977: 24–25 discussion of (74), above), as (116) and (117) show:[23]

(116) What Henry sold was
- a. a postcard
- b. a few postcards
- c. *few postcards
- d. *many postcards
- e. *most postcards
- f. *every postcard

(117) The problem/cause of the riot was
- a. English hooligans
- b. a few English hooligans
- c. *few English hooligans
- d. *many English hooligans
- e. *most English hooligans
- f. *every English hooligan

If Heggie's and Iatridou and Varlokosta's interpretation of (115) were correct, the facts in (116–117) would imply (in combination with their conclusion based on (115)) that specificational copular sentences have *two* predicative constituents – and that would not make any sense. We therefore refrain from drawing hasty conclusions concerning predicativity on the basis of quantificational restrictions of the type just illustrated.

3.2.2 Interpretive properties

Two interpretive properties of specificational constructions, closely related to one another, are worth drawing special attention to.

(x) *Information structure* There is a strong tendency for the 'value'-XP of a specificational sentence to be the focus of the construction, and to convey new

information. Blom and Daalder (1977) effectively use this fact as the key distinguisher between specificational and predicational copular sentences. The following definitions have been adapted from Blom and Daalder's work ('value'-XP replaces their 'hyponym'; see (23), section 1.4):

(118) a. In a *specificational* copular sentence, the focused element is contained in the 'value'-XP.
b. In a *predicational* copular sentence, the focused element is **not** contained in the 'value'-XP.

To illustrate, in a specificational pseudocleft such as (119), the information structure (or theme-rheme structure) of the sentence is partitioned in such a way that the *wh*-clause expresses old information while the 'value', which specifies the variable in the *wh*-clause, supplies new information. Concomitantly, the 'value'-XP in examples of this sort receives focal stress.

(119) What John bought was a book.

However, while there is indeed a strong tendency for the variable to merely express old information and for all the new information to be packaged into the value, one cannot strictly correlate the variable/value (or identified/identifier) dichotomy with the new/given information split, as Halliday (1967: 226) already pointed out. As Collins (1991: 82–83) puts it, "the two are independenty variable; the association of new information with the highlighted element may be overriden by marked focus." An example of such an override is Collins's (120):

(120) a. Tom offered Sue a sherry.
b. No, the one who poured the sherry was Tom.[24]

Although, therefore, "in the majority of basic pseudo-clefts the relative clause/theme [i.e., variable] contains (at least some) new information . . . there are several factors which work together to attenuate the newness of the item or items so marked intonationally" (Collins 1991: 119).

Declerck (1998: 13) makes a more general point of the same general nature, observing that there are essentially four ways of focusing in specificational sentences:

- focus can be on the value as a whole (the 'standard' case),
- focus can be on a subpart of the value,
- focus can be on the entire pseudocleft (in which case information in the *wh*-clause is also new; cf. Erades 1962; Prince 1978),
- focus can be on two value parts, one of which appears in the *wh*-clause (cf. (121), adapted from Declerck's cleft example).

(121) (Why did you hit Mary? – I beg your pardon!) She was the one who hit me!

We refer the reader to Collins 1991: 133, 145 for lucid summaries of the information-structural properties of pseudoclefts with *wh* < XP and XP < *wh* orders.)

(xi) *Exhaustivity* Exhaustivity (or exclusivity or uniqueness, as it has also been called) is another interpretive property peculiar to specificational copular sentences, closely related to the information structural properties of these constructions. It is an implicature (cancelable by 'particularizers' like *not only, mainly, especially, primarily*), not overly robust at that – as Collins (1991: 32) points out, "the types of sentences one may construct to test the exclusiveness implicature elicit variable responses when submitted to the judgment of native speakers": examples of the type in (122c, d), while "rejected by many" once the parenthesized material is included, apparently are not deemed as awkward as the relevant variants of (122b, e, f).

(122) a. The car needs a new battery (amongst other things/and it needs a new alternator too).
b. The car only needs a new battery (*amongst other things/and it needs a new alternator too).
c. It is a new battery that the car needs (?amongst other things/and it needs a new alternator too).
d. What/the thing the car needs is a new battery (?amongst other things/and it needs a new alternator too).
e. All/the only thing the car needs is a new battery (*amongst other things/and it needs a new alternator too).
f. It is only a new battery that the car needs (*amongst other things/and it needs a new alternator too).

Still, the fact that many speakers do indeed reject (121c, d) with the parenthesized material included "can only be attributable to the exclusiveness implicature associated with cleft and pseudo-cleft constructions" (Collins 1991: 33).

This implicature is a sufficient but not a necessary condition for specificationality – that is, any copular construction that has an exhaustiveness implicature is specificational; but not every specificational copular sentence necessarily has this exhaustiveness implicature. As Declerck (1988) points out, this implicature "can only arise if the variable is uniquely defined" (i.e., if the variable is *definite*, which it is when it is a definite noun phrase or the *wh*-clause of a specificational pseudocleft). As a consequence, in cases in which the variable happens not to be "uniquely defined," no uniqueness/exhaustiveness implicature presents itself (see Declerck's examples on p. 31, reproduced here):

(123) a. An example of this kind is World War II.
b. Typical instances of this are Julius Caesar and Napoleon.
c. Something that I don't understand is how the thief managed to get in.

There are cases in which exhaustiveness is not merely an implicature but actually an entailment of the singularity and definiteness of the variable.[25] In such cases,

adding *only* to the focus will block the specificational reading (Declerck 1988: 32): (124b) can only receive a predicational reading ('Smith's murderer is not someone with whom I have close relations').

(124) a. The one who murdered Smith is my neighbor. (ambiguous)
b. The one who murdered Smith is *only* my neighbor. (predicational only)

In a similar vein, Seuren (1985) points out that there are contexts in which the interpretive difference between (pseudo)cleft sentences and their simple counterparts is not merely pragmatic but in fact truth-conditional (cf. (125), (126)): "if in a situation where nobody laughed [(125a)] is uttered it will simply be (minimally) false and its negation [(125b)] will be true, but if [(126a)] is uttered it will be (radically) false and its negation [(126b)] will still fail to be true."[26]

(125) a. Harry laughed.
b. Harry didn't laugh.

(126) a. The one who laughed was Harry.
b. The one who laughed wasn't Harry.

3.3 *Properties peculiar to specificational pseudoclefts*

Now that we have essentially covered the list of syntactic and interpretive properties which unite all specificational copular sentences and set them apart from their predicational congeners, let us make a list of a number of characteristics peculiar to specificational pseudoclefts.

(xii) *The form of the value-XP* (Bolinger 1972b: 98–100; Hankamer 1974; Heggie 1988: 371; Declerck 1988):

(127) a. The way he spoke to me was flatteringly. (specificational)
b. The way he spoke to me was flattering. (predicational)

(128) The best way to categorize them in fact is historically. (Geluykens 1984)

(129) a. When/the day they're coming for the box is Friday. (Hankamer 1974)
b. When she waters them is weekends.

Given that (127a) and (128–129) (the latter due to Hankamer 1974; these are good in certain dialects only) are unambiguously specificational, one expects (cf. property (ii) above) that this kind of pseudocleft should be reversible – and indeed, grammatical and somewhat marginal cases of this kind have been reported in the literature (cf. (130a), due to Radford 1981, and (130b, c), from Heggie 1988: 371). As Heggie points out, "it appears that to the extent that an adverb may be easily

predicated of a human subject (i.e., PRO), the sentence is grammatical" (while "those adverbs which must be predicated of a clause are completely ungrammatical"; cf. **Apparently is how John left early*).

(130) a. A little too casually seems to have been how he addressed the judge.
b. ?Very quickly seems to be how she ran the race.
c. ?Very reluctantly is how we all left.

(xiii) *PP pied-piping* (cf. esp. Heggie 1988: 360–363)

(131) a. *With whom he goes to the cinema is with Mary/important to himself. (specificational)
b. ?With whom he goes to the cinema is important to him. (predicational)

In English it is generally impossible to perform PP pied-piping in a specificational pseudocleft (though pied-piping is possible in predicational pseudoclefts, to the same extent that PP pied-piping is ever felicitous in English). Notice, however, that Heggie (1988: 360–363) has found that pied-piping of a dative or *of*-PP does not seem impossible in specificational pseudoclefts: the examples in (132) and (133) are "simply awkward," not ungrammatical, according to her:

(132) a. ?To whom I gave the book was John.
b. ?John is to whom I gave the book.

(133) a. ?Of what Mary was convinced was that Bill would succeed.
b. ?That Bill would succeed is of what Mary was convinced.

(134) a. ?A person to whom I sent a report without notifying *pg*.
b. ?A person to whom I spoke without kneeling in front of *pg*.
c. ?To whom did John speak without being able to see *pg*?

She notes in this connection that *to whom* can also (marginally) license an NP parasitic gap (as in (134)), which suggests that the PPs in (132) and (133) can exhibit 'NP-like' behavior. If so, (132) and (133) are not genuine exceptions to the generalization that English specificational pseudoclefts disallow PP pied-piping.

Languages differ on this point, however: Higgins (1979: 41) notes Spanish examples of specificational pseudoclefts with PP pied-piping (due to Jespersen 1969: 78–79) which are grammatical (cf. (135)):

(135) a. De un rey es de quién hablamos.[27]
of a king is of whom we speak
b. Con quién hablaba es contigo.
with whom I/he was talking is with you

Similarly, Den Dikken et al. (2000: 72) report that Dutch and German allow PP pied-piping in specificational pseudoclefts as well; but see Blom and Daalder

(1977: 9) for an example of PP pied-piping in Dutch which they judge to be unacceptable (?**Waar Jan op wacht is op de uitslag* 'What Jan is waiting for is for the result'; to our ear, this example does not sound crashingly bad). See also section 5.2, below.

(xiv) '*P-drop*' (Higgins 1979: 303–304):

(136) a. Where John is going *to* is a nice place. (pred/spec)
b. Where John is going is a nice place. (predicational)

Higgins claims that not realizing the preposition *to* delivers an exclusively predicational interpretation of the pseudocleft in (136). It is unclear what should explain this fact[28] – especially from the perspective of the parallels between the *wh*-clause of specificational pseudoclefts and *wh*-questions in question-answer pairs, one might have expected non-realization of *to* to be perfectly compatible with a specificational interpretation of the pseudocleft: the question *Where is John going (to)?* is perfect both with and without *to*.

(xv) *Tag questions* (Higgins 1979: ch. 6, (85)/(87); Bošković 1997a: 272):

(137) a. *What John is is proud, isn't it? (specificational)
b. ?What John is is proud, isn't he?

(138) a. What John is is lucrative, isn't it? (predicational)
b. *What John is is lucrative, isn't he?

Bošković (1997a: 272) notes that, while in predicational pseudoclefts the choice of pronoun and verb in a tag question is determined wholly at the root level (a copular sentence with a free relative subject, resulting in *is* and *it*), in specificational pseudoclefts (at least the ones with *wh* < XP word order; we are not familiar with facts of this nature reported for XP < *wh* pseudoclefts) such is entirely impossible (see (137a)). Instead, the tag may marginally skip the copular root clause altogether and relate itself to the clause contained in the *wh*-constituent.

Sentences of the type in (137b) are certainly not brilliant (Bošković actually assigns (137b) two question marks), but they are attested in spontaneous speech – Geluykens (1984) found (139) in a corpus of spoken English (from the *Survey of English Usage*):

(139) What you're meaning, Joey, is what caused the bolus, aren't you?

The following are two restrictions on the *wh*-clause constituent of pseudoclefts.

(xvi)*Predication restrictions* (Akmajian 1979: 165; Heggie 1988: 351):

(140) a. He is tall. (predicational)
b. He is the man who robbed the bank yesterday. (specificational)

(141) a. What he is is tall.
b. *What he is is the man who robbed the bank yesterday.

In a *wh*-cleft whose *wh*-clause has the form *what X is*, the 'value'-XP must correspond to the *predicate* of the copular *wh*-clause: specificational copular sentences do not serve as input to specificational pseudoclefts whose *wh*-clause has a post-copular gap (cf. (141b), due to Akmajian 1979: 165).

This is clearly not a case of matching across the matrix copula – that is, it is not the case that the gap in the copular *wh*-clause must be a predicate in order to match the predicativity of the post-copular constituent in the matrix: after all, the latter is *not* a predicate. This is shown most directly, perhaps, by the fact that *though*-movement (an operation singling out predicates) fails in specificational pseudoclefts (as Ross 2000 has pointed out):

(142) a. Harmless old duffer though Al was, he won.
b. *Harmless old duffer though what Al was is, he won.
cf. Though what Al was is a harmless old duffer, he won.

While (141a) is grammatical (with *tall* functioning as a predicate inside the *wh*-clause), specificational pseudoclefts with a 'value'-AP "obtain freely only when the verb of the CP-predicate is the copula" (Heggie 1988: 351) – the examples in (143) and (144) are ungrammatical. Contrast these with the grammatical example in (145) (= (60b); see n. 14 on speaker variation with respect to the reverse order of (147), irrelevant here):

(143) a. *How Mary shook John was awake.
b. *Awake is how Mary shook John.

(144) a. *How Tom hammered the nail was flat.
b. *Flat is how Tom hammered the nail.

(145) Rather plump is how John likes his women.

The same problems found in (141b) and (143–144) rear their heads in question-answer pairs: while the *wh*-questions in (146a–c) are good in isolation, they cannot receive the answers provided on the right. (146d) (corresponding to (145)) once again behaves differently:

(146) a. What is he? – *The man who robbed the bank yesterday.
b. How did Mary shake John? – *Awake.
c. How did Tom hammer the nail? – *Flat.
d. How does John like his women? – Rather plump.

This enhances the parallel between specificational pseudoclefts and question-answer pairs (see section 5; cf. Den Dikken et al. 2000 for an analysis of specificational pseudoclefts exploiting this parallel).

(xvii) *Combining clefts and pseudoclefts I* (Blom and Daalder 1977; Akmajian 1979: 89; Declerck 1988):

(147) a. Whatever it was that he got from her was expensive.
b. *What it was that he got from her was expensive.

(148) a. Ik weet niet wie (het is die) daar staat.
I know not what it is that there stands
b. Ik doe wat (*het is dat) de directeur mij opdraagt.
I do what it is that the manager me assigns
c. Wat (*het is dat) hij eet is een banaan.
what it is that he eats is a banana

(149) *The thing that it was that was in the car was my hat.

Declerck (1988: 73) points out that clefting inside the *wh*-clause of a predicational pseudocleft is possible (as in (147a)), though only if *wh-ever* is used (cf. (147b)), for reasons unclear. Blom and Daalder (1977) make the converse claim: clefting inside the *wh*-clause of a specificational pseudocleft is impossible (cf. (148)). Similarly, Akmajian (1979: 89, n. 11) draws attention to the ill-formedness of his (149).

We should point out immediately, however, that the claim that the *wh*-clause of a specificational pseudocleft may not contain a cleft is not uncontroversial. Thus, Faraci (1971) points out that (at least in his variety of English) (150) is grammatical. Akmajian (1979: 74), who includes this example in his discussion, adds that "for my own speech sentences such as [(150)] are more or less marginal":

(150) %What it was that John bought was a car.

(xviii) *Combining clefts and pseudoclefts II* (Heggie 1988). A second way in which combining clefting and pseudoclefting is restricted was first noted by Heggie (1988), who draws attention to the paradigm in (151):

(151)	a.	It's coconut that is what Mary hates.	cf.	It's John that is the teacher.
	b.	*It's what Mary hates that coconut is.		*It's the teacher that John is.
	c.	*It's what Mary hates that is coconut.		*It's the teacher that is John.
	d.	*It's coconut that what Mary hates is.		*It's John that the teacher is.

As the parallelism between the left-hand and right-hand paradigms shows, specificational pseudoclefts behave like double-NP specificational copular sentences in this respect; (151) is strictly speaking out of place in this subsection, therefore, but we included it here for presentational purposes. We will return to this restriction in section 4.1.2, in the discussion of the arguments for a predicational approach to the underlying representation of specificational sentences.

3.4 Properties peculiar to specificational pseudoclefts with wh < *XP word orders*

So far we have found that specificational pseudoclefts show a superset of the restrictions on specificational copular sentences per se. All cases in which specificational pseudoclefts exhibited properties of their own involved peculiarities of their *wh*-clause, not reproducible in double-NP specificational copular sentences for obvious reasons. What we have not found yet is cases in which properties which *are* in principle reproducible throughout the class of specificational constructions are nonetheless specific to pseudoclefts. Such cases do exist, however – and systematically, whenever we find such cases, it is specificational pseudoclefts with a word order in which the *wh*-clause precedes the 'value'-XP which are subject to the constraints in question; their XP < *wh* counterparts are immune to them.

(xix) *Raising/ECM constructions* (Hankamer 1974; Higgins 1979; Williams 1983b; Heggie 1988):

(152) a. ?I consider important to *himself* what *John* is. (specificational; XP < *wh*)
b. *I consider what *John* is important to *himself*. (*specificational; *wh* < XP)

The minimal pair in (152) (taken from Den Dikken et al. 2000: 86, who refer to Williams 1983b) emphasizes the sensitivity to word order of ECM constructions embedding specificational pseudoclefts. In this respect, specificational pseudoclefts are like specificational copular sentences in general: no such construction with 'variable < value' order is ever embeddable under ECM and raising verbs (cf. Moro 1997 for extensive discussion; see also section 4.3.1 below):

(153) a. I consider John the best candidate.
b. *I consider the best candidate John.

Declerck writes in connection with the examples in (154): "In a copular sentence in which *to be* is preceded by *seem*, the copula can never be deleted on a specificational reading" (cf. Den Dikken 1995b; Moro 1997); he then goes on to point out that "WH-clefts like [(154a, b]) are not ambiguous between a predicational and a specificational reading but can only be interpreted predicationally."

(154) a. What you are working on seems an interesting subject. (predicational only)
b. What he suggested seemed a difficult thing to do. (predicational only)

The way Declerck presents this observation, one gets the impression that once *to be* is added to the examples in (154), they will allow a specificational reading – on a par with the grammatical specificational copular sentences in (155). Declerck never makes this explicit; and as a matter of fact, the empirical status of specificational pseudoclefts of the type in (156) (from Higgins 1979), (157) (all from Hankamer 1974), (158a) (from Halvorsen 1978: 34) and (158b, c) (from Ross 1999, 2000) is a contentious issue in the literature:

(155) a. The best candidate seems *(to be) John.
b. The cause of the riot seems *(to be) a picture of the wall.

(156) a. What John is tends to be boring. (predicational only)
b. What he is pointing at seems to be a kangaroo. (predicational only)

(157) a. *What he was doing turned out to be washing himself.
b. *What they were doing seems likely to be claimed to be washing each other.
c. *What the little buggers did happens to have been (to) all get in the tub at the same time.
d. *What she never wants to hear again appears to be any more WH Cleft sentences.

(158) a. What John wants seems to be never to be left alone.
b. What he likes seems *(to be) tofu.
c. What Al is seems *(to be) a harmless old duffer.

Most authors seem to agree that specificational pseudoclefts cannot participate in the raising-to-subject construction; but Hankamer (1974: 231–232, n. 6) points out that "there are some speakers who do not find all of these sentences [i.e., all of (157)] ungrammatical, particularly the ones involving reflexivization." Hankamer suggests linking this case of speaker variation to that surrounding (66b), repeated here:

(66) b. What was staring up at *John* out of his soup was *himself*.

This suggestion will not cover the entire range of speaker variation, however: no peculiarities of reflexives could be at issue in (the relevant variants of) the examples in (158).

Like raising-to-subject, raising-to-object (or ECM) seems to give rise to variable judgments in the domain of *wh* < XP specificational pseudocleft constructions – though, once again, there is no variation on this point when it comes to double-NP inverse specificational copular sentences:

(159) a. I believe the best candidate *(to be) John.
b. I believe the cause of the riot *(to be) a picture of the wall.

(160) a. *We believe what he likes to do to be (to) kiss monkeys.
b. *We believe what he is to be proud.
c. *We found what the theory depends on to be how clefts work.
d. *I believe when she waters them to be weekends. (cf. (129))

(161) a. We believe what John wants to be never to be left alone.
b. I consider what he likes *(to be) tofu.

The examples in (160) are once again due to Hankamer (1974), the one in (161a) to Halvorsen (1978) (as quoted in Declerck 1988: 91), and (161b) is from Ross (1999). The scope of Hankamer's acknowledgement of speaker variation (see above) includes these examples as well. (Blom and Daalder 1977 present grammatical Dutch examples of specificational pseudoclefts with *wh* < XP orders embedded under ECM verbs – but these require a special 'colon intonation'; we address this in section 4.1.2 below.)

Whatever the ultimate fate of specificational pseudoclefts in raising-to-subject and ECM constructions, and notwithstanding Declerck's (1988: 91) observation that the acceptability of *The murderer seems/is unlikely to be John* is "more doubtful" than that of their congeners without raising, it seems clear enough that fewer people will gladly accept examples of the type in (158) and (161) than the ones who find the variants of (155) and (159) featuring *to be* acceptable. This, then, is one context in which *wh* < XP specificational pseudoclefts differ from inverse copular sentences, fellow instantiators of the class of specificational copular sentences.[29]

This turns out not to be the only context in which *wh* < XP specificational pseudoclefts behave in a special way. There are three further restrictions on *wh* < XP specificational pseudoclefts not shared with their reverse or double-NP relatives. We sum them up below, and comment on them briefly.

(xx) *Restrictions on adverbial modification* (See (162); Higgins 1979: 318–320; Declerck 1988; Bošković 1997a):

(162) a. *What John is is probably angry with himself.
b. ??What John is probably is angry with himself.

(163) a. Angry with himself is probably what John is.
b. Angry with himself probably is what John is.

Higgins was the first to point out that specificational pseudoclefts with *wh* < XP orders permit no adverbial modifier to the right of the copula. (Higgins makes the same point with reference to the adverb *also*; see Declerck 1988: 33–34 for critical discussion.) Bošković (1997a: 268, n. 35) adds that placing the adverbial modifier in pre-copular position delivers a "slightly better" result. In this respect, specificational pseudoclefts differ not just from XP < *wh* specificational pseudoclefts (cf. (163)) but also from double-NP specificational sentences with 'variable < value' orders:

(164) a. The cause of the riot was probably a picture of the wall.
b. The cause of the riot probably was a picture of the wall.

The robustness of Higgins's observations is not crystal clear, however. Thus, Huddleston (1971: 341) presents (165a) as an example (culled from a corpus of scientific English) of a specificational pseudocleft; if indeed that is what it is,[30] it flatly contradicts (162a). Another such example taken from a corpus is (165b) (Geluykens 1984). Similarly, Declerck (1988: 91) offers (165c), featuring *perhaps* in post-copular position, as a perfectly well-formed specificational pseudocleft. Since the facts in the general area of adverbial insertion often tend to be somewhat less than clear-cut, we will not dwell on these data in any further detail here.

(165) a. What happens at the anode is probably the conversion of chloride ions into hypochlorite and hydrogen ions.
b. The thing to do is obviously to swing the PhD subject 'round to something nearer what I'm being paid to do.
c. What they need is perhaps a hammer.

(xxi) *Restrictions on gapping/ellipsis* (See (166–171); Higgins 1979: 305; Williams 1983b: 249; Heycock and Kroch 1996: 32; Ross 1999, 2000; Den Dikken et al. 2000: 67–70):

(166) a. What Bill is is important to himself, and what Sue is is important to herself.
b. *What Bill is is important to himself, and what Sue is ___ important to herself.

(167) a. Important to himself is what Bill is, and important to herself is what Sue is.
b. Important to himself is what Bill is, and important to herself ___ what Sue is.

(168) a. What Bill is is important to him, and what Sue is is important to her.
b. What Bill is is important to him, and what Sue is ___ important to her.

(169) a. The best candidate is John, and the runner-up is Bill.
b. The best candidate is John, and the runner-up ___ Bill.

Higgins (1979) has noted that in specificational pseudoclefts with a word order in which the *wh*-clause precedes the copula and the constituent specifying the 'value', it is impossible to gap the copula linking the *wh*-clause to the 'value' constituent – (166b) is ungrammatical. In this respect, constructions of the type in (166) differ strikingly from all other English copular sentences, including predicational pseudoclefts (168), double-NP specificational copular sentences with 'variable < value' orders (169), *and* specificational pseudoclefts with XP < *wh* orders (167).

The contrast between (166) and (167) shows that the ban on gapping of the root copula in the second conjunct of a specificational pseudocleft is a property peculiar to constructions with the word order *wh* < XP. Once the order of the two major constituents is reversed, gapping is perfectly possible (cf. (167b); see Den Dikken et al. 2000: 69). Not surprisingly, gapping continues to be possible once the order in (170) is reversed; and since reversibility is not a property of predicational pseudoclefts to begin with, there are no grammatical counterparts to (168) at all in which the *wh*-clause follows the AP):

(170) a. John is the best candidate, and Bill is the runner-up.
b. John is the best candidate, and Bill ___ the runner-up.

Ross (1999) notes that, in the domain of specificational pseudoclefts with *wh* < XP word order, ellipsis ('VP deletion' in Ross's terms: with the copula analyzed as a verb raising, when finite, from V to I, the ellipsis in (171) is a case of deletion of the beheaded VP) succeeds marginally when the post-copular constituent is nominal but fails completely when it is clausal; cf. (171).[31]

We add that such ellipsis comes out uniformly ungrammatical when specificational pseudoclefts have a XP < *wh* order (cf. the primed examples in (171)).[32] Note also that ellipsis is grammatical in reverse specificational sentences that are a pre-copular NP (cf. (172)).

(171) a. ?What Bill made was popcorn, and what Terry made was too.
a'. *Popcorn was what Bill made, and fudge was too.
b. *What Mary thinks is that Mars is a star, and what Sue thinks is too.
b'. *That Mars is a star is what Mary thinks, and that Venus is a planet is too.

(172) a. Bill's biggest desire was popcorn, and Terry's was too.
a'. *Popcorn was Bill's biggest desire, and fudge was too.
b. Mary's opinion is that Mars is a star, and Sue's is too.
b'. *That Mars is a star is Mary's opinion, and that Venus is a planet is too.

The same grouping of subcases of copular sentences seen in (166–172) is attested another area of the grammar in which reference is made to the copular element in the root of the construction:

(xxii) *Subject-auxiliary inversion* (See (173) vs. (174); cf. Ross 1999; Den Dikken et al. 2000: 62–63):

(173) a. What John didn't buy was any wine.
b. ?I don't know whether what John didn't buy was any wine.
c. *Was what John didn't buy any wine?

(174) a. The cause of the riot was a picture of the wall.
b. I don't know whether the cause of the riot was a picture of the wall.
c. Was the cause of the riot a picture of the wall?

The example in (173a) is unambiguously a specificational pseudocleft – it exhibits NPI connectivity. Embedding such a pseudocleft in an embedded yes/no-question with *whether* is possible; but performing subject-auxiliary inversion in the root question in (173c) results in ungrammaticality. No such ungrammaticality results, however, in the example in (174c), involving an inverse specificational copular sentence with two NPs.[33]

Once again it should be noted that the ban on subject-auxiliary inversion is at least to some degree specific to specificational pseudoclefts with variable < value-XP word order. Examples of the type in (175a) do allow the formation of a root question with subject-auxiliary inversion (cf. Declerck 1988: 45, n. 44):

(175) a. Boring is something John has always been.
b. I was wondering whether boring is something John has always been.
c. Is boring something John has always been? (cf. *Is something John has always been boring?)

It should be pointed out in this context, however, that this triplet involves a *th*-cleft, not a *wh*-cleft; that this may be important is suggested by Ross's (1999) observation that (176c) is entirely impossible (and substantially worse than *Was beans what he ate?* or ?*Was in Londen where they lived?*). For true *wh*-clefts, therefore, the category of the value-XP seems to matter when it comes to subject-auxiliary inversion.

(176) a. Afraid of colons is what Jeremy has been for many years.
b. I was wondering whether afraid of colons is what Jeremy has always been.
c. *Is afraid of colons what Jeremy has been for many years?

The facts discussed in this subsection are a clear indication that we should be careful to look at the word order of specificational pseudoclefts – while it is generally true that specificational sentences (including specificational pseudoclefts) are reversible (cf. property (ii), above), we should not therefore assume that the properties of specificational pseudoclefts with '*wh*-clause *be* XP' word order are necessarily identical with those of their counterparts with 'XP *be wh*-clause' order (see section 2.3 above: Den Dikken et al.'s 2000 split between 'Type A' and 'Type B' specificational pseudoclefts). We will address this issue in more detail in the next section, which takes a closer look at reversibility (property (ii), above). (See also section 5.2 and the beginning of section 5.3 for further divergences of specificational pseudoclefts with *wh* < XP and XP < *wh* orders.)

4 Reversibility

The question as to how to best analyze the reversibility of specificational sentences, and the restrictions on this reversibility, is intimately related to the question

of what the underlying representation of specificational sentences should be assumed to be. In abstract terms, when it comes to the question of how to analyze the word order alternation exhibited in (177), one has three options, *a priori*. These are summed up in (178a–c).

(177) a. XP *be* YP
b. YP *be* XP

(178) *Theoretical possibilities:*
a. (177a) and (177b) are unrelated, each having a different underlying structure.
b. (177a) is basic, (177b) being transformationally derived from it.
c. (177b) is basic, (177a) being transformationally derived from it.

And once the score has been settled for one particular type of instantiation of the pattern in (177), one should repeat this exercise for each additional instantiation. That is, if we were to decide, for instance, that the alternation in double-NP specificational sentences is an instance of (178b), this need not entail that the apparently similar alternation in specificational pseudocleft constructions should necessarily be analyzed along the same lines. In addition, any analysis will also need to take a decision on the question (related to the ones raised above) of whether one of the two major constituents, XP and YP, is a predicate of the other in the underlying representation of the construction at hand, and if so, which.

This said, a wealth of theoretical possibilities presents themselves. It is not surprising, therefore, that there are quite a number of different proposals available in the literature – and that there is a substantial amount of confusion around in this domain as well. In what follows we will endeavor to elucidate the issues and the positions taken in the literature.

4.1 Predicational and non-predicational approaches

In our discussion of approaches to the underlying structure and derivation of specificational sentences, we will make a basic split between two types of accounts: predicational and non-predicational approaches. The non-predicational approaches assume there to be no underlying relationship of predication between the two major constituents of specificational sentences; predicational approaches, on the other hand, do assume such an initial predicational structure.

- *Non-predicational* approaches (cf., e.g., Akmajian 1979; Heycock and Kroch 1999)
- *Predicational* approaches (cf., e.g., Blom and Daalder 1977; Higgins 1979; Heggie 1988; Declerck 1988; Moro 1997)

Non-predicational approaches are most strongly represented in the traditional analyses of specificational pseudoclefts and other specificational copular sentences;

recently, Heycock and Kroch (1999) have reinvigorated this kind of approach. The principles-and-parameters literature has brought forth a number of detailed analyses of specificational sentences which treat them as underlyingly predicational – an analysis that has an important precursor in the pre-GB era in Blom and Daalder's (1977) analysis of specificational sentences.

Largely for presentational efficacy, we will first go through the non-predicational approaches to specificational sentences (section 4.1.1), addressing the predicational approaches in section 4.1.2.

4.1.1 Non-predicational approaches

The most explicitly non-predicational approach to specificational sentences (which in their account form a subgroup of the class of 'equative' constructions; cf. 'identity statements' in sections 1 and 2) is Heycock and Kroch (1999). They treat the relationship between the major constituents of specificational and equative sentences in terms of *equation*. One of the claims of their work, therefore, is that the theory should recognize "equation as distinct from predication" (p. 375).

With specific reference to specificational pseudoclefts (one of the foci of this case study), Heycock and Kroch draw attention to the fact that if one denies that there is a grammatical ('deep') distinction between equation and predication and treats specificational pseudoclefts as underlyingly predicative, one needs to allow free relatives (which is what they take the *wh*-clause of specificational pseudoclefts to be; see section 5) to be ambiguous with respect to their semantic type: in *Honest is what I want a man to be*, the free relative would have to be of type <<*e*,*t*>,*t*> (denoting as it does a second-order property: a property of properties), while in *John is what I want a man to be (i.e., he's honest)*, the free relative should be of type <*e*,*t*>. Moreover, in order to be able to handle tautologies like *(when it comes down to it,) honest is honest*, a predicational approach would need to both type-raise *honest* from <*e*,*t*> to <<*e*,*t*>,*t*> and attach a change in meaning to this type raising operation: *honest(x)* changes into *be identical to honest(x)*. Heycock and Kroch conclude, therefore, that "in other words, if equation is removed from the syntax, it has to be put back into the semantics" (p. 375). An equative approach to specificational sentences, by contrast, will be able to characterize free relatives as being of type <*e*,*t*>, and will not need to resort to type raising operations and concomitant meaning changes.

Heycock and Kroch's approach to specificational copular sentences thus treats these as equivalent to equative constructions – or 'identity statements', in the terminology of Higgins (1979) and Declerck (1988). There certainly are parallels between equative and specificational copular sentences – for example, both behave identically when it comes to embedding under ECM verbs like *consider*, *believe*, in the absence of a copula: both (179) and (180) are ungrammatical (cf. Heycock and Kroch 1999: 374 for the equative cases; cf. Moro 1997 for the original observation concerning specificational or 'inverse copular' sentences):

(179) a. I consider John the best candidate. (predicational)
b. *I consider the best candidate John. (specificational)

(180) a. *I consider your attitude towards Jones my attitude toward Davies. (equative)
b. *I consider my attitude towards Davies your attitude toward Jones. (equative)

In equative constructions, both orders of the two NPs deliver ungrammaticality in the complement of *consider* (180); neither order hence seems to be syntactically representable as predicational (cf. the grammaticality of (179a); recall, however, Blom and Daalder 1977: 76 – discussed in section 1.4 above). It does not seem unreasonable, therefore, to deny predicate status to *both* NPs of an equative construction – equative constructions would be radically non-predicational from such a perspective. Whatever the merits of such an analysis of equatives, however, it has no logical implications when it comes to the analysis of specificational copular sentences: typologies of copular sentences routinely distinguish between identity statements and specificational copular sentences on account of the fact that their properties are not identical (see section 1.3). Heycock and Kroch's (1999: 375) remarks about tautologies like *honest is honest*, which instantiate equatives, not specificational constructions, therefore are strictly speaking beside the point when it comes to the analysis of specificational copular sentences.

Their objection to an underlyingly predicational approach to a pseudocleft like *Honest is what I want a man to be* (cf. above) is more to the point, in the present context – we are dealing here with a specificational copular sentence. But this objection of Heycock and Kroch's is based entirely on the premise that the *wh*-clause of specificational pseudoclefts like this is the same as that of the *wh*-clause of *John is what I want a man to be (i.e., honest)* (which is presumably not a pseudocleft construction to begin with): a free relative. This is by no means an uncontroversial point, however: several scholars have sought to analyze the *wh*-clause of specificational pseudoclefts as a *wh*-question instead (see section 5 for discussion). Heycock and Kroch's objection will be valid only to the extent that one accepts a free relative approach to the *wh*-clause of specificational pseudoclefts; as soon as one denies this, their point is entirely moot.

Heycock and Kroch (1999: 381–382) stress that their recognition of a separate class of equative copular sentences (alongside predicative ones) need not imply the recognition of (at least) two separate types of copular *be* – one may, instead, encode the difference between the two types of copular sentence entirely in the syntactic structure of the small clauses participating in them: there are two types of small clause, equative and predicative ones (the former involving "some functional head," the latter not); the copula *be* can take either as its complement.

(The fact that Heycock and Kroch assume that equative constructions feature a small clause, and that they say explicitly that the only difference between a predicative and an equative small clause lies in the presence in the latter of an additional functional head of sorts, may suggest that Heycock and Kroch do, after all, adopt a type of predicational approach to specificational/equative sentences – if the only difference between equative and predicative small clauses lies in a functional (i.e., non-lexical, non-predicating) head, and if – as is clear – predicative

small clauses involve predication, then how can equative small clauses *not* involve predication? The answer to this question is not given by Heycock and Kroch. They do stress, however, that in equative constructions it is impossible "to interpret one of the noun phrases as less referential/more predicative than the other" (p. 374). This is why we have classified the Heycock and Kroch approach to specificational sentences (which they subsume under their rubric of 'equatives') as a representative of the group of non-predicational analyses.)

By not making a distinction between different types of *be*, Heycock and Kroch's "one *be* but more than one type of copular sentence" approach differs from Akmajian's (1979) account of specificational sentences (pseudoclefts in particular). Akmajian (1979: 162) draws a distinction between "two fundamental senses of the copula, namely, the *specificational* sense as opposed to the *predicational* sense" (original emphasis); the former he later calls a "specification operator [=]" and the latter a "predicational operator [is]" (p. 217) – and it is the former that establishes the relationship between the two major constituents of specificational copular sentences.[34] The constituent harboring the variable and the value-XP are both referential (cf. his ch. 3, section 2.2); neither functions as a predicate of the other.[35] In essence, then, in Akmajian's analysis the 'specification operator [=]' serves as a two-place predicate in specificational sentences – though Akmajian never spells this out in detail, [=] may be taken to take the two major constituents of a specificational sentence as its arguments. The syntactic structure of base-generated specificational sentences is simple: the pre-copular *wh*-clause (treated as a free relative) occupies the subject position of the clause, the 'specification operator [=]' projects a VP and takes the post-copular 'value'-XP as its complement, as in (181):

(181) $[_S\ [_{NP}$ *what there was in the car*$]\ [_{VP}\ [=]\ [_{NP}$ *the jack you gave me/my hat*$]]]$

(Akmajian actually assigns the same syntactic structure (*modulo* the nature of the linking operator) to predicational pseudoclefts, saying that the ambiguity of a sentence like *What John does not eat is food for the dog* is "not associated with the specific derivation of clefted sentences . . . but rather . . . is a function of the general phenomena of referentiality of nominal expressions" (p. 178). We take it, though, that Akmajian would assume that *food for the dog* on its non-referential interpretation functions as a predicate of the pre-copular constituent, and that the 'predicational operator [is]' is not a two-place predicate in its own right.)

Akmajian (1979) argues for a dual approach to specificational pseudoclefts: one analysis generates the specificational pseudocleft in the base, the other deriving them transformationally from their simple clause counterparts (via extraction; see section 6.2 for discussion). We have focused here on the base generation analysis (though for the extraction derivation Akmajian assumes a structure that is underlyingly almost identical, once again featuring the 'specification operator [=]'). As Akmajian stresses several times, "there is no non-ad hoc way of preventing" this duality of sources (p. 32; also cf. p. 38). In a similar vein, Den Dikken et al. (2000) also argue for a dual analysis of specificational pseudoclefts – but this

time, the two structures are radically different, one involving predication, the other not.

The non-predicational analysis is proposed by Den Dikken et al. for a *subset* of specificational pseudoclefts – in particular, those specificational pseudoclefts which feature a word order in which the *wh*-clause precedes the copula and the 'value'-XP, and in which we find connectivity effects involving negative polarity items (their so-called 'Type A' specificational pseudoclefts). For pseudoclefts of this type, Den Dikken et al. propose a 'topic-comment' structure of the type schematized in (182), where the *wh*-clause is a *wh*-question finding itself in a left-peripheral topic position, and the 'value'-XP is represented as a full IP (from which material may be elided, subject to general restrictions on ellipsis) which functions as the root clause:

(182) [$_{\text{TopP}}$ [$_{\text{CP}}$ *wh*-clause = *wh*-question] [$_{\text{Top}'}$ *be* [$_{\text{IP}}$ 'value', either full or elliptical]]]

The structure in (182) straightforwardly captures the connection between specificational pseudoclefts and question-answer pairs (see section 5, below) and topic-comment constructions (cf. also Seuren 1985: 303), the ban on subject-auxiliary inversion, and the possibility of including a negative polarity item in the 'value', apparently licensed by a negation in the *wh*-clause – in actual fact, what happens in examples of this type is that the negative polarity item is licensed *within its own clause* by the negation in the elliptical root-IP:

(183) a. What he didn't read was any book about clefts.
b. [$_{\text{TopP}}$ [$_{\text{CP}}$ *what he didn't read*] [$_{\text{Top}'}$ *be* [$_{\text{IP}}$ ~~*he didn't read*~~ *any book about clefts*]]]

The topic-comment structure in (182) is available only for specificational pseudoclefts with a word order in which the *wh*-clause (the comment) precedes the 'value' – inversion of topic and comment is impossible, given the general impossibility of extraction across a topic (the 'topic island effect'). For specificational pseudoclefts with NPI connectivity, the analysis hence – correctly – predicts that they will feature only *wh* < XP orders. For the alternative XP < *wh* order of specificational pseudoclefts, a different analysis needs to be proposed: these cannot be derived from (182) via some transformation. Den Dikken et al. (2000) thus propose an analysis of the two-word order variants of the specificational pseudocleft in which they are structurally unrelated.

Den Dikken et al. (2000) assume that specificational pseudoclefts with XP < *wh* order, as well as double-NP specificational sentences, feature a small clause structure that includes the 'value'-XP as the subject. Discussion of this kind of structure properly belongs in section 4.1.2, on predicational approaches – to which we now turn.

4.1.2 Predicational approaches

In Higgins's (1979) characterization of specificational sentences, neither of the two constituent NPs receives the qualification 'referential' or 'non-referential';

instead, Higgins assigns NP_1 the label 'superscriptional' (paraphrasable as 'providing the heading of a list') and NP_2 the label 'specificational' (i.e., 'specifying the contents of the list'). Translating these labels into the familiar syntactic functions 'subject' and 'predicate' is not straightforward: Higgins is the only one to use these terms, and he himself is not particularly explicit when it comes to their mapping to underlying syntactic relationships. He does say, however, that the *wh*-clause of a pseudocleft is the subject of the pseudocleft. And in his discussion of the semantic representation of specificational pseudoclefts like *What we saw in the park was a man and a women* (unambiguously specificational unless reference is being made to a hermaphrodite), he writes that whereas "the subject clause specifies a set in terms of a property, the predicate expression constitutes an explicit listing of the members of the same set, and the verb *be* is the identity" (p. 118). Thus, Higgins seems to partition the specificational pseudocleft into a subject, a predicate and a copula of identity (annotated as '=', as in Akmajian's 1979 treatment of specificational sentences); cf. the semantic representation in (184b):

(184) a. What we saw in the park was a man and a woman.
b. {x: we saw x in the park} = {a man, a woman}

Yet, elsewhere in his discussion of the underlying syntactic representation of specificational pseudoclefts, Higgins (1979: 226ff.) brings up a number of syntactic tests (mostly concerning word order in questions) which lead Declerck (1988: 46) to conclude "there appears to be ample evidence that in specificational sentences it is the NP representing the focus [i.e., the 'value'-XP] that is the (underlying) subject." For Declerck, therefore, in a specificational sentence like *The best candidate is John* the post-copular NP *John* (the 'value'; cf. Huddleston's 1971 'identifier'), which is referential (either weakly or strongly), functions as the underlying subject of the construction. The pre-copular constituent (the 'identified' in Huddleston's 1971 terms), which is 'weakly referring' ('attributive' in the sense of Donnellan 1966), is the 'subject complement' (a term largely equivalent to 'predicate') in the underlying representation.

On the *surface*, however, things are governed (in Declerck's analysis) by a principle which says that "the initial NP of a specificational copular sentence is always interpreted as the theme and therefore as the syntactic subject of the clause" (p. 201), regardless of the order of the two NPs. On the surface, then, whichever of the major constituents of a specificational sentence occupies the pre-copular position (in declarative sentences not involving topicalization, that is) is the subject.

Even though Declerck (1988) explicitly does not avail himself of any particular theoretical framework (so that the precise theoretical status of terms like 'underlying', used by Declerck in various places, remains rather difficult to determine), it seems reasonable, in the light of the foregoing, to summarize Declerck's perspective on the underlying syntax of specificational sentences as in (185). Declerck identifies the variable (the *wh*-clause of specificational pseudoclefts) as the 'subject complement' in the underlying representation. With 'subject complement' read as 'predicate', Declerck's approach matches that of Moreau

(1971), Blom and Daalder (1977), Heggie (1988), Verheugd (1990), Heycock (1994a), Den Dikken (1995b), and Moro (1997) (see also Den Dikken et al. 2000 for 'Type B' specificational pseudoclefts) when it comes to the status of the 'variable' in the underlying representation of specificational constructions.

(185) *Blom and Daalder (1977); Declerck (1988); Heggie (1988); Moro (1997) etc.:*
- variable/identified = underlying predicate
- value/identifier = underlying subject

With the exception of Moreau (1971) (who only shares the 'underlying predicate' part of (185), adopting an extraction analysis; see section 6.2) and Blom and Daalder (1977), who avail themselves of a pre-p&p transformational framework, all of the aforementioned generativists assume a small clause structure for this underlying subject-predicate relationship, as illustrated in (186):

(186) . . . *be* [$_{SC}$ [$_{Subj}$ XP] [$_{Pred}$ *wh*-clause]]

It is especially Heggie (1988) who provides a range of syntactically based arguments for an underlying subject-predicate analysis of specificational sentences, with particular emphasis on pseudoclefts. Some of her arguments are intended to support the predicative nature of the *wh*-clause; others seek to vindicate the underlying subject status of XP. We will go through her arguments briefly in what follows, after which we turn to the question of how to derive the surface word order in which the 'variable' precedes the 'value'.

(i) *Quantification restrictions* (cf. section 3.2) Heggie's first argument for the predicativity of the *wh*-clause, based on facts of the type in (187), was also discussed in section 3.2 above. The upshot of it is that the impossibility of *-ever* in the *wh*-clause of specificational pseudoclefts (of whichever order; cf. (187a)) can be likened to the ungrammaticality of (187b) on the assumption that the *wh*-clause of specificational pseudoclefts is a predicate (like the post-copular noun phrase in (187b)):

(187) a. *Whatever Mary hates is Bill's tie.
*Bill's tie is whatever Mary hates.
b. *John is every teacher.

As was argued in section 3.2, this argument has no force: combined with the quantificational restrictions on the 'value'-XP of specificational sentences, it would lead to the nonsensical conclusion that *both* major constituents of specificational pseudoclefts are underlying predicates.

(ii) *ECM* (cf. section 3.4) The second indication that the *wh*-clause of specificational constructions (with 'variable < value' order) is a predicate, according to Heggie, comes from constructions of the type in (179): ECM complements (see our section 3.4 above). Heggie points out that it is impossible to embed a specificational pseudocleft (with *wh* < XP order) under verbs like *consider*:

(188) a. I consider important to himself what John is.
b. *I consider what John is important to himself.

The essence of this argument is that small clauses (like the tenseless complements of *consider* in the examples in (179) and (188)) do not make space available to perform inversion of subject and predicate; the grammatical examples in (179a) and (188a) must hence feature subject and predicate in their base order – hence, the *wh*-clause of (188) must be a predicate in the underlying representation of specificational pseudoclefts.

Once again, however, the argument is not foolproof. A clear indication that something more needs to be said about these data is that adding *to be* renders (179b) grammatical while, for most speakers at least (cf., however, Faraci 1971; Hankamer 1974), (188b) is irremediably bad:

(179) b′. I consider the best candidate *to be* John.

(188) b′. %I consider what John is *to be* important to himself.

(The fact that Blom and Daalder (1977) give examples of specificational constructions with predicate-initial order embedded under ECM verbs does not refute Heggie's argument: see section 4.2 below for discussion.)

(iii) *Combining clefts and pseudoclefts* II (cf. section 3.3) Heggie's third argument (see our section 3.3, above) makes inventive use of the combinability of clefting and pseudoclefting, as in (151a). The argument kills two birds with one stone: for alongside arguing for the predicativity of the *wh*-clause, it also confirms the subjecthood of the 'value'-XP. Heggie observes that, of the four possible outputs of a combination of a cleft and a pseudocleft in (151), only the a-example actually comes out grammatical:

(151)	a.	It's coconut that is what Mary hates.	cf.	It's John that is the teacher.
	b.	*It's what Mary hates that coconut is.		*It's the teacher that John is.
	c.	*It's what Mary hates that is coconut.		*It's the teacher that is John.
	d.	*It's coconut that what Mary hates is.		*It's John that the teacher is.

The force of the argument here comes from the independent fact that in predicate nominal constructions like *John is the teacher* or *the teacher is John*, only the non-inverted subject can be clefted (cf. the examples in the right-hand column). The parallel behavior of *what Mary hates* and *the teacher* in the two paradigms then suggests that the former, just like the latter, is a predicate in the underlying representation of copular sentences – if one assumes, of course, that *the teacher* in

John is the teacher (a non-inverted specificational copular sentence) is in fact a predicate nominal. If one accepts the latter claim (cf. Moro 1997; but see Heycock and Kroch 1999 for a different perspective), the facts in (151) argue for the predicativity of the *wh*-clause of specificational pseudoclefts.

Notice that if this argument goes through, it at the same time argues that *coconut* (the 'value') in the left-hand examples is like *John* in the right-hand cases in being an underlying subject. This is confirmed further by a variety of additional arguments provided by Heggie, the first of which concerns gapping.

(iv) *Gapping* (cf. section 3.3) This argument is originally due to Higgins (1979), and discussed also in Heycock and Kroch (1999) and Den Dikken et al. (2000) (see section 3.3, above). The key point for Heggie is that gapping of the copula linking the *wh*-clause and the 'value' fails in (189b) (while it succeeds perfectly well in (189a), featuring non-inverted XP < *wh* order):

(189) a. Important to himself is what John is, and important to herself ~~is~~ what Mary is.
b. *What John is is important to himself, and what Mary is ~~is~~ important to herself.

Heggie makes the interesting suggestion that the ungrammaticality of (189b) reduces to the general ban on gapping in constructions featuring *movement across the subject*, as illustrated in (190):

(190) *Which man did Bill see, and which man ~~did~~ Gary ~~see~~?

Notice, though, that while (190) involves gapping of two non-contiguous elements, (189b) incurs no such discontinuity problems; the causes of the ungrammaticality of the two examples may well be unrelated, therefore. At the very least, it is not clear that they *are* related.

(v) *Comparatives* (cf. section 3.2) Noting that comparatives of the type in (191a) are "limited to predicates," Heggie goes on to construe the ungrammaticality of (191b) (also brought up in section 3.2, above) as evidence that *important to himself* is **not** a predicate, hence must be a subject:

(191) a. X is more important than Y is.
b. *What John is is more important to himself than what Bill is is.

This argument will only go through if one accepts the premise that specificational pseudoclefts are *predicational* constructions – otherwise there is no implicational relationship between the non-predicatehood of *important to himself* and its subjecthood.

(vi) *Raising* (cf. section 3.4) Heggie seeks to derive further evidence for the subjecthood of the 'value' from raising (cf. Williams 1983b): (192a) is grammatical,

which shows that *important to himself* behaves like subjects in allowing for raising-to-subject. However, the raising argument presents a problem for Heggie's other claim: that the *wh*-clause is a predicate. For notice that (192b) is rejected by most speakers (but cf. Faraci 1971 and Hankamer 1974), which exposes the *wh*-clause as a creature with properties distinct from those of inverted predicates in double-NP specificational copular sentences – after all, inverted predicate nominals *can* undergo raising, as (192c) shows:

(192) a. Important to himself seems to be what John is.
b. *What John is seems to be important to himself.
c. The best candidate seems to be John.

The grammaticality of (192c) flatly contradicts Heggie's (1988: 301) claim that "only subjects may undergo raising," unless one is willing to treat *the best candidate* in (192c) as a subject, a view which would fatally undermine the parallelism arguments in favor of the predicativity of the *wh*-clause reviewed in the foregoing (cf. esp. (151)).

(vii) *Language variation* A last argument for the subject–predicate relationship expressed in (186) comes from interesting observations that Heggie (1988) makes about certain differences between French and English. She observes that English is reasonably flexible in the types of 'honorary NP' subjects (to borrow Safir's 1983 term) that it allows (cf. (193)), while French is much more restricted – crucially, not just in (194a) but in (194b) as well, regardless of the relative order of the *wh*-clause and the 'value'-XP. The PP 'value' of (194b) thus behaves exactly like the subject of a predicative copular sentence, and the *wh*-clause behaves just like the predicate of a copular sentence.

(193) a. In the park is a good place to have a picnic.
b. In the park is where John met Mary.
Where John met Mary was in the park.

(194) a. *Dans le parc est un bon endroit pour un pique-nique.
in the park is a good place for a picnic
b. *Dans le parc est où Jean a rencontré Marie.
in the park is where Jean has met Marie
*Où Jean a rencontré Marie est dans le parc.
where Jean has met Marie is in the park

Heggie's last argument, (vii), is presumably the most convincing – especially the fact that *surface* word order is inconsequential indicates that what is at issue will in all likelihood be a property peculiar to *underlying* subjects of predicates. If this argument stands up to closer scrutiny, it shows that specificational pseudoclefts – regardless of surface word order – feature a subject-predicate structure. If this is right, it also disconfirms Den Dikken et al.'s (2000) tentative suggestion that their 'Type B' specificational pseudoclefts, whose underlying structure is as in (186), do not allow inversion.

In the foregoing, we reviewed a number of syntactic considerations which have led several scholars to assume an underlying predication relationship between the two major constituents of specificational sentences. There are two further batteries of facts which have been advanced in this connection, concerning the *distribution of the copula* in and the *extraction restrictions* on inverse specificational constructions. But since these arguments are based specifically on inverse copular sentences, we will discuss them in section 4.3, which addresses the analysis of inversion from the perspective of analyses based on a predicational approach to specificational sentences.

4.2 Inversion

If one assumes a non-predicational approach to specificational sentences, one needs to spend little time on the question of how the reversibility of these constructions is to be looked upon analytically: any non-predicational analysis will assume that the two major constituents of such copular sentences are 'on an equal footing'; neither is predestined to take precedence when it comes to occupying the (surface) subject position.

If, on the other hand, one bases oneself on a predicational approach to specificational sentences, one of the two word orders of reversible copular constructions will more or less directly reflect the underlying representation, the other being derived from it via some sort of syntactic transformation. The question that arises then is what kind of transformation derives the other order.

The predicational analyses reviewed in section 4.1.2 agree that the underlying relationship between the two major constituents is such that the 'variable' is a predicate and the 'value' functions as its subject. Deriving the word orders reflected in (195) will hence be straightforward: starting out from the base structure in (186), all one needs to do is raise the underlying subject of the small clause (which may be of a variety of category types, subject to some language variation; cf. (193) vs. (194), above) to the subject position of the clause.

(195) a. John is the best candidate.
b. Under the bed is the best hiding place.
c. Important to himself is what John is.
d. Write novels is what John does for a living.

(196) a. The best candidate is John.
b. The best hiding place is under the bed.
c. What John is is important to himself.
d. What John does for a living is write novels.

(186) . . . *be* [$_{SC}$ [$_{Subj}$ XP] [$_{Pred}$ *wh*-clause]]

To get from (186) to the word orders reflected in (196), one will need to do either or both of the following two things:

(i) maneuver the predicate into a position to the left of the subject, and/or
(ii) maneuver the subject into position to the right of the predicate.

Whichever (combination) of these tacks one takes, inversion in copular sentences will come down to the reversal of the underlying subject-predicate word order – an example such as (196a) thus represents an inverse construction.

(We note in passing that there is considerable confusion in the literature about the contents of the terms 'inversion' and 'reversal': while Blom and Daalder (1977), Declerck (1988) and all principles-and-parameters studies use it in the way we are using it here (see also Quirk et al. 1972: 954), Prince (1978) and Collins (1991) refer with the term 'reverse/inverse' construction precisely to the word order pattern which, when viewed from a predicational base perspective, corresponds to the underlying subject-predicate order.)

All three tacks (i.e., (i), (ii), or (i) and (ii)) have actually been taken in the literature on copular inversion. Most authors have opted for (i) (cf. Declerck 1988; Heggie 1988; Verheugd 1990; Heycock 1994a; Den Dikken 1995b; Moro 1997), though there is disagreement among those authors when it comes to the type of position that the pre-copular predicate finds itself in: for Blom and Daalder (1977) and Heggie (1988), this is an A'-position (COMP/SpecCP), while for Heycock (1994a), Den Dikken (1995b), and Moro (1997) it is crucial that this be an A-position (the subject position of the clause, SpecIP; cf. also Den Dikken et al. 2000 for an analysis of this type for what they call 'Type B' specificational pseudo-clefts). As far as option (ii) is concerned, it has been argued by Blom and Daalder (1977) that it exists as an alternative to leftward displacement of the predicate; and Guéron (1992, 1993) argues that both the underlying predicate and the subject are displaced, the latter to a right-peripheral focus position. ("Displacement" here, as well as "maneuver" in (i) and (ii), are meant to be theoretically neutral with respect to the question of whether there is movement involved or not.) The literature can hence be summarized as follows:

(197) *Blom and Daalder (1977):*
Inversion = topicalization/left-dislocation of the base predicate to COMP, or extraposition/right-dislocation of the base subject.

(198) *Guéron (1992, 1993):*
Inversion = leftward A'-movement of the base predicate into a position adjoined to an empty-headed subject, and rightward A'-movement (focus movement) of the base subject.

(199) *Heggie (1988):*
Inversion = leftward A'-movement of the predicate to COMP/SpecCP.

(200) *Heycock (1994a), Den Dikken (1995b), Moro (1997):*
Inversion = predicate raising to subject position (SpecIP).

Since Blom and Daalder's (1977) analysis is the oldest and also represents a superset of the (i)-type approaches, let us take theirs as a starting point for the discussion. For Blom and Daalder, when what is in pre-copular position corresponds to the underlying subject, the pre-copular constituent finds itself in subject position of the clause, where it is base generated (cf. (201), which uses a verb-final word order; recall that Blom and Daalder are exclusively concerned with Dutch, an OV language). However, when the *wh*-clause (the deep predicate) surfaces in pre-copular position, it is not the surface subject – it either raises to a left-peripheral A'-position (via topicalization; cf. (202a)) or it stays put and sees the deep subject extrapose around it (extraposition/right-dislocation; cf. (202b)).

(201) $[_{S}$ Subject $[_{VP}$ Predicate *be*$]]$

(202) a. $[_{S'}$ $[_{COMP}$ Predicate$]$ *be* $[_{S}$ Subject $[_{VP}$ ___ $]]]$
b. $[_{E}$ $[_{S'}$ COMP $[_{S}$ ___ $[_{VP}$ Pred *be*$]]]$ Subject$]$

Blom and Daalder stress that both topicalization/left-dislocation and extraposition/right-dislocation are independently available mechanisms in the grammar of a language like Dutch. The status of the former is indisputed and will not be commented on further; that of the latter, Blom and Daalder argue, is confirmed by the existence of constructions of the type in (203):

(203) a. ___ belde ineens aan: de pianostemmer
'___ suddenly rang the doorbell: the piano tuner'
b. ___ is erg lekker: aardbeien met slagroom
'___ is very nice: strawberries and cream'

It is interesting to note that what (203) and specificational sentences share in common is their list reading and colon intonation (cf. Higgins 1979). (It should be noted, however, that such examples have a stylistically restricted ring to them; they certainly are not as natural as specificational sentences in which the variable precedes the value.)

Blom and Daalder's approach to inversion in specificational sentences thus takes the 'value < variable' order as basic (subject < predicate) and derives the other order from it in either of two ways: (202a) or (202b). The former will be unavailable in embedded contexts – Blom and Daalder thus predict that in embedded clauses the only way in which the inverted order can be derived is via the (rather marked) strategy of extraposition/right-dislocation. In support of this prediction, Blom and Daalder (1977: 111) mention the contrast between (204a) and (204b): even though Dutch embedded clauses are normally verb-final, in embedded specificational sentences in which the predicate precedes the subject, the latter must surface all the way at the end of the clause, to the right of the verbal cluster. Just like the examples in (203), the inverse construction in (204b) must have the special colon intonation characteristic of (202b):

(204) a. *Het bleek dat nog veel hoger de aankoopsom was.
it turned-out that still much higher the buying-sum was
b. Het bleek dat nog veel hoger was: de aankoopsom.
it turned-out that still much higher was the buying-sum

The problem with this kind of approach to inversion in embedded contexts, however, is the fact that in genuine specificational copular sentences (which (204a, b) are not), it *is* in fact perfectly possible to invert the relative order of hyponym and hyperonym in such a way that the former ends up to the *left* of the verbal cluster – that is, (205b) is grammatical (alongside the stylistically marked (205c), with its characteristic colon intonation):

(205) a. Het bleek dat de sollicitant uit NY de beste kandidaat was.
it turned-out that the applicant from NY the best candidate was
b. Het bleek dat de beste kandidaat de sollicitant uit NY was.
it turned-out that the best candidate the applicant from NY was
c. Het bleek dat de beste kandidaat was: de sollicitant uit NY.
it turned-out that the best candidate was the applicant from NY

Since (205b) clearly is not the product of a type (ii) analysis, and since topicalization (type (i)) is entirely impossible in embedded clauses in Dutch, Blom and Daalder (1977) seem at a loss to account for the grammaticality of this example. *Mutatis mutandis*, Heggie's (1988) analysis of inversion (phrased solely in terms of movement to SpecCP) faces the same problem – a problem that presents itself not just for Dutch but for English as well: in English, too, inversion is perfectly possible in embedded specificational copular sentences (even those not embedded under bridge verbs); no 'colon intonation' is required. (See also Heycock 1994b for discussion of this point.)

(206) a. It turned out that the applicant from New York was the best candidate.
b. It turned out that the best candidate was the applicant from New York.

Blom and Daalder (1977) also mention the ungrammaticality of inversion in yes/no-questions as an argument in favor of their approach to inversion. A paradigm first highlighted by Merckens (1961), in the classic '*kooplieden* discussion' in the Dutch linguistic literature in the fifties and sixties (cf. Bos 1961; Droste 1962 for other contributions to this discussion, brought together in Hoogteijling 1969), will serve to illustrate this point:

(207) a. Kooplieden zijn dat.
merchants are that
'That's what merchants are (viz., clever/thrifty/successful/mean/ . . .).'
b. Dat zijn kooplieden.
that are merchants
'That's what merchants are.'/ 'Those are merchants.

(208) a. Zijn kooplieden dat?
are merchants that
'Is that what merchants are?'
b. Zijn dat kooplieden?
are that merchants
'Are they merchants?' (*'Is that what merchants are?')

The example in (207b) is ambiguous between a reading in which *dat* 'that' is the subject of the sentence and *kooplieden* 'merchants' is its predicate (cf. English 'they/those are merchants'; for reasons that need not concern us here, Dutch systematically has the finite verb agree with the predicate nominal in such cases), and one which is the inverse counterpart of the example in (207a), in which *kooplieden* is the subject of pro-predicate *dat*. For Blom and Daalder, the latter reading of (207b) is derived via topicalization of *dat* to COMP/SpecCP (with concomitant raising of the verb; Dutch is a Verb Second language). Interestingly, now, the example in (208b), the yes/no counterpart of (207b), is not ambiguous: it only has a reading corresponding to a structure in which *dat* is the underlying subject.

The unavailability of the 'is that what merchants are?' reading for (208b) will follow if both (i) and (ii) can be blocked. For (i) this is unproblematic: topicalization is impossible in yes/no-questions. Extraposition/right-dislocation of the deep subject around the predicate is less easy to block, however – especially in the light of Blom and Daalder's (1977: 111) own examples in (209), which show that yes/no-questions do not in general block the 'colon construction'. In the light of the acceptability of (209) with 'colon intonation', one would minimally expect (208b) to improve once the requisite intonation contour is superimposed on it. Making the clause-final subject heavier will facilitate this – but (210), with a heavy clause-final NP and 'colon intonation', is simply bad, and definitely lacks the desired inverse predication interpretation:

(209) a. Is hier misschien voor handen: een oude damesfiets?
is here perhaps available an old ladies' bike
b. Heb jij soms gevonden: de sleutels van mijn auto?
have you perhaps found the keys of my car

(210) *Zijn dat: kooplieden uit Amsterdam?
are that merchants from Amsterdam

The radical unavailability of the inverse predication reading in Dutch yes/no-questions of the type in (208b)/(210) thus comes as a partial surprise from Blom and Daalder's (1977) dual approach.

From examples of the type in (208b) we should not draw the general conclusion, however, that inversion of subject and finite verb is never possible in inverse copular sentences (see also item (xxii) in section 3.4, above). Examples of

the type in (212b), derived from the inverse construction in (211b), are grammatical. Since topicalization is impossible in yes/no-questions in English as well, Heggie (1988) has no way of deriving (212b) at all. The well-formedness of this example hence stands out as an insurmountable obstacle for Heggie's analysis. Blom and Daalder (1977) would still have option (ii) at their disposal, though – and even though they do not discuss this kind of example, they might adduce the fact that (212b) seems best on a contrastive reading (cf. *or the dog*) in support of a (ii)-type analysis of this kind of example.

(211) a. (When we go on a holiday,) the cat is our biggest worry.
b. (When we go on a holiday,) our biggest worry is the cat.

(212) a. Is the cat your biggest worry?
b. Is your biggest worry the cat (or the dog)?

Dutch behaves like English when it comes to (212b). But it may be interesting in this context to note that when subject and predicate disagree in number features, as in (213), subject-predicate inversion in a yes/no-question still seems possible in English while in Dutch it is poor:

(213) a. The children are our biggest worry.
b. Our biggest worry is the children.
a.' De kinderen zijn onze grootste zorg.
b.' Onze grootste zorg zijn de kinderen.

(214) a. Are the children your biggest worry?
b. Is your biggest worry the children?
a.' Zijn de kinderen je grootste zorg?
b.' ??Zijn je grootste zorg de kinderen?

The difference between Dutch and English in (214b, b') seems to be related to the difference in finite verb agreement between the two examples (cf. also (213b, b')): while in English it is the inverted predicate that determines agreement (*is*), in Dutch agreement is triggered by the underlying subject in both 'canonical' and 'inverse' copular sentences. (We will not address the question of how the difference between Dutch and English in (214b, b') can be related to the agreement difference.)

Moro (1997) and Heycock (1994b) discuss the agreement facts in detail (see also section 3.2, above; Moro's work presents a perspective on language variation (English vs. Italian) in this department – see Den Dikken 1997 for a critique with particular reference to Dutch). And of course the fact that in English it is the inverted predicate that triggers agreement with the finite verb in (213b) (*Our biggest worry is/*are the children*) stands out as an important additional argument against a topicalization approach to inverse copular sentences *à la* Heggie (1988) (as Heycock 1994b also stresses).

The agreement facts, when carried over into the realm of specificational pseudoclefts, appear to furnish an argument in favor of an inverse predication approach to such constructions featuring *wh* < XP word order. Thus, consider the minimal pair in (97) (from Declerck 1988: 80). As Declerck notes, agreement serves to disambiguate *wh*-clefts – singular agreement, as in (97a), yields a specificational reading, while plural agreement, as in (97b), enforces a predicational interpretation. Of note in this connection is also Declerck's (1988: 79) example in (215a), which can only be assigned a specificational reading (due to the presence of the negative polarity item *any* in the 'value' constituent) – concomitantly, only singular verb agreement is possible.

(97) a. What you have bought is fake jewels. (specificational)
What you have bought are fake jewels. (predicational)

(215) a. What the book does not offer is/*are any solutions to the problems that are noted.
b. What you wanted was two things. (Geluykens 1984)

We should note in this context, however, that the agreement facts in specificational copular sentences in general are not as categorical as especially Moro makes them out to be. Despite the fact that there certainly are strong tendencies of the type just illustrated, Declerck (1988: 79–80) points out that "in specificational sentences the number of the copula can apparently be determined by that of either the superficial subject NP or the variable NP." He quotes the following examples to illustrate:

(216) a. The aim of our policy is/*are improved relations with the Soviet Union.
b. Improved relations with the Soviet Union is/?are the aim of our policy.

(217) a. More books is/?are what I need.
b. What I need is/??are more books.

(218) a. Theft and robbery is/are what I despise most.
b. What we can't have here is/?are theft and robbery.

Verb agreement is not a foolproof diagnostic, therefore; but at the very least, what we may conclude is that the very ability of the pre-copular predicate in inverse specificational sentences to trigger agreement on the finite verb is an indication that a pure topicalization analysis of inversion, *à la* Heggie (1988), is presumably untenable.

Blom and Daalder's two-pronged approach to the derivation of inversion in specificational constructions is no better equipped to account for the English agreement facts.[36] An analysis of inverse copular sentences which treats the pre-copular variable constituent as a surface subject, by contrast, is eminently fit to

explain the fact that the inverted predicate can trigger agreement on the finite verb in English examples of the type in (213b).[37] Likewise, it will straightforwardly accommodate the fact that inverted predicates of specificational sentences can undergo *raising* to ever higher subject positions, as shown in examples such as (219).[38]

(219) a. The best candidate could be John.
b. ?The best candidate is likely to be John.
c. ??The best candidate seems to have turned out to be John.

Examples of this type get less and less brilliant as the length of the raising trajectory increases (cf. also Declerck 1988: 91), but they are certainly not ungrammatical. A raising-to-subject analysis of inversion predicts their grammaticality straightforwardly. A topicalization analysis, by contrast, cannot account for the fact that a whole string of (raising) verbs can squeeze itself in between the inverted predicate and its subject, unless, in addition, the analysis resorts to extraposition/right-dislocation of the subject. In other words, to accommodate (219), an A′ predicate movement instantiation of option (i) would necessarily need option (ii) *at the same time*, and would need to apply both operations simultaneously.

Guéron (1992, 1993) presents an analysis that does indeed combine both options, taking (i) to involve A′-movement into a position adjoined to an empty-headed noun phrase base-generated in subject position (cf. (220)):

(220) $[_{IP}\ [_{DP0}\ [_{DP0}\ \textit{pro}]_i\ [_{QP}\ Op_i\ Q\ [_{DP2}\ t_i\ D\ NP_{[+Q]}]_k]]\ [I\ [_{VP}\ [_{VP}\ t_j\ [be\ t_k]]\ DP1_j]]]$

The key asset of Guéron's analysis, with its special articulation of the complex noun phrase structure in the subject position resulting from the predicate inversion operation, is that it can make sense of the quantificational restrictions on inversion, illustrated in (58), repeated here:

(58) a. Bill is {captain of the team/a doctor/a friend of mine/the best doctor in town/my best friend}.
b. {*Captain of the team/*a doctor/*a friend of mine/the best doctor in town/my best friend} is Bill.

For Guéron, these quantificational restrictions are part and parcel of the QP-structure which the raised predicate-DP ends up embedded under.

The rightward movement of the base subject (DP1) into a VP-adjoined position (Guéron's version of (ii)) also gives Guéron a window on the fact that the post-copular subject of an inverse copular sentence is *focused* – on the assumption that the right-peripheral VP-adjoined position is a focus position, this falls out straightforwardly. Less clear, however, is how Guéron's (1992, 1993) analysis would make sense of the agreement facts discussed above. For Guéron, the output of adjunction of the predicate to the *pro*-headed subject is essentially a free relative configuration (with the raised noun phrase coming to serve as a predicate

of the *pro* heading the complex noun phrase resulting from the adjunction operation). Agreement of the copula with the raised predicate should then be mediated by *pro*, which should be made to agree in number with DP2. Guéron does not address this issue; we will not attempt a formal account here. In closing the discussion of Guéron's proposal, we add that the fact that inversion of DP2 around DP1 'creates' a free relative structure in the subject position establishes a direct parallel between inverse copular sentences and specificational pseudoclefts with *wh* < XP orders (on an account of the latter, that is, which takes the *wh*-clause of specificational pseudoclefts of this type to be a free relative; see section 5 for critical discussion of this point).

All in all, the fact that the topicalization and extraposition/right-dislocation analyses stay empty-handed when it comes to a variety of properties of inverse copular sentences stands out as a strong argument for the view that the pre-copular constituent of inverse specificational sentences finds itself in subject position. This is guaranteed by the analyses proposed by Moro (1997), Heycock (1994b) and Den Dikken (1995b) (all involving predicate raising), possibly by that of Guéron (1992, 1993) (though the agreement facts remain to be worked out for that analysis), and also, of course, by accounts which treat these constructions as equatives (cf. Heycock and Kroch 1999). The fact that (as (97) and (215) illustrate) the agreement behavior peculiar to inverse specificational sentences seems to be shared by specificational pseudoclefts with *wh* < XP orders is a potential argument for an analysis of the latter along the same lines as that of the former (cf. Heggie 1988; Guéron 1992, 1993); but the topic-comment analysis of *wh* < XP (or 'Type A') specificational pseudoclefts proposed in Den Dikken et al. (2000) accommodates the facts in (215) as well: the copula, on their analysis (cf. the structure in (182), above), is a linker between the topic in SpecTopP and the comment in the complement of Top, entertaining a Spec–Head agreement relationship with the (singular) *wh*-clause in SpecTopP. (See Den Dikken et al. 2000 for more discussion of Spec–Head agreement in TopP, in connection with the tense agreement/congruence effects noted in section 3.2.) The fact that specificational pseudoclefts with *wh* < XP orders fail to *systematically* exhibit the same set of properties as inverse specificational sentences (cf., e.g., the difference between (219) and a pseudocleft like %*What John does seems to be write novels*, which is impossible for the majority of speakers), suggests that a full assimilation of such pseudoclefts to inverse specificational sentences may not be on the right track.

At this point, we may conclude that analyses of inverse specification constructions (i.e., specificational copular sentences in which the 'value'-XP follows the 'variable') in terms of topicalization (A'-movement to a left-peripheral position; COMP/SpecCP in Blom and Daalder 1977; and Heggie 1988) or extraposition/right-dislocation both face problems, and that an analysis which places the pre-copular 'variable' in SpecIP is preferable on a number of counts. This said, we still need to determine whether the pre-copular 'variable' ended up in SpecIP via movement or whether it was base generated there. In the next subsection we will present the arguments which have been brought up in support of a movement approach, considering their pros and cons.

4.3 Evidence for inversion as movement to subject position?

4.3.1 Embedding under ECM and raising verbs

Both Heggie (1988) and Moro (1997) have drawn attention to the fact that it is impossible for the 'variable' to precede the 'value' in the verbless (small clausal) complement of ECM verbs like *consider*; cf. (221) (see also section 3.4). Similarly, raising verbs like *seem* do not allow the predicate of their small clause complement to invert with its subject – (222b) is bad even for those (largely British English) speakers who accept (222a):

(221) a. We consider John the best candidate.
b. *We consider the best candidate John.

(222) a. %John seems the best candidate.
b. *The best candidate seems John.

This follows straightforwardly from a movement analysis of inverse specificational constructions: successful movement is dependent on the presence of a landing-site for the moved element; but the structure of the small clause complement of *consider* and *seem* is not large enough to make such a landing-site available.

The argument for a movement approach to inversion based on (221) and (222) will go through regardless of whether one assumes (with Heggie 1988) an A′-movement derivation or (with Moro 1997, etc.) an A-movement one. The argument becomes more specific, however, once we consider the fact that there is a way of salvaging the ungrammatical b-examples – by inserting *to be* in the complement of the ECM/raising verb (something which Heggie 1988 overlooks):

(221) b′. We consider the best candidate *to be* John.

(222) b′. The best candidate seems *to be* John.

Moro (1997) and Den Dikken (1995b) argue in detail that the distribution of the copula in these contexts is an argument in favor of an A-movement analysis of inversion in specificational constructions.

Of course the negative argument (against the A′-movement approach) is easy to make on the basis of (221b′) and (222b′) – the A′-movement analysis simply makes no appropriate landing-site available in the infinitival complement: we know that topicalization in ECM and raising infinitivals is generally impossible (cf. **We consider the best candidate, John to be*). Moreover, even if we could somehow allow topicalization in such infinitivals under limited conditions, we would still face difficulty accounting for the surface word order of the examples – how does

one maneuver the infinitival copula into a position in between the topic and the subject, given that there is no subject-auxiliary inversion in infinitives (cf. **We were wondering when to be eventually/finally/ultimately there* and *When were you eventually/finally/ultimately there?*)?

The positive side of the argument (showing how an A-movement analysis can account for the distribution of the copula in this context) involves a particular outlook on the functions of the copula, in combination with a minimalist theory of locality (cf. Den Dikken 1995b). In a nutshell, the analysis runs as follows. A-movement of a predicate around its subject would – nothing else done – incur a violation of the minimalist theory of locality (based on Rizzi's 1990b Relativized Minimality): in (223), the predicate, on its way to the higher A-position, skips an intermediate A-position (that of its subject):

(223) $*[_{FP}\ \text{pred}_i\ F\ [_{SC}\ \text{subj}\ H\ [t_i]]]$

To remedy the locality problem, one must ensure that the first position that the predicate can land in and the position that the predicate skips on its way there be rendered *equidistant* (cf. Chomsky 1995c). The way to do this is to perform an operation of domain-extending head movement – some head which has the position of the subject in its minimal domain should raise to a higher head ("F" in (223)) which has the landing-site of the raised predicate in its minimal domain. (See Den Dikken 1995b for further details.) The moving head in question is the functional head of the small clause ("H") in (223).[39] The resulting derivation is schematized in (214).

(224) $[_{FP}\ \text{pred}_i\ F{+}H_j\ [_{SC}\ \text{subj}\ t_j\ [t_i]]]$

This structure is well formed: the subject and the landing-site of the raised predicate are now equidistant, hence predicate raising is in conformity with the Minimal Link Condition ("make the shortest move").

To link the obligatory head movement of (224) to the obligatoriness of the copula in (221b′) and (222b′), Den Dikken makes the additional assumption that the result of domain-extending head movement of H to F is the emergence of the copula *be*. The copula, in constructions of the type at hand, is hence an overt signaler of the application of predicate raising and its concomitant domain-extending head movement.

The account of the distribution of the copula in ECM/raising complements just sketched is crucially based on the A-movement analysis of predicate raising – if either the predicate did not raise to SpecFP but was base generated there, or the predicate did so raise but not via A-movement, the obligatoriness of the copula could no longer be derived from the theory of locality along these lines. Thus, the facts in (221) and (222) provide us with an argument for an A-movement analysis of inversion in specificational constructions.

Heycock and Kroch (1999: 373ff.) raise a number of objections to this argument in favor of an A-movement account of inversion in specificational copular

sentences. First, they note that there are surface subjects which, even though they cannot be analyzed as inverted predicates, do trigger the obligatory presence of *to be* in ECM and raising contexts. Consider the following examples:

(225) a. One hundred yen is the best value for the dollar.
b. The best value for the dollar is one hundred yen.

(226) a. The banks consider one hundred yen the best value for the dollar.
b. *The banks consider the best value for the dollar one hundred yen.

(227) a. The best value for the dollar has changed –
b. – it used to be one hundred and thirty yen, but now it is only one hundred.

The distribution of the copula in (226) is the same as in the above examples; yet to analyze *the best value for the yen* as an inverted predicate on account of its 'non-referential' interpretation would seem to commit one to a predicational analysis of this noun phrase in (227a), where it likewise receives a non-referential interpretation. Heycock and Kroch (1999: 373) admit that this batch of facts "does not, of course, entail the absence of predicate raising (i.e., 'inversion') in the copular examples, but it does greatly weaken the motivation for it." True equatives like *the Morning Star is the Evening Star* weaken it further, they go on to point out – for these, too, require the presence of *to be* in ECM/raising constructions, yet there seems to be no referentiality difference between the two NPs in equative constructions (or 'identity statements').[40]

The previous two arguments are at best circumstantial evidence against a predicate raising approach to inverse specificational constructions. A potentially much stronger argument (cf. Heycock 1994a; Heycock and Kroch 1999: 381) comes from ECM/raising examples featuring unquestionably specificational constructions with a variable < value order which, unlike the ones in (221b, b') and (222b, b'), do *not* trigger the presence of *to be*, as seen in (228a–c):

(228) a. If what you say is true, that would make the real murderer John!
b. The best solution remains instant retreat.
c. At this point our real problem becomes John.
d. *I guess that makes one good doctor John.
e. *An example of this kind becomes World War II.

The verbs *make*, *remain*, and *become* behave differently from *consider* and *seem* when it comes to their interaction with predicate raising. Heycock (1994a, 1998), Den Dikken (1995b), and Guéron (2001) all seek to relate this to the aspectual properties of the constructions involved; Guéron, in particular, argues that the verbs *make*, *remain*, and *become* take a small clause complement containing an abstract BE, an analysis which, if correct, would render (228) directly compatible

with the Moro/Den Dikken analysis. Whatever the fate of such analyses, however, we should note that the verbs in question do not simply accept *any* inverse copular sentence in their complement: while *One good doctor is John* and *An example of this kind is World War II* (cf. (123a)) are grammatical, the examples in (228d, e) (due to Jacqueline Guéron) are bad. Further research into constructions of the type in (228) is clearly called for. But at least on its face, the difference between (228a–c) and the ones brought up originally in support of the 'predicate raising as A-movement' analysis raises some questions.

Further questions are raised by an observation made by Blom and Daalder (1977: 113), in connection with their dual account of inversion in specificational sentences. They point out that their analysis allows, in principle, for inversion in ECM contexts – even though a derivation along the lines of (202a) (topicalization/left-dislocation) is unavailable, there is nothing, in principle, that would block an extraposition/right-dislocation analysis *à la* (202b). And indeed, Blom and Daalder (1977: 113) point out that (229) is grammatical (with the same characteristic colon intonation that products of (202b) have in general); and they claim that (230) is ambiguous between a reading in which *een geboren leider* is the value and one in which it is the variable (with intonation serving as a disambiguator):

(229) Het blijkt dat hij belangrijk vindt: een goede maaltijd.
it turns-out that he important finds a good meal

(230) a. Ik vind een geboren leider de aangewezen persoon.
I find a born leader the appropriate person
hyponym/subject hyperonym/predicate
b. Ik vind een geboren leider: de aangewezen persoon.
I find a born leader the appropriate person
hyperonym/predicate hyponym/subject

(230b), with its characteristic colon intonation, is derived via (202b). Blom and Daalder's discussion of inversion thus indicates that a categorical rejection of inversion under ECM verbs would be too strong. The asterisk on examples such as (221b) should hence be taken to mean that, in the absence of special intonation ('list' or 'colon' intonation), these sentences are unacceptable.

On a more general plane, the movement analysis of inverse copular sentences raises questions about the *trigger/motivation* for movement (at least, if one seeks to embed the analysis in a theoretical framework like that of Chomsky 1995c). For Guéron (1992, 1993), for whom the raised predicative noun phrase adjoins to a base-generated subject noun phrase headed by *pro*, one could speculate that the motivation for movement lies in the licensing (for content, at the very least) of this *pro*; that, however, would be a trigger for movement alien to the types of triggers identified in Chomsky (1995c). Moro (2000) takes the satisfaction of Kayne's (1994) Linear Correspondence Axiom to be the motivation for movement of either of the two constituents of the small clause in the copula's complement – when the subject moves, the result is a canonical copular sentence; when the predicate

moves, an inverse copular sentence results; the choice between the two options is free in principle, but one of the two constituents has to move, or else PF would be presented with a structure (the small clause) whose subconstituents (subject and predicate) entertain a relationship of symmetric c-command, a structure which cannot be linearized. Once again, this would locate the trigger for movement outside the bounds of the set of possible triggers in Chomsky (1995c). A third option (taken in Den Dikken 1995b) is to assume that Case is what drives movement: the subject needs to check its Case-feature but is not in a configuration, prior to movement, which would facilitate a checking relationship with Infl; movement of either the subject itself or its predicate would create such a checking relationship. For movement of the subject itself, this needs no discussion; that movement of the predicate also creates a configuration in which the subject can get its Case-feature checked will follow on the assumption (made independently in Den Dikken 1995b) that subject and predicate are co-indexed,[41] and that Spec–Head agreement in IP is a case of coindexation as well: as a result (given uniqueness of indexation), raising of the predicate to SpecIP creates a syntactic configuration in which the *in situ* subject is coindexed with Infl; checking of the subject's features against those of Infl thus becomes possible.

This Case-based account of the trigger of predicate raising has the advantage of capturing the fact that the post-copular subject receives/checks the Case assigned by Infl without further ado. Other possibilities exist, however: one would be to assume that the copula is a Case-assigner (either of an inherent (partitive) Case, *à la* Belletti 1988, or of a structural one); another would be to assume that the post-copular subject does not need Case because it is a focus (cf. Guéron 1992; Kayne 1994 on Heavy NP Shift as a case of *in situ*, non-Case checking noun phrases). We leave this issue open here.

4.3.2 *Extraction restrictions*

Already in Grosu (1972) it was noted that in specificational pseudoclefts with *wh* < XP order, extraction from the post-copular 'value'-XP is impossible (cf. 3.2 above). He also notes that the same is true for specificational copular sentences in general. The example in (231b) illustrates this for double-NP inverse specificational sentences. Moro (1997) points out, in addition, that not just extraction *out of* but also extraction *of* the post-copular 'value'-XP is impossible in inverse specificational sentences:

(231) a. I think that the cause of the riot was a picture of the wall.
b. *What do you think that the cause of the riot was a picture of *ec*?
c. *Which picture do you think that the cause of the riot was *ec*?

These two extraction restrictions have been brought up as definitional properties of inverse specificational constructions. Italian exhibits cliticization facts which parallel the *wh*-extraction data presented here; see Moro (1997: 28–29) for discussion. Note that Moro (1997: 59) claims that the predicate of canonical (i.e., non-inverted) copular sentences is also unextractable – but Heycock and Kroch (1999: 377)

point out that this claim runs counter to the general facts (his particular example being unacceptable for reasons tangential to the subject/predicate issue).

For Heggie (1988), the ungrammaticality of (231b) (and, by the same token, although she does not discuss this explicitly, of (231c) as well) fits in with her topicalization analysis of inverse specificational constructions – the deviance of these examples will then illustrate the familiar 'topic island' effect (cf. Ross 1986). However, the degree of deviance of the examples in (231b, c) is substantially stronger than that of a garden variety topic island effect (cf. ??*What do you think that to Mary, John would never give?*). It is likely, therefore, that the deeper roots of the ungrammaticality of these examples has to be sought elsewhere.

One possibility would be to look for the deeper roots in the domain of focus. What inverse specificational constructions all share in common is the fact that the post-copular constituent (or a subconstituent thereof) is in focus. One may wish to translate this structurally into the hypothesis that it is in a special, right-peripheral focus position, and that it is this which blocks extraction of and from the post-copular noun phrase. Guéron (1992, 1993) presents an analysis along these lines (see also Heggie 1988 for the suggestion that the post-copular noun phrase is in some sort of 'constructional focus' position in at least some inverse specificational sentences; also cf. Blom and Daalder's 1977 extraposition/right-dislocation approach to these constructions). The assumption that the post-copular constituent is in a focus position (an A' island position) will readily make sense of the ban on *sub*extraction from it. It is less clear, however, that it will also successfully rule out *wh*-extraction of the *entire* constituent: *wh*-constituents are themselves foci, and in languages (like English, unlike Hungarian) in which they must raise to SpecCP they may well do so, systematically, via a stop-over in the focus position (which is the surface position of *wh*-constituents in languages like Hungarian) along the way, to check their focus feature. If so, movement from the focus position on to SpecCP should be allowed in general; it will then be unclear why the post-copular focus of inverse copular sentences should be unable to undergo *wh*-movement.

Moro (1997) presents an alternative account of these facts which capitalizes on his raising-to-subject analysis of predicate inversion. Den Dikken (1995b) presents a variant of this account, based on the same overall analysis of inversion in specificational sentences. The key to both analyses is that the post-copular constituent in an inverse specificational construction is a structural *subject* – i.e., finds itself in a specifier position. We are familiar from early transformational work (cf. Ross 1986) with the fact that specifiers (left branches) are strong islands – the 'subject condition' severely penalizes extraction from subjects. The ungrammaticality of (231b) then follows, from the subject condition (Subjacency). That of (231c) can also be made to follow from the subject status of the post-copular deep subject, if one assumes that in its base position, the trace of the extracted 'value'-NP in (231c) cannot be properly governed, which causes an ECP violation. Den Dikken (1995b) presents a different analysis of (231c), one which does not resort to the ECP but capitalizes on the co-indexation of subject and predicate and the

Principle C effect (strong crossover) resulting from extraction of the subject across its A-raised predicate (but see n. 40).

Central to the account of (231b, c) sketched in the previous paragraph is the idea that the post-copular constituent in inverse specificational sentences is in a subject position. It is in this respect that this account rests crucially on the movement analysis of inversion in specificational constructions: if this order were base generated, the post-copular NP would not be a subject. Den Dikken's (1995b) crossover approach to the ungrammaticality moreover capitalizes on the idea that the fronted predicate lands in an A-position (rather than some A'-position).

Heycock and Kroch (1999: 376–378), in their repartee of the raising analysis of specificational sentences, object, however, that "true equative sentences" exhibit the same extraction restrictions, despite the fact here there is no sense in which one of the two NPs can be singled out as an underlying predicate (but cf., once again, Blom and Daalder 1977: 76 for a different perspective):

(232) a. *Who is your attitude towards Jones my attitude towards?
b. *Whose attitude towards Davies would you say that your attitude towards Jones is?

They go on to point out that "in inverse (and equative) sentences the extraction of the surface subject is just as ungrammatical as the extraction of the post-copular noun phrase" (p. 377) – a point overlooked by Heycock (1994a); Den Dikken (1995b); Moro (1997) and others.

(233) a. *Which of the themes do you think *ec* is that phrase of music?
b. *Whose opinion of Edinburgh do you think *ec* is your opinion of Philadelphia?

Heycock and Kroch are right to point out that these facts seriously undermine the extraction argument.

While they do not present a new account of the extraction facts, Heycock and Kroch (1999: 378, n. 9) do make a potentially interesting suggestion which needs to be looked into in future research. They suggest that it might be fruitful to look for an account of the extraction restrictions in the domain of "the only other symmetric constructions in natural language syntax: coordination." The following examples show that there is indeed a close parallel between coordination constructions and equatives – even in the domain of across-the-board extraction:

(234) a. *Which city is your opinion of *ec* my opinion of Philadelphia?
b. *Which city is your opinion of Edinburgh my opinion of *ec*?
c. Which city is your opinion of *ec* my opinion of *ec*?

(235) a. *Which city does John love *ec* and Mary despise Philadelphia?
b. *Which city does John love Edinburgh and Mary despise *ec*?
c. Which city does John love *ec* and Mary despise *ec*?

This parallel suggests that what we are dealing with in the domain of extraction restrictions is constraints on 'symmetric constructions'. If this is right, it strongly enhances an account of inverse specificational sentences as equative sentences, not as inverse predicational constructions.

4.4 Reversibility: concluding remarks

In this section we have discussed approaches to what is perhaps the most conspicuous earmark of specificational copular sentences: the reversibility of their major constituents. There are two basic questions that come up in the accounts of reversibility offered in the literature:

- Does reversal involve movement or not?
- If so, is it movement of the 'variable' to the left or of the 'value' to the right (or both), and what kind of movement (A or A') are we dealing with?

Approaches which take inverse specificational sentences to be a subtype of equative copular sentences (or 'identity statements') answer the first question negatively. Underlyingly predicational approaches to inverse specificational sentences of necessity give a positive answer to this question, and have come up with a variety of ways of deriving the surface word order from an underlying subject-predicate base. Evidence has been presented in the literature in favor of the underlying predicativity of inverse specificational sentences, as well as for leftward predicate movement and rightward subject displacement accounts of the inverted order. None of these accounts is flawless, however: many of the individual arguments face difficulties, as we have seen. This raises questions about the transformational account, and, concomitantly, about the predicational base of inverse specificational sentences as well.

The predicativity of the pre-copular constituent is also potentially called into question by the fact that there are severe restrictions on what qualifies as an 'invertible predicate' (cf. (58), above). Heycock and Kroch (1999: 379–380) review these restrictions (see also Declerck 1988; Guéron 1993, 2001) and conclude that what they show is "that it is not possible to treat any constituent appearing in [SpecIP] as predicated of a postcopular argument." This stands out as perhaps the most serious obstacle to a predicate raising analysis of inverse specificational sentences. Guéron (1993, 2001), however, presents a concrete perspective on how to analyze these restrictions (which are mostly of a quantificational nature) from a perspective of an approach which starts out from an underlying subject-predicate relationship.

On the other hand, an analysis of inverse specificational sentences which treats them on a par with equative copular constructions (or 'identity statements') will need to face the fact that, despite their similarities in the domains highlighted by Heycock and Kroch, there are differences between the two as well – see section 1.3.

With these conclusions concerning the analysis of specificational copular sentences drawn, we have now reached the final destination of the code-share

flight operated by double-NP specificational sentences and specificational pseudoclefts. From this point on, we will leave constructions of the type *The best candidate is John* behind, and focus instead on two questions arising specifically in the context of specificational pseudoclefts, concerning:

- the status of the *wh*-clause,
- the relationship between specificational pseudoclefts and their simple clause counterparts.

We will address these two questions in turn, in sections 5 and 6, respectively.

5 The *wh*-clause: Question or free relative?

We are gradually making our way towards a discussion of the theoretical approaches to the relationship between specificational pseudoclefts and their simple clause counterparts. But before we can assess these, we will need to address another question: what is the status of the *wh*-clause of specificational pseudoclefts? Since *wh*-clauses with *what* as their first constituent (the canonical realization of the *wh*-clause of specificational pseudoclefts; on the limited possibility of other *wh*-elements, see section 2.1) without subject-auxiliary inversion come in two general varieties, what we need to determine is which of the two, if either, we are dealing with in a specificational pseudocleft:[42]

(236) *The* wh-*clause of specificational pseudoclefts:*
  a. a free relative,
     (cf. *What John did is a disgrace*.)
  b. an embedded *wh*-question,
     (cf. *I wonder what John did*.)
  c. a third type.

In the literature on specificational pseudoclefts, both positions in (236a, b) have in fact been taken – see Akmajian (1979), Blom and Daalder (1977), Heggie (1988), Declerck (1988), Guéron (1992), and references cited there for proponents of (236a); see Clifton (1969), Faraci (1971), Ross (1972a), Seuren (1985), Den Dikken et al. (2000), and references cited there for adherents of (236b).

The issue is certainly not straightforwardly settled. The fact that it has turned out to be extremely contentious finds its roots in the fact that neither (236a) nor (236b) fits the bill like a glove – on both sides there are familiar properties which fail to be matched by the *wh*-clause of specificational pseudoclefts. We will structure the discussion as follows. Section 5.1 will discuss general theoretical and conceptual arguments in favor each of the two approaches in (236a) and (236b). Section 5.2 is subsequently devoted to specific empirical pros and cons of the free relative approach, which, as we will see, typically can be cashed in as arguments in favor of the *wh*-question analysis. Section 5.3 then presents a list of

problems for the *wh*-question approach, which, conversely, fall into place on the free relative approach. Finally, section 5.4 addresses problems shared by both approaches, and considers option (236c).

5.1 General theoretical and conceptual issues

For proponents of a predicational approach to specificational pseudoclefts (of all sorts) according to which the *wh*-clause functions as a (small clause) predicate (cf. section 4.1.2 above for discussion), a free relative approach to the *wh*-clause is of course the only option – we are not aware of any *wh*-questions being used predicatively:

(237) a. Home is where the heart is.
b. *Home is whether you like it there.

On the other hand, for those who do not subscribe to a predicational analysis, there is no argument here in favor of a free relative approach to the *wh*-clause.

Adherents of the free relative approach may also capitalize on the fact that the *wh*-clause of specificational pseudoclefts typically alternates with a headed relative, with heads like *one/thing/reason/time/way*, etc. (the '*th*-clefts' of Collins 1991). The properties of such '*th*-clefts' are very similar to those of specificational *wh*-clefts; as a result, scholars have generally analyzed them on a par. If they are indeed identical in their distribution, this may be taken as an argument to liken the *wh*-clause of *wh*-clefts to a relative clause construction. Hankamer (1974) stresses more than once, however, that the two, though similar, are not identical, saying that the headed relative cases "*identify* rather than predicate; and that the allowable subjects of these constructions are very restricted, and do not include [headed relative] clauses" (n. 9). It may be wrong, therefore, to attach too much weight to the fact that there are contexts in which the *wh*-clause of a specificational pseudocleft can be replaced with a headed relative.[43]

As for the *wh*-question approach, its general advantage is that it captures the connection between specificational pseudoclefts and question-answer pairs, which many scholars have drawn a good deal of attention to (see Faraci 1971; Ross 1972b; Akmajian 1979; Higgins 1979; etc., and more recently, Ross 1999; Den Dikken et al. 2000; and Schlenker 2003b); cf. (238). Ross (1999) points out specifically that the *wh*-clause of a specificational pseudocleft corresponds to what he calls a 'conjunctive question', as distinct from a 'disjunctive question' – these are different in that the answer to the former "is presupposed to be known to someone in the sentence . . . whereas for disjunctive questions, no answer is known" (Ross 1999).

(238) a. What John does for a living is write novels.
b. What does John do for a living? – Write novels.

Of course, the connection between specificational pseudoclefts and question-answer pairs can in principle be established in ways other than one which takes

the *wh*-clause of the former to be a *wh*-question: the link could, for instance, be established at the level of semantics or even pragmatics.

Akmajian (1979: 78ff.) argues, however, that exactly when it comes to the semantics, the *wh*-clause of specificational pseudoclefts is in fact *not* identical with *wh*-questions in one important respect: referentiality. He makes this point – that the *wh*-clause of specificational pseudoclefts is referential while a *wh*-question is not – on the basis of empirical arguments which we will address in more detail below. On a higher theoretical plane, however, matters of referentiality are extremely contentious precisely in the domain of specificational copular sentences (cf. the discussions in Blom and Daalder 1977; Higgins 1979; Declerck 1988; and Keizer 1992; see section 1, above, for an overview).

In themselves, these broad theoretical or conceptual arguments will not tip the balance in favor of or against either of the two approaches in (236a) and (236b). What we need is explicit empirical arguments for or against them. This is what we turn to next.

5.2 *Empirical evidence against free relatives and in favor of* wh-*questions*

(i) *The ban on* -ever (cf. section 3.2) One respect in which the *wh*-clause of specificational pseudoclefts differs empirically from free relatives, and instead patterns with *wh*-questions, concerns the distribution of *-ever*. We have come across this fact in section 3.2: while free relatives freely allow the addition of *-ever*, the *wh*-clause of specificational pseudoclefts does not (cf. (239) with (241)); in this respect it is like a *wh*-question (cf. (240)):

(239) What(ever) John does is interesting. (free relative)

(240) I wonder what(*ever) John does. (*wh*-question)

(241) What(*ever) John does is write novels. (specificational pseudocleft)

Heggie (1988) and Iatridou and Varlokosta (1998) seek to derive this fact from a predicate approach to the free relative, but as was discussed in section 3.2, this line of thought is problematic. As far as we can tell, the ban on *-ever* stands out as an unresolved problem for an analysis of the *wh*-clause as a free relative. (See also Dayal 1997 for an attempt at empirically undermining the problem; her examples do not successfully alleviate the problem, however: see n. 22 for discussion.)

(ii) *PP pied-piping* (cf. section 3.3) Another property of the *wh*-clause of specificational pseudoclefts that has been noted before in this work (cf. section 3.3, above) and which plays a role in the debate concerning the analysis of the *wh*-clause is the fact that PP pied-piping is allowed inside this clause in some languages (though not in all), crucially despite the fact that those languages

strictly forbid pied-piping in free relatives (cf. esp. Den Dikken et al. 2000: 72 for discussion).

(242) *Free relative:*
*Mit wem Maria gesprochen hatte kam gerade ins Zimmer.
with whom Maria spoken had came just into-the room

(243) *Wh-question:*
Mit wem hat Maria gesprochen?
with whom has Maria spoken

(244) *Specificational pseudocleft with* wh < *XP order:*
Mit wem Maria gesprochen hatte, war mit Peter.
with whom Maria spoken had was with Peter

It should be pointed out, however, that PP pied-piping works only in those specificational pseudoclefts that have a word order in which the *wh*-clause precedes the 'value'-XP. (245) is ungrammatical:

(245) *Specificational pseudocleft with XP* < wh *order:*
Mit Peter war mit wem Maria gesprochen hatte.
with Peter was with whom Maria spoken had

This is one of a variety of ways in which specificational pseudoclefts with *wh* < XP order are different from their congeners with XP < *wh* order. We will encounter more of these in what follows. For Den Dikken et al. (2000) these mismatches are an important argument for an analysis which assigns different underlying syntactic structures to the two types of specificational pseudocleft: a topic-comment structure for *wh* < XP and a free relative structure for XP < *wh*. The latter analysis will of course straightforwardly relate the ill-formedness of (245) to that of the free relative construction in (242), while a topic-comment structure in which the *wh*-clause is analyzed as a *wh*-question accommodates the link between (243) and (244).

(iii) *Multiplicity* Free relatives in languages like English do not allow multiple *wh*-elements inside them – (246) is ungrammatical. Multiple interrogation, on the other hand, is perfectly possible in such languages, as shown in (247). The distribution of multiple *wh*-elements thus constitutes another testing ground for the hypotheses in (236a) and (236b).

(246) *[Who ordered what] should come fetch it at the counter. (free relative)

(247) I would like to know [who ordered what]. (*wh*-question)

Testing the hypotheses against this criterion actually turns out to be somewhat tricky, however. What one needs here is examples involving a rather complex

'value'-XP: one which contains values for all the *wh*s in the *wh*-clause. The kinds of pseudoclefts one is then confronted with are the kinds of cases which involve a full-clausal post-copular constituent (which, if the conditions are met, may undergo some degree of ellipsis). Such pseudoclefts (illustrated in (248)) do not meet with general enthusiasm among native speakers, however: while Ross (1972a) accepts them, Akmajian (1979) does not like them, and Higgins (1979: 86) finds them "irremediably anacoluthic." In (249), we present some attested examples from Geluykens's (1984) corpus-based study of English clefted sentences.[44]

(248) %What Tom ordered was Tom ordered a beer.

(249) a. All you do is you turn it in to the red mark.
b. All I did was I did Montaigne.
c. What you do is you look at the return.
d. What you do is you go.

In the light of this (see also section 6.1, below), it therefore will not surprise the reader that Ross's judgment of multiple *wh*s in specificational pseudoclefts differs from that reported by Akmajian and Higgins – the following examples reproduce their respective illustrations:

(250) a. %Who ordered what was Tom (ordered) a beer and Jim a watermelon flip.
b. %Who ate what was Jane ate spaghetti and Chica (ate) hamburger.
(Ross 1999)

(251) *Who kissed whom was John kissed Mary. (Akmajian 1979: 76)

(252) *What Mary gave who was John a book. (Higgins 1979: 67)

It may well be that there is substantial dialectal and idiolectal variation when it comes to multiplicity. Thus, while for Dutch, Blom and Daalder (1977) report that it fails (cf. (253)), Meinunger (1997) presents grammatical examples for German (cf. (254)):[45]

(253) *Wat zij waar gekocht heeft zijn twee aandelen Haagse Hopjes op
what she where bought has are two shares 'Haagse Hopjes' on
de beurs.
the stock-exchange

(254) ?Wer hier wem geholfen hat war die Hilde dem Heinz (und nicht
who here whom helped has was the Hilde the Heinz and not
umgekehrt).
reversed

The variation among speakers certainly raises questions. But what one may conclude at the very least is that multiplicity is not universally rejected in

specificational pseudoclefts – at least, not in those with *wh* < XP word order; it is entirely impossible in XP < *wh* cases (cf. (255), (256)). When one compares this to the fact that there is no variation among speakers at all when it comes to the ungrammaticality of multiplicity in free relatives in the languages considered (English, Dutch, German), examples like (250) and (254) present us with at least a weak case against the free relative approach to the *wh*-clause of specificational pseudoclefts with *wh* < XP order. At the same time, the categorical unacceptability of (255) and (256) tells us that specificational pseudoclefts with the order XP < *wh* do not feature a *wh*-question; the properties of their *wh*-clause are in fact similar to those of free relatives. (See Den Dikken et al. 2000 for discussion.)

(255) *Tom (ordered) a beer and Jim a watermelon flip was who ordered what.

(256) *Die Hilde dem Heinz war wer hier wem geholfen hat.

(iv) *Topicalization inside the* wh-*clause* Free relatives categorically disallow topicalization – regardless of whether the topic is placed to the left or to the right of the *wh*-word (cf. (257)). English *wh*-questions, on the other hand, have been noted to be compatible with topicalization – and as Pesetsky (1989) notes, the position of the topic is different in root and embedded *wh*-questions: in the former, the topic must precede the *wh*-phrase, while in the latter, the topic follows the *wh*-phrase (cf. (258) and (259)). The *wh*-clause of specificational pseudoclefts differs radically from free relatives: it allows topicalization. As a matter of fact, it allows it on either side of the *wh*-word (cf. (260)). This was first pointed out in Den Dikken et al. (2000: 71).

(257) a. *[To Mary, what he gave] caused a scandal. (free relative)
b. *[What to Mary, he gave] caused a scandal.

(258) a. ?To Mary, what will he give? (root *wh*-question)
b. *What <will> to Mary, <will> he give?

(259) a. *He is wondering [to Mary, what he will give]. (emb. *wh*-question)
b. ??He is wondering [what to Mary, he will give].

(260) a. ?[To Mary, what he will never give] is any wine. (spec. pseudocleft)
b. ??[What to Mary, he will never give] is any wine.

Interestingly, then, while the *wh*-clause of specificational pseudoclefts certainly does not behave like a free relative when it comes to topicalization, it seems to blend the properties of root and embedded *wh*-questions. Den Dikken et al. conclude from this that the *wh*-clause of specificational pseudoclefts is indeed a *wh*-question – but it is neither a root question nor an embedded question; it is a hybrid case with properties of both types of question.

We stress this here because most of the arguments against the *wh*-question analysis have been directed specifically towards an analysis of the *wh*-clause of specificational pseudoclefts as an *embedded* question, as we will see in the next section.[46]

5.3 *Empirical evidence against* wh*-questions and in favor of free relatives*

(v) *Determiners* (Izvorski 1997; Alexiadou and Giannakidou 1998; Ross 1999) While the previous section concerned itself with problems for a free relative approach to the *wh*-clause of specificational pseudoclefts, something which seems to stand out as a strong recommendation for such an analysis is the fact that in languages like Bulgarian (Izvorski 1997), Greek (Iatridou and Varlokosta 1998; Alexiadou and Giannakidou 1998; the latter also refer to Spanish and Catalan), and Portuguese (Ross 1999), the *wh*-clause of these constructions is obligatorily adorned with an affixal definite determiner (cf. (261) for Bulgarian, (262) for Greek, (263) for Portuguese). Such an affixal determiner is typical of free relatives in these languages; on the other hand, it never occurs on *wh*-questions in Bulgarian and Greek (though it does in Portuguese: *O que é que aconteceu?* 'What happened?').

(261) Kakvo-*(*to*) *pro* kaza bese ce Maria e umna.
what-def said was that Maria is smart
'What he said was that Maria is smart.'

(262) Afto pu ipe o Kostas ine oti i ji ine epipedi.
this that said the Kostas is that the earth is flat
'What Kostas said is that the earth is flat.'

(263) O que Boris roubou foi o Lavoris.[47]
the what Boris stole was the Lavoris
'What Boris stole was the Lavoris.'

As Den Dikken et al. (2000: 71, n. 23) point out, however, specificational pseudoclefts in these languages are characterized by two further properties which make them different from their English congeners: (i) they never allow full-IP 'values', and (ii) they never exhibit connectivity with respect to negative polarity item licensing. They might hence instantiate their 'Type B'.[48]

(vi) *No yes/no-questions* (Huddleston 1971: 243; Akmajian 1979: 76) The second problem for an assimilation of the *wh*-clause of specificational pseudoclefts to (embedded) *wh*-questions springs to mind immediately. While *wh*-questions come in two flavors (constituent questions and yes/no-questions), the *wh*-clause of specificational pseudoclefts comes only in one:

(264) a. What John did was unclear.
b. Whether John did it (or not) was unclear.

(265) a. What John did was kiss Mary.
b. *Whether John did it (or not) was {yes/he did}.
*Whether John did it (or not) was {no/he didn't}.

From the perspective of proponents of the view that there is a close syntactic relationship between question-answer pairs and specificational pseudoclefts (with *wh* < XP orders), the ungrammaticality of (265b) is surprising – after all, yes/no question-answer pairs of the type in (266) are perfectly well formed. (Notice, though, that (266) involves a *root* question, not an embedded question.)

(266) Did John do it (or not)?
a. (Yes,) he did.
b. (No,) he didn't.

Of course, a free relative approach to the *wh*-clause of specificational pseudoclefts encounters no difficulty accounting for the deviance of (265b): there are no free relatives with *whether* (for the same reason that there are no relative clauses with *whether* either).

That *if* does not occur in the *wh*-clause of specificational pseudoclefts either is less of a surprise: *if* is ruled out as the complementizer of subject questions as well:

(267) *If John did it (or not) was unclear.

(268) *If John did it (or not) was {yes/he did}.
*If John did it (or not) was {no/he didn't}.

(vii) *No adverbs* (Blom and Daalder 1977: 22; Akmajian 1979; *contra* Faraci 1971) Faraci (1971), who is an early champion of the *wh*-question analysis, mentions as one of the arguments in its favor the fact that adverbs like *exactly* can be added to both the *wh*-clause of specificational pseudoclefts and *wh*-questions, but not to free relatives. Akmajian (1979: 75) points out, however, that he does not accept Faraci's pseudocleft example in (269); likewise, Blom and Daalder (1977: 22) present a Dutch triplet which makes the pseudocleft pattern with free relatives rather than with *wh*-questions (cf. (272–274); in (273) we have corrected a word order mistake in Blom and Daalder's original example):

(269) %What, exactly, John bought was a car.

(270) What, exactly, John bought is not clear.

(271) *I threw out what, exactly John bought.

(272) *Wat ik precies gezegd heb was dat samenwerking niet meevalt.
what I exactly said have was that cooperation not with-falls
(i.e., isn't easy)

(273) Ik herinner me niet wat ik precies gezegd heb.
I recall me not what I exactly said have

(274) *Wat ik precies gezegd heb gelooft hij niet.
what I exactly said have believes he not

(viii) *No clefting inside* wh-*clause* (Blom and Daalder 1977: 22; Akmajian 1979; *contra* Faraci 1971) (cf. section 3.3) Faraci (1971) also claims that the *wh*-clause of specificational pseudoclefts can contain a cleft. But most authors (cf. Akmajian 1979 for English, Blom and Daalder 1977 for Dutch) disagree and find such combinations impossible.

(275) %What it is that John bought was a car.

For those speakers (the vast majority) for whom (275) is bad, it appears at first sight that there is a difference between the *wh*-clause of specificational pseudoclefts and *both wh*-questions *and* free relatives (*contra* Blom and Daalder 1977: 22) – (276) is grammatical, and so are the free relative examples in (277) (cf. Akmajian 1979: 80):

(276) I don't know what it is that John bought.

(277) a. Whatever it was that John bought cost him a lot of money.
b. She threw away whatever it was that John bought.

Thus, while Faraci (1971) construes (275) (which he finds grammatical) as an argument in favor of a *wh*-question approach, and while Blom and Daalder (1977: 22) bring up a Dutch example like (275) (which they find ungrammatical) as evidence in favor of a free relative approach to the *wh*-clause of specificational pseudoclefts, neither argument goes through unscathed: as Akmajian points out, the *wh*-clause of specificational pseudoclefts is identical neither with *wh*-questions nor with free relatives.

As Akmajian goes on to point out, however, it is not just any free relative that accepts internal clefting: replacing *whatever* with *what* in (277) delivers a substantially degraded result. The generalization seems to be that "*non-referential* clauses may occur in clefted form" (Akmajian 1979: 81; original emphasis); and addition of *-ever* makes free relatives non-referential. If this is correct, the fact that clefting inside the *wh*-clause of specificational pseudoclefts is impossible will reduce to the same factor that is responsible for the impossibility of *-ever* in such clauses: their referentiality (see also (ix), immediately below). In having the ability to be referential, the *wh*-clause does indeed pattern with free relatives rather than with *wh*-questions, which obviously cannot be referential in any context.

(ix) *Appositive relative clauses* (Akmajian 1979: 80) In the same context in which he assesses the cleft-*cum*-pseudocleft argument, Akmajian (1979: 80) also brings

up an additional argument (original with him) that casts doubt on the *wh*-question status of the *wh*-clause of specificational pseudoclefts, and enhances their free relative-hood. The argument is based on the fact that appositive relative clauses can be added to the *wh*-clause of specificational pseudoclefts but not to *wh*-questions (cf. (278) vs. (279)). The same argument can be built on the distribution of parentheticals (cf. Akmajian 1979: 102, n. 28); this will not be shown here.

(278) What John got from his father yesterday, which was very expensive, was that Jaguar XKE.

(279) *What John got from his father yesterday, which was quite expensive, is a mystery.

(280) What John got from his father yesterday, which was very expensive, was broken two days later.

Once again, the *wh*-clause of specificational pseudoclefts patterns with free relatives (see (280)) rather than with *wh*-questions – as a function of its referentiality, according to Akmajian.

(x) *Else/ever* (Akmajian 1979: 75) Problematic for the question analysis of the *wh*-clause of specificational pseudoclefts as well is the fact that, pointed out by Akmajian, that *else* and *ever*, while fine in *wh*-questions, are impossible in pseudoclefts:

(281) a. *What else he bought was a car.
b. *What he ever worked on was his thesis.

(282) a. What else he bought is not clear.
b. What he ever worked on is simply not known.

(283) a. *What else he bought was very expensive.
b. *What he ever worked on took him a long time to finish.

Though Akmajian does not provide free relative examples, the sentences in (283) show that what we are dealing with here is another property of the *wh*-clause of specificational pseudoclefts which makes it pattern with free relatives and not with *wh*-questions.

(xi) *Any* (Akmajian 1979: 76) Akmajian makes a similar point by drawing attention to the distribution of negatively polar *any* – it is found in *wh*-questions but not in the *wh*-clause of specificational pseudoclefts, nor (though Akmajian does not show this himself) in free relatives:

(284) *What makes any sense is not John's theory.

(285) What anyone can do about the war is unclear.

(286) *What anyone can do about the war is not important.

This argument is dependent more on the relationship between the *wh*-constituent and the external negation, it seems, than on the internal syntax of the *wh*-constituents themselves (cf. the fact that even (285) becomes unacceptable when *unclear* is replaced with *clear*). It may be important in this context that *unclear* in (285) is an ergative adjective (cf. Cinque 1990b), hence will c-command the *wh*-clause in the underlying representation of this example; in (284) and (286) we presumably do not find such a c-command relationship at any point in the derivation. The force of this particular argument is therefore less than crystal clear.

Be that as it may, in the foregoing we have found that there are a number of reasons to use care when assessing the claim that the parallelism between question-answer pairs and specificational pseudoclefts suggests an analysis of the *wh*-clause of the latter as a *wh*-question. There are a number of respects in which the two differ; and in some of those cases we actually find that there is in fact a closer kinship between the *wh*-clause of specificational pseudoclefts and free relatives (though the relationship between those two is by no means one of identity either).

5.4 *Problems either way*

No matter which tack one takes when it comes to the analysis of the *wh*-clause, one inevitably runs up against the problem that there at least two respects in which it behaves neither like a free relative nor like a *wh*-question.

(xii) *No complementizers* (Blom and Daalder 1977: 22) While, as we saw in (267–268), English *if* does not occur in subject questions and the *wh*-clause of specificational pseudoclefts alike, its cognate *of* in Dutch does occur in subject questions. But according to Blom and Daalder (1977: 22) it still fails to rear its head in the *wh*-clause of Dutch specificational pseudoclefts – interestingly, not just when it is 'on its own' (in a yes/no-question) but also when it follows a *wh*-word (in constituent questions, which in spoken varieties of Dutch allow sequences of a *wh*-word/phrase and the complementizer *of*; see e.g. Zwart 1997 for exemplification):

(287) a. Wat Jan gedaan had was onduidelijk.
what Jan done had was unclear
b. Of Jan het gedaan had was onduidelijk.
if Jan it done had was unclear
c. Wat of Jan gedaan had was onduidelijk. (= (287a))
what if Jan done had was unclear

(288) a. Wat Jan gedaan had was Marie kussen.
what Jan done had was Marie kiss
b. *Of Jan het gedaan had was {ja/inderdaad}.
if Jan it done had was yes/indeed
c. ?*Wat of Jan gedaan had was Marie kussen.
what if Jan done had was Marie kiss

Blom and Daalder (1977: 22), who draw attention to the deviance of (288c), point out that in this respect the *wh*-clause of specificational pseudoclefts bears a resemblance to free relatives, which likewise do not allow *wh- of* sequences:

(289) *Wat of ik zeg valt niet in goede aarde.
what if I say falls not in good earth

However, while we agree that (288c) is deviant, it does seem that it is noticeably less bad than the free relative case in (289), which is entirely impossible. If this is right, it makes the *wh*-clause of specificational pseudoclefts a kind of hybrid of free relatives and embedded *wh*-questions.

It is important to point out at this time that Blom and Daalder's argument based on (288) is built on the premise that, if the *wh*-clause of a specificational pseudocleft is to correspond to a *wh*-question to begin with, it should resemble an embedded *wh*-question rather than a root *wh*-question – a premise which, in its turn, is based on the impression that the *wh*-clause finds itself in clause-internal position, hence cannot itself be a root clause.

But we have seen in the examples in (262) (from Den Dikken et al. 2000) that the *wh*-clause of specificational pseudoclefts is neither a pure embedded clause, nor a perfect copy of a root clause: it has properties in common with both (in particular, it allows topics to be positioned either to the left or to the right of the *wh*-element in English). *Tertium datur*, in other words: there seem to be *wh*-questions which are neither root nor embedded clauses, thanks to their unique position in the syntactic tree structure (the SpecTopP position of Den Dikken et al. 2000). In this respect, option (236c) is presumably closer to the truth than pure versions of (236a) or (236b).

This said, the fact that the complementizer *of* is not perfect in Blom and Daalder's example (288) is less of a surprise than Blom and Daalder made it out to be. In effect, we may want to liken the *wh*-clause of specificational pseudoclefts to echoic *wh*-questions of the type illustrated in (290b), which likewise seem to have a status in between root and non-root clauses – non-root when it comes to word order; root with respect to the fact that it does not appear to be embedded under any predicate. In both these respects, it matches the *wh*-clause of pseudoclefts on the analysis of 'Type A' specificational pseudoclefts propounded in Den Dikken et al. (2000). It may be interesting to note, therefore, that adding *of* to (290b) seems somewhat less felicitous than it is in run-of-the-mill embedded *wh*-questions:[49]

(290) a. Speaker A: Wat heb je gedaan?
what have you done
b. Speaker B: Wat (?of) ik gedaan heb? – De auto gewassen.
what if I done have the car washed

Whatever the precise outcome of this discussion, it seems clear that, if the *wh*-clause of specificational pseudoclefts is to be likened to *wh*-questions at all, it must be assumed to be a cross-breed of a root and a non-root question. Possibly, this hybrid root/non-root clause could embody precisely those properties of free relatives that are shared by the *wh*-clause of specificational pseudoclefts. It seems unlikely, though, that it will also help us explain one other respect in which the *wh*-clause of specificational pseudoclefts is like no other *wh*-construction in the grammar:

(xiii) *Restrictions on* wh (cf. section 2.1) Most speakers do not accept *who* – or at least not very readily – as the *wh*-element of the *wh*-clause of specificational pseudoclefts; the only exception is constituted by pseudoclefts featuring *that* in pre-copular position (*That's who I meant*). Likewise, the *wh*-words *why* and *how* are severely restricted in pseudoclefts, as noted in section 2.1. All of these three *wh*-elements occur readily, however, in free relatives with *-ever* (though the presence of *-ever* seems essential here). We are not aware of any approach to the syntax of the *wh*-clause of specificational pseudoclefts which has succeeded in accounting for the restrictions on the form of the *wh*-element.

This concludes our discussion of the vicissitudes of the free relative and *wh*-question analyses of the *wh*-clause of specificational pseudoclefts. On balance, the following tentative conclusions seem legitimate:

- The *wh*-clause of specificational pseudoclefts of 'Type A' (see section 2.3) is a hybrid type of *wh*-question, with properties of root and embedded *wh*-questions combined.
- The *wh*-clause of specificational pseudoclefts of 'Type B' is a free relative (see esp. the facts from Bulgarian and Greek discussed at the beginning of section 5.3).

Clearly, though, neither free relatives nor *wh*-questions fit the bill perfectly. Further research will be needed to clarify the precise status of the *wh*-clause of specificational pseudoclefts. (For completeness' sake, we note in passing that for *predicational* pseudoclefts there is no doubt about the fact that the *wh*-clause of these constructions is a free relative.)

6 Analyses of the relation between specificational pseudoclefts and simple sentences: transformation or base generation?

The reason why generative linguists became interested in specificational pseudocleft sentences in the early days of transformational grammar is not difficult to

see – specificational pseudoclefts have a close relationship with their simple clause counterparts, and it seemed clear that a transformational theory of grammar should somehow be able to capture this relationship in transformational terms. The urge to meet this desideratum led to two competing types of transformational approach to specificational pseudoclefts:

- the deletion analysis (Peters and Bach 1969; Clifton 1968b; Emonds 1970; Ross 1972a; Seuren 1985; Kayne 1998: 26; Schlenker 2003b; Den Dikken et al. 2000),
- the extraction analysis (Chomsky 1972; Akmajian 1979; Moreau 1971; Grosu 1972, 1973; Verkuyl 1972: 146).

In response to these two transformational analyses, for which he listed a variety of problems, Higgins (1979) defended a non-transformational account, adopted also by Blom and Daalder (1977):

- the base generation analysis (Higgins 1979; Blom and Daalder 1977).

In the more recent principles-and-parameters literature, the restrictions on movement transformations are substantially stricter than they were in the sixties and seventies. Not surprisingly, therefore, the extraction analysis (which picks the 'value'-XP up from out of the *wh*-clause and raises it to post-copular position) has been abandoned in current GB-based work almost without exception – a notable non-conformist approach being presented by Bošković (1997a), which in a sense reverses the classic extraction analysis by lowering the 'value'-XP into the *wh*-clause (in covert syntax), thereby creating the simple sentence covertly out of its complex overt counterpart. Heycock and Kroch (1999) propose a different type of covert operation (later in the covert component, beyond LF 'proper') with the same effect of covertly reshaping the pseudocleft into its simple sentence paraphrase. We may refer to these two approaches jointly as follows:

- the covert reconstruction analysis (Bošković 1997a; Heycock and Kroch 1999).

All the various approaches to the (overt and covert) syntax of specificational pseudoclefts are meant to serve, in one way or another, the general purpose of accounting for the parallels between these and their simple clause counterparts – especially when it comes to connectivity/connectedness effects, which have played a major role in the discussion throughout the decades.

It is our purpose in what follows to give brief outlines of the various types of analysis of specificational pseudocleft constructions summed up in the previous paragraphs, with short discussions of their pros and cons (as they have been noted in the extensive literature on the construction). For detailed discussions, we refer the reader to the references provided at each point.

6.1 Deletion analyses

We will start our discussion with some remarks about the deletion analysis. It was first proposed by Peters and Bach (1968), and also adopted by Emonds (1970), Ross (1972a) and Seuren (1985); in recent years, Ross (1997), Den Dikken et al. (2000), and Schlenker (2003b) have revamped the account (the last-mentioned only for one particular subset of specificational pseudoclefts: their 'Type A' cases, which feature *wh* < XP exclusively, and are characterized by the fact that they and only they allow for NPI connectivity between the *wh*-clause and the post-copular 'value').

The deletion analysis is easy to describe in general terms. It assumes that the post-copular constituent of a specificational pseudocleft such as *What John read was novels* is a full-fledged clause corresponding to the clause contained in the *wh*-constituent in pre-copular position. Ellipsis rules subsequently come in to reduce the underlying full clause to that subpart of it which is pronounced on the surface:

(291) [[*What John read ec*] [*was* [~~*John read*~~ *novels*]]].

Ellipsis inside the full-clausal post-copular constituent is optional in principle: when it does not apply, the result is a specificational pseudocleft of the type in (292b), which, as Ross (1972a: 89, 1999) has stressed in particular (see also Clifton 1969: 38; Kayne 1998: 26; Den Dikken et al. 2000; Schlenker 2003b), is acceptable in spoken varieties of English – though this is a topic of some debate in the literature. To Higgins (1979: 86) these sentences sound "irremediably anacoluthic" (see also Blom and Daalder 1977: 20 for the claim that they are impossible in Dutch; but see Drubig 1997 for attested examples from German). But Seuren (1985: 297) declares in characteristically eloquent terms that "this construction type is extremely common in spoken English of all sociolinguistic levels, even though some who frequently use it will hotly deny that they do." See also the spontaneously produced examples in (249), from Geluykens's (1984) corpus-based study.[50]

(292) a. What John read was novels.
b. What John read was he read novels.

(249) a. All you do is you turn it in to the red mark.
b. All I did was I did Montaigne.
c. What you do is you look at the return.
d. What you do is you go.

The occurrence of full-clausal 'values' in specificational pseudoclefts serves as one of the key arguments for the deletion analysis.

Blom and Daalder's (1977) attempt as discrediting this argument for the deletion analysis based on the fact that the post-copular clause may not contain a complementizer (cf. **What John read was that he read novels*) has little force – it seems to be built on the premise that the only thing the post-copular clause could be is an *embedded* clause; but on Den Dikken et al.'s (2000) deletion analysis, it actually functions as the *root* of the pseudocleft construction as a whole.

Another argument that has been taken to recommend this analysis is the fact that it straightforwardly captures the links between specificational pseudoclefts and question-answer pairs. We discussed these links in section 5, above; see especially Den Dikken et al. (2000) for a detailed investigation of the parallels between the two construction types.

Apart from these considerations, Peters and Bach (1968) mention the grammaticality of such specificational pseudoclefts as (293) as a further argument in favor of the deletion analysis:

(293) What I saw was Mary.

On the deletion analysis, the selectional restrictions of the verb are met in both the *wh*-clause (by *what*) and the (underlyingly clausal) post-copular 'value' (by *Mary*); no clash in features will arise between *what* and *Mary*, simply because *what* is not actually a 'replacement' of *Mary* on the deletion analysis (it *would* be on the extraction analysis – see (309) below).

Blom and Daalder (1977: 17–18) (who also refer to Daems 1974: 85 in this context) take care to reject this argument for the deletion analysis, however. They stress that for them, the Dutch counterpart of (293) fails (cf. (294); note that Akmajian 1979: 99, n. 18 also notes that (293) for him is not perfect), and that even in English it is by no means generally possible to use *what* as the *wh*-word of specificational pseudoclefts with a [+human] 'value' (cf. (295)). What the facts show, according to Blom and Daalder, is that *what* works well in specificational pseudoclefts with a [+human] 'value' *only* on a 'non-specific' interpretation of the 'value' NP (paraphrasable as 'anyone who . . .' – see (296); cf. also Akmajian 1979: 100, n. 18: "*Mary* . . . is abstract in that particular context"). Blom and Daalder suggest (without elaborating) that this non-specific interpretation neutralizes the feature [+human] for the NP in question; and they then go on to point out that, if this is right, Peters and Bach's original argument in favor of the deletion analysis actually mutates into an argument *against* it: if we do find, after all, that there are general correspondences (when it comes to the feature [+human]) between the *wh*-word and the 'value', such is unexpected on a deletion approach to specificational pseudoclefts.

(294) *Wat we zagen was je moeder.
what we saw was your mother

(295) *What I amazed was Mary.

(296) a. Wat ze moeten zien te vinden is iemand met een rijbewijs.
what they must see to find is someone with a driver's license.
'What they will need to find is someone with a driver's license.'
b. Wat we nodig hebben is iemand met geld.
what we needy have is someone with money
'What we need is someone with money.'

So we see that one of the arguments presented in favor of the deletion analysis may actually turn against it in the end. Other problems for the account that have been noted include:

- *there*-sentences (cf. (297); Blom and Daalder 1977; Akmajian 1979):

  (297) a. What there was in the car was my hat.
  b. *There was my hat in the car.

- *do* (cf. (298); Blom and Daalder 1977):

  (298) a. What he did was kiss Mary.
  b. *He did kiss Mary.

These two arguments both assume that the post-copular 'value'-clause is identical in all respects with the *wh*-clause – it contains exactly the same lexical material found in the *wh*-clause. There is no *a priori* reason to expect, however, that semantically meaningless material in the *wh*-clause should be represented in the post-copular clause as well – once one assumes that the post-copular clause in (297a) and (298a) lacks the dummies (*there*, *do*) found in the *wh*-clause, the problems highlighted by the deviance of the b-examples do not present themselves. (See also Den Dikken et al. 2000: section 1.5 for discussion of 'indirect answer' pseudoclefts, in which there is no direct match between the IP in the *wh*-clause and the post-copular IP.)

(In connection with the *do* used in specificational pseudoclefts of the type in (298a) one may wonder whether it is a dummy verb or the lexical verb *do*. The fact that it combines with the dummy *do* in negative *wh*-clauses of specificational pseudoclefts and cannot itself host the negation shows that it is not the dummy *do*; on the other hand, the fact that – contrary to what is claimed in Collins 1991: 128 – it can combine with stative 'value'-VPs, as in Higgins's 1979: 194 (299), Heggie's 1988: 346 examples in (300), and Geluykens's 1984 (301), raises questions about the status of *do* as a lexical ('activity') verb:

(299) The very first thing he did when he got there was *be* rude to the chairman.

(300) a. What John did was *be* pampered by his mom.
b. What John did was *be* sick all day.

(301) The thing to do seems to me is to *be* eminently reasonable.

We leave the status of *do* in the *wh*-clause of specificational pseudoclefts for further research.)

An argument that is related to the previous one based on the distribution of *do* is the following, which concerns the possible occurrence of the infinitival marker *to* in the 'value' of specificational pseudoclefts with *do* in the *wh*-clause:

- *to* (cf. (302b); Heggie 1988: 346ff.):

  (302) a. What he did was write a letter.
  b. What he did was *to* write a letter.

From a deletion perspective, the occurrence of *to* in (302b) is unexpected: **He did to write a letter* is impossible. Plausibly, however, the *to*-infinitive in post-copular position in (302b) should be analyzed as a *nominal infinitive* (as in *To err is human, to forgive divine*). The categorial status of the 'value'-XP (the remnant of ellipsis) in the examples in (302a, b) would then be different; the former would involve a bare VP while the latter would feature a nominal *to*-infinitive. Analyzing the *to*-infinitive as a nominal infinitive still would not help one out on a 'pure' deletion approach to specificational pseudoclefts (*do* does not take nominal *to*-infinitival complements); but a deletion analysis is never forced for pseudoclefts whose 'value'-XP is nominal, on the assumption that a base-generation analysis is always available as an alternative in such cases (cf. the discussion in section 6.3, below): nominal constituents can readily be base generated across the copula.

Another objection that has been levelled at the deletion analysis in the literature concerns

- disagreement (cf. (303); Blom and Daalder 1977):

  (303) a. Wie daar staat ben ik.
  who there stands am I
  b. * Ik staat daar.
  I stands there

Here again (as in the case of *there* and *do*), the premise on which the argument is based is that there is complete formal identity between the *wh*-clause and the post-copular clause, and that hence an agreement problem arises in the latter (in the light of the deviance of (303b)). Agreement is a surface phenomenon, however. Even if verbs enter the syntactic derivation fully inflected (Chomsky 1995c), agreement will involve a checking operation that is performed late enough in the derivation to cause no trouble in (303a): by the time feature checking should be executed, the verb in the post-copular clause will already have been elided (cf. Lasnik 1995 on similar cases of avoidance of checking clashes as a result of ellipsis).

- lack of ambiguity (cf. (304); Blom and Daalder 1977):

(304) a. Wat hij zich aantrekt is het onschuldigste grapje.
what he se onpulls is the most-innocent joke
'What gets him upset is the most innocent joke.'
b. Hij trekt zich het onschuldigste grapje aan.
he pulls se the most-innocent joke on
'He gets upset by the most innocent joke.'

The upshot of this argument is that the fact that (304a) is not ambiguous (cf. section 3.2, above) while (304b) is, is unexpected if the post-copular constituent in the pseudocleft is in fact identical with (304b). This argument is valid in principle; but conceivably, the breakdown of ambiguity in (304a) could be blamed in its entirety on the *wh*-clause in pre-copular position, with reference to the fact that (for obvious reasons) *Wat hij zich aantrekt* 'What gets him upset' is not ambiguous in the way that (304b) is.

All in all, then, the empirical arguments concerned specifically with the *deletion* part of the deletion analysis are not overwhelming. What remains is the general question of the robustness of the connection between question-answer pairs and specificational pseudoclefts (see section 5, above); if, as proponents of the deletion analysis claim, this is indeed robust, it serves as an important argument in favor of this analysis – along with the fact that it provides a straightforward account of the connectivity effects characteristic of specificational pseudoclefts (which reduce to the dependencies found in simple clauses).

Some of the counterarguments that have been leveled at the deletion analysis are shared by the other transformational approach to specificational pseudoclefts, to which we turn next.

6.2 Extraction analyses

The extraction analysis of specificational pseudoclefts was first proposed by Chomsky (1972) (which first appeared in 1970) and Emonds (1970). The key ingredient of this analysis is the idea that the 'value'-XP of a specificational pseudocleft starts out as a constituent of an NP-dominated clause base generated in the subject position of the pseudocleft construction as a whole, and is raised into a post-copular position, which is generated empty. The analysis is schematically presented in (305):

(305) a. $[_S\ [_{NP}$ *it* $[_{S'}$ *that* . . . $[_{XP}$ 'value'] . . .]] $[_{VP}$ *be* ___]] → extraction →
b. $[_S\ [_{NP}$ *it* $[_{S'}$ *that* . . . [+PRO,+WH] . . .]] $[_{VP}$ *be* $[_{XP}$ 'value']]] → wh-fronting →
c. $[_S\ [_{NP}$ *it* $[_{S'}$ [+PRO,+WH] (= *what*) . . . ___ . . .]] $[_{VP}$ *be* $[_{XP}$ 'value']]]

The process of extraction of the 'value'-XP leaves behind a *wh*-pronoun (cf. [+PRO,+WH] in (305b)), the same kind of creature which early transformational

analyses of relativization postulated; this *wh*-pronoun is ultimately fronted to a position at the left edge of the NP-dominated S', replacing the complementizer *that* (cf. (305c)).

The extraction analysis runs up against a variety of theoretical and empirical problems, which have been duly noted in the literature (cf. esp. Higgins 1979; Blom and Daalder 1977). One clear theoretical difficulty concerns the cycle (though see Hankamer 1974 for the view that whatever derives specificational pseudoclefts must be a *post*cyclic rule: it does not feed raising, for example); but we will not belabor this point here (depending as it does on assumptions concerning the cycle and the nature of transformations which are specific to the theory in vogue at the time at which the extraction analysis was first proposed). Instead, we will draw attention to a theoretical issue which Blom and Daalder (1977) stress in their discussion of the vicissitudes of the extraction analysis: the fact that the extracted element is raised to a position which is not structurally superior to its extraction site, hence does not c-command the extraction site. This problem is insurmountable unless 'sideways movement' is allowed as a theoretical option (see Nunes 1995; Bobaljik and Brown 1997; Kayne 1999 for the suggestion that such movement is indeed feasible).

Moreau (1971) presents a variant of the extraction analysis which avoids this c-command problem, by reversing the underlying hierarchical relationship between the major constituents – rather than placing the 'variable' in subject position and base generating an empty slot in the complement of the copula, she generates the 'variable' in post-copular position, as the predicate of the construction. This allows her to raise the 'value'-XP out of the *wh*-clause into a position that does indeed c-command the extraction site: the subject position of the matrix clause. (Note that by generating the 'variable' in post-copular position as a predicate, Moreau's analysis is a precursor of Blom and Daalder's 1977 and Heggie's 1988 analysis of specificational pseudoclefts.)

Whatever the theoretical (de)merits of an analysis along the lines of (305) or its reverse counterpart (i.e., one in which 'NP' is the predicate in post-copular position), however, there are certain empirical properties of specificational pseudoclefts which threaten an analysis of these constructions strictly in terms of extraction. One is the fact that there are specificational pseudoclefts for which there simply is no simple clause counterpart – because of the fact that the *wh*-clause contains material which cannot occur in the simple clause paraphrase of the pseudocleft. Examples of this type typically involve *about*-PPs (cf. Green 1971; Higgins 1979; Heggie 1988):

(306) a. What I like *about Sara* is her courage.
b. *I like <*about Sara*> her courage <*about Sara*>.

An extraction analysis of specificational pseudoclefts would have to start out from the ill-formed (306b) and transform it into the grammatical surface output in (306a). (As long as it is less than crystal clear, however, what exactly is responsible for the deviance of (306b), it is difficult to assess the strength of this kind of

objection. Note, in any event, that the deletion analysis is immune to it: the post-copular IP would simply lack the *about*-PP from the start.)

Other threats to the extraction analysis are posed particularly by specificational pseudoclefts which, while exhibiting connectivity effects (which serve as an important argument for any transformational account), do not seem to make an extraction analysis available on theoretical grounds. Akmajian (1979), Higgins (1979), and Blom and Daalder (1977) draw attention to such constructions as (307–308) (cf. Akmajian 1979: 47 and 118):

(307) a. What there was next to *Bill* was {the/that} photograph of *himself* which was taken last summer.
b. *There was {the/that} photograph of *himself* which was taken last summer next to *Bill*.

(308) a. The one who has to protect {**myself*/*himself*} is *me*.
b. *I* have to protect {*myself*/**himself*}.

The problem with (307a) is that the 'value'-XP, because it is definite, would not seem to be generable inside the *wh*-clause; and (308) presents a clear person agreement problem: while the 'value' in (308a) is first person singular, the anaphor in the pre-copular 'variable' clause may only be third person singular. These facts are unexpected from an extraction perspective.

Higgins (1979: 121–122, n. 7) is "not convinced of the cogency" of the argument against extraction based on the *there*-sentences in (307). As he points out, "the 'picture-noun' *photograph* brings with it added complications. It seems to me to be equally acceptable if *himself* is replaced by *him*." Akmajian (1979: 93–98, n. 16) also suggests a possible ground for setting (307) aside as a problem for the extraction analysis: one might (as Ken Hale pointed out to Akmajian) want to assimilate (307a) to *there*-sentences with a 'list reading', which likewise form an exception to the indefiniteness requirement on *there*-sentences (cf. the fact that (307b) with a word order in which the associate of *there* is clause final and set off from what precedes it by 'colon intonation' is grammatical). Akmajian ultimately rejects this option, but in the light of the close kinship of specificational sentences and lists (cf. Higgins 1979), it would certainly be worth investigating further. At the very least, we should conclude from the above that the problem for an extraction analysis posed by *there*-sentences of the type in (307a) is not insurmountable.

Perhaps more interesting is the problem posed by (308), which concerns agreement in phi-features between the anaphor and the 'value'-XP. If the post-copular focus in (308a) were to be base generated inside the relative clause and raised to post-copular position via extraction, one would not expect the anaphor to be *himself*; instead, one would expect *myself* (but *myself*, while good in (308b), is entirely impossible in (308a); cf. Akmajian 1979: 119). The force of this argument is substantially reduced, however, by Akmajian's (1979: 120–121) observation that when the order of examples such as (308a) is *reversed* the anaphor *can* agree in all phi-features with its clause-external antecedent (though it does not have to):

(308) a'. *I* am the one who has to protect {*myself*/*himself*}.

There are three different reflexivization patterns, therefore: the one represented by the simple sentence in (308b) (with full phi-feature agreement as the only option), the one seen in the specificational pseudocleft with a post-copular 'value' in (308a) (with obligatory person disagreement), and the one found in pseudoclefts with a sentence-initial 'value' such as (308a') (where both possibilities deliver a grammatical result). Akmajian (1979: 121) takes these facts to "suggest that the reflexive forms in [(308)] arise under certain surface structure conditions" (which, he adds on p. 123, he does not understand). If he is right that we are dealing here with a surface phenomenon, the reflexive agreement facts tell us little if anything about the underlying representation of specificational pseudoclefts – they would be compatible, therefore, with an extraction approach. We will take the reflexive agreement argument to be moot, therefore – though it may ultimately support Akmajian's dual analysis of specificational pseudoclefts like (308a'): person agreement would be obtained via extraction, lack of agreement via base generation.

More importantly, however, there is one clear indication that an extraction analysis – whatever its merits for those cases to which it is indeed applicable – will not be sufficient for the entire battery of specificational constructions. In particular, it will fail to capture the parallelism between specificational pseudoclefts and other specificational copular sentences. This point is raised by Akmajian (1979: 51–52), Blom and Daalder (1977: 59–60), and Heggie (1988), among others (cf. also Higgins 1979: 145–149). Consider the following pair:

(309) What *John* contributed was a poem about *himself*.

(310) *John*'s contribution was a poem about *himself*.

As is clear from the examples, simple specificational copular sentences exhibit the same connectivity effect with respect to anaphors which pseudoclefts display. If one believes that connectivity effects are an argument for an extraction analysis, therefore, one seems forced to adopt a complex clausal analysis of nominalizations like *contribution* in (310). Chomsky (1970), however, has presented cogent evidence against such an approach to nominalizations. An extraction approach to (310) will hence be unavailable; consequently, anaphor connectivity cannot be used as an exclusive argument for an extraction analysis.

It is particularly in the light of the parallel between (309) and (310) that Akmajian (1979) comes to the conclusion that a base generation analysis for specificational sentences should be available as well. We will turn to this kind of analysis in the next section.

6.3 Base generation analyses

Throughout the decades, the base generation analysis has served as a home base for scholars who found that transformational approaches to specificational

pseudoclefts fail to be descriptively and explanatorily adequate. Higgins (1979) adopts such an account, and so do Blom and Daalder (1977); both also mention the similarities between their base-generated structures of specificational pseudoclefts and the structure of specificational copular sentences in general. As Akmajian (1979), who adopts the base generation analysis for a subset of specificational pseudoclefts, points out in various places, the base source is a structure which "there is no non-ad hoc way of preventing" (p. 32; also cf. p. 38) in any event; so one would certainly expect it to exist.

Akmajian (1979) argues for a dual approach to specificational pseudoclefts: one analysis derives them transformationally from their simple clause counterparts (via extraction; see section 6.2, above), the other generates the specificational pseudocleft in the base. The base generation analysis is argued to be required for those kinds of specificational pseudoclefts for which an extraction analysis would run into trouble:

- [±human] clashes (cf. (293)),
- *there*-sentences (cf. (307)),
- agreement clashes (cf. (308)).

For Akmajian, specificational pseudoclefts with 'value'-XPs whose categorial status is NP are always ambiguous in principle between an extraction analysis and a base-generated structure. But specificational pseudoclefts with non-NP 'values' are not derivable via base generation, according to Akmajian: there are no non-cleft specificational sentences with non-NP post-copular constituents:[51]

(311) a. What John did was kiss Mary.
b. *John's action was kiss Mary.

When it comes to the analysis of connectivity effects (the key argument for transformational approaches), Higgins's (1979: ch. 3) base generation approach looks for the account in the realm of 'the meaning of specification' (rather than in the workings of some transformation), and points out that such an approach has the advantage of predicting, correctly, that connectivity arises in specificational constructions regardless of the verb used (mentioning the occurrence of connectivity with *lie in*, *consist in*, *constitute* in support of this prediction; p. 99). Faced with this, a transformational analysis would need to mention explicitly a list of verbs which 'trigger' the transformation involved; and that list would be arbitrary, according to Higgins, unless the meaning of specification can somehow be referred to – but once one needs to refer to the meaning of specification anyway, one might as well derive the connectivity effects directly from it *without* postulating a transformation to derive the pseudocleft construction, so Higgins's argument goes. In other words, "a transformational analysis would be not merely clumsy but also unnecessary" (p. 117).

Higgins's own attempt to account for them purely in terms of the semantic notion of 'specification' remains rather vague, however. He states explicitly (p. 97)

that when it comes to the analysis of reflexive connectivity, at least two factors are involved:

(i) "the establishment of some designated noun phrase in the subject clause which can act as a controller (in Postal's sense (1970: 443))";
(ii) "the application of the properties of specification to the semantic reading so that the controller is specified as the understood subject of the predicate complement phrase."

But when it comes to "devising mechanisms for establishing understood subjects in the complements to nominalizations" (p. 98), he leaves the details open. Blom and Daalder (1977) are quite a bit more explicit in this regard. They develop an analysis which, recast in present-day theoretical terminology, hinges on postulating a null subject PRO inside the post-copular constituent:

(312) a. What *John* should do is [PRO protect *himself*].
b. What *John* was reading was [a PRO story about *himself*].

Assigning specificational pseudoclefts structures of this type will make it possible to use the pro subject of the 'value'-XP as an intermediary in the establishment of the interpretive relationship between subconstituents of the *wh*-clause and the post-copular XP.

It predicts, at the same time, that the only contexts in which specificational pseudoclefts could feature connectivity effects are the ones in which these effects can be mediated by a PRO. Blom and Daalder themselves present this as a correct prediction: they point out that anaphor connectivity breaks down in examples in which the 'value' is *constituted* by the anaphor itself (cf. their examples in (313)); and they also claim that connectivity with respect to negative polarity item licensing is impossible (at least in Dutch; cf. their (314) and (304), the latter repeated from section 6.1):

(313) a. ?*Wie hij op het oog had is *zichzelf*.
who he on the eye had is himself
b. *Wie zij tartten was/ waren *elkaar*.
who they pestered was were each other

(314) a. Hij weigerde *ieder* geneesmiddel.
he refused every medicine
b. *Wat hij weigerde was *ieder* geneesmiddel.
what he refused was every medicine

(304) a. Wat hij zich aantrekt is het onschuldigste grapje.
what he se onpulls is the most-innocent joke
'What gets him upset is the most innocent joke.'
b. Hij trekt zich het onschuldigste grapje aan.
he pulls se the most-innocent joke on
'He gets upset by the most innocent joke.'

As we pointed out in section 3, however, each of these empirical claims is problematic – it is not in general impossible for anaphors to constitute the 'value' of specificational pseudoclefts; and connectivity effects exist for a variety of phenomena other than anaphora. And even if Blom and Daalder's (1977) claims about Dutch were entirely accurate, one would still be in need of some other approach to connectivity for languages other than Dutch.

We should mention here as well that Higgins (1979) explicitly takes issue with an Equi-NP Deletion (i.e., Control) approach to anaphor connectivity effects in specificational sentences. Referring to Chiba (1971), he states that it would be impossible to postulate a PRO subject for the post-copular constituents in the examples in (315):

(315) a. *John*'s biggest worry is having to photograph *himself* without a tie on.
b. The greatest source of embarrassment that *John* has to endure is having to photograph *himself* without a tie on.

If Chiba and Higgins are right on this score, the prospects for a control approach to anaphor connectivity in specificational copular sentences are gloomy – and at best, a control approach would be a way of moving the problem into a different department anyway: after all, once one postulates a PRO subject inside the 'value'-XP, one will need to face the question of how this PRO, in turn, could be controlled by a subconstituent of the 'variable'.

If a syntactic approach along the lines of control fails, therefore, other ways of capturing the connectivity effects on a base generation analysis should be found outside the syntax. Higgins (1979) makes vague suggestions along these lines (as we have seen); more specific proposals are found in Jacobson (1995) and Sharvit (1997a), where connectivity in specificational pseudoclefts is treated as a purely interpretive phenomenon, arising wholly without syntactic c-command. In their approach, binding dependencies and other such dependencies involved in the domain of connectivity are viewed as side effects of semantic composition – an area in which the semantic properties of *what* and *be* play a key role. (We refer to section 1.5, above, for remarks about the semantic vacuity of the copula. If the discussion there stands up to careful scrutiny, it counts as an argument against semantic approaches which attribute an important role to the semantic properties of *be*.) We will not discuss these semantic accounts to the general problem of connectivity any further here.

6.4 Reconstruction analyses

Recent (principles-and-parameters) approaches to specificational pseudoclefts have largely adopted a base generation analysis (see Heggie 1988; Iatridou and Varlokosta 1998; Alexiadou and Giannakidou 1998; also the semantically oriented, syntactically simple approaches in Jacobson 1995; Sharvit 1997a), eschewing the postulation of movement operations which would raise the 'value'-XP from out of the *wh*-clause into a position on the other side of the copula – operations which

would contravene broadly accepted views on what constitutes possible movement (but cf. the discussion in section 6.1, above, on the possibility of 'sideways movement'). Apart from the re-emergence of the deletion analysis (in Den Dikken et al. 2000; Schlenker 2003b), however, there are two noteworthy exceptions to the base generation approach in the recent literature – Bošković (1997a) and Heycock and Kroch (1999). Both propose a kind of analysis which we may characterize as the reconstruction approach – the simple sentence paraphrase is 'reconstructed' out of the complex surface construction. In a sense, these reconstruction approaches (esp. Bošković's) are the opposite of the early transformational analyses. But even though they are motivated by the same overall desire (viz., to capture the connectivity effects manifest in specificational pseudoclefts), in the details of their execution they are quite different – both from the early transformational accounts and from one another. We will discuss them one by one.

6.4.1 Move at LF (Bošković 1997a)

Bošković (1997a) presents an analysis of specificational pseudoclefts which is based on the idea that the *wh*-element in the *wh*-clause is replaced with the 'value'-XP at LF as a result of Move.[52] Replacement of *what* is triggered by the assumption that what *what* is is a 'surface anaphor' in the sense of Hankamer and Sag (1976) – an anaphor that has to be replaced by its linguistic antecedent at some level of representation. (See Lødrup 1994 for related discussion of Norwegian *det*.)

(316) a. Hankamer: I'm going to stuff this ball through the hoop.
Sag: I don't think you'll be able to do *it*/*so*.
b. [Hankamer is trying to stuff a ball through a hoop]
Sag: I don't think you'll be able to do *it*/**so*.

Just like *so*, but unlike *it*, the *what* of a specificational pseudocleft needs a linguistic antecedent, and must be replaced by this antecedent by the end of the derivation. Bošković takes the point at which such replacement obtains (in any event in pseudoclefts) to be LF. At LF, therefore, the representation of a specificational pseudocleft will no longer contain *what* – in its place we find the 'value'-XP which appeared on the other side of the copula in the overt syntactic structure; this XP is moved into the *wh*-clause via Move.

With the 'value' at LF inside what used to be the *wh*-clause, the connectivity effects will follow, so the argument goes. But note that for NPI connectivity, things seem to happen 'too late': negative polarity items generally want to be c-commanded by their licensors at S-structure – cf. the ungrammaticality of (317a), from Den Dikken et al. (2000: 50): though reconstruction is possible in this kind of context (cf. the grammaticality of (317b)), negative polarity item licensing nonetheless fails here.[53]

(317) a. *Which charges that he_i concealed *anything* would every $President_i$ *deny*?
b. Which charges that he_i concealed something would every $President_i$ deny?

One of Bošković's (1997a) key arguments for the idea that the 'value' is actually moved via an instantiation of the syntactic operation Move is the fact that extraction of and from the 'value' is impossible (cf. section 3.2 for discussion):

(318) a. I think that what caused the riot was a picture of the wall.
b. *What do you think that what caused the riot was *ec*?
c. *What do you think that what caused the riot was a picture of *ec*?

For Bošković, the cause of the ungrammaticality of (318b, c) lies in a general restriction on Move: it is impossible, in general, to have Move apply either to a trace or to a constituent containing a trace. (318b, c) fall under this restriction – at LF, Move will need to replace the *what* of the pre-copular *wh*-clause with the 'value'-XP; but at that time, the 'value'-XP has already been reduced to either a trace (318b) or a constituent containing a trace (318c), as a result of overt-syntactic *wh*-extraction. The ban on movement of (constituents containing) traces thus makes it impossible for the *what* of the pseudocleft to be replaced in (318a, b), which is why these examples are ungrammatical.

Den Dikken et al. (2000: 64) find fault with this account of (318) (which, in any event, is by no means an exclusive argument in favor of the Move analysis; see section 4.3.2 for other approaches) by pointing out that *covert* extraction from the 'value'-XP is also impossible in specificational pseudoclefts:

(319) a. *Who thinks that what caused the riot was which picture of the wall?
b. *Who thinks that what caused the riot was a picture of which wall?

Here, there has been no overt-syntactic extraction from the 'value'-XP: the *wh in situ* will not move toward the overtly extracted *wh*-element *who* until LF. There should be no problem, therefore, with a derivation of (319) which first has the intact 'value' replace *what* (by which the pseudocleft is reshaped into a simple clause) and subsequently performs LF *wh*-movement on (a subconstituent of) the 'value'. Hence there is no reason, on Bošković's analysis, to expect there to be anything wrong with (319) – contrary to fact.

The ban on movement of a constituent containing a trace, Bošković argues, is also responsible for the ungrammaticality of the examples in (320) (cf. also Higgins 1979: 67):[54]

(320) a. *What John gave was Mary a book.
b. *What John gave was a book to Mary.

Bošković follows Larson (1988b) in assigning a structure to triadic constructions according to which they contain two VPs, the lower one of which includes the direct and indirect objects and *a trace of the verb*. It is precisely this lower VP that one would need to move into the *wh*-clause to derive the examples in (320) – and since one is not allowed to move a constituent containing a trace, the ungrammaticality of these examples follows directly.

Once again, however, this argument for a Move derivation overlooks an essential fact. For, as Den Dikken et al. (2000: 78) point out, examples of the type in (320) become grammatical once the *wh*-clause of the pseudocleft is given *two* variables – one corresponding to each of the two post-copular objects:

(321) ?What John gave to whom was (John gave) a book to Mary and a CD to Sue.[55]

The ungrammaticality of (320) thus turns out to have nothing to do with restrictions on Move – instead, it is a consequence of the lack of parallelism between the *wh*-clause and the post-copular 'value' (see also Boeckx 1998). In this respect, (320) seems to be on a par with Akmajian's (1979: 26) examples in (322b, c):

(322) a. What I forced Bill to do was leave.
b. *What I forced was Bill to leave.
c. *What I forced Bill was to leave.

Den Dikken et al. (2000: section 4.2) draw attention to a variety of other 'parallelism effects' in specificational pseudoclefts, largely shared by question-answer pairs. (320) thus by no means stands on its own.

As far as we can see, there are no properties of specificational pseudoclefts which argue unambiguously in favor of a LF Move approach to these constructions as proposed by Bošković (1997a). On the other hand, there do exist some general considerations which suggest that such an approach (regardless of the theoretical vicissitudes of the instantiation of Move that this analysis needs to invoke) is presumably not on the right track. These considerations are all concerned with the fact that Bošković's analysis turns on an instance of Move which is triggered by a property of the *wh*-element *what*, which he treats as a surface anaphor in the sense of Hankamer and Sag (1976).

Interestingly, *what* is the *wh*-counterpart of *it* – and *it*, unlike *so* (which does have the property of being a surface anaphor), is not a surface anaphor (but a 'deep' one instead): as (316b) shows, *it* can take a situation as its antecedent; it does not need a linguistic antecedent, hence does not need to be (in fact, cannot be) replaced at LF. Given the morphological link between *it* and *what*, it is at the very least surprising that (if Bošković's approach to *what* is right) the two should part ways so radically when it comes to the 'deep/surface anaphor' dichotomy.

Surprising as well is the fact that, even though it is true that *what* is by far the most common *wh*-element in specificational pseudoclefts, it is not just *what* that can be used in these constructions – see section 2.1 for examples featuring *wh*-words other than *what*. Though in actual fact it is basically only *who* that is practically impossible in specificational pseudoclefts, Bošković predicts that only *what* should be permissible.

Even more importantly, the fact that Bošković's analysis of specificational pseudoclefts is built entirely on a property of the *wh*-element *what*, which is absent from non-cleft specificational sentences, prevents it from extending to the larger set of specificational copular sentences. Such an extension is nonetheless

called for, in the light of the syntactic and semantic parallels between specificational pseudoclefts and their non-cleft congeners (see the discussion in section 3 for a list of such parallels).

It is in the light of general considerations like this that we should conclude that an LF Move analysis of specificational pseudoclefts along the lines of Bošković (1997a) must be rejected.

6.4.2 *Iota reduction (Heycock and Kroch 1999; cf. also Partee 1986; Guéron 1992, 1993)*

Recall from section 4.1.1, above, that for Heycock and Kroch (1999), specificational pseudoclefts are equative copular constructions (cf. 'identity statements'). Such an approach to their deep and surface syntactic structure does not give one a handle on the connectivity effects exhibited by these constructions, it would seem. So, Heycock and Kroch (1999: 388) argue, "the connectedness effects in pseudoclefts are evidence that neither surface structure nor anything close to it can be the level at which crucial aspects of semantic interpretation are determined." They postulate "a quite abstract level of logical form" at which "pseudoclefts must have a structure identical in relevant respects to that of their canonical paraphrases."

The essence of Heycock and Kroch's (1999) analysis is aptly summarized with the aid of the above quotations. What is left to be determined is how the surface syntactic form of specificational pseudoclefts can be converted into a 'logical form' representation which is similar to that of their simple clause paraphrases, such that the connectivity effects can be accommodated.

Heycock and Kroch propose a semantic representation of specificational pseudoclefts which is obtained via 'iota abstraction'. In this regard, their approach is very similar to that of Guéron (1992, 1993), which also postulates an iota operator in the *wh*-clause of specificational pseudoclefts,[56] and has this variable replaced (just as in Heycock and Kroch's approach) at a very late and abstract point in the derivation (her metalinguistic level of the *commentaire*). Though different in detail, the Guéron and Heycock and Kroch approaches are of kindred spirit; we will key the discussion to the latter, more readily accessible paper.

Following Jacobson (1995), Heycock and Kroch take the *wh*-clause of a specificational pseudocleft to be a noun phrase with the semantic denotation of an individual rather than a set – in particular, the *wh*-clause/free relative *what Fiona bought* in the specificational pseudocleft in (323) is taken to "denote the maximal individual (a plural individual in the sense of Link (1983)) of which the sentence *Fiona bought y* holds." The semantic representation of *what Fiona bought* thus reads as in (324), and the concomitant semantic representation of the entire pseudocleft in (323) as in (325):

(323) What Fiona bought was that ancient dictionary.

(324) ιy[Fiona bought y]

(325) ιy[Fiona bought y] = 'that ancient dictionary'

Crucially, now, the Russellian 'iota operator' used in (324), defined as in (326), will allow us to alter the structure in (325) by applying the definition in (326) to the equative formula. Via this procedure (dubbed 'iota reduction' by Heycock and Kroch), the iota operator is eliminated from the representation in (325), and the iota-bound variable is replaced with the 'value' of the pseudocleft. The result is as in (327):

(326) ιy[f(y)] denotes a iff f(a) and ($\forall z$)(f(z) iff $z \leq a$)

(327) Fiona bought that ancient dictionary and ($\forall z$)(Fiona bought z iff $z \leq$ 'that ancient dictionary').

What we now have is a representation of (323) which, as its first conjunct, contains precisely the simple clause of the pseudocleft's paraphrase. (327) which will therefore allow us to capture the connectivity effects of specificational pseudoclefts – *if* we can ensure that the dependency relations involved in the relevant set of connectivity effects all apply no sooner than at the level of the grammar at which (327) is obtained (and if the second conjunct of (327) can be eliminated from the logical form relevant for connectivity; but as Heycock and Kroch point out later in their discussion, that second conjunct is actually unnecessary, so we need not be concerned with this condition).

It should be noted that 'iota reduction' must be taken to be obligatory – for pseudoclefts feature no 'antireconstruction effects': Principle C effects are not circumvented in these constructions (cf. **What he_i had said to Mary was that she had been lying to $John_i$*; see section 3.2). The same is true for specificational sentences in general. One must assume, therefore, that (i) 'iota reduction' applies to all specificational sentences (regardless of whether they feature a *wh*-clause or not; i.e., noun phrases like *Fiona's purchase* must have a representations of the type in (324), which 'iota reduction' takes as its input); *and* (ii) the only representation of specificational sentences which is available at the interface with the conceptual system is the one obtained by 'iota reduction'.

The point at which 'iota reduction' takes place is a very late one – it must be, according to Heycock and Kroch, since its effects are noticeable even across stretches of discourse (cf., e.g., question-answer pairs; see Heycock and Kroch 1999: 390–391, and also section 5, above). In other words, "the syntactic derivation of the LF interface representation relevant for such phenomena as binding follows operations that are part of discourse interpretation" (Heycock and Kroch 1999: 391).

Heycock and Kroch's (1999) approach to connectivity effects thus relegates them to a late stage in the derivation of the semantic representation of specificational sentences. The desired connection with the simple clause paraphrases of specificational pseudoclefts is obtained as a result of the operation of 'iota reduction' performed on the logical formula of equation that is part of the semantic representation of all specificational sentences – *all* specificational sentences, regardless of their surface word order.

This account of connectivity effects in specificational copular sentences (and across discourse chunks as well; cf. Heycock and Kroch's 1999: 390–391 discussion of question-answer pairs) hence predicts that such effects should be totally oblivious to linear order. As Den Dikken et al. (2000) stress, however, there are connectivity effects in these constructions which are highly sensitive to the relative order of the 'variable' and its 'value' – NPI connectivity effects, to be specific: *What nobody bought was any wine* is grammatical while **Any wine was what nobody bought* is not.[57] It is true, of course, that not all connectivity effects in specificational sentences are sensitive to word order; in fact, the bulk of them are not. But an overall approach to connectivity effects in specificational sentences which relegates *all* of them exclusively to a late discourse-semantic level of representation will not be able to make the desired cut.

Of course, the lateness of 'iota reduction' also makes Heycock and Kroch's (1999) analysis run up against the same problem which we noted in the previous subsection for Bošković's (1997a) approach: the fact that, in general, NPIs need to be c-commanded by their licensors at S-structure (see (317)).

Thus, while it seems likely that many of the connectivity effects known from the literature could and probably should be dealt with at a semantic level of representation, semantic accounts of connectivity will need to be supplemented by a (presumably syntactic) analysis of the fact that some of these connectivity effects (notably, NPI connectivity) have a much more limited distribution than a general 'reconstruction' or 'iota reduction' approach would lead one to expect. A dual, syntax-and-semantics analysis of specificational pseudoclefts along such lines is the ellipsis approach proposed in Den Dikken et al. (2000). It makes immediate sense of the contrast in (328) (on account of the fact that full-clausal 'values' are systematically impossible in the pre-copular position of specificational pseudoclefts), and relegates order-insensitive connectivity effects to a semantic (or even 'metalinguistic') level – perhaps indeed via something like Heycock and Kroch's 'iota reduction', or for that matter Bošković's LF reconstruction (Jacobson 1995; and Sharvit 1997a present alternative semantic perspectives).

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NOTES

1 Blom and Daalder (1977: 77) seek to support their approach with reference to the claim that the post-copular noun phrase of such constructions is *pronominalized* with *it* rather than *(s)he* – a claim which they illustrate for Dutch with the aid of (i), which, however, is not an unequivocal case of an identity statement. The argument fails to be convincing, therefore.

(i) Is hij de burgemeester van Amsterdam? Nee, maar hij wordt *het*/**hij*/**hem*.
Is he the mayor of Amsterdam? No but he becomes it/he/him.

2 Declerck also claims that the Blom and Daalder type approach to specificational sentences (which treats them as predicational underlyingly) is incompatible with Givón's (1973: 119) universal that "a predicate may never be less general than its subject" – but this is a mistake on Declerck's part: for advocates of the inversion approach to specificational copular sentences, the pre-copular NP_1 (the hyperonym) is indeed the predicate underlyingly, with the post-copular NP_2 (the hyponym) being its subject.

3 Guéron (1992) makes a difference between the *récit* and the *commentaire*, two levels of interpretation (a distinction which does not correspond to that between overt syntax and LF). In the *récit* of an inverse (specificational) copular sentence like *The culprit is John*, the copula is a part of the predicate, along with the non-verbal part; in the *commentaire* (a "metalinguistic" level, according to Guéron) it is an identificational operator.

4 As Partee (1999) points out, "in the Slavic literature, it has long been noted that insofar as differences in the semantics of different copular sentences can be predicted from differences in the semantics of the 'arguments' of the copula, it should not be necessary to posit ambiguities in the copula itself"; she refers to Chvany (1975) and Padučeva and Uspenskij (1979) in this context.

Irrelevant in the context of specificational copular sentences and pseudoclefts but significant in the broader context of copular sentences in general is the fact that languages may use different linker elements in copular sentences with an individual-level predicate (like *intelligent*) and ones with a stage-level predicate (like *sick*). Spanish and Portuguese are such languages (cf. the *ser*/*estar* distinction, where *estar* goes back to the Latin verb *stare* 'stand'). We will not be concerned with this question here. See Schmitt (1996) and references cited there for discussion of the distribution of *ser* and *estar*.

5 The term is spelled variably as "pseudo-cleft" (cf., e.g., Huddleston 1971; Akmajian 1979; Higgins 1979) or "pseudocleft" (cf. more recent work); we will use the non-hyphenated spelling in what follows.

6 (28) is taken from Ross (1999), where the 'nouniness' of *Jerry drunk* is noted (cf. Safir's 1983 'Honorary NPs').

7 On the scope of the term 'pseudocleft' (or '*wh*-cleft'), see section 2.4.

8 Reversal of the order of (44a) is not ungrammatical, however; but when reversed (*What I need is that*) it takes on the guise of a specificational pseudocleft, and is not identificational/descriptionally identifying anymore.

9 The term 'discontinuous pseudocleft' is adapted from Declerck (1988: 222), who uses 'discontinuous cleft'; the adjective 'discontinuous' does not refer to discontinuous constituency; though Declerck does not elaborate on the rationale for using this adjective to define pseudoclefts of the type in (48), what seems to be behind this term is the fact that in these constructions *both* the focus *and* the *wh*-clause are accented and represent new information, as indicated in (49).

10 For the meaning of this term and other names for the relevant constituent, see (53) and the text immediately following it.

11 Note in this context that it is precisely the link between specificational pseudoclefts and question-answer pairs that has led Declerck 1988: 8 to call the answer clause of a question-answer pair such as *Who opened the door? – John opened the door* a 'specificational sentence' (i.e., for Declerck, the scope of the term 'specificational sentence'

includes non-copular answers to questions; see also Akmajian 1979: 178–180 for a wider application of the term 'specificational' than the one used here). Declerck's extension of the term 'specificational' mistakes the 'value'-XP (the answer) for an entire 'variable-value' pair – *John opened the door* is not a specificational sentence per se: it is the 'value' of a specificational question-answer pair.

12 A problem arises here only for specificational readings of (58a); predicational and identificational copular sentences never invert to begin with (cf. (17) and (19) above). Declerck treats (58a) with *captain of the team* as a specificational copular sentence and has no answer to the question of why (58b) is ungrammatical; Higgins (1979) analyzes the same sentence as an *identificational* copular sentence; a third (and plausible) option is to treat it as a garden-variety predicational copular sentence.

13 Den Dikken et al. (2000) give XP < *wh* pseudoclefts with full-clausal 'values' a * uniformly (though they do not mention cases with *do* in this context). Ross (1999, 2000) notes the contrast between *bought* and *did* in (59b), and points out furthermore that not all speakers seem to reject (59b) even with *bought* (though it does seem to be substantially worse than both (59b) with *did* and (59a)). Ross (1999) makes the further observation that, for those speakers for whom (59b) with *bought* is good, the construction can be input to Sluicing as well, yielding sentences like (i), which are "used only in colloquial spoken English".

(i) %He bought some wine, is what.

14 The contrast in (60) is due to Heggie (1988). Not all speakers find this contrast equally strong, however – some, in fact, find it very weak at most. Pseudoclefts with *how* are usually not very good to begin with; for many speakers the choice of word order does not seem to add further complications above and beyond the use of a *how*-pseudocleft.

15 When reversed, specificational copular sentences (double-NP and pseudocleft alike) resist deletion of the pre-copular constituent (Ross 1999): **even if ___ tofu, what he likes is interesting*; **even if ___ John, the best candidate is not very intelligent*.

16 The data in (71–72) are from the published sources mentioned; many speakers find (72b) with *someone* grammatical, on a par with *I doubt that someone needs this money* – positive polarity items like *someone* are generally allowed to scope below extraclausal NPI-licensers like *doubt* (cf. Von Fintel 1999). The key fact in (72b), however, is the grammaticality of *anyone*.

17 Though more like a 'free choice item' (FCI) than like an NPI, this reading qualifies as a polarity reading on the understanding (see Giannakidou 1998) that FCIs are polarity items.

18 The contrast between *say* and *say to me* is reported in Hankamer (1974); not all speakers share this judgment, many finding the example perfectly acceptable with *to me* included. It remains unclear how to account for the contrast if it is real.

19 In Akmajian (1979: 169), the asterisk on (100c) has inadvertently been omitted.

20 The a- and b-examples in (101) are taken from Akmajian (1979); (101c) was added here, for the sake of completeness.

21 The examples and judgments here are taken from the sources given; not all speakers seem to agree.

22 Dayal (1997) presents the grammaticality of ?*Whatever she bought was not Barriers* to refute the claim that the *wh*-clause of specificational pseudoclefts does not allow *-ever*. Her example does not seem to instantiate a specificational pseudocleft, however: (i) it features sentential negation, which is otherwise impossible in specificational

pseudoclefts (cf. (111)); (ii) it is irreversible (cf. **Barriers was not whatever she bought*); and (iii) it is uniformly deemed unembeddable under ECM-verbs taking *to*-infinitival complements (cf. **I consider whatever she bought not to be Barriers*, to be contrasted with %*I consider what John is to be important to himself*, which, though judgments vary substantially, is acceptable to at least some speakers; see item (xix) in section 3.4, below).

23 See Seuren (1985: 297) for the observation that the same quantificational restrictions hold of *in situ* foci: *Henry sold (*few) postcards*; and see Declerck (1988: 87–88) for contexts in which these restrictions on specificational sentences can be alleviated.

24 Collins capitalizes both *poured* and *Tom*, but this reflects an intonation contour which seems very awkward for (120b). We assume the capitalization of *Tom* was an error and have taken the liberty of correcting it here.

25 The text discussion reproduces Declerck (1988: 32), where the definiteness and singularity of the variable is capitalized on. Notice, however, that adding *only* to the examples in (123), which do not have definite singular variables, is equally bad with the word order given there (**An example of this kind is only Word War II*). When reversed, (123) does allow the addition of *only* to the 'value' (cf. *Only World War II is an example of this kind*). Here is where a difference between (123) and (124) continues to manifest itself: **Only my neighbour is the one who murdered Smith* is impossible.

26 Note, however, that Seuren's (126b) is a marked construction: as Higgins (1979: 321) points out, root negation in specificational pseudoclefts triggers a 'contradiction negation' reading; it is this which may be responsible for the truth-conditional effect noted by Seuren with reference to negated pseudoclefts. See item (vi), example (111), above.

27 One might question the status of these Spanish examples as genuine pseudoclefts. An alternative analysis of them as cleft sentences (with a null counterpart of *it*; Spanish is a *pro*-drop language) is readily conceivable; cf. Higgins's translations in terms of *it*-clefts.

28 If indeed it is a fact – the specificational reading, while perhaps dispreferred, does seem to be available for (136b): cf. *Where John is going is that city over there*, which seems acceptable, features P-drop, but cannot be predicational.

29 Ross (1999) mentions in the context of (158) and (161) the impossibility copula-drop in absolutive constructions with *wh* < XP pseudoclefts (cf. (i) below). Double-NP specificational copular sentences seem to be grammatical with copula-drop in these contexts only on their canonical order (cf. (ii)). This potentially enhances a parallel treatment of *wh* < XP specificational pseudoclefts and inverse specificational copular sentences (cf. Heggie 1988):

(i) a. With what he likes *(being) tofu, I doubt that he'll pass.
b. *What he likes tofu?!

(ii) a. With John (being) the murderer, . . . with the murderer *(being) John, . . .
b. John the murderer?! *The murderer John?!

30 Notice, though, that inserting *only* in front of *the conversion of chloride ions into hypochlorite and hydrogen ions* is grammatical. In the light of the discussion under item (xi), above, this would seem to indicate that (165a) is not (necessarily) a specificational pseudocleft.

31 Related to this case is the one in (ib) below, also from Ross (1999), involving comparative ellipsis. Ross also mentions the ungrammaticality of subject deletion (**Even if* __

tofu, what he likes is interesting; **Though __ a drunk, what he was is well-known*); this is common to reverse specificational copular sentences as a class (**Though ___ John, the best candidate is intelligent*); n. 15.

(i) a. Barbara is more often a sadist than Bartholomew is.
b. *What he writes is more often that he is brilliant than what he says is.

32 The ungrammaticality of the primed examples in (170) and (171) is not surprising in the light of the exhaustiveness reading which characterizes specificational sentences; see item (xi) above.

33 The status of *?Is your best friend John?* seems to be somewhat degraded, however (Jacqueline Guéron, p.c.; she suggests that the difference between (174c) and the example just mentioned may have to do with the animacy of the first of the two NPs).

34 Akmajian points out, though, that his 'predicational operator [is]' occasionally links the variable and the focal material of specificational pseudoclefts as well.

35 It should be noted, however, that in the tree structures in his first chapter Akmajian does systematically label the post-copular node 'Pred' – cf., e.g., pp. 27, 40.

36 It should be noted, of course, that their analysis was exclusively designed for Dutch; it is only in a brief appendix that they consider the possibility of extending it to English.

37 See Moro (1997) for discussion of the difference between English and Italian; see Den Dikken (1997) for a critique with reference to Dutch.

38 Note that, for most speakers in any event, specificational pseudoclefts with *wh* < XP orders behave differently in this respect (cf. Hankamer 1974; Halvorsen 1978); see section 3.4 above for illustration and discussion.

39 Den Dikken identifies this head as Agr; Moro (1997) objects that if the functional head of small clauses is Agr, one would not expect it to be possible to find disagreement in phi-features between subject and predicate – but such disagreement is in fact possible: cf. the examples in (213), for instance. We will leave the question concerning the nature of 'H' open here.

40 See, however, Blom and Daalder's (1977: 76) predicational analysis of equatives, mentioned in section 1.4 above.

41 But see Postal (1971), Guéron (1992) for arguments against this; for Guéron, subject and predicate are counter-indexed in the *récit* and co-indexed in the *commentaire* (a metalinguistic level which is created out of the *récit* in the covert component): "une chaîne non pas syntaxique mais sémantique. Deux NP non coindicés sont mis dans un rapport d'équivalence" ["not a syntactic chain but a semantic one. Two non-co-indexed NPs are put in a relationship of equivalence"; p. 90].

42 Ross (1999) points out that in Brazilian Portuguese ("though apparently not in all varieties of Portuguese"), constructions of the type in (i) below are found. These superficially look like pseudoclefts from which the *wh*-element has been deleted. If that is what they are, they may be brought to bear on the question of the status of the *wh*-clause of specificational pseudoclefts. Ross himself does not assume an approach to (i) which derives it from (ii) via deletion. We cannot go into the issue here.

(i) Boris roubou foi o Lavoris.
Boris stole was the Lavoris

(ii) O que Boris roubou foi o Lavoris.
the what Boris stole was the Lavoris

43 See also Den Dikken et al. (2000: section 4.3) for a way of extending the *wh*-question analysis to '*th*-clefts', by treating examples like *The (one) thing he didn't do was drink any wine* as reduced variants of *wh*-clefts of the form *What the (one) thing he didn't do was, was drink any wine* (see also Ross 1999 on what he calls 'nominalised questions'); as they point out, such an analysis may afford one a perspective on the 'double *is*' phenonemon in sentences like %*The reason is is (that)* . . . We will not discuss these issues any further here.

44 Notice that these corpus examples all involve *do* in the *wh*-clause; pseudoclefts with full-IP counterweights whose *wh*-clause features *do* rather than a substantive verb are much more widely accepted, and, as was pointed out in (59), also behave differently when it comes to reversibility.

45 It may be important that the 'counterweight' in (253–254) features only a *single* pair of values for the *wh*-phrases in the *wh*-clause, whereas in Ross's examples in (250) a pair list is provided in the 'counterweight'. The difference between Dutch (253) and German (254) may then be related to that between Hungarian (i) and (ii) below (cf. Kiss 2002): in (i), regular multiple *wh*-questions with fronting of all the *wh*-phrases to a left-peripheral focus position, the *wh*-constituents do not have to operate on the same domain (e.g., humans) and a pair-list answer is required; in (ii), only one *wh*-constituent fronts, the other remaining *in situ*, and here the *wh*s must operate on the same domain (e.g., humans) and a pair-list answer is not required. Going back to (253) vs. (254), we note that in the former the *wh*-constituents ('what' and 'where') do not operate on the same domain, whereas in the latter they do; in the light of the Hungarian facts, only the latter will hence be compatible with a single-pair 'counterweight'.

(i) a. Ki kivel verekedett? (pair-list required)
who who-with fought 'Who fought with whom?'
b. Ki mit mondott?
who what said 'Who said what?'

(ii) a. Ki verekedett kivel? (single-pair possible)
who fought who-with
b. *Ki mondott mit?
who said what (Hungarian; adapted from Kiss 2002)

46 Before moving on to the next section, we add here one further respect in which the *wh*-clause of specificational pseudoclefts seems to pattern with *wh*-questions rather than free relatives. When free relatives undergo coordination, it is possible (as Jespersen 1909: vol. III, p. 61) points out, for the *wh*-element of the second conjunct to be *which* rather than *what* (cf. (i) below). When, on the other hand, the *wh*-clause of a specificational pseudocleft is conjoined with another *wh*-clause, it seems impossible to use *which* in the second conjunct, *what* being the only possibility. The examples in (ia, b) with *what* are taken from Declerck (1988: 220) and Geluykens (1984), respectively (the latter being a corpus-based study); replacing *what* with *which* in these examples seems to render the sentences ungrammatical, just like it would in coordinated *wh*-questions:

(i) To assert what cannot be proved and *which*, were it true, annihilates all hope of existence after death. (Percy B. Shelley)

(ii) a. What we have always wanted to know but *what*/**which* the government has never wanted to tell us is what exactly happens at secret conferences.
b. What they are thinking of and *what*/**which* they will probably come up with at the end of the day is a proposal for a cassette tape of the whole bloody issue.

47 In Brazilian Portuguese, *o que* can be left out in constructions of this type, yielding *Boris roubou foi o Lavoris*; see n. 42 above, and Ross (1999) for discussion – Ross argues against the hypothesis that this construction literally results from (263) via deletion of *o que*.

48 Note, though, that the *wh* < XP word order that these pseudoclefts display would be incompatible with a 'Type B' analysis on Den Dikken et al.'s (2000) assumption that 'Type B' pseudoclefts can only have a XP < *wh* word order.

49 The parallelism between (288c) and (290b) can presumably be strengthened by considering the distribution of the complementizer *dat* 'that' in combination with (*of* and) *wh*-phrases: *Wat of dat ik gedaan heb* 'What or that I done have' is good in embedded questions (in those varieties that allow these constructions to begin with), but it seems impossible in a context such as (290b) or in specificational pseudoclefts. These data have not, to our knowledge, been discussed in the literature before; further research is called for.

50 Recall the differences between such examples (with *do*) and ones with a substantive verb in the *wh*-clause; cf. e.g. (59).

51 Higgins (1979) seeks to counter Akmajian's claim about the non-ambiguity of specificational pseudoclefts with non-NP 'counterweight'/'value' by drawing attention to the existence of non-cleft specificational copular sentences with a gerund as post-copular constituent (such as *John's biggest worry is having to photograph himself without a tie on*), which he claims feature a VP to the right of the copula. Higgins's point is not well-taken, however: these gerunds arguably are NPs.

52 Guéron (1992) seems to be a predecessor of this approach, though she does not conceive of the operation that reconstructs the focus into the *wh*-clause as a syntactic movement operation: for her, it is an operation ensuing in the mapping of the *récit* onto the *commentaire*, the latter a metalinguistic level of representation. To quote her directly (p. 103): "Le focus remplace la tête de la relative . . . Ensuite le focus est *reconstruit* à la place de la variable dans DP2 [i.e., the free relative which includes the *wh*-clause]" [original emphasis; "The focus replaces the head of the relative . . . Subsequently the focus is reconstructed into the position of the variable in DP2"]. By taking the reconstruction to happen *beyond* syntax Guéron is in fact closer to Heycock and Kroch (1999).

53 We refer the reader to Den Dikken et al. (2000) for discussion of cases in which the point at which NPI licensing takes place is indeed LF; these cases behave in interesting ways when converted into specificational pseudoclefts.

54 The ungrammaticality of (320a) is also noted in Ross (1999), who blames it on the non-constituency of *Mary a book*; on approaches to double object constructions *à la* Kayne (1984a) or Larson (1988b), however, this sequence *is* a constituent (see the main text immediately below for discussion of Larson's account, invoked by Bošković). Ross contrasts the ungrammaticality of (320a) with the well-formedness of (i) (= (28) from section 2.1, above). Here, *Jerry drunk* is unquestionably a constituent – an Honorary NP in the sense of Safir (1983):

(i) What we need is Jerry drunk.

55 See the discussion in section 5.2 for other examples of multiplicity in specificational pseudoclefts. Not all authors find such examples grammatical (see Higgins 1979: 67 for explicit rejection of an example with a structure similar to that of (321)); the point, however, is that for those speakers for whom multiple *wh*s are possible in the *wh*-clause of specificational pseudoclefts to begin with, examples of the type in (321) are acceptable.

56 In fact, Guéron's approach is more general in that it postulates such an operator in the representation of inverse specificational copular sentences of the double-NP type (like *The best candidate is John*) as well: see (220) in section 4.2, above.

57 They also point out that the restrictions on gapping in specificational pseudoclefts (which played a role in an earlier manuscript version of their paper, Heycock and Kroch 1996; see section 3.4) are another context in which linear order effects play a key role, without the Heycock and Kroch approach managing to accommodate them.

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62 Split Topicalization

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1 Introduction

Over the past decades, Split Topicalization (ST) has attracted an increasing amount of attention. And sometimes, this construction, which used to be considered only a marginal phenomenon, even figured in important theoretical debates, as for instance whether German is configurational (cf. Fanselow 1987; Webelhuth 1990) or whether extraction should be assigned a derivational or representational analysis (cf. Van Riemsdijk 1989a; Brody 1995).

1.1 Some general remarks about Topicalization

Since ST forms a special kind of Topicalization (T), some general remarks about (unsplit) Topicalization are in order. The term 'Topicalization' was introduced by Ross (1986, originally a 1967 dissertation) as a name for a transformation that fronts a non-*wh*-constituent to the left-periphery of the clause. Nowadays, the minimal assumption is that the topicalized constituent is located somewhere in the IP/CP-domain and is coindexed with an empty category inside the clause:[1]

(1) a. $[[_{NP}$ Beans$]_i$ $[_{IP}$ I don't like [e]$_i]]$. (Ross 1986: (5.68))
b. $[[_{AP}$ Proud of him$]_i$ $[_{IP}$ I've never been [e]$_i]]$. (Ross 1986: (5.69))

T creates an unbounded A-bar-dependency relation with island and connectivity effects. The term 'Topicalization' refers to the intuitive information-structural function of this preposing transformation, which is to mark the fronted constituent as a sentence topic, i.e., as the entity the sentence is about. In this most frequent use of T, the primary accent is on a constituent within the clause, while the topicalized constituent bears a somewhat weaker accent.[2]

(2) BEANS, I don't LIKE.

ST – the topic of this chapter – forms a special kind of T. The languages in which ST is attested form a subset of the languages that have T. The phenomenon of ST has been investigated most extensively with respect to Split Noun Phrase Topicalization and Split Verb Phrase Topicalization (SVPT) in German.

1.2 Different categorial types of Split Topicalization

ST gives rise to a split-constituent dependency of the following kind: a constituent's core is extracted to the pre-field while leaving its non-core behind in the middle-field of the clause:[3]

(3) $[[_{X'} \ldots X^0 \ldots]]_i \ldots [_{XP}$ YP [e]$_i$ (ZP)]

The most frequent categorial type of ST in German is Split Noun Phrase Topicalization (SNPT). The German example in (4) forms a case in point:

(4) [$_{CP}$ [$_{TOP}$ Bohnen] [$_{C'}$ mag$_i$ er nur [$_{REM}$ grüne ___]t$_i$]].
beans likes he only green
'As for beans, he likes only green ones.'

In (4), not the entire direct object has been topicalized, as in (1a), but only its core: the adjectival modifier of the topicalized noun has been stranded within the clause. The topicalized part of a ST will be referred to as TOP and the stranded part as REM.[4] TOP and the gap in REM always corefer and must therefore be co-indexed.

By what syntactic criterion does an instance of T become classified as an instance of ST? For example in (5), part of the embedded clause has been topicalized. Does this instance of subextraction (see chapter 66) count as an instance of ST?

(5) [$_{CP}$ [Grüne Bohnen]$_i$ [$_{C'}$ glaube ich, [$_{CP}$ dass er gerne mag [e]$_i$]]].
green beans believe I that he very much likes
'Green beans, I think he likes very much.'

In order to determine the class of STs cross-categorially, the notion of extended projection (cf. Van Riemsdijk 1998a and the references therein) comes into play. Without going into the technical details of this notion, it will be assumed that an extended projection consists of the lexical projection plus its functional extensions. The categorial features of all the projection nodes in an extended projection have to be identical. So, while an incomplete nominal extended projection has been topicalized in (4), in the T in (5) it is a full extended nominal projection (NP) that is extracted out of CP in (5), and not an incomplete CP. So, the subextraction in (5) is not an instance of ST. One could say that in ST, a single (extended) projection is scattered over different positions in the clause.[5]

Besides the ST of arguments, which mainly comes about by SNPT, predicates can also undergo ST. The main categorial type of split predicate T is Split Verb Phrase Topicalization (SVPT) in German and Dutch. (6) provides a clear example of this second type of ST, which matches the scheme in (3):

(6) [$_{CP}$ [Gegessen] [$_{C'}$ hat [$_{IP}$ er [$_{VP}$ nur grüne Bohnen ___]]].
eaten has he only green beans
'He has eaten only green beans.'

However, also AP predicates can undergo ST, resulting into Split Adjective Phrase Topicalization (SAPT) (cf. Corver 1997a; Müller 1998; De Kuthy and Meurers 2001), which will further be ignored here:[6]

(7) [Stolz] ist er vor allem [$_{AP}$ ___ auf seine Kinder].
proud is he especially on his children
'He is especially proud of his children.'

Finally, yet another type of ST can be discerned, namely Mixed Split Topicalization (MST), which seems to be a blend of SVPT and SNPT:

(8) [$_{CP}$ [Mädchen verführt] [$_{C'}$ hat er schon [viele ___]]].
girls seduced has he already many
'He has already seduced many girls.' (Fanselow 1987: 102)

MST seems to pose a tough problem for most analyses proposed in the relevant literature because it is unclear how TOP can form the core part of REM, as the actual split seems to occur at the N-bar-level and not at the level of V-bar.

1.3 Interesting problems

Until now, the syntactic literature on ST has mainly focused on the nature of the A-bar-dependency relation between TOP and REM. Since T is usually analyzed in terms of direct movement, the most straightforward analysis for ST seems to be an analysis in which a main constituent's core (i.e., a subconstituent) is moved into a left-peripheral position. However, this analysis faces particular problems. First, it violates the descriptive generalization that only major, single constituents can be topicalized in German (cf. Thiersch (1978)), which will be dubbed the Single Constituent Condition (SCC) here. The theoretical counterpart of this generalization can be called the Structure Preservation Condition (SPC). The SPC, which has its roots in Emonds (1970), has been reformulated in Chomsky (1986a). It says that maximal projections can only be moved into positions that are apt to host them, such as specifier positions, and that heads can only be moved into X^0 positions. Since it is usually assumed that T targets Spec, C, a movement analysis of ST would violate the SPC. In addition, a subphrasal movement analysis faces problems having to do with unexpected overlaps between TOP and REM, which become visible when TOP and REM are concatenated into a single constituent. A telling example is the SNPT with "determiner overlap" in (9a):

(9) a. [$_{CP}$ [Eine Lösung] [$_{C'}$ hat er [$_{NP}$ eine bessere ___] als ich]].
a solution has he a better (one) than I
'As for solutions, he has a better one than I have.'
b. *[$_{NP}$ eine bessere eine Lösung]. (Van Riemsdijk 1989a: 107)

In order to deal with such movement paradoxes (cf. section 2.2), the subphrasal movement analysis has to be supplemented with additional mechanism which will be dealt with in section 3.1. However, different analyses have been proposed to deal with this problem as well (cf. section 3).

With respect to examples like (9a), yet another interesting and complicating aspect of ST deserves to be noticed, namely the considerable amount of dialectal variation with respect to the possible syntactic realizations of TOP and REM. For example, the SNPT with determiner overlap in (9a) is not accepted by all speakers

of German that allow for SNPT, but is usually only acceptable for speakers who hail from the south of Germany, or from Switzerland or Austria.

Yet another interesting aspect of this construction, which has remained almost unnoticed so far, is formed by its striking information-structure properties. One should be aware of the fact that ST is a construction that is stylistically marked and occurs almost exclusively in colloquial language (cf. Kniffka 1996).

STs are mostly characterized by two informational peaks. These two information units are intonationally marked by a rising (L*H) and a falling (H*L) pitch accent respectively and they form a rise-fall contour (RF-contour) (cf. Féry 1993; Van Hoof 2003). The rising pitch accent is marked as '/' and the falling accent as '\' in front of the accented word, which are written in SMALL CAPS. The intonational description in (10) is consistent with the prosodic description that has been provided in (2) for unsplit T. Although the difference in strength between the rising and the falling pitch accent has not been specified in (10), the falling accent is perceived as more prominent than the rising one:[7]

(10) [A: Dieses Lehrbuch fand ich ziemlich schlecht. Es gab zwar viele Beispiele . . .]
'This textbook, I found rather bad. It contained many examples, though . . .'
aber [/ERKLÄRUNGEN] gab es dazu [\KEINE ___].
but explanations gave it to that none
'but explanations, it contained none.' (Van Hoof forthcoming)

The rising and the falling pitch accent of the RF-contour signal two foci of attention. The first focus, which is marked by the rise, is located on an element in TOP and the second one, marked by the fall, is often realized on an element in REM, but can be realized on another constituent in the clause, too. TOP mostly contrasts with an entity in the context that differs from TOP with respect to the meaning that is conveyed by the element with the rise and REM sometimes contrasts with another discourse entity as well. Although the examples of ST in this article have not been augmented with a contrast-facilitating context, it is important to be aware of the specific semantico-pragmatic meaning of this construction in German.

Another intriguing but also difficult problem of ST forms its restricted cross-linguistic distribution in comparison with unsplit T. For example, SNPT leads to ungrammatical results in Modern English, Standard Dutch and Scandinavian, which all have (unsplit) T at their disposal.

As becomes clear from (11a), the SNPT in (4) does not have a direct counterpart in English. A well-formed English translation of (4), is provided by (11b):

(11) a. *[[Beans], [he likes only [green ___]]].
b. [[Beans], [he likes only [green ones]]].

In (11b), the left-peripheral NP corefers with the indefinite pronoun *ones* and not with an empty category. (11b) forms an instance of Hanging Topic Left Dislocation

(HTLD) (see chapter 37), a construction in which the left-peripheral constituent does not show connectedness effects with a sentence-internal anaphor.

Although English has VP-preposing, as illustrated in (12), this construction cannot strand arguments. So, SVPT of the German type is excluded in English (cf. (13)):

(12) They all said that Harry had been eating green beans and . . .
[eating green beans], [he must have been ___]!

(13) They all said that Harry had been eating something and . . .
*[eating], [he must have been ___ green beans].

Of course, the restricted cross-linguistic distribution of ST compared with (unsplit) T can be related to many factors. Ideally, an answer to such a deep question should follow from the proposed analysis. But a lot of hypotheses deserve to be tested before it can be answered in a more than speculative way.

The literature on ST has grown most extensively for German. The emphasis of this article will therefore be on ST in this language (but see section 7 for related phenomena in other languages). Since the two main types of ST, i.e. SNPT and SVPT, have not been treated on a par in the previous literature, the different subtypes of ST will be dealt with separately here as well.

2 Syntactic properties of Split-NP Topicalization

2.1 A-bar-characteristics

As demonstrated in detail in Van Riemsdijk (1989a), SNPT exhibits the diagnostic properties of an A-bar-dependency relation. SNPT triggers V-second and leaves behind a gap in REM. Furthermore, the relation between TOP and REM is island sensitive. The latter is illustrated by the examples in (14). (14a) demonstrates that SNPT is unbounded in principle and (14b) shows that SNPT is sensitive to the Complex-NP Constraint:[8]

(14) a. [Augen] sagt er, [$_{CP}$ dass sie [schönere ___ t_i] hat [als ich]$_i$].
eyes says he that she more beautiful (ones) has than I
'As for eyes, he says that she has more beautiful ones than I have.'

b. *[Augen] kenne ich ⟦$_{NP}$ keine Frau, [$_{CP}$ die [schönere ___ t_i]
eyes know I no woman who more beautiful (ones)
hat [als ich]$_i$]].
has than I
'As for eyes, I know no woman who has more beautiful ones than I have.'

In addition, SNPT shows connectivity effects with respect to binding and morphological case. (15) shows this with respect to Binding Condition A:

(15) [Bücher von einander$_i$] sind uns$_i$ [keine ___] bekannt.
books of each other are us none known
'As for books of each other, none are known to us.'
(Van Riemsdijk 1989a: 115)

Another important property showing that TOP and REM are A-bar-related is formed by the preservation of ordering restrictions among prenominal adjectives (cf. Van Riemsdijk 1989a). Although the grammatical contrasts shown in (16) are not absolute – for (16b) can be saved by a strong RF-contour and a context in which both TOP and REM can contrast with another discourse entity[9] – a clear contrast can be observed if the minimal pair (16a, b) is uttered 'out of the blue'. Since a similar contrast cannot be diagnosed for the corresponding HTLDs (see chapter 37), as can be derived from the translations of the examples in (16), the contrast in (16) can be interpreted as a connectivity effect:

(16) a. [Ein amerikanisches Auto] kann ich mir [kein neues ___] leisten.
an American car can I me no new (one) afford
'As for an American car, I cannot afford a new one.'
b. * [Ein neues Auto] kann ich mir [kein amerikanisches ___] leisten.
a new car can I me no American (one) afford
'As for a new car, I cannot afford an American one.'
c. Base order: [$_{NP}$ ein [$_{N'}$ [$_{AP}$ neues] [$_{N'}$ [$_{AP}$ amerikanisches]$_{N'}$ [$_{N}$ Auto]]]].
(Van Riemsdijk 1989a: 122)

Another indicator for an A-bar-dependency relation between TOP and REM is provided by the fact that TOP in SNPT can licence parasitic gaps (cf. Van Hoof 1997b):

(17) [Briefe] hat sie [ohne zu Ende *e* zu lesen] noch [keine ___] weggeworfen.
letters has she without to end to read yet none away-thrown
'As for letters, she has not thrown any away yet without finishing reading them.'

Van Riemsdijk (1989a) attributes yet another well-known A-bar property to SNPT, namely the occurrence of Empty Category Principle (ECP) effects (cf. Chomsky 1981), which states that an empty category has to be properly governed. The following tendency is observed: the tighter the structural relation between REM (containing the gap) and the verb, the more easily SNPT can apply. Under the assumption that an accusative object and the main verb have more structural cohesion than a dative object or an unergative subject and the main verb, this tendency is illustrated by the paradigm in (18):

(18) a. [Einen Wagen] hat er sich [keinen ___] gekauft.
a car has he himself none bought
'As for a car, he bought himself none.'

b. ?? [Einem älteren Mann] bin ich [keinem ___] begegnet.
an older man have I none met
'As for an older man, I've met none.'
c. ?* [Ein Experte] hat [keiner ___] den Schaden geprüft.
an expert has none the damage inspected
'As for an expert, none has inspected the damage.'

However, since ECP effects do not show up as clearly in German as they do in English, it is more appropriate to speak of ECP-*like* effects in this language. Since these effects can only be perceived if the examples are uttered with the neutral stress pattern (see chapter 49) and can be repaired with the aid of narrow focus on REM (cf. Pafel 1993; Van Hoof 1977a), this A-bar-diagnostic has to be applied with care. ECP-like effects of a similar kind have also been diagnosed for *what-for* subextraction (see chapter 66) (cf. Oppenrieder 1991b). On the other hand, Pafel (1995) has shown that the syntactic position of REM in SNPT and of the source category in *what-for* split is more constrained in comparison with the syntactic position of the source category of other split constructions, such as Quantifier Floating or Partitive Split (cf. section 2.3). Therefore, in spite of the ameliorating effect of focus, the pattern outlined in (18) can be interpreted as an indicator for the existence of an A-bar-relation between TOP and REM.

2.2 Movement paradoxes

In general, A-bar-constructions are derived by syntactic movement. However, certain syntactic properties of the internal syntactic make-up of TOP and REM in SNPT seem to demonstrate that it is highly improbable that TOP has been moved directly out of REM. Most paradoxes, however, are dialectally constrained.

The first movement paradox that can be observed if the syntactic realizations of TOP and REM are compared with their combination is determiner overlap (cf. (9), repeated in (19)):

(19) a. [$_{CP}$ [Eine Lösung] [$_{C'}$ hat er [$_{NP}$ eine bessere ___] als ich]].
a solution has he a better (one) than I
'As for solutions, he has a better one than I have.'
b. *[$_{NP}$ eine bessere eine Lösung].

The so-called continuatives, i.e., bare plurals and mass nouns, are the most unmarked TOP forms (cf. Van Riemsdijk 1989a; Kniffka 1996). Although they cannot cause a determiner overlap if they are split (cf. the SNPT in (20a)), a non-matching effect with respect to adjectival inflection can appear, as shown in (20b):[10]

(20) a. [Geld] hat er glaube ich [keines ___].
money has he believe I none
'As for money, I believe he has none.'
b. [kein(*-es) [Geld]].

The strong adjectival inflection on the quantifier is required as soon as the NP in (20) is split. This phenomenon can be explained in the following way: the gap in REM has to be licensed by overt nominal features on the syntactic category that precedes and c-commands the gap. This requirement can be satisfied by the presence of an overt functional head or by inflectional morphology on a preceding adjective. Probably, the head features of the nominal gap have to become visible through the overt part of REM. Exactly the same syntactic conditions appear to hold for the remnant of NP ellipsis (see chapter 22).

Similar mismatches have been observed with respect to the inflectional morphology on adjectives, where one can make a distinction between weak and strong adjectival inflection. This is so because both TOP and REM are inflected as if they were two independent NPs.

(21) and (22) demonstrate that the adjectival inflections within the split NPs do not always match with the adjectival inflections within the corresponding unsplit NP:

(21) a. [Polnisch-e Gänse] hat sie [kein-e ___] gekauft.
Polish-STRONG geese has she no-STRONG bought
b. *[Polnisch-en Gänse] hat sie [kein-e ___] gekauft.
Polish-WEAK geese has she no-STRONG bought
'As for Polish geese, she has bought none.'

(22) a. Sie hat [kein-e polnisch-en Gänse] gekauft.
she has no-STRONG Polish-WEAK geese bought
b. *Sie hat [kein-e polnisch-e Gänse] gekauft.
she has no-STRONG Polish-STRONG geese bought
'She has bought no Polish geese.' (Fanselow 1988)

The so-called number-disagreement facts, i.e., examples in which TOP and REM do not agree in number, form a subphrasal movement paradox, too. Note however, that TOP and REM can disagree only one way: a plural TOP can take a singular REM, but not the other way around (cf. (23)):

(23) a. [Autos] hat er nur [eins ___].
cars has he only one
'As for cars, he has only one.'
b. *[(Ein) Auto] hat er sogar [zwei ___].
(a) car has he even two
'As for (a) car, he has even two.'

Other examples feeding the movement paradox are SNPTs with a REM that simply cannot be a source for subphrasal movement because of its specific lexical content. They constitute a so-called non-source for subphrasal movement.

SNPTs containing a non-source are, for example, SNPTs with the non-interrogative quantifier *welch-* ('some') as a REM. This quantifier is only licit if it c-commands an empty category that refers to a continuative:[11]

(24) a. [Pflanzen] hatte sie immer [welche ___] im Angebot.
plants had she always some to offer
'As for plants, she always had some to offer.'
b. *[$_{NP}$ welche Pflanzen]

A completely different kind of non-source REM, which is also dialectally constrained, is formed by SNPTs with so-called full-NP remnants:[12]

(25) a. [Raubvögel] glaube ich kennt Gereon nur [Bussarde].
birds of prey believe I knows Gereon only buzzards
'As for birds of prey, Gereon knows only buzzards.'
b. *[$_{NP}$ Raubvögel Bussarde] (Fanselow 1993: 63)

According to Fanselow and Ćavar (2002), another non-source can be found in SPPT, which occurs in certain dialects of southern German:

(26) a. [In Schlössern] habe ich noch [in keinen ___] gewohnt.
in castles have I yet in no (ones) lived
b. *[$_{PP}$ In keinen in Schlössern ___] habe ich noch gewohnt.
in none in castles have I yet lived
'I have not yet lived in any castles.' (Fanselow and Ćavar 2002: 69)

2.3 Different kinds of split

TOP in SNPT is a non-quantificational indefinite and refers to a property or a kind.[13] REM restricts the TOP set by introducing some properties that can be attributed to it, so that the anaphoric relation between TOP (antecedent) and REM (anaphor) forms a proper subset relation. As a consequence, the 'whole-to-part' relation, that is also encoded in unsplit modified NPs, becomes expressed prominently in SNPT.

SNPT can also apply to pseudo partives (cf. (ia) in note 12, which is repeated in (27a) and (27b)):

(27) a. [Wein] habe ich nur [zwei Flaschen ___] dabei.
wine have I only two bottles with me
'As for wine, I brought only two bottles.'
b. [Flaschen Wein] habe ich nur [zwei ___] dabei.
bottles wine have I only two with me
'As for bottles of wine, I brought only two.'

In both split pseudo-partitives, NP1 (REM) functions as a (complex) quantifier to NP2 (TOP), like in ordinary SNPTs with a quantificational REM. However, preposings that split a real partitive clearly differ from SNPT of pseudo partitives. While in SNPT, a quantificational REM quantifies over an unrestricted set of entities in TOP, the quantifier in "real" partitive constructions quantifies over

a contextually restricted set of entities. But definite or specific TOPS are not allowed for in SNPT.

Real split-partitive constructions are, for example, Quantifier Floating (cf. (28)) and Partitive Split (cf. (29)):

(28) [Die Solisten] haben [___ alle] viel Beifall bekommen.
the soloists have all much applause got
'The soloists all got much applause.'

(29) [Von uns] hat sich [niemand ___] freiwillig gemeldet.
of us has himself nobody voluntarily announced
'None of us volunteered.' (Pafel 1995: 146)

In Quantifier Floating, the fronted NP has to target an A-position before it can target an A-bar position. In Partitive Split, the preposed PP targets an A-bar position. In both constructions, the NP within the preposed PP is definite. Therefore, both Quantifier Floating and Partitive Split are constructions that differ substantially from SNPT. Another difference between Quantifier Floating and Partitive Split, on the one hand, and SNPT and *what-for* subextraction, on the other hand, is that the source category of the former group of constructions is not subject to the ECP, as becomes apparent from the examples in (28).[14]

Yet another kind of T that seems to break up NPs is NP-PP Split (cf. De Kuthy 2002). (30) shows that NP-PP Split can go in two ways: either the NP is preposed and the PP stays behind or vice versa:

(30) a. [Über Syntax] hat er [ein Buch ___] ausgeliehen.
about syntax has he a book borrowed
b. [Ein Buch] hat er [___ über Syntax] ausgeliehen.
a book has he about syntax borrowed
'He borrowed a book about syntax.' (De Kuthy 2002: 5–7)

In principle, the preposed NP in (30b) could be the underlying core part of the nominal extended projection that is extracted from, as required by our (working) definition of ST (cf. section 1.2). On the other hand, the remnant in NP-PP Split differs from REM in SNPT because the gap in the remnant of NP-PP Split is not licensed by overt agreement morphology. In addition, NP-PP Splits do not give rise to non-matching effects like those in SNPT (cf. De Kuthy 2002: 36).

NP-PP Splits like those in (30a) have been analyzed in terms of subphrasal movement, and NP-PP Splits like those in (30b) in terms of subphrasal movement in combination with remnant movement (cf. Müller 1998) or in terms of phrasal movement preceded by reanalysis (cf. Fanselow 1987; Grewendorf 1989; De Kuthy 2002).[15]

In this section, a number of constructions that at first sight seemed to be highly similar to SNPT were listed. However, they appeared to be different from SNPT both on syntactic and semantic grounds. This conclusion is supported by the fact that in contrast with SNPT, Quantifier Floating, Partitive Split and NP-PP Split

Table 62.1 NP-Split types and properties

	SNPT	NP-PP Split	Q-Floating	Partitive Split
A′-preposing	+	+	–	+
Non-specific TOP	+	–	–	–
Non-specific REM	+	–	–	–
ECP-effects	+	+	–	–
Inflected REM	+	–	–	–

are also grammatical in English. Table 62.1 summarizes their main similarities and differences. A more exhaustive list of the grammatical properties of SNPT will be provided in section 3.4.

3 Syntactic analyses of Split-NP Topicalization

This section provides an overview of the different syntactic analyses that have been proposed in the literature so far and reviews some of their problems.[16] The analyses are subdivided into three groups: (i) subphrasal extraction analyses; (ii) verbal complex extraction analyses; and (iii) phrasal extraction analyses. Although relatively many analyses for SNPT in German are available, fully worked-out proposals are pretty rare. Therefore, the analyses will only be discussed with respect to the core data of SNPT, excluding the data to be presented in section 6.

3.1 Subphrasal extraction analyses

Subphrasal movement analyses form the main type of subphrasal extraction analysis for SNPT.[17] Apart from the movement paradoxes listed in section 2.2, this analysis type must say something extra about the SPC on Move α (cf. section 1.3). Then according to this condition (cf. Chomsky 1986a), only heads and maximal projections can be moved, but no intermediate projections. The first subphrasal movement analysis (cf. Van Riemsdijk 1989a), which was developed at a time nominal functional categories had not yet really arrived, does not derive this property from a restriction on the application of Move α, but from a well-formedness condition on S-structure representations. Subphrasal extraction analyses stemming from a more recent date (cf., for example, Tappe 1989; Haegeman 1995b; Kniffka 1996) simply do away with the problem by appealing to the modern version of X-bar-theory that divides constituents into maximal lexical and maximal functional projections.[18] The movement-and-regeneration analysis (M&R analysis) proposed in Van Riemsdijk (1989a) supports a derivational analysis of SNPT in which the movement of intermediate projections is not precluded in principle. Instead of Chomsky's SPC on Move α, van Riemsdijk assumes a well-formedness condition on X-bar-structure representations. The filter dismisses S-structures containing intermediate TOP projections that are not dominated by another intermediate or maximal projection of the same category and calls into existence some mechanisms of repair that regenerate and relexicalize missing structure in turn. Van Riemsdijk assumes that only languages that allow missing structure to be

regenerated can move intermediate projections. In some languages with regeneration, a grammatical formative in TOP can become relexicalized too. However, the lexical spell-out of regenerated structure is subject to a strict recoverability condition: only words or morphemes that are fully determined by the inherent grammatical features of the nominal lexical head, such as number, gender, and case, can be relexicalized in their unmarked form. (31b, c) demonstrate the effects of regeneration and relexicalization after the A-bar-movement of an intermediate projection to Spec, C has been completed (cf. (31a)):

(31) a. $[_{CP}\ [_{N'}$ Definitiver Beweis$]_i$ $[_{C'}$ ist bis jetzt $[_{NP}$ keiner $t_i]$ gefunden worden]].
definitive proof has until now none found
been

b. *Regeneration*: $[_{CP}\ [_{NP}\ [_{N'}$ Definitiver Beweis$]_i]$ $[_{C'}$ . . .

c. *Relexicalization*: $[_{CP}\ [_{NP}$ Ein $[_{N'}$ definitiver Beweis$]_i]$ $[_{C'}$ . . .

As becomes apparent from (31), the possibility of determiner overlap between TOP and REM in certain varieties of German is accounted for by the possibility of regeneration and relexicalization. The non-matching effects of weak and strong adjectival inflection can only be explained if the spell-out of weak vs. strong inflection is not caused by specific lexical-grammatical features, but is postponed after A-bar-movement has been completed. The same solution, however, cannot be offered for the non-source *welche*. In order to derive SNPTs with this REM, Van Riemsdijk (1989a: 110) has to make the somewhat dubious assumption that lexical meanings do not have to remain constant throughout the derivation. Also the number-disagreement facts, that are quite common among the different varieties of SNPT, do not follow in a straightforward way from this analysis. Furthermore, an explanation for the existence of full-NP remnants and SPPT would certainly overstrain the mechanisms of regeneration and relexicalization. The existence of MST remains mysterious, too, under this analysis, as Van Riemsdijk (1989a) admits himself in his note 29.

Another subphrasal movement analysis is suggested in Haegeman (1995b: 173–178). Haegeman assumes that the nominal projection consists of different functional layers and that TOP, being an intermediate maximal projection of REM, can be extracted via the outer specifier of REM. According to Haegeman, the advantage of this implementation of the subphrasal-movement analysis is that the mechanisms of regeneration and relexicalization become superfluous because a layered-NP structure allows NPs to have more internal structure than becomes apparent from surface structure. For instance, the layered-NP structure in (32a) can be used to explain the phenomenon of determiner overlap (cf. (32b)):

(32) a. $[_{QP}$ keinen $[_{DP}$ einen Wagen]]
no a car

b. $[_{DP}$ Einen Wagen$]_i$ hat er sich noch $[_{QP}\ t_i$ keinen $t_i]$ leisten können.
a car has he himself yet none afford can
'As for cars, he has not been able to afford one yet.'

Although the NP in (32a) does not form a well-formed NP in German, the order 'quantifier – determiner' is possible in unsplit NPs in West Flemish and in some other varieties of West Germanic, according to Haegeman:

(33) $[_{QP}$ gen $[_{DP}$ eenen $[_{NP}$ boek]]] West Flemish
no a book

(Haegeman 1995b: 173)

Haegeman considers *eenen* in (33) and *einen* ('one') in (32a) to be a singular indefinite determiner. She argues that both the negative quantifier and the indefinite singular determiner can be spelled out in unsplit NPs in West Flemish, but that this is impossible in German because of a surface condition. After splitting of the unsplit NP in (32a) has occurred, however, the indefinite determiner would pop up overtly in some dialects (cf. (32b)) that do not allow the indefinite determiner to be spelled out in the same configuration in unsplit NPs.[19]

Although the determiner overlaps with an indefinite determiner in TOP and an indefinite determiner or numeral in REM can be analyzed in the same way, this kind of proposal is hardly extendable to data such as (34), as Haegeman notices herself, since NPs of the form *eine bessere eine Lösung* ('a better a solution') are not attested in any variety of Germanic.

(34) [Eine Lösung]$_i$ hat er [eine bessere t_i als ich].
a solution has he a better (one) than I
'As for solutions, he has a better one than I.' (Van Riemsdijk 1989a: 107)

In order to motivate a structure for German in which adjectives take NP complements, Haegeman (1995b: 305ff. note 11) suggests a parallel with the phenomenon of double definiteness in Hebrew and Modern Greek (cf. section 7.1).

A subphrasal-movement analysis combined with a base-generated TOP is sketched in Giusti (1993: 148–154). Giusti suggests an extension of the Contrastive Left Dislocation (CLD) analysis of T (see chapter 37) to SNPT.[20] In this analysis, TOP is base-generated in left-dislocated position and is co-indexed with a moved empty operator in Spec, C that binds an empty category in REM:

(35) $[_{CP}\,[_{F}\,[_{NP}\,NP]]_i\,[_{CP}\,Op_i \ldots [_{VP} \ldots [_{QP}\,Q^0\ t_i] \ldots]]]$

Giusti assumes that the moved empty NP-operator has been assigned partitive case by Q^0 and can be lexicalized as *da* ('there') or *solche* ('such') in German. The empty operator in Spec, C and the variable in REM have the same categorial and projectional features because this chain results from movement. The left-dislocated TOP and the movement chain become co-indexed through binding and, therefore, no full identity of categorial and projectional features is required. As a consequence, this analysis opens perspectives to explain SNPTs with determiner overlap or number-disagreement. It remains unclear, however, how SNPTs

with full-NP remnants could be accounted for. On the other hand, if the moved empty operator is assumed to be *pro* (cf. Cardinaletti 1986), the generalization that the licensing conditions for the empty nominal part in REM are identical to the ones for the gap in elliptic NPs follows as a matter of fact. Giusti's analysis also complies with the SCC and with the SPC. For a slightly different CLD-analysis for SNPT, see Van Hoof (1997a).

3.2 Extraction of a verbal complex from VP

In one of the first analyses for SNPT (cf. Fanselow (1987: 98–107)), the operation of T is preceded by a process of reanalysis between the object and the verb. In this reanalysis-and-movement analysis (R&M analysis), SNPT and MST are analyzed in the same way. The preconditions for the application of reanalysis are that the to-be-reanalyzed NP is adjacent to the verb and that the NP is dominated by VP. The process of reanalysis is illustrated in (36):

(36) a. *D-str1*:
$[_{VP}\,[_{NP}$ viele Mädchen$]$ $[_{V}$ verführt$]]$
b. *D-str2 after reanalysis*:
$[_{VP}\,[_{NP}$ viele $t_i]$ $[_{VC}$ Mädchen$_i$ verführt$]]$

The SNPT and the MST in (37) are derived by A-bar-movement of the verbal complex (VC) to Spec, C:

(37) a. $[_{VC}$ Mädchen$]_i$ hat er schon [viele t_i] verführt.
girls has he already many seduced
'As for girls, he has already seduced many.'
b. $[_{VC}$ Mädchen verführt$]_i$ hat er schon [viele t_i].
girls seduced has he already many
'As for having seduced girls, he has already seduced many.'
(Fanselow 1987: 102)

Since reanalysis can only apply to VP-internal constituents that are left adjacent to the verb, this analysis predicts that SNPTs with dative and nominative REMS are generally less well-formed than SNPTs with accusative REMS. Therefore, the contrast between passivized and ergative-subject REMS, which can form a REM easily, and agentive-subject REMS, which can only form a REM if they are focused (cf. section 2.1), is predicted by this analysis under the assumption that passivized, ergative and focused agentive subjects are realized VP-internally (cf. Diesing 1992b).

Unfortunately, this proposal has not been worked out in every detail. For instance, Fanselow remains vague about the syntactic category of the verbal complex in (36b). Is it a complex word or a phrasal constituent? Related to this problem, the projectional feature of the incorporated part of the NP is left unspecified, too. It is also not clear how the empty category in (36b) can be

bound, since it c-commands its antecedent after reanalysis, but this is a general problem for certain analyses of N-incorporation. Fanselow (1987) does not describe either how the SNPT in (37a) can be derived. If it is indeed the verbal complex that has been preposed to Spec, C, the verb *verführt* ('seduced') must probably have been extracted to the right before T applies.

A serious problem for this analysis is that the linear adjacency condition on reanalysis is not always respected. If, as suggested by (36b), only the second half of the source NP, i.e., the part that is adjacent to the verb, can be reanalyzed, we would expect *Bücher von Chomsky* to be the only possible TOP-candidate in (38) (cf. (38a)), but this does not turn out to be the case (cf. (38b)):

(38) a. [Bücher von Chomsky] hat er [keine ___] gekauft.
books of Chomsky has he none bought
'As for books of Chomsky, he bought none.'
b. [Bücher] hat er [keine ___ von Chomsky] gekauft.
books has he none of Chomsky bought
'As for books, he bought none of Chomsky.'

Apart from these problems, this analysis fails to solve the same problems that were problematic for derivational N-bar-movement analyses, too. A similar analysis that overcomes some of these problems has been presented in Fanselow (1993).

In order to derive SNPT and MST on a par, Fanselow (1993) proposes the base-generated-VP-plus-chain analysis, in which a base-generated VP is co-indexed through a binding chain with an empty category in the middle-field. MST and SNPT are assigned the same underlying structures as shown in (39a, b):

(39) a. *MST*:
$[_{CP}\ [_{VP1}\ \textsc{top}_{NP}\ V1]_i\ [_{C'} \ldots [_{VP2} \ldots \textsc{rem}_{NP} \ldots [_{VP1}\ e]_i\ V2]]]$.
b. *SNPT*:
$[_{CP}\ [_{VP1}\ \textsc{top}_{NP}\ [_{V1}\ e]]_i\ [_{C'} \ldots [_{VP2} \ldots \textsc{rem}_{NP} \ldots [_{VP1}\ [_{NP}\ e]\ V1]_i\ V2]]]$.

In SNPT (cf. (39b)), the verbal head of the VP projection in Spec, C is represented by an empty category, and is overtly realized in the middle-field instead. Unlike in the former split-VP analysis, i.e., the R&M-analysis of Fanselow (1987), $\textsc{top}_{NP}$ and $\textsc{rem}_{NP}$ are base-generated as two independent NPs in the sentence.

The advantages of a base-generation analysis are clear: split NPs do not have to constitute a continuous NP in underlying structure. Therefore, both variants in (38) are predicted to be grammatical. The existence of non-sources, including full-NP remnants, follows as a matter of fact.

How does this analysis fare with respect to the theta-criterion? The standard solution GB-theory has to offer for similar phenomena, like clitic doubling (see chapter 14), is that theta-roles are not assigned to syntactic constituents, but to syntactic chains. But this procedure of theta-role-assignment cannot be adopted for $\textsc{top}_{NP}$ and $\textsc{rem}_{NP}$ in (39a, b) because the split NPs do not form an NP-chain, since they are included in constituents that form links of a VP-chain. Nevertheless,

the split NPs form different instantiations of the same argument. Therefore, Fanselow (1993) adopts a more refined version of the theta-criterion than is usually assumed in GB-theory:

(40) In the extended projection of a (base-generated) VP, an argument license can be issued only once.

The notion *argument license* in (40) does not only cover theta-assignment, i.e. the closing of an argument position, but also its modification. It is also assumed that although an argument slot can be closed only once, it can be modified repeatedly before closure. In the representational chains of co-indexed VPs in (39), TOP_{NP} receives a modification license from the (c)overt verb V1 that heads the topicalized VP, while REM is assigned a theta-role by the (c)overt verb V2 in the predicating clause. In this way, TOP and REM form two different realizations of one and the same argument of the complex predicate that is formed by V1 and V2.

In these two proposals of Fanselow, the similarities between SNPT and MST are captured by means of an almost identical structural representation. But this analysis may well turn out a means too powerful to express the common properties between SNPT and MST. Intuitively, SNPT seems to be a more basic kind of ST than MST. But in these two analyses, SNPT ends up with an analysis that is at least as intricate as the one for MST.

3.3 Phrasal extraction analyses

Fanselow (1988) proposes an analysis in which two NPs are base generated in the middle-field and one of them is topicalized. In the base-generated structure (cf. (41a)), REM is in a VP-internal A-position and TOP, an indefinite property-denoting NP, is adjoined to V^0. The corresponding S-structure that is derived after T is specified in (41b):

(41) a. Sie hat $[_{VP}$ $[_{NP}$ keine *pro*] $[_{V^0}$ $[_{NP}$ polnischen Gänse] $[_{V^0}$ gekauft]]].
she has none Polish geese bought
'She didn't buy any Polish geese.'

b. $[_{CP}$ $[_{NP}$ Polnische Gänse]$_i$ $[_{C'}$ hat sie $[_{VP}$ $[_{NP}$ keine *pro*] $[_{V^0}$ t_i $[_{V^0}$ gekauft]]]]].
Polish geese has she none bought
'As for Polish geese, she bought none.' (Fanselow 1988: 103f)

It is assumed furthermore that only REM, which is base-generated in the regular A-position outside of the domain of V^0, is assigned a theta-role. In order to satisfy the Principle of Full Interpretation (cf. Chomsky 1986b), which says that every link in a chain must make its own contribution to the meaning of a sentence, it is assumed that TOP modifies REM by binding *pro* in REM. In this way, the fronting of TOP out of the complex verb into Spec, C is forced to apply and *pro* can only be bound by the preposed TOP and by no other c-commanding constituent in the sentence.

The idea to treat REM as an elliptic NP in which the elided site is represented as a pronominal category was newly introduced in Fanselow (1988), who adopted the analysis of Olsen (1987) for ellipsis in German NPs. Similar ideas were substantiated and became more influential by the work of Lobeck (1995) (see chapter 22).

Fanselow's (1988) proposal, which has been adopted recently in Van Geenhoven (1998) and Krifka (1998b), avoids many problems that are inherent to subphrasal-movement analyses. The paradox that SNPT shows properties of movement and of base-generation at the same time receives a straightforward explanation by the two independently base-generated NPs representing the same argument and of which only one is A-bar-moved.

However, some details in the analysis remain obscure. Although Fanselow (1988: 105) states that not only non-referential NPs but also directional PPs can be adjoined to V^0 in German, he remains silent about the details of a deep structure for a VP in which both types of predicative constituents occur at the same time. Another problem for this analysis is that usually only bare nouns, i.e. bare plurals, mass nouns, or bare count nouns, take part in word formation processes and that, therefore, singular-count TOPs with a lexicalized indefinite determiner are not predicted by this analysis. A general problem for analyses that allow one argument to be represented by more than one syntactic constituent is that they do not have a straightforward answer as yet to the question of how adjectival ordering restrictions holding in the corresponding unsplit NP are preserved among TOP and REM.

Fanselow and Ćavar (2002) offer yet another phrasal-movement analysis for SNPT in German, i.e. the so-called copy-and-distributed-deletion analysis (C&DD analysis). In the Minimalist Program (cf. Chomsky 1995c), movement is analyzed as a combination of two distinct operations, i.e. Copy and Delete (C&D). According to Fanselow and Ćavar, one of the advantages of a movement analysis in which deletion does not form an automatic sequel of copying, is that the existence of a construction like SNPT comes more or less for free. They propose to derive SNPT by a special application of C&D, in which the deletion operation does not affect the entire downstairs copy, but the upstairs and the downstairs copy in a partial and complementary way. This is what they call "distributed deletion." (42) compares an instantiation of unsplit movement (42a) with an instantiation of split movement in terms of C&D (the phonetically deleted parts have been struck out):

(42) a. [viele Birnen]$_2$ . . . [~~viele~~ ~~Birnen~~]$_1$ . . . (unsplit movement)
many pears . . . many pears
b. [~~viele~~ Birnen]$_2$ . . . [viele ~~Birnen~~]$_1$ . . . (split movement)
many pears . . . many pears

Both phrasal-movement types are assumed to be licit because in both cases, i.e., in (42a) and (42b), the economy Principle of Pronunciation, saying that material should not be pronounced twice, has been respected. It is also assumed that only those syntactic categories of the copy have to be visible in the upstairs copy

whose features are checked there, and that the remaining part can be deleted in accordance with the Principle of Pronunciation. Furthermore, the C&DD-analysis is enriched with additional principles that can be ranked differently for the different varieties of German. In the analysis of Fanselow and Ćavar, split-constituent movement is marked because C&DD violates the Principle of Contiguity, which says that material that has been merged as a single phrase should remain contiguous at spell-out. However, a violation of the Principle of Contiguity is possible in German, because this language still has another principle, which is higher ranked and which allows a single constituent with two or more syntactic features to check its features with different heads before spell-out.

SNPT is further assumed to be information-structure driven. The authors assume that the information structure of SNPT in German is determined in the following way: REM has to be focused and TOP has to be a topic or a secondary focus. In addition, these information-structural requirements of TOP and REM are assumed to be encoded as strong semantico-pragmatic operator features that have to be checked by two different functional heads: a focus head F1 and a topic (or secondary-focus) head F2 (cf. also Krifka 1998b). So the to-be-split phrase XP first moves into Spec, F1, where the focus feature is checked and then into Spec, F2 where the other pragmatic feature is checked.[21] (43a) specifies the result after the two subsequent copying operations have applied, and (43b) after distributed deletion. It is assumed that the operations of distributed deletion do not apply before the copying operations have been completed.

(43) a. $[_{FP2}\ [_{XP}\ a_{topic}\ [b\ c]_{focus}]\ [F2 \ldots [_{FP1}\ [_{XP}\ a_{topic}\ [b\ c]_{focus}]\ [F1 \ldots [_{XP}\ a_{topic}\ [b\ c]_{focus}]]]]]$

b. $[_{FP2}\ [_{XP}\ \sout{a_{topic}}\ [b\ c]_{focus}]\ [F2 \ldots [_{FP1}\ [_{XP}\ a_{topic}\ \sout{[b\ c]_{focus}}]\ [F1 \ldots [_{XP}\ \sout{a_{topic}}\ [b\ c]_{focus}]]]]]$

(Fanselow and Ćavar 2002: (67))

For a great part, the explanatory force of this analysis stems from the different possible rankings of principles. For example, the phenomenon of determiner-overlap, which violates the Principle of Pronunciation, is viewed as a natural consequence of a principle that requires the phonetic string dominated by an NP to meet the lexical and morphological well-formedness conditions for NPs. Since determiner overlap violates the Principle of Pronunciation, this principle is assumed to be ranked higher than the Principle of Pronunciation in a minority of dialects. The number-disagreement facts are accounted for in a similar way. So, many problems that have been identified as movement paradoxes in section 2.2 receive an optimality-theoretic explanation in this analysis. The C&DD-analysis suggests a 'regeneration and relexicalization'-like solution for the possibility of SPPT, but it has no explanation to offer for the possibility of full-NP remnants in some dialects. Furthermore, this analysis provides no explanation for MST.

Yet another phrasal-movement analysis for SNPT, which – like any phrasal-movement analysis – obeys the SPC as a matter of fact, is an analysis that base-generates split NPs as members of a paratactic NP, i.e., the apposition analysis.

This analysis is discussed in Van Hoof (1997b, forthcoming) for German and Brabant Dutch.[22] Van Hoof relates SNPT with a complex-NP construction, named Restrictive Elliptic Appositive (REA) in Van Riemsdijk (1998a), which is attested in some colloquial varieties of German.

(44) [[Unterhosen] [dreckige]] solltest du waschen.
underpants dirty should you wash
(Van Riemsdijk 1998a: 19)

According to Van Riemsdijk (1998a), a REA forms a complex NP consisting of two independent NPs, of which the second one is elliptic. Van Hoof observes that in REAs, the second NP modifies the first one by specifying a subkind. Therefore, the antecedent/anaphor relation between the two NPs in a REA is of the same semantic type as between TOP and REM in SNPT (cf. section 2.3). Van Hoof argues that in SNPT, the split NPs are base-generated as a REA headed by the first NP. As shown in (45), the individual members of a REA form two autonomous NPs, for both NPs need a lexical determiner if they are headed by a singular count-noun:

(45) [$_{NP1}$ [$_{NP1}$ eine Unterhose] [$_{NP2}$ *(eine) saubere *pro*]].
an underpant a clean (one)

SNPT is derived by fronting the first NP into the pre-field, as illustrated in (46):

(46) [$_{NP1}$ Eine Unterhose]$_i$ habe ich glücklicherweise doch noch [$_{NP1}$ t_i [$_{NP2}$ eine
an underpant have I fortunately AFF still a
saubere *pro*]] gefunden.
clean (one) found
'As for underpants, I have fortunately still found some clean ones.'

Many grammatical properties of SNPT can be derived correctly by the apposition analysis, such as the possibility of determiner overlap, non-source and full-NP REMS as well as the possibility of number-disagreement facts.

However, some problems still remain. For example, this analysis does not predict the possibility of bare singular count-noun TOPS (cf. note 10).[23]

On the other hand, the apposition analysis is one of the very few analyses that predicts the possibility of SPPT, at least in some dialects of German. Van Riemsdijk (1998a) provides an example of a REA that consists of two PPs (cf. (47)). By splitting up the REA in this example, the SPPT in (48) can be derived:

(47) [$_{PP}$ [$_{PP}$ Auf einen Drink] [$_{PP}$ auf einen kurzen]] komme ich gern
on a drink on a short (one) come I gladly
schnell hinüber.
quickly over
'For a short drink, I'd like to come over quickly.'

(48) [$_{PP}$ Auf einen Drink]$_i$ könnte ich nur [$_{PP}$ t_i [$_{PP}$ auf einen kurzen *pro*]]
on a drink could I only on a short (one)
hinüberkommen.
come over
'As for a drink, I could only come over for a short one.'
(Van Riemsdijk 1998a: 21)

The apposition analysis can also derive MST by extraposing NP_2 from a NP-REA to VP, as demonstrated in (49) for the REA in (45). From the structure in (49), the MST in (50) can be derived:

(49) Ich habe hier noch nie [$_{VP}$ [$_{VP}$ [$_{NP1}$ [$_{NP1}$ eine Unterhose] t_i] gefunden]
I have here still never an underpant found
[$_{NP2}$ eine saubere *pro*]$_i$].
a clean (one)
'I still have not ever found clean underpants here.'

(50) [$_{VP}$ [$_{NP1}$ [$_{NP1}$ Eine Unterhose] t_i] gefunden]$_k$ habe ich hier noch nie
an underpant found have I here still never
[$_{VP}$ t_k [$_{NP2}$ eine saubere *pro*]$_i$].
a clean (one)
'As for having found underpants, I still have not ever found clean ones here.'

3.4 Summary

Although the analyses developed for SNPT in the past can be characterized as highly inventive, none of the analyses can account for all the different possible syntactic realizations of TOP and REM. Table 62.2 provides a bird's-eye view of the

Table 62.2 Analyses and properties of SNPT

	VR89	H95	G93	F87	F93	F88	FC02	VH97
A'-properties	+	+	+	+	+	+	+	+
Preservation AORs	+	+	+	+	+	+	+	+
ECP effects	+	+	+	+	+	+	+	+
Parasitic gap licensing	+	+	+	?	?	+	+	+
Mismatches adj. infl	+	+	+	+	+	+	+	+
Det overlap	+	+	+	−	+	+	+	+
Bare-single-count TOP	+	+	?	+	+	+	+	?
Number disagreement	−	−	+	−	+	+	+	+
Non-source REM	−	−	+	−	+	+	+	+
Full-NP REM	−	−	−	−	+	+	−	+
MST	−	−	−	+	+	+	−	+
SPPT	−	−	−	−	−	−	+	+

Note: VR89, H95, G93, F87, F93, F88, FC02, and VH97 refer to Van Riemsdijk (1989a), Haegeman (1995b), Giusti (1993), Fanselow (1987, 1993, 1988), Fanselow and Ćavar (2002), and Van Hoof (1997b) respectively.

Table 62.3 Parameters

	Parameter
VR89	Regeneration and relexicalization
H95	Random insertion of an indefinite determiner within NP
G93	Partitive *pro* and CLD
F87	N-incorporation
F93	Independently base-generated VP in Spec, C
F88	NP-incorporation and multiple realizations of one argument and NP-ellipsis
FC02	Violation of Principle of Contiguity
VH97	Possibility of REAs

Note: See table 62.2 for abbreviations.

different grammatical properties of SNPT, as discussed in section 2, as well as a list of the most important analyses of this grammatical construction, as discussed in this section.

In relation to the restricted cross-linguistic distribution of SNPT within the Germanic language family, another interesting point of comparison has a bearing on the factor(s) that are held responsible for the occurrence of this construction in a particular language variety. Table 62.3 lines up the parameters that are implied by the different proposals.

4 Syntactic properties of Split-VP Topicalization

In SVPT, a core part of a complex verbal predicate (i.e., TOP) is extracted to the pre-field, where it is immediately followed by the fronted finite verb, while at least one of its verbal dependents, forming REM together with the c-commanded gap, is stranded in the clause. This is illustrated by the contrast between the well-formed SVPTs in (51) and the ill-formed ones in (52):[24]

(51) a. [Verkaufen] [wird er das Pferd ___ müssen].
sell will he the horse have to
'He will have to sell the horse.'
b. [Verkaufen müssen] [wird er das Pferd ___].
sell have to will he the horse
(De Kuthy and Meurers 2001)

(52) a. *[Das Pferd müssen] [wird er ___ verkaufen ___].
the horse have to will he sell
b. *[Müssen] [wird er das Pferd verkaufen ___].
have to will he the horse sell
'He will have to sell the horse.'

In a way, the syntactic properties of SVPT are reminiscent of SNPT. The X-bar-status of the fronted split VPs in (51) has been left unspecified. Under a

direct-movement analysis, the topicalized constituents cannot be maximal extended verbal projections, at least not without an additional stipulation. Therefore, SVPTs pose the same problems to the SPC and SCC as SNPT.

An analysis for SVPT must also be compatible with a plausible structural representation for the complex verbal predicate in the middle-field before the application of T. T is often used as a constituent test. However, it appears impossible to draw any firm conclusions about the constituency of complex verbal predicates on the basis of SVPT. For example, on the basis of (51a), one would conclude that the embedded verb combines with the direct object before it combines with other verbs. However, (51b) contradicts this conclusion. It shows that the main verb can also be combined with other verbs before it combines with the direct object. So on the basis of SVPT, it can only be concluded that there is no single bracketing available for the deep structure of the predicating clause. This seems to be an undesired result and has become known as the problem of spurious ambiguity (cf. Nerbonne 1994).

4.1 A-bar-properties and movement paradoxes

SVPT is island-sensitive, as briefly shown by (53), which violates the Complex-NP Condition, and by (54), which constitutes a violation of the Subject Condition:

(53) *[Gelesen] kenne ich $[\![_{NP}$ keinen Mann $[_{CP}$ der diese Bücher ___ hat]].
read know I no man who these books has
'I know no man who read these books.'

(54) *[Lesen] ist $[\![_{IP}$ $[_{IP}$ dieses Buch ___ zu müssen] schwer].
read is this book to have to difficult
'To have to read this book is difficult.'

So SVPT also creates an A-bar-relation between TOP and REM. Movement paradoxes are not that numerous as with SNPT, though they do occur. Haider (1990) brings up an example set with argument clauses that can be interpreted as a movement paradox. In German, non-topicalized argument clauses have to be realized in the post-field and cannot appear in the middle-field at surface structure, as shown in (55). However, the two SVPTs in (56) can only be derived if the transformational rules T and extraposition are not ordered. Then, in (56a), extraposition must have applied after T and in (56b), extraposition must have applied before T, at least under the assumption that SVPT is derived by direct movement:[25]

(55) a. dass er wohl fragen müssen wird, [ob wir einverstanden sind].
that he surely ask have to will whether we agreed are
b. *dass er wohl fragen [ob wir einverstanden sind] müssen wird.
that he surely ask whether we agreed are have to will
'that he surely will have to ask whether we agree.'
(Haider 1990b: 95)

(56) a. [Fragen, ob wir einverstanden sind] [wird er wohl ___ müssen].
ask whether we agreed are will he surely have to
b. [Fragen] wird er wohl ___ müssen, [ob wir einverstanden sind].
ask will he surely have to whether we agreed are
'He will surely have to ask whether we agree.'

Weerman (1989) and Zwart (1993) note that in some VPTs the dummy verb *to do* shows up naturally in the second position of a topicalized sentence, though it is really awkward in a stylistically unmarked declarative sentence. A similar contrast can be constructed for SVPT, too:[26]

(57) a. [Kochen] [tut er nur vegetarische Gerichte ___].
cook does he only vegetarian dishes
'As for cooking, he cooks only vegetarian dishes.'
b. *Er tut nur vegetarische Gerichte kochen.
he does only vegetarian dishes cook
'He cooks only vegetarian dishes.'

In spite of these movement paradoxes, the relation between TOP and REM can be characterized as of the A-bar-type.

4.2 The gap is governed by a restructuring verb

A fundamental observation about SVPT is that this construction requires a complex VP consisting of at least two verbs (cf. Haider 1990b). In addition, the governor of the gap of the preposed split VP has to be a restructuring verb (see chapter 75).

The individual verbs in a restructured complex VP are more cohesively connected than verbs that form part of a verbal complex that includes non-restructuring verbs. The cohesion property of restructured VPs becomes apparent from a number of grammatical properties,[27] among others the possibility of SVPT (cf. (58)). In SVPTs, the gap corresponding to TOP has to be governed by an (optional) restructuring verb (cf. Müller 1998 and the references therein). For instance, *wollen* ('to want'), which governs the gap in (58a), forms an obligatorily restructuring verb, *versucht* ('to try') in (58b) an optionally restructuring verbal participle and *abgelehnt* ('refused') in (58c) an obligatory non-restructring verbal participle:[28]

(58) a. [Lesen] [hat keiner das Buch ___ wollen].
read has no one the book want
'No one has wanted to read the book.'
b. [Zu lesen] [hat keiner das Buch ___ versucht].
to read has no one the book tried
'No one has tried to read the book.'
c. *[Zu lesen] [hat keiner das Buch ___ abgelehnt].
to read has no one the book rejected
'No one has rejected to read the book.'

4.3 The division of arguments among TOP and REM

If SVPT were really similar to SNPT, one would expect that the base order of arguments of a restructured VP would be reflected in the division of arguments among TOP and REM, by analogy with the preservation of adjectival ordering restrictions in SNPT. As argued in Haider (1993), the base order of arguments in non-topicalized sentences is determined by the rank of argument variables in the lexical argument structure of a verb. So, one would predict the effect of a condition like that in (59) to become perceivable somehow:[29]

(59) **No-Theta-Crossing Constraint (NTCC):**
Argument *A* cannot be in TOP if there is an argument *B* in REM and *A* >>> *B* in the argument structure of the restructured VP.

Clear contrasts with respect to the NTCC can be observed for restructured VPs that select a direct object and a dative or genetive object. As can be viewed from the base order in (60a), the genetive object must be ranked lower in the lexical argument structure of the complex VP than the direct object. The contrast between (60b) and (60c) shows the effect of the NTCC:[30]

(60) a. Man sollte seinen Vater nie eines Mordes
one should his father never the-GEN murder-GEN
beschuldigen. (Base order)
accuse
'One should never accuse his father of murder.'
b. [Eines Mordes beschuldigen] [sollte man seinen Vater nie ___].
the-GEN murder-GEN accuse should one his father never
c. *[Seinen Vater beschuldigen] [sollte man nie eines Mordes ___].
his father accuse should one never a-GEN murder-GEN
'One should never accuse his father of murder.'

However, the ungrammaticality in (60c) is not absolute, for this SVPT improves in a contrastive context with a strong rise-fall contour, as shown by the examples in (61):

(61) [Seinen /VATER beschuldigen] [sollte man nie eines \MORDES ___]
his father accuse should one never a-GEN murder-GEN
und seine /MUTTER nie eines \VERBRECHENS.
and his mother never a-GEN crime-GEN
'One should never accuse his FATHER of MURDER and his MOTHER of CRIME.'

So, ordering restrictions among arguments are preserved, although not in an absolute way, as has also been concluded with respect to the preservation of the ordering restrictions of prenominal adjectives in SNPT (cf. section 2.1).

Although it was initially believed that only indefinite subjects of passive participles and ergative verbs can be preposed along with the verb in SVPT (cf.

Thiersch 1985b; Grewendorf 1989), as illustrated in (62), Haider (1990b: 97) and Webelhuth (1990) observe that indefinite unergative subjects can also appear in TOP if the middle-field is filled by at least one verbal dependent (cf (63)):

(62) [Fehler unterlaufen] [sind meinem Lehrer noch nie ___].
mistakes occurred have my teacher yet never
'My teacher has never made any mistakes yet.'

(63) [Ein Aussenseiter gewonnen] [hat da noch nie ___].
an outsider won has there yet never
'An outsider has never won there yet.'

Haider (1990b: 97) notices that subjects of transitive VPs cannot appear in TOP if the direct object is in REM (cf. (64)), a result that corroborates the NTCC in (59):[31]

(64) *[Ein Aussenseiter gewonnen] [hat da noch nie das Derby ___].
an outsider won has there yet never the Derby
'An outsider has never won the Derby yet.'

4.4 An asymmetry between Topicalization and Scrambling

Müller (1998: 24, 215) observes that although split VPs can be topicalized (cf. (65a)), they cannot be scrambled, as shown in (65b) (cf. Fanselow 1989; Haider 1993: among others for similar observations):

(65) a. [Zu lesen] [hat das Buch keiner ___ versucht].
to read has the book no one tried
'No one has tried to read the book.'
b. *dass [zu lesen] [das Buch keiner ___ versucht hat]
that to read the book no one tried has
'that no one has tried to read the book'

However, a similar asymmetry between T and scrambling cannot be observed with the preposing of unsplit VPs, for the examples in (66) show that unsplit VPs can be scrambled:

(66) a. dass [das Buch zu lesen] keiner ___ versucht hat
that the book to read no one tried has
'that no one has tried to read the book'
b. dass [dem Matthias den Drucker zu reparieren] der Frank ___
that the Matthias the printer to repair the Frank
versprochen hat
promised has
'that Frank has promised to Matthias to repair the printer'

(Müller 1998: 215)

These contrasts show that T, as opposed to Scrambling, can also apply to partial VPs. However, the contrast between (65) and (66) can only be obtained if the examples are uttered with a flat intonation contour. So, the type of Scrambling that is not allowed to apply to parts of a restructured VP is the neutral kind of Scrambling (see chapter 43).[32]

5 Syntactic analyses of Split-VP Topicalization

The following two main types of analysis have been proposed for SVPT in German in the past: (i) the remnant-movement (RM) analysis, and (ii) extraction of a VP shell. Both analyses somehow build a bridge between the phenomenon of Scrambling and the possibility of SVPT. The fact that SVPT only occurs in the Germanic languages with Scrambling, such as German and Dutch, hints at this correlation.[33] The two analyses capture this correlation in slightly different ways.

5.1 The RM analysis

The RM analysis for SVPT was launched in Thiersch (1985) and developed further by den Besten and Webelhuth (1990) and by Müller (1998). The analysis proceeds in two steps: (i) an internal argument is scrambled (i.e., moved) out of a dominating VP, and (ii) the VP is topicalized (i.e., moved directly) into Spec, C:

(67) $[_{CP}\ [_{VP}\ t_1 \ldots V^0]_2\ [_{C'}\ V_{fin} \ldots NP_1 \ldots t_2 \ldots]]$.

In this way, the SPC is satisfied and also the spurious-ambiguity problem is solved.

In the RM analysis, it is assumed that the domain of the restructured VP also delimits the syntactic domain for Scrambling (cf. (i) in note 28), as also becomes apparent from the minimal pair in (68):

(68) a. [[t_i Zu lesen]$_k$ versucht]$_j$ hat keiner [$_{NP}$ das Buch]$_i$ t_j.
to read tried has no one the book
'No one has tried to read the book.'

b. *[[t_i Zu lesen]$_k$ abgelehnt]$_j$ hat keiner [$_{NP}$ das Buch]$_i$ t_j.
to read refused has no one the book
'No one has refused to read the book.'

(cf. Müller 1998: 19)

A theoretical problem for this analysis is the problem of unbound traces. According to the Proper Binding Condition (PBC), traces have to be c-commanded by their antecedent. Since TOP in SVPT contains an unbound trace, the PBC is expected to preclude SVPT under this analysis.

Den Besten and Webelhuth (1990) propose to alleviate the effect of the PBC for SVPT by allowing unbound argument traces in TOP to be reconstructed into

their base position and as a consequence, to become invisible for the PBC.[34] Contrasts like those in (69) are explained in this way:

(69) a. $[t_i$ Gelesen$]_j$ [hat Hans $[_{NP}$ das Buch$]_i$ nicht $t_j]$.
read has Hans the book not
'Hans has not read the book.'
b. *$[[_{PP}$ t_i Mit] gerechnet$]_j$ [hat Hans da_i nicht $t_j]$.
with counted has Hans there not
'Hans has not counted with that.'
(Den Besten and Webelhuth 1990: 78)

Müller (1998) argues that the PBC can be fully dispensed with in a strictly derivational theory of movement that adopts the main premises of the Minimalist Program (cf. Chomsky 1995c).[35]

Another theoretical problem for the RM-analysis is formed by the so-called 'anti-freezing' effects. The Freezing Principle (see chapter 28) states that extraction of a phrase α from another phrase β is only possible if β occurs in situ and is not a moved category itself. Therefore, extraction from the (overt) scrambled REM in SVPT is predicted to be always ungrammatical, contrary to fact. For example, the Freezing Priniciple correctly rules out the SVPT in (70a), but incorrectly excludes the SVPT in (70b):

(70) a. *$[t_j$ Gerechnet$]_k$ [hat da_i wie immer $[_{PP}$ t_i mit$]_j$ keiner $t_k]$.
counted has there as always with no one
b. $[t_j$ Gerechnet$]_k$ [hat da_i wie immer keiner $[_{VP}$ $[_{PP}$ mit $t_i]_j$ $t_k]]$.
counted has there as always no one with
'No one counted with that, as always.' (Müller 1998: 203)

Given the sum of facts in (70), it cannot be claimed that every scrambled phrase forms an island for extraction, since the string-vacuously scrambled REMs do not. Therefore, Den Besten and Webelhuth (1990) propose that the general ban against extraction from adjoined phrases can be alleviated if the PP is adjacent to the reconstructed verb.

Müller (1998: 205ff.) provides a different account for the contrast in (70). According to him, the REM PP in (70b) must have undergone a different kind of movement in this example, namely 'string-vacuous' extraposition, that exempts it from inducing a freezing effect. However, as Müller admits himself, this solution does not seem to be fully satisfactory either.

Müller (1998) explains the asymmetry between topicalized and scrambled split VPs (cf. section 4.4) – i.e., that split VPs can be topicalized but cannot be scrambled – by the Principle of Unambiguous Domination (PUD). The PUD says that remnant XPs cannot undergo a particular type of movement if the antecedent of the unbound trace in XP has undergone the same type of movement (Müller 1998: 241).

We will now focus on a different problem for the RM-analysis, namely on its tenet that REMs are evacuated from VP by a movement type that equals Scrambling. The strongest possible prediction of the RM-analysis is that elements that can be scrambled can be stranded as REMs and vice versa. But it can be argued that this premise cannot be upheld for at least three reasons: (i) the NTCC does not comply with it; (ii) certain elements cannot be scrambled, but can still be stranded as REMs; and (iii) certain stranded elements that can be scrambled can also be stranded with an 'in situ' interpretation.

Although different types of Scrambling can be distinguished in West Germanic (see chapter 43), most Scrambling types change the base order of arguments. Therefore, the effect of the NTCC (cf. (59)) comes somewhat as a surprise, since in the RM analysis Scrambling precedes T. The proponents of the RM analysis do not specify which Scrambling type is supposed to be relevant for their analysis. The type of Scrambling that can apply after T has been completed, on the other hand, is allowed to permute arguments (cf. note 29).

A constituent type which it is generally assumed cannot be scrambled, but that can still be stranded as a REM, is formed by negated indefinites, as shown in (71):

(71) a. dass der Fritz niemanden küsst (Base order)
that the Fritz no one kisses
'that Fritz kisses no one.'
b. ?*dass niemanden$_i$ der Fritz t_i küsst (Scrambled order)
that no one the Fritz kisses
c. [t_i Geküsst]$_j$ [hat der Fritz niemanden$_i$ t_j]. (SVPT)
kissed has the Fritz no one
'Fritz has kissed no one.' (Fanselow 2002: 99–100)

Another example is formed by non-d-linked w-indefinites, whose VP-internal position is generally believed to be fixed. Haider (1993) provides the following example:

(72) [Gelungen] [ist hier selten wem was auf Anhieb ___].
succeeded is here rarely someone something off straight
'Rarely has someone succeeded something straight off here.'
(Haider 1993: 281)

If non-specific w-indefinites are immovable, the RM analysis does not predict that they can be stranded. The SVPT in (72) can only be derived if the type of Scrambling that evacuates VP also subsumes a string-vacuous type of Scrambling.[36]

Another point that weakens the RM analysis is that in this analysis any VP node can form the target of remnant T, which makes it hard to falsify the analysis. As a consequence, the preposed remnant VP is labeled 'α' in order to remain uncommitted about the categorial features of the remnant VP (cf. Müller 1998: 214).

An HPSG analysis that resembles the RM analysis in many respects has been proposed by Hinrichs et al. (1994).

5.2 *Extraction of a VP shell*

Another possible way by means of which a movement analysis can meet the requirements that are set by the SPC and the spurious-ambiguity problem is to conceive a maximal (complex) VP as a cascade of layered VPs and by extracting one of the VP shells, as proposed for instance in Frey and Tappe (1991), Fanselow (1993), Haider (1993, 1994a):

(73) weil [$_{VP}$ jemand [$_{VP}$ einem Mädchen [$_{VP}$ einen Blumenstrauss
because someone a girl a bunch of flowers
verspricht]]] (base order)
promises
'because someone promises a girl a bunch of flowers.'

This type of analysis assumes that theta-roles cannot only be assigned in a head–sister configuration, but in a V^{max}–sister configuration as well. In addition, it is assumed that the arguments are merged in the same order as in the lexical argument structure of the main verb.

In the analysis of Frey and Tappe (1991), elements that are theta-marked in the head–sister configuration are restricted to non-depictive predicative elements, resultatives and directional PPs. The syntactic position of these elements is relatively fixed, which appears from the fact that they cannot be scrambled with a flat intonation. According to Frey and Tappe, the fact that these elements cannot be stranded in SVPT (cf. (74)) is predicted by their analysis. However as shown by (75), these SVPTs become perfectly grammatical if the predicative element is made heavier, for instance by means of focus:

(74) *[Gegessen] [hat er den Teller leer ___].
eaten has he the plate empty
'He has eaten the plate empty.'

(75) [Gegessen] [hat er den Teller nur HALB leer ___].
eaten has he the plate only half empty
'He has eaten the plate only HALF empty.'

In the analysis of Haider (1990b, 1993, 1994a), TOP is base-generated as a (small VP) in Spec, C and co-indexed with an empty category in the clause with identical categorial but with not necessarily identical level features (cf. note 17 for a reference to a similar analysis of SNPT, which violates the Chain Uniformity Condition as well).

Haider (1993, 1994a) assumes that in restructured VPs, the argument structures of the individual verbs have been unified and that the restructured VP has a complex projection base. A complex projection base contains more than one lexical head in the syntactic projection, which comes about through head-to-head

adjunction, while the arguments of the verbal complex form segments of the maximal projection of the complex head.

Given this structural representation of restructured VPs, the SVPT in (76a) can be derived. However, the derivation in (76b) is problematic because of a conflict of requirements (cf. also Haider 1993: 282). On the one hand, TOP has to be a maximal projection – not only because of the SPC, but also since it contains a direct object – while on the other hand, the empty category bound by TOP has to be a head, since it must form a complex head with the fronted restructuring verb *haben* ('to have'):

(76) a. $[_{VP}$ Versprochen$]_i$ $[hat_j$ er $[_{VP}$ einem Mädchen $[_{VP}$ einen
promised has he a girl a
Blumenstrauss e_i $e_j]]]$.
bunch of flowers

b. $[_{VP}$ Einen Blumenstrauss $[_{VP}$ versprochen$]]_i$ $[hat_j$ er $[_{VP}$ einem
a bunch of flowers promised has he a
Mädchen e_i $e_j]]$.
girl
'He has promised a girl a bunch of flowers.'

A similar kind of analysis within the framework of HPSG has been proposed in Nerbonne (1994) and De Kuthy and Meurers (2001). They propose an analysis that makes use of an argument-raising mechanism encoded in lexical rules.

A modernized version of the VP-shell movement analysis is proposed in Fanselow (2002) and is called the predicate-raising analysis (PR-analysis). In this analysis, a maximal VP is directly moved into Spec, C and each VP shell is dominated by its own lexical head. The traditional assumption that theta-roles of X^0 must be assigned to elements within XP has also been dismissed. By this move, the contents of the base-generated VP become variable, so that not only the structure in (77a), but also the structures in (77b, c) are base-generated candidates for the sentence *dass sie dem Fritz ein Buch geschenkt hat*:

(77) a. dass $[_{IP}$ sie $[_{VP2}$ $[_{VP1}$ dem Fritz ein Buch geschenkt$]$ hat$]]$
that she the Fritz a book given has

b. dass $[_{IP}$ sie $[_{VP2}$ dem Fritz $[_{VP1}$ ein Buch geschenkt$]$ hat$]]$
that she the Fritz a book given has

c. dass $[_{IP}$ sie $[_{VP2}$ dem Fritz ein Buch $[_{VP1}$ geschenkt$]$ hat$]]$
that she the Fritz a book given has
'that she gave a book to Fritz (as a present)' (Fanselow 2002: 94)

Fanselow (2002) considers theta-assignment a consequence of feature checking and assumes that the theta-features do not have to be checked before LE. As a consequence, theta-checking is not restricted to the lexical domain of a verb but is extended to the domain of dominating restructuring verbs. It is assumed that

the verbs in a restructured VP can be related by incorporation at LF, i.e. *geschenkt* in (78) can be copied to the auxiliary at LF (cf. (78e)). This does not imply that the theta-features can only be checked after incorporation at LF: some theta-features can be checked before and some theta-features have to await verb incorporation. The PR-analysis of SVPT is demonstrated in (78):

(78) a. Structure generated by Merge:
C^0 sie $[_{VP}$ dem Fritz $[_{VP}$ ein Buch geschenkt] hat]
she the Fritz a book given has

b. Movement of V_{fin} to C^0:
$[_{C^0}$ hat] $[_{IP}$ sie $[_{VP}$ dem Fritz $[_{VP}$ ein Buch geschenkt] ~~hat~~]]
has she the Fritz a book given has

c. Preposing of lower VP into Spec, C (= spell-out):
$[_{CP}$ $[_{VP}$ ein Buch geschenkt] $[_{C'}$ hat sie $[_{VP}$ dem Fritz ~~$[_{VP}$ ein Buch~~
a book given has she the Fritz a book
~~geschenkt] hat~~]]]
given has

d. Reconstruction of VP:
$[_{CP}$ ~~$[_{VP}$ Ein Buch geschenkt]~~ $[_{C'}$ hat sie $[_{VP}$ dem Fritz $[_{VP}$ ein Buch
a book given has she the Fritz a book
geschenkt] ~~hat~~]]]
given

e. Predicate raising:
$[_{CP}$ ~~$[_{VP}$ Ein Buch geschenkt]~~ $[_{C'}$ hat sie $[_{VP}$ dem Fritz $[_{VP}$ ein Buch
a book given has she the Fritz a book
~~geschenkt~~] geschenkt ~~hat~~]]]
given given has

(Fanselow 2002: 97)

In these three variants of the VP-shell-extraction analysis, there is a direct link between SVPT and the base-generated structure for restructured VPs (see chapter 75). The fact that German (and Dutch) allow for SVPT, but English does not (cf. the VPT in (12) vs. the ungrammatical SVPT in (13)), is attributed to the German-specific middle-field structure in which arguments can be base-generated as sisters of a VP. A clear advantage of these analyses is that stranded arguments are not predicted to be islands a priori because they can be in base-generated position. For the same reason, the concept of 'string-vacuous' Scrambling comes more or less for free in these analyses, so that they do not imply a mismatch between stranding and Scrambling. However, the latter point does not pertain to the PR analysis, since in this analysis free word order is base generated. Therefore, this analysis does not make a distinction between 'string-vacuous' Scrambling and Scrambling that permutes arguments, just like the RM analysis. Fanselow (2002: 105ff.) appears to draw this conclusion himself.

Table 62.4 shows in a nutshell to what extent the syntactic characteristics of SVPT are accounted for by three representative analyses of SVPT.

Table 62.4 Analyses and properties of SVPT

	M98	FT91	F02
A'-properties	+	+	+
Movement paradoxes	?	?	?
Gap is governed by a restructuring verb	+	+	+
Stranding of VP-internal arguments	−	−	+
Anti-freezing effects	?	+	+
Obedience to NTCC	−	+	−
No neutral Split-VP Scrambling	+	+	+

Note: M98, FT91, and F02 refer to Müller (1998), Frey and Tappe (1991), and Fanselow (2002) respectively.

6 Different landing sites for Split Topicalization

Until now, we have only taken into account STs in which the split constituent has been extracted to a position right in front of the finite verb in main clauses. However, ST can also target different positions, which this section will pass in review.

6.1 Split Scrambling

It has been noted in Grewendorf (1989) and Neeleman (1994a) that split NPs can also be preposed in embedded clauses, a type of ST that will be referred to as Split Scrambling. (79) and (80) provide some examples of Split-NP Scrambling:

(79) a. weil er [Kleider] immer [dreckige ___] anhat
because he clothes always dirty (ones) wears
b. weil [Kleider] er immer [dreckige ___] anhat
because clothes he always dirty (ones) wears
(Grewendorf 1989: 27)

(80) a. dass [Bücher solcher Autoren] selbst Hans seinem Sohn nicht
that books of such authors even Hans his son not
[viele ___] gibt.
many gives
b. dass Hans [Bücher solcher Autoren] selbst seinem Sohn nicht
that Hans books of such authors even his son not
[viele ___] gibt.
many gives
'that Hans does not give many books of such authors even to his son'
(Neeleman 1994: 86)

(79) and (80) show the split-scrambled NP can either precede or follow the definite subject. According to Neeleman (1994a), the examples in (80) form instances of Focus Scrambling, an A-bar-kind of Scrambling that triggers the rise-fall contour with a rise on the preposed phrase.[37]

Although split VPs, like split NPs, are not allowed to undergo neutral Scrambling (cf. section 4.4), they can undergo Focus Scrambling, again with the rise-fall contour, giving rise to Split-VP Scrambling:

(81) dass [so geliebt] [die Maria nur er hat]
that so loved the Maria only he has
'that only he loved Maria to such a degree' (Hinterhölzl 2002: 140)

Like the unsplit type of Focus Scrambling, Split Scrambling shows connectivity effects and can straddle a clause-boundary, as becomes apparent from (82):

(82) Ich hab' gehört, dass ['ne /LÖSUNG für sein$_i$ Problem] wohl \NIEMAND
I have heard, that a solution for his problem surely nobody
glaubt, dass er$_i$ [eine ___] finden wird.
believes, that he one find will
'I have heard that nobody believes that he will find a solution for his problem.'

6.2 Split Contrastive Left Dislocation

Van Hoof (1997a, 1997b) demonstrates that in Brabant Dutch split NPs cannot only undergo ST to the position right in front of the finite verb, but Contrastive Left Dislocation (CLD) (see chapter 37) as well. This type of ST, in which the finite verb ends up in third position, is named Split-CLD. As shown in (83), SNPT and Split-NP CLD (SNPCLD) occur side by side in Brabant Dutch:

(83) Brabant Dutch:
[Koeien] (die) heeft-ie [een helehoop ___] in de achterste wei.
cows D-pr has-he a whole heap in the rearmost meadow
'As for cows, he has quite a lot in the rearmost meadow.'
(Van Hoof 1997a: 280)

As becomes apparent from (83), SNPCLD differs from SNPT by a right-adjacent d(emonstrative)-pronoun (i.e. a so-called d-pronoun) whose ϕ-features agree with TOP. As shown in Van Hoof (1997a), TOP and REM are A-bar-related through the D-pronoun. Except for the presence of the D-pronoun, SNPT and SNPCLD in Brabant Dutch roughly have the same grammatical properties as SNPT in German.[38]

Examples of Split-VP CLD (SVPCLD) have also been observed for different varieties in West Germanic. Zwart (1993) provides an example for Dutch (84) and Fanselow (1993) mentions similar examples for German (85):

(84) [Gekust] [(dat) heeft Jan Marie niet ___].
kissed D-pr has Jan Marie not
'Jan hasn't kissed Marie.' (Zwart 1993: 109)

(85) a. [Schenken], [das wird Peter mir das Buch zwar nicht ___].
give D-pr will Peter me the book actually not
'Peter will actually not give the book to me.'
b. [Einem Kind schenken], [das sollte man solche Bücher besser
a child give D-pr should one such books better
nicht ___].
not
'One should better not give a child such books.'
(Fanselow 1993: 13)

According to Müller (1998: 221ff.), SVPCLD is ungrammatical in German. It has to be concluded, therefore, that Split-CLD is a variant of ST that is dialectally restricted. The question arises why this is the case (cf. Van Hoof forthcoming for discussion).

6.3 Split Topicalization and Split Scrambling

Split-NP Scrambling is also possible in combination with SNPT. These recursive splits induce the rise-fall contour with a strong rise on the split-scrambled NP:

(86) [Fehler] sind ihm [so richtig dumme ___] noch [keine ___]
mistakes are him such real stupid (ones) still none
unterlaufen.
happened
'As for mistakes, he hasn't made any real awful ones yet.'
(Pafel 1995: 66)

Given the fact that there are two different possible landing sites for ST, it does not come really as a surprise that multiple SNPT is possible, too:

(87) [Sonaten]$_j$ haben [Frauen]$_i$ bislang nur [wenige ___]$_i$ [welche ___]$_j$
sonatas have women up to now only few some
geschrieben.
written
'As for sonatas: up to now, only few women have composed some.'
(Fanselow and Ćavar 2002: 67)

Split-NP Scrambling can be combined not only with SNPT, but with SVPT and MST, too, as shown by the examples in (88) and (89):[39]

(88) [Gelesen] [hat er [/SOLCHE Bücher] \BESTIMMT noch [keine ___]].
read has he such books surely yet none

(89) [/BÜCHER gelesen] [hat er [/SOLCHE ___] \BESTIMMT noch [keine ___]].
books read has he such (ones) surely yet none
'He surely hasn't read such books yet.'

7 Work on related phenomena in other languages

Within the generative framework, SNPT and related split-NP-preposing constructions have been investigated in some depth for Modem Greek, Polish, Serbo-Croatian, and Russian. These constructions are typical of two registers, namely literary prose and spoken language. Most studies take into account only the latter variety, and so does this section. These languages also allow for split-NP preposings that seem to be of a slightly different type, since not the constituents' core but their left branch are preposed. In this type of split-NP preposing, for example, an adjective can be preposed, while the noun stays behind. Fanselow and Ćavar (2002) introduce the term pull split for this kind of split-NP preposing, a term that will be adopted here.

7.1 Split-NP preposing in Modern Greek

Androutsopoulou (1998) proposes a RM analysis for split-NP preposing in Modern Greek. Androutsopoulou only discusses split-NP preposings of the pull-split type with a definite TOP (cf. (90b)). The unsplit variant is provided in (90a):

(90) a. Idha [to kokkino forema].
I saw the red dress
'I saw the red dress.'
b. [To KOKKINO] idha [___ forema].
the red I saw dress
'It is the RED dress that I saw.' (Androutsopoulou 1998: 2)

Androutsopoulou demonstrates that the relation between TOP and REM exhibits properties of A-bar-movement. She proposes the analysis in (91) for the split-NP preposing in (90b):

(91) $[_{FocP}\,[_{DP}$ To kokkino $t_i]_j$ $idha_k$ $[_{XP}\,[_{NP}$ forema$]_i$ X^0 $[_{VP}\,t_k$ $t_j]]]$.
the red I saw dress
(Androutsopoulou 1998: 9)

According to the derivation depicted in (91), firstly the overt part of REM, apparently remaining in situ in (90b), is scrambled as a subconstituent out of the unsplit NP to the specifier of a verbal functional head, i.e. X^0, which hosts a clitic

in clitic doubling constructions. In a second step, TOP – i.e., the remnant DP containing the trace of *forema* 'dress' – is moved in its entirety into the specifier of a left-peripheral focus phrase (FocP). In this way, a potential violation of the Left Branch Condition (see chapter 66) is avoided. The island and connectivity effects are caused by the second step of remnant movement.

Although Androutsopoulou explicitly notes that the preposed NP remnant, i.e., TOP, has the syntactic appearance of an independent elliptic NP, the relation between the gap in TOP and its antecedent REM is one of movement in this analysis. However, exactly this observation and the fact that REM can also be preceded by a determiner (cf. (92)), as in independent NPs, lead Mathieu and Sitaridou (2003) to adopt an analysis that departs from a base-generated paratactic NP "[[to forema] [to kokkino]]" (cf. also Devine and Stephens 2000 for a similar analysis of split NPs in Ancient Greek):[40]

(92) [To KOKKINO] agorase [to forema ___].
the red bought the dress
'She bought the RED dress.' (Horrocks and Stavrou 1987: 91)

Mathieu and Sitaridou (2003) relate the phenomenon of determiner spreading (or: 'double definiteness' (cf. section 3.1)) in Modern Greek to split-NP preposing in this language. They propose that the two paratactic NPs in a determiner-spreading structure form a small clause. One NP forms a referential elliptic DP-predicate; the other NP, which is of the category NP and may contain an expletive determiner, forms its subject. The predicate DP of the small clause undergoes predicate inversion and raises to an outer specifier position in order to be licensed. (93) shows the determiner-spreading structure for the paratactic NP '[[to forema] [to kokkino]]' as proposed by Mathieu and Sitaridou (2003: (25)):[41]

(93) $[_{DP}\ [_{DP}$ To kokino $e]_i\ [_{SC}\ [_{NP}$ to forema] $t_i]]$.

The structure in (93) forms the point of departure for the derivation of split-NP preposing in (90b).[42]

7.2 Split-NP and split-PP preposing in Slavic languages

Most Slavic languages have split-NP and split-PP preposing. Fanselow and Ćavar (2002) propose an analysis for split-NP and split-PP preposing in Polish and Croatian; Franks and Progovac (1994) discuss split-PP preposing in Serbo-Croatian; Siewierska (1984) describes information-structural aspects of these two split preposings in Polish; and Sekerina (1997a, 1997b) takes into account information-structural and syntactic aspects of split preposing in Russian.

Two types of split preposing can be distinguished for Slavic: (i) a type that is similar to SNPT in German, in which fronting brings about an inverse scope relation between the two base-generated parts of an unsplit NP, and (ii) a pull-split preposing comparable to split-NP preposing in Modern Greek, in which the

scope relation of the split parts are the same as in the unsplit constituent. The two types of split-NP preposing are illustrated in (94) and (95). Split-PP preposing (cf. (96)), can only be of the pull-split type in Croatian; the inverted type is not allowed:[43]

(94) Croatian:
[Knijge] mi je Marija [zanimljive ___] preporučila.
books me has Mary interesting recommended
'Mary has recommended interesting books to me.'

(95) [Crveni] je Ivan [___ auto] kupio.
red has Ivan car bought
'Ivan has bought a red car.'

(96) [Na veliko] se Ivan [___ drvo] popeo.
on big self Ivan tree climbed
'Ivan climbed on a big tree.'
Fanselow and Ćavar 2002: (5b), (14a), (22e))

According to standard assumptions, pull PP-splits cannot be submitted to a subphrasal movement analysis because the modifier of the NP cannot form a constituent with the determiner. Therefore, Franks and Progovac (1994) propose a RM-analysis for the split-PP preposing in (97). As a first step, the NP moves out of the PP and right-adjoins to IP. Subsequently, the remnant PP topicalizes into Spec, C:[44]

(97) Serbo-Croatian:
$[_{CP}\ [_{PP}$ U $[_{DP}\,[_{AP}$ veliku $t_i]]]]_j\ [_{C'}$ je $[_{IP}\ [_{IP}$ Jovan t_j ušao] $[_{NP}$ sobu $]_i]]]$.
into big CL J. walked room
'Jovan walked into this big room.' (Franks and Progovac 1994: 71)

One of the problems that this analysis faces is that the structure gained after the first movement operation never occurs at the surface in this language. For example, NPs can neither be topicalized, nor be scrambled out of PPs (cf. (98)):

(98) Croatian:
a. *$[\text{Drvo}]_i$ se Ivan popeo $[_{PP}$ na veliko $t_i]$.
tree self Ivan climbed on big
b. *Ivan se $[\text{drvo}]_i$ popeo $[_{PP}$ na veliko $t_i]$.
Ivan self tree climbed on big
'Ivan climbed on a big tree.' (Fanselow and Ćavar 2002: 72)

Franks and Progovac suggest that the ill-formed examples in (98) stem from a violation of a scope-preservation principle that makes surface word order strive to reflect the scope relations in base-generated structure as much as possible.

These problems motivate Fanselow and Ćavar (2002) to extend their C&DD-analysis they propose for SNPT in German (cf. section 3.3) to split-NP and split-PP preposing in Croatian and Polish.

Sekerina (1997a, 1997b) observes that split-NP preposing and split-PP preposing in Polish and Russian have some striking similarities. Four grammatical properties identified for split preposing in Polish by Siewierska (1984), hold for split preposing in Russian, too: (i) split-PP and split-NP preposing tend to involve phrases containing a noun and just one adjective; (ii) in the majority of cases, phrases are split into two parts that end up at the edges of the clause; (iii) PPs can only be split if the prepositional object is modified and no part of the prepositional object precedes the preposition; (iv) there can be only one split per clause.

Also in Russian, split preposings go hand in hand with a contrastive reading for at least one split constituent. In the wake of Androutsopoulou (1998a, 1998b) (cf. section 7.1), Sekerina (1997a, 1997b) proposes a focus-driven movement analysis for split-NP Scrambling in Russian, too. Different possible outcomes of split-NP Scrambling in Russian together with their prosodic structures are shown in (99) and (100) (cf. also Mehlhorn (2001) for a detailed information-structural description of split-NP preposing in Russian):

(99) Russian:
  a. [Cernyj] on ljubit [___ KOFE].
  black-ACC he-NOM likes coffee-ACC
  'It is coffee that he likes to take black.'
  b. [CERNYJ] on ljubit [___ kofe].
  'He likes to take his coffee black.'

(100) a. [Kofe] on ljubit [CERNYJ ___].
  'He likes to take his coffee black.'
  b. [KOFE] on ljubit [CERNYJ ___].
  'It is coffee that he likes to take black.' (Sekerina 1997a: 384)

In contrast to Polish, where both split parts are focused in the majority of cases, resulting in a double-focus construction (cf. Siewierska 1984), both split parts can be focused only rarely at the same time in Russian (cf. Sekerina 1997a: n. 9). In general, split-NP preposing in Russian is appropriate in more contexts than in Polish. A contrastive context is no absolute desideratum and initial opening utterances of the discourse with split constituents are quite common (cf. Sekerina 1997a, 1997b).

Sekerina (1997b) proposes a double-movement analysis for split preposing in Russian: an unsplit DP or PP first scrambles into the specifier position of a higher FocusP (above IP and below CP). As a second step, a subconstituent is extracted out of it and becomes right-adjoined to FocP. Sekerina adduces two putatative causes for the fact that split phrases in Russian and Polish tend to appear at the peripheral edges of the clause (a descriptive generalization that is named

'Periphery-Constraint'). One pragmatic driving force for split-NP preposing is formed by the purpose of focus assignment to one of the two subparts of the discontinous constituent by moving it into FocP. Another information-structural force for split preposing is formed by deaccentuation as defined by the nuclear-stress rule as formulated in Cinque (1993) (see chapter 49).

7.3 Split topics 'Chinese-style'

Chinese-style topics are typical of topic-prominent languages, such as Japanese, Chinese, and Korean (see chapter 73). One type of whole-to-part relation exploited by this topic construction is the kind–subkind relation. The most famous Japanese example stems from Kuno (1973c) and is represented in (101):

(101) Japanese:
[Sakana -wa] [tai -ga] oisii.
fish TOPIC redsnapper NOM delicious is
'Speaking of fish, red snapper is the most delicious one.'
(Kuno 1973: 62)

As opposed to SNPT with a full-NP REM in German, Chinese-style topics in Japanese are not island-sensitive, as shown in (102) for the Complex-NP Constraint and in (103) for the Coordinate Construction Constraint:

(102) Japanese:
[Hon -wa] [[$_{NP}$ [shoosetu] sika yoma nai hito] -wa baka da
books TOPIC novels only read NEG person CONTR stupid is
'As for books, a person who reads only novels is stupid.'
(Van Riemsdijk 1989a: 119)

(103) Japanese:
[Isu -wa] [Peter -wa kinoo [rampu -to [kurashikku -no-o
chair TOPIC Peter TOPIC yesterday lamp and classical ACC
___]]] kat-ta
bought
'Peter bought a lamp and a classical chair yesterday.'
(Fanselow and Ćavar 2002: 77)

Although it is almost unanimously agreed upon that the topic in these constructions does not bind an empty site, but is base-generated in situ, transformational analyses have been suggested, too (see chapter 73).

7.4 Miscellanea

A construction that seems to be somewhat reminiscent of the double-subject construction in (101) is the existential construction in Malagasy, a topic-prominent language (cf. Pearson 1996). Existential clauses in Malagasy are headed by the

verb *misy*, which takes a small-clause complement. Existential clauses are used to introduce new referents or situations into the discourse.

Besides other 'part-to-whole' relations, *misy* can express a superset–subset relation between the outer subject (or 'topic' in Pearson's terms), located at the right-edge of the clause, and a predicate-internal argument:

(104) Malagasy:
[$_{\text{PredP}}$ Misy [maro ___ ao an-tokotany]] [ny raozy].
exist many DEIC LOC-garden DET-DEF rose
'Of roses, there are many in the garden.'
('Many of the roses are in the garden.') (Pearson 1996: 115)

In (104), the topic *ny raozy* 'roses' denotes a set or a kind of which the NP *maro ao an-tokotany* 'many in the garden' forms a subset (or 'subtype') or instantiation. Pearson (1996) assumes that an abstract unaccusative light verb be takes a small-clause complement DomP, whose head (Dom^0) takes a nominal complement and assigns a Domain (or 'superset' theta-role) to a DP that is base-generated in its specifier position, in order to establish the superset–subset relation between the predicate-internal and the predicate-external argument. Finally, it is argued that Dom^0 raises and incorporates into be and that the result of this process is spelled out as *misy*.

A construction that seems only remotely to be similar to SVPT in German and Dutch is the so-called predicate cleft (P-cleft) construction occurring in many West African languages. An example is Vata, a language of the Kru family (cf. Koopman 1984, 2000b). P-clefts involve two overt copies of the finite verb: one in sentence-initial position and one in the regular clause-internal position. The preposed verb is focused and contrasts with some other verb in the discourse that may be implicit:

(105) Vata:
a. [*Lē*] [à *lē* sȧ́ká].
eat we eat rice
'We are (really) EATING rice.'
b. [*Lī*] [Ȯ dā sȧ́ká *lī*].
eat s/he Perf-Aux rice eat
'S/he has EATEN rice.'
c. [*Lī*] [Ȯ *lì* sȧ́ká].
eat s/he ate rice
'S/he ATE rice.' (Koopman 1984: 38)

As shown by the examples in (105), the preposed focused verb is a segmental copy of the verb in clause-internal position. The fronted focused verb merely consists of the segmental specifications of the verb, i.e., without tonal specifications. Since elements with no associated tone surface with a mid tone, the focused verb invariably surfaces with a mid tone. The focused verb can be inherently

marked for aspect, too, as in (105a). However, the imperfective aspect is the only kind of aspect that may appear on the focused verb. And tense morphology cannot appear on the focused copy either. So in a way, the clause-initial copy is bare. In principle, any verb that may serve as the input for a morphological process can be clefted, but auxiliaries and other semantically defective verbs cannot undergo P-cleft, as they do not have enough semantic content to be focused. Koopman (1984) demonstrates that the dependency between the two verbal copies created by P-cleft is an A-bar-dependency.

In Koopman (1984), it is argued that the focused verb is moved to a clause-initial position (i.e. C^0) by head movement of the *wh*-type. It is argued that an overt copy of the fronted verb must be left behind, in order to prevent a violation of the ECP, since otherwise the clausal-internal verbal *wh*-trace is not properly governed.

Koopman (2000b) proposes a completely different analysis in which P-cleft involves remnant-XP movement. As a consequence, P-cleft is considered to be A-bar-movement of the usual kind, i.e., of an XP (and not of a head). Whereas in the head-movement analysis (cf. Koopman 1984), it is the spell-out of the clause-internal verbal copy that has to be explained, it is the spell-out of the copy in focus position that asks for an explanation in the RM-analysis. According to Koopman (2000b), the clefted verb must be overt because it is included within the fronted VP that cannot form a chain with the clause-internal verb, which is assumed to be in I^0.[45] So, the spell-out of the focused verb is required by reasons of recoverability and by the fact that only overt copies can be focused.

An analysis of the P-cleft data in (105) in terms of the C&DD-analysis is tempting (cf. section 3.3), since this analysis conceives movement as a process consisting of two separate operations, whose noncomplementary effects could somehow surface in this verb-fronting construction. However, also under this movement analysis, many questions remain open, at least at first glance. For example, why does the 'partial' or 'imperfect' copy appear in sentential-initial position and not in clause-internal position? However, in the traditional movement analysis, in which movement leaves an empty category, the P-cleft construction gives rise to completely different questions. For example, why does this construction leave more or less an exact replica of the fronted verb instead of a resumptive pronoun as usual in a resumptive-pronoun strategy? See Koopman (1984: ch. 6) for discussion.

8 Conclusion: outlook

In sum, a problem for all syntactic analyses of SNPT is that they cannot offer a straightforward solution for the full range of different possible realizations of TOP and REM. As soon as analyses aim to take into account all the possibilities in different varieties, they either overgeneralize or have to appeal to *ad hoc* mechanisms. Since there exists a considerable amount of dialectal variation with respect to the possible syntactic realizations of TOP and REM, the possibility that SNPT is not a unitary phenomenon should not be lost sight of. Most analyses exclusively

concentrate on SNPT, sometimes in combination with MST, but they have completely ignored split NPs in Split-NP Scrambling and in Split-CLD until now. Another issue that remains to be explored concerns the possible syntactic realizations of TOP in the alternative target positions of ST.

The analyses for SVPT also appear to be confronted with quite a different problem. Then, apart from the problem that is posed by movement paradoxes, both types of analysis face the problem of relating TOP to the free order of arguments within the extended, restructured VP in the predicating clause.

These investigations lead to the ultimate question of parameterization, i.e. the determination of the necessary conditions for SNPT (cf. also table 3) and SVPT to occur in a particular language. It has been suggested more than once in the past literature (cf., for example, den Besten and Webelhuth 1990) that the existence of ST correlates with the availability of Scrambling. But although both German and Dutch are Scrambling languages that allow for SVPT, not all varieties of these languages have SNPT as well.

Gouskova (2001) argues that split preposing results from the interaction of violable constraints with opposing demands. Her optimality-theoretic approach adopts a set of information-structural requirements that potentially conflicts with barrier constraints for different categorial types. Since these barrier constraints are ranked in a particular order, extraction from VP is predicted to be more likely than extraction from NP.

Fanselow (1988: 97ff.) observes two correlations for languages with discontinuous NPs, such as German, on the one hand, and non-configurational aboriginal Australian languages on the other hand: (i) if a language has discontinuous NPs, adjectives and determiners can also form NPs by themselves, i.e., the language has elliptic NPs; (ii) if a language allows for discontinuous NPs, it also has rich overt agreement morphology within NP.

In determining the relevant factors for the possibility of split NPs in a language, the possibility of NP ellipsis (see chapter 22) appears to be a relevant factor indeed (cf. also Van Hoof 1997b, forthcoming; Kuhn 1999; Mathieu and Sitaridou 2003; emphasizing this point). Also other languages with clause-internal split NPs, such as Latin, Finnish, Hungarian and West Greenlandic, allow for NP ellipsis, too. Furthermore, it has become clear from investigations in the more recent past (cf. Lobeck 1995); Kester 1996) that correlations (i) and (ii) are related too, since elided nominal catagories need agreement morphology on the overt nominal remnant to be licensed.

Also in non-configurational languages, the correlation between strong agreement morphology and the occurrence of split NPs appears to be valid. As shown by the example set in (106–107) originating from Nash (1986), NPs can only be split if each of the individual members is marked for case and agreement, although this is not required for the unsplit NP (cf. (106b)):

(106) Warlpiri:
a. [Kurdu-ngku wita-ngku] ka maliki wajilipi-nyi.
child-ERG small-ERG AUX dog chase-AGR

b. [Kurdu wita-gku] ka maliki wajilipi-nyi.
child small-ERG AUX dog chase-AGR
'The small child chases the dog.'

(107) a. [Kurdu-ngku] ka maliki wajilipi-nyi [wita-ngku].
child-ERG AUX dog chase-AGR small-ERG
b. *[Kurdu] ka maliki wajilipi-nyi [wita-ngku].
child AUX dog chase-AGR small-ERG
'The small child chases the dog.' (Fanselow 1988: 96)

Furthermore, the similarity of discontinuous NPs and elliptic NPs does not only become apparent from the obligatory agreement morphology on the adjective licensing the gap in both types, but also from the specific semantic class of the adjective, which has to be a predicative one. Mathieu (2003) reaches this conclusion for split NPs and elliptic NPs in Romance, Van Hoof (forthcoming) independently with respect to German and Brabant Dutch, and Partee (2001) reports a similar result for split NPs in Polish.

On the other hand, it cannot be claimed that a language is parameterized to have split-NP preposing if this language allows for elliptic NPs. Then, although NP ellipsis is probably a necessary condition it cannot be a sufficient one. For example, Spanish and Swedish are languages with NP ellipsis (cf. Kester 1996), but they do not have split-NP preposing with connectivity effects.

Fanselow (1988) argued that discontinuous NPs in non-configurational languages do not differ from split NPs in configurational languages. In his view, the base-generated VP structure underlying SNPT in German, which contains two independent argument NPs with the same theta-role (cf. section 3.3), also suffices to account for discontinuous NPs in non-configurational languages. Van Geenhoven (1998) provides additional semantic support in favor of this view. She shows that N-incorporation structures in West Greenlandic that occur together with a VP-internal doubling argument (cf. (108)) can be unified with the base-generated structure for SNPT in German (cf. (109)):

(108) West Greenlandic:
Jensi [$_{V'}$ marlun-nik [$_{V}$ manni-tu-ssa-a-q]].
Jensi-abs two-inst.pl egg-eat-fut-ind-[tr]-3sg
'Jensi will eat two eggs. / # Jensi will eat two of the eggs.'

(109) [$_{NP}$ Eier]$_i$ hat Jensi [$_{V'}$ [$_{NP}$ zwei] [$_{V}$ [$_{NP}$ t$_i$] gegessen]].
eggs has Jensi two eaten
'As for eggs, Jensi ate two.' (Van Geenhoven 1998: 44)

Van Geenhoven (1998) argues that both the incorporated noun in West Greenlandic and the to-be-fronted NP in German SNPT are property-denoting NPs that cannot gain wide scope because they are semantically incorporated into the verb (cf. Mathieu and Sitaridou (2003) for a similar explanation).

One more common property between SNPT and discontinuous NPs in (some) non-configurational languages deserves to be mentioned. Some incorporation languages allow an incorporated noun to appear together with an external full object NP, whereby the incorporated noun includes the reference of the external noun. Such an example is provided by Mithun (1984) for Mohawk:

(110) Mohawk:
Sha'te:ku snikú:ti rabahbót wahu-tsy-ahní:nu ki rakeniha.
eight of them bullhead he-fish-bought thus my father
'My father bought eight bullheads.' (Mithun 1984: 870)

Of course, examples like (110) are highly reminiscent of the occasional occurrence of full-NP REMS in German.

Fanselow's (1988) hypothesis that discontinuous NPs in non-configurational languages do not differ from split NPs in configurational languages is countered by the 'Pronominal Argument Hypothesis', according to which overt NPs in non-configurational languages function as modifiers or adjuncts to VP instead of VP-internal arguments. Since non-configurational languages are often characterized by a rich case or agreement system, it has been hypothesized that in these languages, the agreement morphemes or clitics satisfy a predicate's argument slots. Therefore, the overt (split) NPs do not really count for the Projection Principle. Under this hypothesis, discontinuous NPs are expected to be of quite a different type than split NPs in configurational languages. For example, the number of discontinuous NPs in non-theta-marked positions modifying a particular argument slot are predicted to be unlimited. Split NPs in configurational languages appear to be stylistically marked, for they can only occur in certain contexts, although their exact information-structural interpretation varies from language to language, perhaps because split-NP preposing in these languages constitutes a marginal phenomenon. The question arises whether split NPs in non-configurational languages are information-structurally restricted, too. This and many other questions require further research.

NOTES

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1 Different syntactic analyses for T have been proposed in the past, but will largely be ignored here. For instance, it has been proposed that the topicalized constituent is directly moved into the specifier of S-bar or CP (cf. Thiersch 1978), or to the specifier of a subprojection thereof (cf., for example, Müller and Sternefeld 1993) or adjoined to IP (cf. Lasnik and Saito 1992) or is base-generated as an adjunct to S-bar or CP (cf. Chomsky 1977b, Zwart 1993, and others).

2 It has been observed by Gundel that the topicalized constituent can also receive the main sentence accent, while the remaining part of the sentence is deaccented. In this case, the topicalized constituent seems to be the focus of the sentence:

(i) BEANS$_i$ I don't like [e]$_i$ (not LENTILS).

Gundel calls this prosodic realization of T 'Focus Topicalization'.

3 In this chapter, the notion of extraction is theory neutral between a derivational and a representational analysis. In addition, it is assumed that the V-second transformation leaves a trace of movement, as can be seen in (4). In subsequent examples, the traces of V-second will be ignored. In addition, the nature of the gap caused by ST often remains unspecified and is indicated by a dash. The main structure of German sentences is often described in terms of topological domains: (i) pre-field ('Vorfeld'); (ii) middle-field ('Mittelfeld'); (iii) coda ('Koda'); (iv) post-field ('Nachfeld'). These topological domains correspond to the following structural domains:

(i) [$_{CP}$ pre-field] [$_{C'}$ middle-field] [$_{V}$ coda] [post-field].

The exact landing position of the topicalized phrase will be left unspecified. A (split) topicalized constituent is assumed to end up in a specifier or adjunct position within the CP/IP domain (cf. also note 1).

4 With the labels TOP and REM, we wish to remain neutral with respect to the syntactic or information-structural status of these constituents. While TOP hints at 'topic' and REM suggests 'remnant', of course, they cannot be equated with these suggestive notions. For example, note 7 puts in doubt the hypothesis that topicalized constituents are sentence topics, a view that is often implicitly assumed in the literature. For a more general critique on this view see Prince (1998). The notion 'remnant' has not been adopted here because this notion figures prominently in remnant-movement analyses (cf. especially section 5.1) and plays a different role in these analyses, since remnants end up as fronted constituents.

5 We refrain from referring to the functional extensions of lexical projections by their functional-category labels. So in general, the functional extension of a lexical NP projection will simply be referred to as NP. However, if the bare, lexical NP projection is at stake, it will be made explicit in the text.

6 Cf. section 2.2 for an example of Split Preposition-Phrase Topicalization (SPPT) in German and section 7 for split-PP preposing in other languages.

7 SNPT is also compatible with the prosodic pattern for Focus Topicalization (cf. note 2), as shown in (i):

(i) A: Mag er nur grüne Bananen?
'Does he like only green bananas?'
B: Nein, [BOHNEN] mag er nur [grüne ___].
No, beans likes he only green (ones)

8 It should be noted, however, that long extractions out of a subordinate clause introduced by the lexical complementizer *dass* ('that') (cf. (14a)) are judged grammatical only by speakers of High German. The double bracket '⟦' in (14b), as well as in (53), (54), (102), and (103), indicates a syntactic island.

9 For example, (16b) clearly improves in the following context (with a steep rise on TOP and a steep fall on REM):

(i) a. A: Was für Auto kannst du dir nicht leisten?
'What kind of car can't you afford?'
b. B: [Ein /NEUES Auto] kann ich mir [kein \AMERIKANISCHES ___] leisten und
a new car can I me no American (one) afford and
[ein /ALTES] [kein \FRANZÖSISCHES].
an old no French
'As for an AMERICAN car, I cannot afford a NEW one and as for an OLD one, not a FRENCH one.'

10 Some dialects allow bare singular count-nouns to be split topicalized, as illustrated in (i):

(i) [Anzug] hab' ich auch noch [einen ___].
suit have I also still one
'As for a suit, I still have one, too.'

Tops of this type cannot give rise to determiner overlap either.

11 The same phenomenon has also been observed with similar quantifiers in other dialects of German. For example, in Swabian and Bavarian, the numeral *ein* ('one') can fulfill the same function as *welch-* in northern varieties. Abraham (1995: 519) provides (i), an example from a southern Bavarian dialect spoken in Carinthia:

(i) a. [Zuckerln] ham-ma gestern a: scho [a ___] ghopt.
bonbons have-we yesterday also already one become
'As for bonbons, we got some yesterday, too.'
b. *[A Zuckerln] ham-ma gestern a: scho ghopt.
one bonbons have-we yesterday also already got
'Some bonbons, we got yesterday, too.'

12 A SNPT kind that is highly reminiscent of a SNPT with a full-NP REM is formed by the ST of pseudo partitives (cf. Selkirk 1977). However, unlike SNPT with a full-NP REM, TOP and REM can still be concatenated into a single complex NP in this kind of SNPT, as shown in (i):

(i) a. [Wein] habe ich nur [zwei Flaschen ___] dabei.
wine have I only two bottles with me
'As for wine, I have only two bottles with me.'
b. Ich habe nur $[_{NP}\ [_{NP1}$ zwei Flaschen$]\ [_{NP2}$ Wein$]]$ dabei.
I have only two bottles of wine with me
'Ich habe nur zwei Flaschen Wein dabei.' (Van Riemsdijk 1989a: 120)

13 As shown by (i), TOP must have a *de dicto* interpretation and does not carry an existential presupposition:

(i) [Einhörner] sind mir noch [keine ___] über den Weg gelaufen.
unicorns are me still none across the way walked
'As for unicorns, I've met none yet.'

14 Pafel (1995) argues that the difference in sensitivity to restrictions like the ECP between the two groups can be explained by a difference in their internal NP-structure:

only in the latter group is the element to be extracted included by all maximal-projection nodes of the NP source.

15 (ia) presents the remnant-movement analysis of (30b) (see chapter 28), (ib) shows the analysis of Fanselow (1987), which is based on the fronting of an independent NP object after reanalysis of the complex NP, and (ic) shows the more refined reanalysis process proposed by Grewendorf (1989), which not only breaks up the NP, but forms a complex verbal expression with the head NP and the verb before the NP is preposed:

(i) a. $[_{NP}$ Ein Buch $t_i]_j$ hat er $[_{PP}$ über Syntax$]_i$ t_j ausgeliehen.
a book has he about syntax borrowed

b. $[_{NP}$ Ein Buch$]_i$ hat er t_i $[_{PP}$ über Syntax] ausgeliehen.
a book has he about syntax borrowed

c. $[_{NP}$ Ein Buch$]_i$ hat er t_i $[_{PP}$ über Syntax] $[_V$ t_i ausgeliehen.
a book has he about syntax borrowed

16 For a more extended overview, see Van Hoof (forthcoming). In this section, we stick to the terminology that has been developed in the preceding sections as far as possible. Whenever necessary, however, the terminology of the analyses under review will be adopted.

17 In this chapter, 'extraction' is used theory-neutrally between a derivational and a representational approach. A representational X-bar-chain analysis for SNPT has been sketched in Tappe (1989) and Haider (1990b). The problem for this type of analysis is that it violates the Chain Uniformity Condition (cf. Chomsky 1995c), which requires that the different links in a chain should not differ with respect to their phrase-structural status.

18 The X-bar-preposing analysis Van Riemsdijk (1989a) can also be enriched with functional categories as described in Van Riemsdijk (1998a). This view roughly implies that although intermediate projections 'old style' have become maximal projections 'new style', they still count as intermediate extended projections. Therefore, SNPT still poses a problem for the SCC in that only maximal constituents can be topicalized and its theoretical counterpart, the SPC (cf. section 1.3) if maximality is conceived of as a relational notion, i.e., a projection Y of X^0 is maximal if the mother of Y is not a projection of X^0.

19 However, both Abraham (1996) and Van Hoof (1997b) cast doubt on this analysis for comparable data in Bavarian and Brabant Dutch in which the counterparts of West Flemish *eenen* in (33) seem to be a cardinal quantifier, not an indefinite determiner.

20 The left-dislocation analysis of T was originally proposed in Chomsky (1977b) for English and transformed into a covert CLD-analysis for T in German and Dutch by Koster (1978b) and Cardinaletti (1986). According to the covert CLD-analysis of T, the fronted d(emonstrative)-pronoun in CLD is either phonetically deleted or substituted for by an empty operator in T.

21 See Van Hoof (forthcoming) for a critique of the information-structural part of this analysis and the syntactic implementation thereof.

22 Mathieu and Sitaridou (2003) propose a similar analysis for split-NP preposing in Modern Greek (cf. section 7.1).

23 One might think that the apposition analysis violates the Left Branch Condition (see chapter 66). But as pointed out by Edward Göbbel, similar facts occur with

relative-clause extraposition in English, i.e., 'relative-clause stranding', if a strictly right-branching structure is assumed (cf. Kayne 1994), as illustrated in (i):

(i) $[_{NP}$ A man$]_i$ arrived $[_{NP}$ t_i $[_{NP}$ who I met in London]].

24 Although SVPT is also possible in Dutch, only German examples are presented in this section. In the literature, examples like (i) are usually not subsumed under ST, but are considered to be Ts of an unsplit VP (cf., for example, Müller 1998):

(i) $[_{CP}$ $[_{VP}$ Grüne Bohnen gegessen] $[_{C'}$ hat $[_{IP}$ nur er ___]]].
green beans eaten has only he
'As for having eaten green beans, only he has.'

However, in accordance with the extended-projection-based definition for ST adopted in section 1.2, it could be argued just as well that IP in (i) forms an extended verbal projection that is headed by the participle *gegessen* 'eaten' and that the topicalized phrase forms a split VP (cf. Van Riemsdijk 1998a: 12, n. 11, for a suggestion along these lines). However, here we only deal with the clear examples or SVPT, in which an extended verbal projection has been split in such a way that at least one argument of the split VP in TOP has been stranded in the clause. Note furthermore that, unlike for the examples of SNPT, no stylistically precise translations are rendered for the SVPT examples for complexity reasons.

25 Still one other option is available, however. The VPT in (55) and the SVPT in (56) can be derived if the extraposition of a CP argument is obligatory, but not before PF. The same kind of movement paradox can also be constructed for SNPT (cf. Fanselow and Ćavar 2002: 97).

26 For a slightly different view on the status of grammaticality of sentences like (57b), see Grohmann (2000b) and Erb (2001). According to Grohmann (2000b: 189), sentences like (i) are grammatical in some varieties of colloquial German and Dutch:

(i) Meine Freunde tun nicht viel arbeiten, die gehen lieber feiern.
my friends do not much work, they go preferably party
'My friends don't like to work very much, they'd rather go partying.'

27 For example, in restructured VPs, the arguments of the different verbs are permutable, as shown by the contrast in (i), the verbs can undergo V-raising and operators can have scope over the entire complex VP (cf. Fanselow 1989; Meurers 1999); (chapter 75, this volume):

(i) a. dass [das Buch]$_i$ keiner t_i zu lesen versucht hat
that the book no one to read tried has
'that no one has tried to read the book'
b. ?*dass [das Buch]$_i$ keiner t_i zu lesen abgelehnt hat
that the book no one to read refused has
'that no one has refused to read the book' (Müller 1998: 17)

28 (58b, c) have been borrowed from Müller (1998: 18). An anonymous reviewer points out that the SVPTs in (58b, c), as well as the SVPTs in (68), can also be derived from an underlying Third-Construction variant (cf. (i)), which is often analyzed in terms of 'remnant extraposition' (cf. Den Besten and Rutten 1989; Broekhuis et al. 1995):

(i) dass keiner das Buch$_i$ abgelehnt hat [t_i zu lesen]
that no one the book refused has to read
'that no one has refused to read the book'

However, see Müller (1998: 18, n. 17) for a reason why *das Buch* 'the book' cannot have been locally scrambled within the domain of the infinitive α in (ii), which is the underlying structure of (i):

(ii) *[$_{VP}$ t_i Zu lesen]$_j$ hat keiner [$_\alpha$ [$_{NP}$ das Buch]$_i$ t_j] abgelehnt.
to read has no one the book refused

29 Note that the permutation of arguments within TOP and within REM, after SVPT has been completed, is allowed for, however (cf. Haider and Rosengren 1998: 8 for a similar observation):

(i) a. Der Grossvater hat am Sonntag dem Enkel ein Pferd
the grandfather has on Sunday the grandchild a horse
versprochen. (base order)
promised
b. [Ein Pferd$_i$ dem Enkel e_i versprochen] [hat der Grossvater
a horse the grandchild promised has the grandfather
am Sonntag ___].
on Sunday
c. [Ein Pferd versprochen] [hat der Grossvater dem Enkel$_i$
a horse promised has the grandfather the grandchild
am Sonntag e_i ___].
on Sunday
d. [Ein Pferd versprochen] [hat dem Enkel$_i$ sogar der GROSSVATER
a horse promised has the grandchild even the grandfather
am Sonntag e_i ___].
on Sunday

30 However, no clear NTCC can be derived for the alternation between direct and indirect objects. In the restructured VP, whose main verb is *hinterlassen* ('to bequeath'), the dative argument is ranked higher than the accusative object (cf. Thiersch (1985), Müller (1998) for the same observation):

(i) a. Er hat der Kusine das Schloss hinterlassen. (Base Order)
he has the-DAT female cousine the castle bequeathed
b. [Das Schloss hinterlassen] [hat er der Kusine ___].
the castle bequeathed has he the-DAT female cousin
c. ?? [Der Kusine hinterlassen] [hat er das Schloss ___].
the-DAT female cousin bequeathed has he the castle
'He bequeathed the cousin the castle.'

31 According to Haider (1990b), the ungrammaticality in (64) vanishes if the direct object is represented by a weak pronoun or by a deaccented NP, as becomes apparent from (i):

(i) [Ein Aussenseiter gewonnen] [hat [es/das] da noch nie ___].
an outsider won has it/that there yet never
'An outsider has never won it/that yet.' (Haider 1990b: 97)

However, the status of the grammatical contrast between (64) and (i) is still rather unclear at this moment.

32 However according to Müller, Scrambling of split VPs is sometimes possible, namely if the stranded argument in REM is represented by a weak pronoun or a clitic:

(i) dass [zu lesen] [es/'s keiner ___ versucht hat]
that to read it no one tried has
'that no one has tried to read it' (Müller 1998: 227)

Note that pronoun movement and cliticization in Germanic are generally not believed to be instances of Scrambling, but instances of a different movement type (see chapter 13).

33 Still more analyses of SVPT can be distinguished, but they are mere suggestions that have not been worked out so far. Discussion of them will therefore be omitted. For example, Van Riemsdijk (1989a) considers extending his X-bar-movement analysis for SNPT to SVPT in German, but since there is no real evidence for relexicalization in TOP of German SVPT, which makes regeneration visible, this possibility has not been pursued. Weerman (1989) and Zwart (1993) suggested the LD-cum-operator analysis for SVPT in Dutch. Hinterhölzl (2002) argues that the C&DD-analysis (cf. section 3.3) is inappropriate for SVPT and provides an alternative analysis based on a strictly right-branching structure (cf. Kayne 1994) combined with RM-movement.

34 See Huang (1993) for another technical solution to the problem of unbound traces in TOP of SVPT.

35 Müller (1998) refers to SVPT by the name of Incomplete Category Fronting. Since this term also subsumes NP–PP Split, it does not equal the notion of ST used here.

36 Note that the neutral type of Scrambling that is triggered by the referentiality or definiteness property of arguments (see chapter 43) cannot be at stake in (71) and (72) because the stranded arguments are nonspecific indefinites. Hinterhölzl (2002), who assumes a VO-based restructuring account, introduces yet another type of clause-internal movement, called 'licensing movement', which can apply to all verbal dependents irrespective of their referential status. This type of movement precedes Scrambling and empties the to-be-topicalized VP in remnant T. It is assumed that this movement type does not create freezing effects.

37 In Haider and Rosengren (1998), this type of Scrambling is called Topic Scrambling and it is assumed to target a position directly below C^0. The question of which term is more on the right track will not be answered here, and neither will the question of whether this Scrambling type can be equated with embedded Topicalization in English (see chapter 23).

38 Some speakers of Brabant Dutch also allow for the split variant with a D-pronoun in situ:

(i) Brabant Dutch:
[Koeien], hij heeft die [een helehoop ___] in de achterste wei.
cows he has D-pr a whole heap in the most behind meadow
'As for cows, he has quite a lot in the rearmost meadow.'
(Van Hoof 1997a: 280)

39 Additionally, Split-NP Scrambling can also occur together with different types of Split-CLD in Brabant Dutch (cf. Van Hoof forthcoming).

40 Besides the pull-split type of split-NP preposing, Modern Greek also allows for the inverted (German) type of split NPs, as illustrated in (i), an example that originates from Horrocks and Stavrou (1987):

(i) [To FOREMA] idha [___ to kokkino].
the dress saw-I the red
'I saw the red DRESS.' (Mathieu and Sitaridou 2003: (17))

41 In (93), 'e' denotes a null-head modifier, i.e., an elided nominal head.

42 Mathieu and Sitaridou (2003) and Mathieu (2003) apply this analysis to a split-NP-preposing construction that is attested in some varieties of Romance, too:

(i) French:
a. Je préfère [la chemise rouge].
I prefer the shirt red
'I prefer the red shirt.'
b. Je préfère [$_{DP}$ [$_{DP}$ la rouge *e*]$_i$ [$_{SC}$ [$_{NP}$ de chemise] t_i]].
I prefer the red of shirt
'I prefer the RED shirt.'
c. [La ROUGE], elle te va bien [___ de chemise].
the red it you goes well of shirt
'The RED shirt suits you.' (Mathieu and Sitaridou 2003)

In passing, Grewendorf (1995) also proposes an underlying small-clause structure for SNPT in German, in which REM forms the subject and TOP the predicate of a base-generated small clause in the middle-field (cf. Grewendorf 1995: 1299).

43 The discussion of split preposing in Slavic languages sometimes also includes (pull-split *wh*-phrases (cf., for example, Fanselow and Ćavar 2002), a split type that is not considered here. As becomes apparent from the main text, Franks and Progovac (1994) provide examples from Serbo-Croation, while Fanselow and Ćavar (2002) offer examples from Croatian. Although Serbian and Croatian are very similar, they are still considered to be two different languages. The (artificial) language Serbo-Croatian was brought into existence for political reasons in the past. Probably, Serbo-Croatian examples are grammatical both in Serbian and in Croatian, but we stick to the language terminology employed by the authors here.

44 Note that Franks and Progovac (1994) base-generate NP as a complement of A^0 (cf. Abney 1986). They also suggest the RM analysis as a viable alternative for pull-split-NP preposing.

45 Both Koopman (2000b) and Pearson (1996) adopt a strictly right-branching base structure (cf. Kayne 1994) and the constituent order at spell-out is derived by successive leftward movement.

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63 The Spray-Load Alternation

MAYA ARAD

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1 Introduction: spray-load verbs – the data and the problem

The spray-load alternation, better known in the literature as the locative alternation, is exemplified in the sentences (1–5):

(1) a. Lucy sprayed the paint on the wall.
    b. Lucy sprayed the wall with paint.

(2) a. Ben loaded hay on the truck.
    b. Ben loaded his truck with hay.

(3) a. Jan plant bomen in de tuin.
       John plants trees in the Garden.
    b. Jan beplant de tuin met bomen.
       John be-plants the garden with trees.

(Dutch; Dik 1980)

(4) a. kabe ni penki o nuru
       wall on paint ACC Paint (VERB)
       'smear paint on the wall'

b. kabe o penki de nuru
wall ACC paint with Paint (VERB)
'smear the wall with paint' (Japanese; Fukui et al. 1985)

(5) a. János rámázolta a festéket a falra.
John onto-smeared-he-it ACC Paint-ACC the wall-onto
'John smeared paint on the wall.'
b. János bemázolta a falat festékkel.
John in-smeared-he-it ACC The wall Paint-with
'John smeared the wall with paint.'
(Hungarian; Moravcsik 1978)

Verbs such as *spray* and *load* appear in two different syntactic structures: each of their internal arguments may be realized as a direct object. The other argument is then realized as a goal (the truck in 2a) or a locatum (the entity that is being applied or located, like the hay in 2b). In this, they differ from other verbs that have two internal arguments, but which do not participate in that alternation:

(6) a. Lucy covered the towel with sand.
b. *Lucy covered sand on the towel.

(7) a. Ben poured water into the glass.
b. *Ben poured the glass with water.

Even from this limited set of data in (1–5), two characteristic properties of the alternation are evident. First, this alternation exists in a number of unrelated languages. Second, it is roughly the same types of verbs that participate in that alternation. The two facts combined suggest that there may be something about the lexical properties of certain verbs which enables them to be realized in two different ways.

The existence of such cases as (1–5) raises several related questions. First, noting that only a particular group of verbs undergo the locative alternation, the question arises:

- What are the lexical properties of the verbs that participate in that alternation?

Second, it has been noted by many that there exists also a difference in the interpretation of the two variants in (1a, b) (cf. Rappaport and Levin 1988 and references therein). It is always the argument that is realized as a direct object, which is interpreted as wholly affected by the action of the verb. In (1a) it is understood that the whole amount of paint involved has been sprayed on the wall (although it is not specified whether the wall is now entirely covered with paint). In (1b) it is understood that the wall is completely covered with paint (but nothing is specified as for whether the whole amount of spray has been used). This difference in interpretation raises the following question:

- How can the difference in interpretation between the two variants be accounted for?

In addition to these empirical questions, the locative alternation also raises a theoretical challenge to any theory of the syntax–lexicon interface:

- How can the two argument structures associated with spray-load verbs be accounted for?

It is worth explaining, perhaps, why this is a problem at all. Work on the syntax–lexicon interface has established a robust correlation between verbs' lexical properties and verbs' argument structure. Within generative grammar, specifically within the GB framework, this correlation is captured by the Projection Principle, which ensures that all of verbs' lexical properties are encoded at the beginning of the derivation (i.e., at D-structure). The projection of verbs is mediated via the thematic roles that each verb specifies: agent, theme, benefactor, etc. Each case of alternation poses a challenge to projection: does the verb have two lexical entries, each specifying different thematic roles, and associated with a different syntactic structure? Or is there a single lexical entry, associated with one structure only, and the other syntactic structure is derived from it?

Argument structure alternations are not a homogeneous group. Consequently, the analyses that have been suggested for different alternations vary from one class to another. Cases of the causative-inchoative alternation (e.g. *Lucy broke the glass* vs. *The glass broke*) are standardly analyzed as an instance of unaccusativity (in the case of the inchoative verb), involving a single lexical entry. (Levin and Rappaport Hovav 1995; Reinhart 1996.)

Cases such as the dative alternation (e.g., *Lucy gave a book to Ben* vs. *Lucy gave Ben a book*) have been argued by many to be a *syntactic* alternation, in which one structure is derivationally related to the other (Larson 1988b).

The locative alternation is thus an intriguing case, which does not lend itself easily to any of the above accounts (lexical operations or syntactic derivation). This question crosses theoretical boundaries: no matter what your theoretical assumptions are, there has to be a way to allow for such verbs to appear in two syntactic structures.

Cases such as the spray-load alternation can be used, therefore, as a probe into the relation between the syntax and the lexical semantics of verbs. It is precisely by looking at such phenomena that we gain insight regarding the syntax–lexicon interface.

2 Accounting for the spray-load alternation

While all accounts of the locative alternation aim to answer the three questions posed above, theories differ with regard to their theoretical focus. We shall review here three types of theories based on: thematic roles; the role of aspect in

mediating between syntax and semantics; and the role of the syntactic construction itself.

2.1 Thematic roles (Levin and Rappaport 1988)

Working within the theory of thematic roles, Rappaport and Levin (1988) concentrate on the challenge that spray-load verbs pose for the theory of thematic roles. Thematic roles, under their view, do not interface directly with the syntax. Rather, they are specified at an initial level of representation called Lexical Conceptual Structure (LCS). Part of the lexical information verbs include at that level is the thematic roles they take:

(8) LOAD: <Agent, Locatum, Goal>

Thematic roles are then associated with another level of representation, which is syntactically relevant – Predicate Argument Structure (PAS). This level specifies argument *slots*, distinguishing between internal and external arguments, but is blind to specific thematic representation such as Agent, Theme etc. The linking rules from LCS to PAS ensure that the Agent argument ends up at the position of the external argument, and never as an internal argument (and, similarly, that the Theme argument is associated with the direct internal argument). Projection from PAS to the level of D-structure then proceeds according to the well-known projection rules (external argument realized as a subject, direct internal argument realized as an object, other arguments realized as indirect objects or objects of prepositions). Levin and Rappaport assume that from the single entry of *load* type verbs at LCS, there arise two different argument structures at PAS (in the following example the external argument, *x*, is marked as being outside the scope of the internal arguments. The direct internal argument, *y*, is underlined, and the preposition present in each alternant is specified at the level of PAS):

(9) a. LOAD: x <$\underline{y}$, $P_{loc}z$>
b. LOAD: x <$\underline{y}$, $P_{with}z$>

From these two argument structures, the two syntactic structures associated with *load* are projected. The problem is how to get from the single LCS entry in (8) to the two structures in (9).

Rappaport and Levin note that the locative variant (2a) is easy to account for, if we allow the Locatum argument to be interpreted as a Theme. This ensures that the argument bearing this role ends up in the direct object position. The problem starts when we try to account for the other alternant, the '*with*-variant' (2b). Here, it is the Goal argument that is linked with the position of the direct internal argument. Goals generally tend to be linked with the position of indirect internal argument. To account for this alternation, it is necessary to postulate a linking rule specific to these cases – an undesirable thing to do. In addition, to account for the difference in interpretation between the two variants, an ad hoc

rule assigning a holistic interpretation to a direct internal argument bearing a Goal role would be required. Another possibility to associate *load*-type verbs with two argument structures would simply be to assume that they include two LCS entries, each specifying different thematic roles:

(10) $LOAD_a$: <Agent, Locatum, Goal> (locative variant)
$LOAD_b$: <Agent, Theme, Locatum> (*with*-variant)

A Theme is an entity that undergoes change of state, while a Locatum undergoes a change of location. Each of these verbs is then uniquely associated with an argument structure of its own.

However, Rappaport and Levin point out that associating *load*-type verbs with two different thematic roles raises three serious problems. First, without a definition of a Theme, labeling arguments as 'Locatum' and 'Theme' seems like a restatement of the fact that either the goal or the locatum may be associated with the direct internal argument. The question is, how do we get two different argument structures from a single lexical entry? In addition, this approach does not explain the interpretative difference between the two variants. More importantly, it also masks the connection between *load*-type verbs and another group of verbs, *clear*-type verbs, that seems like their mirror image:

(11) a. Lucy cleared dishes from the table.
b. Lucy cleared the table of dishes.

Such verbs seem to share the thematic structure of *load*-type verbs, except for their second internal argument, which bears the role of a Source rather than a Goal:

(12) $CLEAR_a$: <Agent, Theme, Source>

In the *of*-variant, the list of thematic roles is identical to that of the *load*-type verbs:

(13) $CLEAR_b$: <Agent, Theme, Locatum>

Such an approach does not distinguish between *clear*-type verbs and *load*-type verbs at the level of LCS. To summarize, the single-thematic-structure approach fails to provide linking rules and account for the affected interpretation. The double-thematic-structure approach fails to account for the near-paraphrase interpretation of the two alternants.

Cases such as the spray-load alternation clearly indicate the problems with the standard view of thematic roles (which successfully accounts for other types of alternations, such as the causative-inchoative alternation). Based on this case, Rappaport and Levin propose a finer-grained semantic representation of verbs. This view makes use of a decomposition of the meaning of load into argument variables and a number of primitive meaning components. The verb *load* has two LCSs:

(14) a. LOAD: [*x* cause [*y* to come to be at *z*] / LOAD]
b. LOAD: [[*x* cause [*z* to come to be in a STATE]] BY MEANS OF [*x* cause [*y* to come to be at *z*]] / LOAD]

(14a) is associated with the locative variant (load hay on the cart), and (14b) – with the *with*-variant (load the cart with hay). Note that the same variables occur in the main clause and in the subordinate MEANS clause in (14b) – ensuring identification of the participants in both events. Such an analysis captures the fact that the *z* variable has both undergone a change of state, and served as a goal for a change of location of the *y* variable. As Levin and Rappaport point out, this would not have been possible to capture in an approach that is based solely on thematic roles. Such an approach also captures the fact that *load* verbs make it possible for both their internal arguments to be understood as affected (by virtue of undergoing a change of state). The fact that verbs' meaning may be semantically decomposed also captures the similarity between *load* verbs and *clear* verbs. The directionality of causation is different – *load* specifies causing to come to a certain location, while *clear* specifies causing to go away from a location, but the two verbs involve the same variables and the same matrix of event structure. This, again, is impossible to capture in a thematic-roles-based approach.

Note that on this view the locative alternation is not an 'alternation' in the syntactic sense – involving a derivation of one structure from the other, as in the case of the dative alternation. Rather, the relation between the two variants occurs at an initial lexical level, where the same verb, *load*, is associated with two different, but related, LCSs.

While the model proposed by Rappaport and Levin elegantly accounts for the empirical facts related to the locative alternation, other accounts question the theoretical mechanism behind that analysis. The two types of theories that will be reviewed question the rich lexical representation that Levin and Rappaport associate with verbs. The first approach suggests that a coarser-grained criterion, based on aspect, mediates between lexical semantics and syntax. The second approach questions the very idea that the meaning of verbs resides in fully specified lexical entries.

2.2 *The Aspectual Interface Hypothesis*

Over the past 15 years, a number of linguists have emphasized the role of aspect in determining the correlation between the syntax and the lexicon (see Tenny 1987, 1992, 1994; Borer 1994; Van Hout 1996; Arad 1998). The Aspectual Interface Hypothesis (originating with Tenny 1987) argues that aspect mediates the mapping from thematic structure (or any level of lexical semantic representation) and the syntax. In particular, Tenny draws attention to the property associated with direct objects, of measuring out the event denoted by the verb: "The internal argument of a simple verb is constrained so that it either undergoes no change or motion, or it undergoes change or motion that 'measures out the event' over time" (Tenny 1992: 3). The object can be seen as a scale on which the event

proceeds over time. As the event advances, so is the change of state undergone by the agent. For example, in an event of eating an apple, the apple is gradually consumed, indicating the progress of the event. Once the apple is consumed completely, the event is terminated. The same holds for objects such as 'knit a sweater' – when the sweater is completed the event is terminated – 'read a book' or 'perform a sonata'. Other direct objects may not be as gradual, or incremental, but they serve to measure out the event as well: fix the car (the event ends once the car is fixed), solve a problem, find a book. By making the two assumptions regarding the role of aspect and the properties of the direct object, the Aspectual Interface Hypothesis gives a unified explanation of several cases of verb alternations. Let us see how this approach deals with the locative alternation.

Tenny notes that the verbs that participate in the locative alternation share a specific semantic property: they specify one argument which is a well defined location (flat surface or container) and the other, which is a material that is applied to (or removed from, in the case of *clear* verbs) that location. Like Levin and Rappaport (1988), Tenny notes that a thematic-role-based account is problematic: why would certain verbs containing a Theme and a Goal (*load*, *spray*) but not others (*push*) allow both their Theme and Goal arguments to be realized as direct objects? According to Tenny, the Aspectual Interface Hypothesis provides a simple explanation of this phenomenon. *Load* verbs denote an event that can be measured out in two different ways – both by the Theme and by the Goal. Since measuring out is associated with direct objects, either the Theme or the Goal may be realized as direct objects. The advantages of this approach are twofold: first, it captures the lexical class of verbs that participate in this alternation, and accounts for them in a unified way, using their aspectual properties. Second, it derives the subtle differences in interpretation associated with each variant. Because the direct object measures out the event, it turns out that the event terminates when the object is completely affected. In the locative variant (load the hay on the truck), the hay is realized as a direct object, and therefore the event terminates when the total amount of hay is loaded. In the *with*-variant (load the truck with hay) it is the truck that is realized as the direct object of the verb, and therefore the event terminates when the truck is full.

Note that Tenny's approach is similar in many respects to the approach advocated by Levin and Rappaport Hovav. Both approaches assume an initial lexical level where verbs' lexical properties are specified, and both believe that not all the information specified at that level is relevant for the syntax. They differ regarding the type of semantic information that is visible to the syntax. Levin and Rappaport postulate an intermediate level, PAS, mediating between the lexicon and the syntax, while Tenny takes aspectual properties to be the crucial mediator between the two.

2.3 The role of syntax

Tenny's work associates a specific semantic interpretation with the direct object position. This association is captured through linking rules, postulating that the

argument that measures out the event is lexicalized as the direct object of the verb. Borer (1994 and consequent work) points out that while the observations regarding the role of aspect are robust, the *direction* of the correlation may be opposite to that postulated by Tenny. Her approach thus turns the traditional view of argument structure upside down: it is not the case that arguments are labeled in the lexicon as Agent, Patient (or any other specification, such as event measurer), following which projection rules determine their syntactic position. Rather, it is the syntactic positions themselves that are associated with semantic interpretation: an external argument position endowed with agent-like properties, and an internal argument position, associated with the property of measuring out the event. The arguments of the verb do not bear any specifications in the lexicon. They acquire their interpretation as agents and patients only once they move into a syntactic projection associated with such an interpretation. We can define this view as the construction-based approach to argument structure (for a similar view see Van Hout 1996, as well as, somewhat differently formulated within the framework of Construction Grammar, Goldberg 1995).

The motivation behind Borer's approach is, first and foremost, economy. Instead of rich lexical specifications, followed by linking rules that ensure mapping of the 'right' argument (i.e., the one that was originally labeled as 'Agent' in the lexicon) to the external argument position, she simply postulates that projection of argument takes place freely, and whatever argument happens to end up at the higher position will be interpreted as an agent (and, similarly, the one that ends up at the lower position is interpreted as measuring out the event). This way, the theoretical machinery needed for projection is considerably reduced. There is no need for rich lexical representations, nor for linking rules. All that verbs specify is their number of arguments.

While this approach may prove too coarse-grained in dealing with the variety of argument structure alternations that exist in language (e.g., psychological verbs, the dative alternation), it is very fruitful in dealing with cases of multiple realization of arguments, such as the locative alternation. Let us see how this approach deals with the locative alternation. *Load* verbs are listed in the lexicon as taking three (unlabeled) arguments. These arguments are then freely projected into the available argument positions: AspOR (for *originator* of event), AspEM (*event measurer*) and prepositional object (leaving aside, for the moment, how the identity of that preposition is determined):

(15) a. [$_{\text{AspOR}}$ Lucy [$_{\text{VP}}$ loaded [$_{\text{AspEM}}$ hay [$_{\text{PP}}$ *on* the truck]]]]
b. [$_{\text{AspOR}}$ Lucy [$_{\text{VP}}$ loaded [$_{\text{AspEM}}$ the truck [$_{\text{PP}}$ *with* hay]]]]

The argument that is projected into the AspEM position is interpreted as the measurer of the event.

Note that Borer's approach is primarily concerned with the interface of the lexicon and the syntax, rather than with internal lexical properties. Questions such as the identity of the lexical properties that are unique to *load* verbs or the distinction between *load* verbs and *clear* verbs fall outside its scope.

3 The semantic properties of spray-load verbs

So far we have been primarily concerned with the syntactic realization of spray-load verbs. There remains, however, the first question we raised here:

- What are the lexical properties of the verbs that participate in that alternation?

The data discussed so far provide some cues regarding the answer. It has been observed by a number of linguists that such verbs require both a locatum (an entity that is located or put somewhere) and a location that is either a container (e.g., the truck) or a flat surface (e.g., the wall). However, this is obviously not a sufficient condition for a verb to undergo this alternation.

Dribble, for example, takes both a location and a surface, yet fails to undergo the alternation:

(16) a. Lucy dribbled paint onto the floor.
b. *Lucy dribbled the floor with paint.

Similarly, *pour* specifies a locatum and a container, but does not allow the *with*-variant:

(17) a. Lucy poured milk into her glass.
b. *Lucy poured her glass with milk.

Conversely, certain verbs that take a locatum and a location allow the *with*-variant, but not the locative variant:

(18) a. *Lucy coated lemon icing onto the cake.
b. Lucy coated the cake with lemon icing.

(19) a. *Lucy seasoned lemon rind into the cake.
b. Lucy seasoned the cake with lemon rind.

Some finer-grained semantic criteria are required to distinguish these cases from *load*-type verbs, which participate in the alternation. Such a semantic account is offered by Pinker (1989), based on earlier work by Rappaport and Levin (1985). Pinker notes, first, that the location verbs are not a homogenous class. The first principal division holds, according to him, between content-oriented verbs and container-oriented verbs. Content-oriented verbs obligatorily take a locatum argument, while their location argument is optional (20). Container oriented verbs obligatorily take a location, while their locatum argument is optional (21):

(20) a. Lucy piled the books (on the shelf).
b. Lucy piled the shelf *(with books).

(21) a. Lucy stuffed the turkey (with breadcrumbs).
b. Lucy stuffed the breadcrumbs *(into the turkey).

Pinker assumes that the optionality of arguments tells us about the direction of the derivation. When the locatum argument is obligatory (in the case of *stuff* verbs) the derivation proceeds from the *with*-variant to the locative variant. When the locative variant is obligatory (as in the case of *pile* verbs) the derivation proceeds from the locative variant to the *with*-variant. When both arguments are optional (cf. *load*, as in *load the gun* and *load the bullets*), the verb could in principle belong to either class, although, as Pinker notes, one interpretation is more salient, or basic (in this case, the container-oriented, *load the gun*. *Load the bullets* seems like a truncated form).

Having established the basic distinction between content-oriented and container-oriented verbs, Pinker offers detailed characterizations of the different semantic classes found within each group. What is striking is that there is a robust correlation between the different semantic classes he notes and the groups of verbs that participate or do not participate in that alternation.

Content-oriented verbs (verbs taking the locative-variant) include the following classes:

Alternating:

(i) simultaneous forceful contact and motion of mass against a surface (*smear*, *smudge*, *spread*, *rub*, *dab*, *daub*);
(ii) vertical arrangement on a horizontal surface (*heap*, *pile*, *stack*);
(iii) force is imparted to a mass, causing ballistic motion in a specified spatial distribution along a trajectory (*splash*, *spray, inject*, *splatter*, *sprinkle*);
(iv) mass is caused to move in a widespread or nondirected distribution (*seed*, *scatter*, *sow*).

Non-alternating:

(v) a mass is enabled to move via the force of gravity (*dribble*, *drip*, *ladle*, *pour*, *spill*);
(vi) flexible object extended in one dimension is put around another object (*coil*, *chain*, *spin*, *whirl*);
(vii) mass is expelled from inside an entity (*spit*, *exude*, *secrete*, *vomit*).

Container-oriented verbs (verbs taking the *with*-variant) include the following classes:

Alternating:

(i) a mass is forced into a container against the limits of its capacity (*pack*, *cram*, *jam*, *stuff*);

(ii) a mass of a size, shape or type defined by the intended use of the container (and not purely by its geometry) is put into the container, enabling it to accomplish its function (*load*, *pack*, *stock*).

Non-alternating:

(iii) a layer completely covers the surface (*inundate*, *bandage*, *blanket*, *cover*, *pave*, *smother*, *tile*);
(iv) addition of an object or mass to a location causes an esthetic or qualitative, often evaluative, change in the location (*adorn*, *burden*, *clutter*, *dirty*, *embellish*, *garnish*, *soil*, *stain*);
(v) a mass is caused to be coextensive with a solid, liquid or layer-like medium (*interlace*, *lard*, *soak*, *drench*);
(vi) an object or mass impedes the free movement of, from, or through the object in which it is put (*block*, *choke*, *clog*);
(vii) a set of objects is distributed over a surface (*bombard*, *coat*, *speckle*, *spot*, *stud*).

This characterization of classes may seem too fine-grained, perhaps almost arbitrary. Pinker notes that there are wider semantic motivations behind them, related to the core they specify. Content-oriented verbs thus share the property of naming the specific *manner* of applying the content (the kind of force exerted or the direction of motion according to which the Theme moves). The motion may be forced against something (*smear*), around something (*wrap*), or all over the place (*scatter*), due to gravity (*dribble*) or against gravity (*pile*). Container-oriented verbs specify the change of state resulting from the addition of material: *adorn*, *load*, *clock*, *pollute* etc.

The ability of verbs to alternate results, according to Pinker, from two factors. First, types of actions whose goal argument can be more easily construed as undergoing change are more likely to realize their goal argument as a patient and participate in the alternation (note that Pinker's analysis is formulated in terms of thematic roles; his assumption is that thematic roles mediate between the initial level of lexical representation and syntactic projection). Loading a truck or cramming a jar means that the truck or the jar are filled to their capacity, thus affected. Pouring liquid into a glass does not entail similar affectedness of the glass. The second factor has to do with the specific content of verbs. As Pinker points out, container-oriented verbs (those taking the *with*-variant) must specify not only that a change of state has taken place in the container, but also *what* the change of state is. Otherwise, all such verbs would be synonymous with *fill* or *cover*. Content-oriented verbs (those taking the locative variant) must not only specify movement of substance into a location, but also what is the *specific* manner of the movement of that substance. Otherwise, they would all be synonymous with *put*.

Therefore, container-oriented verbs that alternate must specify not only the change of state in the container, but also the manner in which the substance is moved into the location. Similarly, alternating content-oriented verbs must specify not only the manner in which the substance is moved, but also the change of state in the location. As Pinker points out, in the *smear* class, "the moved substance and the container simultaneously feel the force of the action, and in

the *spray* class, the force imparted to the object can aim it in a direction. This contrasts with the *pour* class, where gravity is a force mediating between the immediate effect on the moving object and the effect on the destination" (Pinker 1989: 128).

Furthermore, as Pinker notes, in the case of alternating content-oriented verbs, the manner of applying the substance enables us to predict the distribution of material on the surface of the location: *smear*, *dab*, *spray*, etc. For alternating container-oriented verbs, the specified state of the container imposes constraints on the manner in which the substance is moved.

4 Conclusion

The spray-load alternation proves an interesting case study both for theories of lexical semantics and for theories of the syntax–lexicon interface. The different accounts reviewed here are complementary: each takes as its focus a different aspect of the alternation. Rappaport and Levin (1988) and Tenny (1992) are primarily concerned with the *linking* problem of alternating verbs, offering two different perspectives of the rules governing mapping between syntax and semantics. Borer (1994) uses the alternation as a case study pointing out the role of syntax in determining the semantic properties of verbs: information contained in syntactic positions (e.g., measuring out) is assigned to verbs by virtue of occupying those positions. Borer's theory draws on Tenny's observation, regarding the role of aspect in mediating between syntax and semantics. Tenny's account thus aims both to characterize alternating verbs (verbs whose Theme and Goal argument can both be construed as measuring out the event named by the verb) and explain their linking properties (by postulating that the argument that measures out the event is linked with the direct object position). Pinker's account offers the most detailed semantic characterization of alternating verbs, accounting for subtle differences between seemingly similar verbs that behave differently with respect to that alternation. Note that Pinker's characterization of alternating verbs is compatible with Tenny's. Specifying a change of state in the location entails that the goal can be construed as measuring out the event (the event proceeds along with the change of state in the container, e.g., until the truck is full). Pinker assumes some general principles that mediate between lexical semantics and the syntax. Tenny's Aspectual Interface Hypothesis may be such a coarser-grained general rule.

There remain a number of interesting questions, which cannot be addressed here for lack of space. The first question regards the acquisition of locative verbs. The second question is about the morphological marking of this alternation. In English there is no morphological marking of any of the variants, but in other languages (German, Hungarian) there is different morphological marking of the alternants (specifically, an affix on the *with*-variant). Finally, there arises the question regarding the universality of the alternation. We saw that this alternation exists in a number of unrelated languages – but does it exist in all languages? If not, what are the semantic or syntactic criteria that govern the availability of the

alternation? Within languages that allow this alternation, is the set of alternating verbs similar in each? If some languages are more 'permissive' with respect to the number and type of verbs that alternate, what factors govern this variation?

For a detailed discussion of the acquisition question, see Gropen (1989) and Brinkmann (1997). Brinkmann (1997) also offers some discussion of *be-* prefixation of the *with*-variant in German (for Hungarian see Moravcsik 1978). The last question, regarding variation between languages, must await further research.

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64 Strong vs. Weak Islands

ANNA SZABOLCSI

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1 Introduction

The fundamental work on islands is Ross (1986, originally a 1967 dissertation). Ross distinguished between transformations that move a constituent and leave behind a pro-form (i.e., a resumptive pronoun) and ones that 'chop' a constituent and move it without leaving anything behind. An example of the former is left dislocation (that is, in Ross's analysis left dislocation is not base generated). An example of chopping is topicalization. Of the two, only chopping operations are constrained by islands. Islands will be enclosed in angled brackets:

(1) This kid, I must call <the teacher who punished him>.

(2) *This kid, I must call <the teacher who punished ___>.

Diagnosing islands has become more complex since Ross because it is assumed that there exist invisible pro-forms (empty resumptive pronouns), in addition to overt ones. I will use 'gap' as a pretheoretical term that covers both traces and empty pronouns.

Islands come in two main varieties: weak and strong. Note that the weak/strong qualification does not correspond to degrees of ungrammaticality.

(3) **Strong islands:**
No extraction is allowed (constructions with an appropriate resumptive pronoun may be allowed).

(4) **Weak islands (WI):**
Some phrases can extract, others cannot.

The focus of this chapter is weak islands (WI). Strong islands are considered only to set the stage for the discussion of WIs.

Up until the late 1980s nothing much beyond *wh*-islands had been thought to be a weak (selective) island. Beginning with Relativized Minimality, however, an ever growing range of weak islands have been recognized. Thus, theories of weak islands have mushroomed, each coming with a significant set of new data and important new connections to other domains. The review of weak islands will emphasize the correspondence between data sets and theories. Less attention will be given to proposals that primarily recast the theoretical account of some narrow range of data.

2 Absolute vs. selective islands

Although the notion of strong vs. weak islands as defined in (3) and (4) seems like a simple descriptive one, it is not. Consider the following examples involving *wh*-islands and adjunct islands:

(5) a. *About which topic did John ask <who was talking ___>?
b. *?Which topic did John ask <who was talking about ___>?
c. *How did John ask <who behaved ___>?

(6) a. *About which topic did you leave <because Mary talked ___>?
b. *Which topic did you leave <because Mary talked about ___>?
c. *How did you leave <because Mary behaved ___>?

These two sets might suggest that both *wh*-clauses and adjunct clauses are strong islands: the extraction of three different types of phrase was attempted and failed. On the other hand, it is easy to construct other examples in which some, but not other, phrases can extract. The percentage sign % indicates that there is variation among the speakers of English:

(7) a. %About which topic did John ask <whether to talk ___>?
b. Which topic did John ask <whether to talk about ___>?
c. *How did John ask <whether to behave ___>?

(8) a. *About which topic did you leave <without talking ___>?
b. Which topic did you leave <without talking about ___>?
c. *How did you leave <without behaving ___>?

The difference between the two sets involves Tense in the first place. While tensed clauses are themselves not islands, cf.

(9) Which topic do you think that I talked about ___?

we see that the presence of Tense may considerably strengthen other islands. This fact must be systematically controlled for in the evaluation of various islands.

(Chomsky 1986a briefly touches upon the role of Tense. Cinque 1990 uses it as an important test, and Manzini 1992 proposes a theory of its behavior.) Thus, the specific constructions in (5–6) may preclude the presence of any gaps, but this in itself does not mean that *wh*-complements and adjuncts per se are totally impenetrable. Shall we conclude now that *wh*-clauses and adjuncts per se are merely weak islands? Note a fine distinction: while adverb extraction is blocked in both, the infinitival *whether*-clause allows the extraction of both DPs and PPs (at least for some speakers), while the gerundival adjunct clause allows only DP-extraction.

The interpretation of this situation is a theoretical, rather than descriptive, matter. Making the implicit assumption that the PP vs. DP facts are highly consistent in each island type. Cinque (1990) argues that this difference warrants radically different analyses because a DP gap may be an empty resumptive pronoun but a PP gap cannot be. *Wh*-islands are indeed weak (selective); adjunct-islands on the other hand are strong (absolute) and the DP-gap that they may contain is an empty resumptive pronoun.

Cinque's distinction will serve as a basic organizing principle in this chapter because it is typically taken for granted in the weak island literature: theories of weak islands do not try to account for the islands that Cinque classifies as strong.

(10) **Cinque's diagnostic of strong vs. weak islands:**
Among the domains that do not allow all standard extractions, those that allow a PP-gap are weak islands, and those that can at best contain a DP-gap are strong islands (and their DP-gap is an empty pronoun).

This is not the only possible way to cut the cake. For instance, Postal (1997a, 1998), who uses the terms locked (absolute) and unlocked (selective) island, does not attribute this much significance to PP vs. DP. Following Ross, he assumes that extraction from unlocked islands always involves empty resumptive pronouns and subsumes Cinque's weak islands under this rubric.

A note on the data: question formation, relativization, and topicalization are all instances of *wh*-movement. Because the bulk of the literature to be surveyed focuses on examples involving question formation, this chapter follows the same practice, unless the discussion of a particular work requires us to do otherwise.

3 Strong islands

3.1 Classical strong islands

While recent literature has identified a host of weak islands, the classical inventory, with the exception of certain *wh*-islands, consists of strong ones. What follows is a list, sometimes interrupted by comments.

Complex DP (with relative clause):

(11) *Which kid must you call <the teacher who punished ___>?
*Where must you call <the teacher who put the book ___>?

(12) *This kid, you must call <the teacher who punished ___>.
*On the table, you must call <the teacher who put the book ___>.

(13) *What size shoes did you call <the man who wears ___>?

(14) *How did you call <the man who behaved ___>?

Complex DP (with complement clause):

(15) *Which man did you hear <the rumor that my dog bit ___>?
*Where did you hear <the rumor that I put the book ___>?

(16) *This man, I heard <the rumor that my dog bit ___>.
*On the table, I heard <the rumor that you put the book ___>.

(17) *What size shoes did you hear <the rumor that I wear ___>?

(18) *How did you hear <the rumor that I behaved ___>?

But just as it was possible to arrange for a DP-gap in adjuncts by removing Tense, the same is possible with Complex DPs if the definiteness of the head is removed. (Pollard and Sag 1994 assume, for this reason, that there is no need for a Complex DP constraint.) PP-gaps remain practically excluded.

(19) a. ??What the police arrested <everyone who saw ___> was this video. (Postal 1998)
b. *I know in which building the police arrested <everyone who lives ___>.

(20) a. ??Which man did they consider <rumors that Bob would betray ___>? (Rothstein 1988)
b. *About which man did they consider <rumors that Bob would talk ___>?

In distinction from Tense, definiteness may create an island by itself (Fiengo and Higginbotham 1981; Manzini 1992):

Definites:

(21) *Which man did you discover <Mary's poem about ___>?

(22) ??Which man did you discover <the poem about ___>?

(23) Which man did you discover a poem about ___?

Subjects:

(24) *Which man did <his visiting ___> shock you?

(25) *Which book do you believe <the first chapter of ___> to be full of lies?

(26) *Which man does <everyone who knows ___> admire his sincerity?

Adjuncts (see the discussion of Tense above):
(27) *Which topic did you leave <because Mary talked about ___>?

(28) a. Which topic did you leave <without talking about ___>?
b. *About which topic did you leave <without talking ___>?

Authier (1991) argued that adjuncts can contain CP gaps besides DP gaps; for an alternative analysis, see Postal (1994):

(29) We suggest ___ to our employees, <without actually requiring ___ of them>, that they wear a tie.

Coordinate structures, unless extraction is across-the-board:
(30) *Which man did you invite <Mary and ___>?

(31) *Which man did you invite <Mary and a friend of ___>?

(32) Which man did you invite <a friend of ___ or a brother of ___>?

However, DP-gaps are acceptable under various circumstances (see Postal 1998 for detailed discussion):

(33) This is the beer that I <bought ___, loaded ___ into the car, went home, and then fell asleep>. (Jacobson 1996)

The status of tensed constituent *wh*-complements seems to vary cross-linguistically. Some speakers of English reject extractions from them entirely, whereas others find them tolerable. Likewise, they are rejected by speakers of Dutch, whereas they are acceptable in Scandinavian languages (see Engdahl and Ejerhed 1982) and in Hungarian. (Hungarian has object pro-drop, but only for singulars, thus we know that the gap in (34c) is not a dropped pronoun.) This variation is not well understood (though see Bayer 1984, 1996: section 6.6.4).

Tensed constituent *wh*-complements (in some languages/dialects):
(34) a. %Which man did John ask <who invited>?
b. *Welke man heb jij je afgevraagd <wie – gezien heeft>? Dutch
which man have you self asked who seen has
c. Mely fiúkat találgattad, hogy <ki látta ___>? Hungarian
which boys were-guessing-you that who saw

Left branches:
(35) *Which (man's) did you see <___ picture>?

As (35) shows, it is often difficult to extract from the left branch of a structure (Ross 1986). But comparable examples are perfect in other languages:

(36) Combien as-tu lu <___ de livres>? French
how many have-you read of books

(37) Cuius legis <___ librum>? Latin
whose read-you book

(38) Kinek olvastad <___ a könyvét>? Hungarian
who-dative read-you the book + agr

Whether all the counter-examples are well understood, the Left Branch condition seems like a less plausible generalization than the others. See Corver (1990).

Finally, some islands constrain left-extraction but not Right Node Raising, indicating that the latter may not be an extraction (Bouma 1987; Postal 1998):

(39) I patted <the dog that bit ___> and hit <the dog that adored ___> the man who stole my beloved cat.

We will not discuss the relation between *wh*-in-situ and islands; for discussion, see chapter 77.

3.2 Types of explanation

The standard explanation of the islandhood of Complex DPs, Subjects, *Wh*-complements, and Left Branches is in terms of Subjacency: movement out of them results in ungrammatical sentences because movement crosses more than one bounding node (barrier); see sections 3.4 and 7.1. Adjunct islands are standardly explained by Huang's (1982a) Condition on Extraction Domains, hence by the Empty Category Principle: an extraction domain needs to be properly governed. Likewise, Pesetsky (1982) subsumes the Coordinate Structure Constraint under the path containment version of the ECP (see section 7.1). Manzini (1992) is the only attempt to unify the effect of Definiteness and Tense with other locality phenomena: D and T block dependencies based on Case-addresses, which, in her theory, DPs otherwise rely on to escape from islands.

3.3 Ways of salvaging strong island violations

As has been mentioned, a strong island violation can sometimes be salvaged by resorting to the resumptive pronoun strategy (whether the pronoun is overt or empty). In addition, the gap in the island may be parasitic on a well-behaved trace of movement, e.g.:

(40) Which papers did you file ___ <without reading ___>?

(41) He is a man who <everyone who knows ___> admires ___.

See also Engdahl (1983), Kayne (1983), Chomsky (1982, 1986a), Cinque (1990), among others.

Finally, the island itself may be pied-piped, overtly or at Logical Form:

(42) a. *Whose did you visit <___ brother's sister>?
b. <Whose brother's sister> did you visit?

Pied-piping at LF has been proposed for apparent violations of Complex DPs in *wh*-in-situ languages in Pesetsky (1987a), and for apparent violations of a single adjunct island in among others, Cinque (1990). These matters are not discussed here further; see chapters 50 and 55 for details.

3.4 More on Subjacency

Subjacency is classically understood as a condition on movement and requires that movement not cross more than one bounding node. Bounding nodes were originally defined as a list: NP and S (= DP and IP) in English (Chomsky 1973b, 1977); NP and S' (= DP and CP) in Italian (Rizzi 1978b). Chomsky (1986a) redefines bounding nodes as barriers. An XP is a blocking category for α iff it is not theta-marked by a sister lexical head and dominates α. β is a barrier for α iff (i) β is a blocking category for α but not IP, or (ii) β is the first XP that dominates a blocking category for α. Chain-formation (which takes the place of movement) requires 1-subjacency: no more than one barrier may be crossed. (For an excellent introduction to *Barriers* as well as other theories of locality, see Roberts 1997a.)

Adopting Rizzi's (1990b) Relativized Minimality (the pertinent aspects of which will be discussed when we turn to Weak Islands), Cinque (1990) proposes two important changes in the understanding of strong islands: (i) strong islands constrain binding chains, not necessarily movement, and (ii) not only government but also binding chains require 0-subjacency (no barrier may be crossed).

3.4.1 Cinque (1990)

We now take a closer look at some aspects of Cinque's proposal, because they are fundamental in defining the division of labor between theories of strong and weak islands as assumed in most of the literature. Following Obenauer (1984/1985), Cinque observes that both parasitic gaps and gaps inside strong islands are restricted to the category DP and takes this to indicate that these gaps are not variables, but A-bar bound empty pronominals: pro. These pros are not moved in syntax but must move at LF (like some kind of abstract *wh*-phrase). But instead of moving on its own, it pied-pipes the minimal island it is contained in. This accounts for the fact that, if all goes well, one strong island can be evaded.

Now recall the contrast between tensed and gerundival adjunct islands:

(43) *Which topic did you leave <because Mary talked about ___>?

(44) Which topic did you leave <without talking about ___>?

Bona fide cases of pied-piping are also constrained by Tense (Nanni and Stillings 1978):

(45) *They bought a car that their son might drive which was a surprise to them.
'they bought a car and the fact that their son might drive it was a surprise to them'

(46) The elegant parties, to be admitted to one of which was a privilege, had usually been held at Delmonico's.

Cinque stipulates that Tensed Inflection weakly blocks the upward percolation of features. Thus, even one island cannot be pied-piped by pro if it is tensed. Cinque predicts that at most one island can be evaded: strong islands cannot be compounded:

(47) *the book that we left Russia <without being arrested <after distributing ___>>

The reason is that the movement of the pied-piped domain continues to be sensitive to islands (can at best be parasitic on overt movement). Postal (1998) notes, though, that an adjunct island can be compounded with a complex DP (see further section 3.4.3):

(48) It was Lucille that Mike went home <without criticizing <anyone who defended ___>>.

(49) It was Lucille that Mike criticized <everyone who went home <without defending ___>>.

To summarize, the observation that certain islands only contain DP gaps leads Cinque to a theory according to which these islands are strong, and the DP gap is not a trace of movement but A-bar bound pro. This contrasts with Weak Islands, which may also contain PP gaps. The latter must be traces since, according to Cinque, human languages generally lack resumptive pronouns of category PP. The behavior of weak islands is explained by considerations that do not apply to strong islands in Cinque's work and in the many other proposals this chapter will review. Thus, the DP–PP distinction carries a great burden in deciding which data are to be accounted for by each theory.

3.4.2 Some intriguing similarities between SIs and WIs

While the division of labor so determined has proven very useful in the literature, it may be worth pointing out some intriguing similarities between the phrases that may or may not escape from the two types of islands. First, there is dialectal variation among speakers of English regarding the acceptability of PP-extraction out of *wh*-islands (one of the weak islands). Unfortunately, no systematic empirical

study of this variation exists, to my knowledge, wherefore it is difficult to assess its significance for Cinque's theory.

Second, consider the following contrast:

***Wh*-phrase associated with pro in a strong island:**

(50) Which politician did you go to England <after meeting ___>?

(51) *How much water did you make the pasta <after boiling ___>?

***Wh*-phrase associated with a variable in a weak island:**

(52) a. Which politician did John ask <whether to worry ___>?
b. *About which politician did John ask <whether to worry ___>?

(53) a. *How much gravy did John ask <whether to cook ___>?
b. *With how much gravy did John ask <whether to cook ___>?

In both cases the *wh*-phrase needs to be referential in some sense. But the reasons are different. In the case of strong islands, the *wh*-phrase needs to be of the kind that resumptive pronouns tend to associate with; in the case of weak islands, it has to carry a referential index and corefer with its variable (see in section 7.2). Cinque (1990) characterizes the suitable *wh*-phrases rather similarly in the two cases, but neither this book nor any subsequent work known to me addresses the question whether the two requirements are exactly identical. Cinque (p.c., 1998) has kindly suggested the following contrast between a weak and a strong island:

(54) ?Quanti pazienti volevi sapere <se ogni dottore avesse potuto visitare ___>?
'How many patients did you want to know whether each doctor had been able to examine?'

(55) *Quanti pazienti vuoi incontrare <ogni dottore che abbia visitato ___>?
'How many patients do you want to meet each doctor who examined?'

But the exact generalization remains an open question. One proposal that attempts to unify weak and strong islands is Starke (2001).

3.4.3 Postal (1998)

Perlmutter (1972) proposed that all extractions leave invisible resumptive pronouns, whether they are from islands or not. Obenauer (1984/1985) proposed that all extractions from islands involve empty resumptive pronouns. Cinque (1990) developed a specific resumptive pronoun theory of apparent strong island violations. Postal (1998) proposes to generalize Cinque's idea to all islands and introduces many novel pieces of data.

Postal (1997a) asks the fundamental question whether or not constituents are islands by default. The standard answer is that by default they are not, which is

why theories attempt to characterize islands as a natural class. In contrast, he argues that non-islands form a small natural class, characterizable in Arc-Pair Grammar.

Postal (1998) distinguishes locked (absolute) and unlocked (selective) islands. Locked islands permit only left dislocation (or operations that are like LD in the relevant respect). Unlocked islands permit some gaps and comprise both strong and weak islands in Cinque's terms: interrogative clauses, complements of factive verbs like *regret*, rationale clauses (*go home* (*in order*) *to* . . .), clausal complements of certain nouns (*formulate a plan to prove* . . .), adjuncts, relative clauses with quantifier heads, subjects, and certain coordinate structures (Postal's list is not intended to be exhaustive). On Postal's analysis, every extraction from an unlocked island contains an invisible resumptive pronoun (RP). Such islands are unlocked because they permit the extraction of an RP. The mechanism is in many respects like Cinque's. The invisible RP in question requires control, hence it extracts to a position sister to the fronted phrase. This derives island-sensitivity. The reason why limited island violations are possible is that an RP controls a secondary invisible resumptive pronoun, notated as RPx, which extracts only to the left boundary of the lowest island from which the primary RP extracts. Tertiary RPs are excluded.

Postal assumes that RPs in unlocked islands are DPs. The fact that some selective islands permit PP gaps is acknowledged (n. 15 to ch. 3) but not addressed in any depth. But, unlike Cinque, Postal does not derive his reason for adopting an RP-analysis from category restrictions. Instead, the differential ability of phrases to occur in what he calls 'anti-pronominal contexts' plays a major role.

Anti-pronominal contexts are ones that do not allow weak definite pronouns. An example is the object of *tell* (as opposed to *determine*):

(56) Mike was a spy. We could easily determine/*tell it.

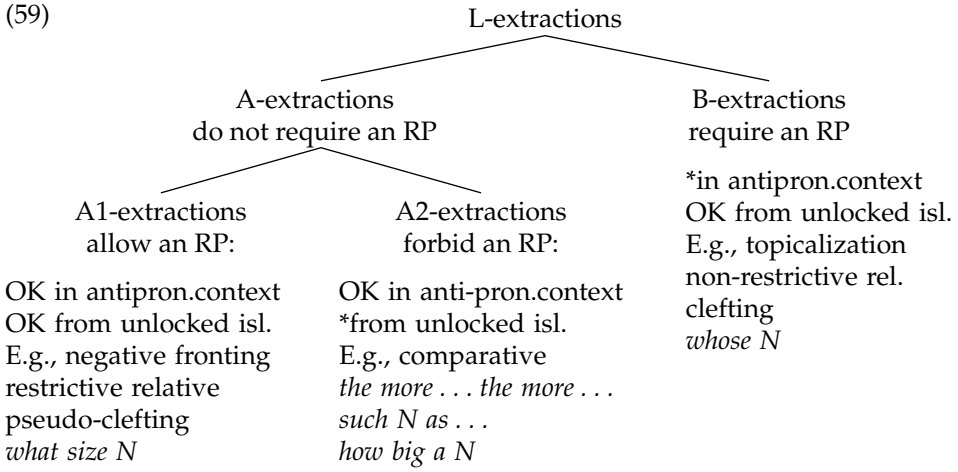
A pseudo-clefted phrase can, but a topicalized one cannot, be linked to a gap in an anti-pronominal context:

(57) What we could easily tell was that Mike was a spy.

(58) *That Mike was a spy, we could easily tell.

This is explained if topicalization requires an RP, independently of whether it is from an island, whereas pseudo-clefting does not require one. Assume further that pseudo-clefting allows, but comparative extraction forbids an RP. Then, if extraction from an island invariably involves an RP, one arrives at the typology in (59).

(59)



Note that A1-extractions are linked to an RP when escaping from an unlocked island, and they are not linked to an RP when occurring in an antipronominal context.

This typology predicts that when an anti-pronominal context is embedded in an otherwise unlocked island, no extraction is possible since the two ingredients impose contradictory requirements. Consider, for instance, the existential *there* context. The examples indicate that it is antipronominal; it disallows topicalization, it permits negative fronting, but when embedded in a factive island, it disallows negative fronting even though the latter is otherwise possible from a factive island:

(60) *There are them in the bottle.

(61) *Such chemicals, he thought there were ___ in the bottle.

(62) No such chemicals did he think that there were ___ in the bottle.

(63) *No such chemicals did he regret that there were ___ in the bottle.

(64) No such chemicals did he regret that we used ___.

Postal identifies the following further antipronominal contexts (illustrated with the impossibility of topicalization):

(65) **Existential there:**
No such chemicals did he believe that there were ___ in the bottle.
*Such chemicals, he believed that there were ___ in the bottle.

(66) **Change of color:**
*Green, he never painted the car ___.

(67) **Name position:**
*Raphael, I would not name anybody ___.

(68) **Inalienable possession:**
*His ear, I never touched him on ___.

(69) **Predicate nominals:**
*That kind of surgeon, Frank never became ___.

(70) **Adverbial NPs:**
*That reason, he resigned for ___.

(71) **Extraposed PPs:**
*Such a scurrilous review, they published ___ last year of his book.

(72) **Infinitival extraposition:**
*A definite wish, I did not perceive ___ in Sylvia to retire.

(73) **Exceptive shifting:**
*Something dangerous, he might have handed ___ to Rita other than the gun.

(74) **Temporal NPs:**
*That much time, Frank could never stay ___ in Italy.

(75) **Idiomatic V+NP:**
*That much headway, which they made ___ on the job, . . .

(76) **Place name as locative:**
*Argentina, our president is said to have been born in ___.

Postal remains non-committal as to why each extraction type allows, forbids, or requires an RP. It would clearly be desirable to identify syntactic or semantic properties that entail either that an RP is forbidden or that an RP is required, and to analyze the permissive type as syntactically or semantically ambiguous. This would be especially tempting in connection with the *wh*-phrases *how big a N* (RP forbidden), *whose N* (RP required), and *what size N* (RP permitted), whose divergent behavior Postal notes. Postal's data, whether well understood or not, provide some novel counter-examples to certain claims in the literature. Although many of the anti-pronominal contexts involve adjuncts or non-referential expressions, many others are argumental and/or referential, i.e., their island sensitivity is surprising. On the other hand, while Cinque takes the island-sensitivity of Italian negative phrases to support the referentiality generalization, (64) shows that negative fronting in English is not blocked by weak islands.

As was mentioned at the outset, Postal lumps all unlocked islands together and does not distinguish between Cinque's two subtypes, weak islands and single

strong islands. The restricted viability of such a position is in fact implicit in Cinque's work. The DPs that can escape from weak islands are described quite similarly to those that can escape from strong ones. If this is correct, then, as long as only DP-extraction is considered, we do not expect to be able, or need, to distinguish between the two subtypes. Recall that Cinque distinguishes the two subtypes with reference to the possibility of PP-extraction. In support of his unitary analysis, Postal (p.c.) notes that (77b, c) pose a problem for Cinque's dual analysis. Only one of the gaps being inside an island, the two members of the conjunction in (b) and the two individuals that make up the plural in (c) need to participate in two different filler–gap relations:

(77) a. Which cop/1 did Lucy believe Sam called ___/1 and May faint after meeting ___/1?
b. Which cop/2 and which nurse/3 did respectively Lucy believe Sam called ___/2 and May faint after meeting ___/3?
c. Which two cops/3i,j did respectively Lucy believe Sam called ___/3i and May faint after meeting ___/3j?

The island sensitivity of an extraction may not be fully equated with its inability to link to an RP, however, whether the latter property be a primitive or a derived one. As will be detailed in section 5.6, collectively interpreted arguments of one-time-only predicates are sensitive to weak islands (in the sense that extraction out of a WI forces a multiple events reading on the naturally one-time-only predicate):

(78) Which relatives do you <regret that you heard this rumor from ___>?

(79) ??Which relatives do you <regret that you got this present from ___>?

The same collective arguments can nevertheless antecede resumptive pronouns, in contrast to some amount phrases, for example:

(80) a. These relatives of mine, they gave me this present.
b. These relatives of mine, I got this present from them.

(81) *This much pain, Mary endured it.

Whether or not the unification of all unlocked islands that Postal proposes is eventually viable, in the rest of this chapter, I follow standard practice in excluding the islands that Cinque calls strong from the discussion of weak (selective) islands.

4 Weak islands: a preview

The historical starting point is the assumption, made in Huang (1982a), Lasnik and Saito (1984, 1992), Chomsky (1986a), that the paradigmatic (if not the only)

case of weak (selective) islands is *wh*-islands, and the expressions whose extraction is sensitive to WIs are adjuncts, as opposed to arguments. Since *Barriers*, a number of new theories of weak islands have appeared in quick succession. What makes this process especially interesting is the fact that practically each theory comes with a significant new set of data. The survey below will reflect this spirit. The critical data come in two dimensions:

(A) What extractions are sensitive to WIs?
(B) What induces a WI?

Much of the literature can be conveniently surveyed along the dimensions in (A) and (B). I will thus begin by drawing ever-widening circles of data, first for (A), then for (B). The third part of the discussion will review what theories account for what data sets. Sections 5 and 6 are not simple data surveys, though. Detailed and often theoretical arguments will be put forth as to why exactly the proposed generalizations hold. Also, when certain pieces of literature offer important analyses of WI-phenomena without proposing their own overall theory of WI, they will be summarized in these sections. In both these sections and in section 7, where we turn to theories, we will see that the proposals are less and less syntactic. Some of them include pragmatic or semantic factors in the description of what expressions are WI-sensitive or WI-inducers, although they formulate the explanation in syntactic terms. Others even derive the explanation from semantics.

The data to be discussed are as follows:

Ad (A) What extractions are sensitive to WIs:
(A1) Arguments vs. adjuncts.
(A2) Referential vs. non-referential.
(A3) Re-evaluating the role of D-linking.
(A4) Individual vs. non-indvidual, and *how many*-phrases.
(A5) Functional readings and event-related readings.
(A6) Individuals: is it being type e that matters?
(A7) Split constructions.
(A8) Negative polarity item (NPI) licensing.
(A9) Cross-sentential anaphora.
(A10) Elements of anti-pronominal contexts.

Ad (B) What induces a WI:
(B1) *Wh*-islands.
(B2) Negatives and other affective operators.
(B3) Response stance and non-stance vs. volunteered stance predicates.
(B4) Extraposition islands.
(B5) VP-adverbs.
(B6) Scope islands.

Section 7 presents the theories that account for these data and generalizations. To anticipate, the division of labor is as follows: when a theory accounts for only some of the data falling under some generalization, the generalization is marked with a percentage sign (%):

- ECP and Subjacency for (A1)–(B1)
- Relativized Minimality for (A2, A7)–(B1, B2, B3%, B4, B5%)
- Monotonicity for (A3, A4, A7%)–(B1, B2, B3%, B5%)
- Scope Theory, algebraic version for (A3, A4, A5, A6, A7%)–(B1, B2, B3, B5, B6)
- Scope Theory, dynamic semantic version (A4, A5, A7, A8, A9)–(B1, B2, B3, B5, B6)

5 What extractions are sensitive to WIs? (A)

Here we survey the main distinctions that have been found useful in describing what extractions are sensitive to WIs. To keep new information manageable, *wh*-islands will be used to illustrate the phenomena. Two other familiar WIs, negative and factive islands, will be added where necessary (e.g., because subject extraction out of a *wh*-island may be independently ungrammatical). The full set of WIs is much greater, though, and will be presented when dimension (B) is addressed.

5.1 Arguments vs. adjuncts (A1)

Huang (1982a), Lasnik and Saito (1984, 1992), and Chomsky (1986a) draw the distinction between arguments (claimed not to be sensitive to WIs) and adjuncts (claimed to be sensitive to them); see (82) and (83).

(82) Which problem did John ask <how to phrase ___>?

(83) *How did John ask <which problem to phrase ___>?
'what is the manner such that John asked which problem to phrase in that manner'

In addition to *how*, *why*, and, to a somewhat lesser extent, *when* are WI-sensitive adjuncts.

(84) *Why did John ask <whether to fire him ___>?
'What is the reason such that John asked whether it is a good reason for firing him'

(85) ??When did John ask <whether to fire him ___>?
'What is the time such that John asked whether it is a good time for firing him'

Where does not fit the picture very well because its WI-sensitivity does not depend much on whether it is subcategorized for (as with *put*) or not (as with *read*):

(86) ?Where did John ask <whether to put/read this book ___>?
'What is the location such that John asked whether to put this book there/ whether to read this book there'

The morphological constitution of these *wh*-words may also play a role. It has been noted that when counterparts of *why* and *when* have an articulated PP structure in a language, they extract better. Korean, Japanese, and Hungarian are cases in point.

5.2 *Referential vs. non-referential/Existential presupposition (A2)*

A major revision of the argument/adjunct distinction is prompted by observations by Ross (1984), Kroch (1989a), Comorovski (1989), Rizzi (1990b), Cinque (1990), Obenauer (1992), and Kiss (1993). In a nutshell, the claim is that originating in an argument position is not enough: a successful extractee must also be referential in some sense. Some subcategorized for, and thus, presumably, argumental, XPs are unexpectedly WI-sensitive:

(87) *What did John ask whether these pearls cost ___? (Ross)
cf. *These pearls cost.

(88) *How did John ask whether to behave ___? (Rizzi)
cf. *John behaved.

According to Rizzi (1990b), amount and manner phrases may be arguments but they do not have the theta-roles of event-participants (referential theta-roles). On the other hand, as events take place in time and space, Rizzi surmises that the event specification may license a temporal and locative index that accounts for the fact, noted above, that such phrases are less sensitive to WIs than manners and reasons.

On the basis of the fact that expletive *wh*-phrases do not have referential theta-roles, Rizzi (1992) extends this reasoning to partial *wh*-movement, which is blocked by a negative island (for cross-linguistic variation, see Dayal 1994):

(89) Was glaubst du (*nicht), mit wem Jakob jetzt spricht?
what think you (*not) with whom Jacob now talks
'With whom do(n't) you think Jacob is talking now?'

Drawing from work by Kroch and Comorovski, Cinque (1990) makes a finer distinction that involves pragmatics: a referential *wh*-phrase, in addition to having

a referential theta-role, needs to be Discourse-linked, i.e., drawn from a pre-established set.

Some of the most persuasive examples involve *how many*-phrases:

(90) *How many books are you wondering <whether to write ___ next year>?

(91) How many books on the list are they wondering <whether to publish ___ next year>?

(92) *How many points are you wondering <whether to earn ___>?

(93) How many points are the jurors debating <whether to take off ___>?

The good examples involve a contextually established set of books or a specific range of points that figure skating jurors conventionally assign to mistakes in the program. Similar contrasts are easy to construct with other *wh*-phrases, including adjuncts. For instance, although *how*-extraction out of a *wh*-island or a negative island is by default bad, it becomes rather acceptable given a contextually specified checklist of ways to solve the problem:

(94) How are you wondering <whether to solve the problem ___>?
(OK when choosing from salient checklist)

(95) How did <no student solve the problem ___>?
(OK when choosing from salient checklist)

In a similar spirit, Kiss (1993) assumes that specificity in the sense of Enç (1991) is a prerequisite for extraction out of a *wh*-island.

We might say that these proposals define WI-sensitivity in terms that combine syntax with pragmatics. In the name of philological correctness it should be mentioned that Kroch's influential paper apparently had more than one version, and the 'official, unpublished' version gives a different explanation than the one Cinque relies on. According to Kroch, what saves (91) is not that the *how many*-phrase is D-linked but, rather, the fact that the context licenses the existential presupposition that there is a particular amount such that you are wondering whether to publish that amount.

A similar interpretive contrast is pointed out in Obenauer (1992). He characterizes it in terms of specificity and correlates it with a difference in agreement with the past participle. The split construction (*combien . . . de fautes* 'how many . . . errors') never allows agreement and only the non-specific reading is available. In the non-split construction, on the specific reading agreement is optional: *Dis-moi combien de fautes tu as fait/faites* 'Tell me how many (of the typical, expected) errors you made', and on the non-specific reading, which asks about the number of errors, participle agreement is excluded.

5.3 Re-evaluating the role of D-linking (A3)

The pragmatic argument is very powerful: indeed, almost any *wh*-phrase (save for *why*, perhaps) can be made immune to WIs by D-linking. But it has been argued that D-linking is not the discriminating factor. Szabolcsi and Zwarts (1990, 1993) argue that the moral of the salient-checklist examples is different from what Kroch and Cinque draw from them. The checklist in effect turns elements of a non-individuated domain into discrete individuals. D-linking may thus play an important role in transforming a domain but, they claim, it is not D-linking itself but the emergent set of individuals that is decisive. Likewise, the pragmatic approach predicts that *wh-the-hell* can never be extracted out of a weak island, because it is aggressively non-D-linked, in the words of Pesetsky (1987a). Szabolcsi and Zwarts (1993) submit that it is an independent property of *wh-the-hell* that makes it difficult to extract from WIs. For example,

(96) Who the hell saw John?

Unless it is a rhetorical question, (96) is felicitous only if we have unquestionable evidence that someone saw John and merely wish to identify the person. The requirement of unquestionable evidence is often difficult to fulfil in the complex situations described by WI-violations:

(97) ??Who the hell are you wondering <whether to invite ___>?

On the other hand, when such evidence is available, a WI-violation by *wh-the-hell* is acceptable. E.g., seeing someone rifling through a dictionary, we may felicitously ask,

(98) What the hell do you still <not know <how to spell ___>>?

Perhaps the clearest example demonstrating the significance of individuals, in distinction to D-linking, comes from Dobrovie-Sorin (1994c). Clitic doubling in Romanian signals D-linking, and indeed, it enables a *how many*-phrase to extract from a factive island:

(99) Pe cîte femei regreţi <că le ai iubit ___>?
'how many (of the) women are such that you regret having loved them'

On the other hand, *cîte femei* 'how many women' can be extracted even if it is not doubled by *le* and, consequently, is not D-linked. It turns out that the critical factor is whether it is interpreted as quantifying over numbers of women (case (i), which is bad) or over individual women (case (ii), which is OK):

(100) Cîte femei regrei <câ ai iubit ___>?
(i) *'for what number, you regret having loved that number of women'
(ii) 'how many women are such that you regret having loved them'

These data lead to the conclusion that semantics, rather than pragmatics, plays the real role in the characterization of WI-sensitivity. (On the other hand, the WI-sensitivity of certain expressions in anti-pronominal contexts, e.g., place names in (76) remains a mystery.)

5.4 *Individual vs. non-individual, and* how many-*phrases (A4)*

Szabolcsi and Zwarts argue that the individual/non-individual distinction is what sets apart WI-escaping *which/what*-phrases from manners, reasons, amounts, and other WI-sensitive expressions (when the latter are not individuated by contextual brute force). A very similar conclusion is reached by many authors, specifically in connection with the ambiguity of *how many*-phrases. Dobrovie-Sorin proposes to split QR into two Logical Form operations: NPR (the raising of noun phrases with a quantifier feature) and DR (the raising of determiners). The first leaves an individual variable and is immune to WIs. The second leaves a higher order, determiner-type variable and is sensitive to WIs. (NPR may be followed by DR but that does not matter in relation to island escaping.) The distinction is of course highly reminiscent of the contrast between overt *combien* extraction and *combien de N* extraction (Obenauer 1984/1985):

(101) Combien as-tu (*beaucoup) consulté ___ de livres?
how many have-you (*a lot) consulted ___ of books

(102) Combien de livres as-tu (beaucoup) consulté ___?
how many of books have-you (a lot) consulted

The overt extraction of *combien* 'how many' is blocked by WIs, whereas the overt extraction of the full noun phrase (generally) is not; see also Rizzi (2000a) for a similar case of 'splitting' in Italian, involving *wh-d'altro 'wh* else'. The finer point that Dobrovie-Sorin makes is that *combien de livres* is in itself ambiguous between an amount and an individual reading, and the amount reading is absent when *combien de livres* is (grammatically) extracted out of a WI, exactly as was observed in connection with *cîte femei*:

(103) Combien de livres as-tu consulté ___?
ambiguous (DR/NPR)

(104) Combien de livres as-tu beaucoup consulté ___?
not ambiguous (*DR/NPR)

In fact, even overt *combien de N* extraction out of a WI may be ungrammatical when, as the object of a verb of creation, the phrase can only have an amount reading (Szabolcsi and Zwarts 1993). The contrast between this and grammaticality of (102) is taken to show that *combien de livres* is ambiguous:

(105) Combien de cercles as-tu (*beaucoup) dessiné ___?
how many circles have-you (*a lot) drawn

The same interpretive contrast holds for non-*wh* numeral phrases whose amount reading is produced by DR, and whose individual reading is produced by NPR, at Logical Form (Dobrovie-Sorin 1994c):

(106) John read fifty books.
(i) 'John read books. Their number was fifty.'
(ii) 'There are fifty books such that John read them.'

(107) John didn't read fifty books.
(i) *'John didn't read books. Their number was fifty.'
(ii) 'There are fifty books such that John didn't read them.'

Agreement facts in Italian clefts appear to support the claim that the amount/individual distinction has its own independent existence: amount readings, as opposed to individual readings, lack number agreement (F. Beghelli's observation, quoted in Szabolcsi and Zwarts 1993):

(108) È cinque donne che (*non) ho invitato. (amount)
is five women that (*not) have-I invited

(109) Sono cinque donne che (non) ho invitato. (individual)
are five women that (not) have-I invited

It is interesting to note that mass expressions are more irrevocably WI-sensitive than count ones, and abstract ones are more WI-sensitive than concrete ones. Thus, the following have no individual readings.

(110) a. How much milk did(*n't) you spill on your dress?
b. How much pain did(*n't) you suffer?

The pragmatic proposal would make this natural (mass and abstract denotations are difficult to D-link), but once we saw that D-linking is not a panacea magna, the explanation must lie elsewhere. Dobrovie-Sorin (1994c) proposes a thorough analysis of the amount–individual ambiguity of *how many*-phrases in terms of distinguishing the raising of determiners (DR) and the raising of noun phrases with a quantifier feature (NPR). But she does not develop a new theory of WIs; rather, she simply assumes that DR, unlike NPR, is sensitive to WIs. Other authors who identify individuality as the crucial factor are Aoun (1986), Frampton (1990), Rullmann (1993), and Cresti (1995).

An important difference between the approaches of Dobrovie-Sorin and Szabolcsi and Zwarts on the one hand, and Frampton, Rullmann, and Cresti, on the other, is that the former posit an amount–individual ambiguity even in

sentences where *how many N* does not interact with another scopal expression, whereas the latter do not. Cresti addresses the ambiguity manifested in what Longobardi (1987) called scope reconstruction facts:

(111) How many people do you think I should talk to ___?
  (i) 'For what number n: you think it should be the case that there are n-many people that I talk to.'
  (ii) 'For what number n: there are n-many people x such that you think I should talk to x.'

Cresti (and in a very similar proposal, Rullmann 1993) derives the two readings without actual reconstruction. In the derivations below, x is a trace of type e (individuals), and X is a trace of the same type as *N-many people* (intensionalized generalized quantifiers). Working bottom-up, each trace is bound by a lambda-operator to allow the next trace or the moved phrase itself to enter the chain. The lowest, argument, position of the chain is always occupied by a trace x of the individual type, but intermediate traces may make one switch to the higher type X. The scope difference with respect to *should* is due to the fact that in (i), the switch from x to X takes place within the scope of *should*, whereas in (ii), *should* has a trace x of the individual type within its scope.

(112) (i) Narrow scope (amount):
  $[_{CP}$ how many people $\lambda X[_{IP} \ldots$ think $[_{CP}$ X $\lambda X[_{IP} \ldots$ should $[_{VP}$ X $\lambda x[_{VP} \ldots x \ldots]]]]]$
  (ii) Wide scope (individual):
  $[_{CP}$ how many people $\lambda X[_{IP}$ X $\lambda x[_{IP} \ldots$ think $[_{CP}$ x $\lambda x[_{IP} \ldots$ should $[_{VP} \ldots x \ldots]]]]]$

If *wonder whether* replaces *think that*, in derivation (i) it inescapably has a higher type trace X in its scope; in derivation (ii), it can have a trace x of the individual type in its scope. Cresti stipulates that when CP constitutes a *wh*-island, the trace adjoined to CP must be of the individual type. This rules the *wonder*-version of (112i) out.

(113) (i) *Narrow scope (amount):
  $[_{CP}$ how many people $\lambda X[_{IP} \ldots$ wonder $[_{CP}$ X $\lambda X[_{IP} \ldots$ should $[_{VP}$ X $\lambda x[_{VP} \ldots x \ldots]]]]]$
  (ii) Wide scope (individual):
  $[_{CP}$ how many people $\lambda X[_{IP}$ X $\lambda x[_{IP} \ldots$ wonder $[_{CP}$ x $\lambda x[_{IP} \ldots$ should $[_{VP} \ldots x \ldots]]]]]$

Cresti (1995) proposes a novel analysis of scope-reconstruction facts related to *how many*-phrases and extends it to a new domain: functional readings. But she does not develop a new theory of WIs: she simply stipulates that only a variable of type e may be adjoined to a CP that constitutes a *wh*-island. The question as

to why this is so and how this proposal might extend to WIs other than *wh*-islands is not addressed by Cresti.

5.5 Functional readings and event-related readings (A5)

Cresti (1995) adds a set of novel data to the inventory of WI-sensitive expressions: *wh*-phrases on the functional reading, which obtains in a quantificational context, illustrated in (114i).

(114) Which book did no student read?
  (i) 'Which f, f a function from people to books, no student x read f(x)?'
  Answer: No student$_i$ read her$_i$ mother's book.
  (ii) 'Which y, y a book, no student read y?'
  Answer: No student read *War and Peace*.

When the *wh*-phrase contains a reflexive, only the functional reading is possible:

(115) Which book about herself did no politician read?
  (i) Answer: No politician$_i$ read the book her$_i$ aide wrote.
  (ii) Answer: *No politician read this book.

The functional reading (116i) is sensitive to *wh*-islands, whereas the non-functional reading of the same *wh*-phrase (116ii) is not:

(116) I know which book you wonder whether no/any student read.
  (i) *I know that you wonder whether no/any student$_i$ read her$_i$ mother's book.
  (ii) I know that you wonder whether no/any student read *War and Peace*.

This would be impossible to explain on the earlier, syntactic or pragmatic, theories. Cresti argues that on the functional reading, the trace of *which book* (*about herself*) must be of a higher order, functional type, as opposed to the individual type. Functional readings neatly fall under the individual vs. higher order generalization.

Another set of new data that might be accounted for along these lines involves event-related readings (Krifka 1990). Notice that on reading (117ii), each ship counts as many as the number of times it passes through the lock:

(117) Four thousand ships passed through the lock last year.
  (i) Object-related: 'there are 4,000 distinct ships that passed through the lock'.
  (ii) Event-related: 'there were 4,000 lock traversals by ships'.

Doetjes and Honcoop (1997) observe that the event-related reading is sensitive to WIs, negative islands among them:

(118) How many ships <___ didn't pass through the lock>?
(i) Object-related: okay.
(ii) Event-related: ungrammatical.

The authors analyze event-related readings as quantification over <event, object> pairs. The WI-sensitivity of such pairs might be explained with reference to the fact that they are not of type e – although Doetjes and Honcoop themselves offer a different explanation, namely, one in terms of an algebraic notion of individuals.

5.6 Individuals: is it being of type e that matters? (A6)

The contrasts above can indeed be accounted for by defining the critical property in terms of logical type: type e (the type of individuals) versus higher types (the types of determiners, generalized quantifiers, functions from sets to sets, event-object pairs, etc.). The following data, however, are not easily amenable to this account.

Szabolcsi and Zwarts (1993) observe that arguments and adjuncts of non-iterable ('one-time-only') predicates must denote collectives. The absence of the distributive interpretation is indicated by the unacceptability of distributing the preposition or *did* over the members of the conjunction:

(119) Which relatives did you hear this rumor from?
From my aunt and from my uncle.

(120) Which relatives did you get this present from?
From my aunt and (*from) my uncle.

(121) Which soldiers visited this house?
Jones and Smith did./Jones did and Smith did.

(122) Which soldiers destroyed this house?
Jones and Smith did./*Jones did and Smith did.

Surprisingly, these collectives are sensitive to weak islands. Example (124), which involves extraction from a factive island, is acceptable only if we are willing to give up the natural 'one-time-only' interpretation of the predicate and assume that the same present (token) was given to you several times by different relatives. Likewise, (126) is acceptable only if we assume that the same house can be destroyed more than once:

(123) Which relative(s) do you <regret that you heard this rumor from ___>?

(124) ??Which relative(s) do you <regret that you got this present from ___>?

(125) Which soldier(s) <didn't visit this house ___>?

(126) ??Which soldier(s) <didn't destroy this house ___>?

These contrasts are problematic for all the accounts reviewed above. *Which N(s)* in the non-iterative context is clearly an argument, not an adjunct. It is an event-participant. It is in all probability D-linked. Finally, it ranges over things of the same logical type as it does in the iterative context.

There are two standard approaches to collectives. According to Link (1983), collectives are plural individuals. They are entities of the same type e as singular individuals, but they have an internal part-whole structure. According to Scha (1981), collectives are sets of individuals (type <e,t>) – but singular individuals like John are also treated as sets, namely, singletons. In other words, logical type does not discriminate between WI-sensitive and WI-immune *which N(s)*. Either both are type e or both are type <e,t> (or fancier reincarnations thereof). Thus, a different definition of the pertinent notion of individualhood is needed; one that singles out almost, but not exactly, the same things as the type theoretic one. This need is underscored by the fact that the relevance of being type e is merely stipulated, but not explained, in Cresti's work. An alternative proposal in terms of algebraic structure is made by Szabolcsi and Zwarts (1993) (see section 7.5.1).

5.7 Split constructions (A7)

Obenauer (1984/1985) demonstrated that one kind of split construction, *combien*-extraction, is sensitive to WIs. The same holds for Dutch *wat voor-* and *wat aan*-split and their German counterparts, in the judgment of Beermann (1997), Corver (1990), and Honcoop (1998). (M. den Dikken (p.c.) informs me that minor additions may improve the examples, e.g., *wat . . . voor een soort boek*.)

(127) Wat voor een boek heeft Jan gelezen ___?
what for a book has John read

(128) Wat heeft Jan ___ voor een boek gelezen?
what has John for a book read

(129) ??Wat voor een boek vroeg jij je af <of je ___ moest lezen>?
'What kind of book did you wonder whether you should read?'

(130) *Wat vroeg jij je af <of je ___ voor en boek moest lezen>?
'What kind of book did you wonder whether you should read?'

(131) a. Wat heb jij ___ aan boeken gelezen?
what have you on books read
b. Alles wat jij ___ aan boeken hebt gelezen past op één klein plankje.
everything what you on books have read fits on one small shelf

(132) *Wat vroeg jij je af <of Jan ___ aan boeken heeft gelezen>?
what wondered you if John on books has read
'What books did you wonder whether John has read?'

Because *combien*-extraction inescapably yields an amount as opposed to an individual interpretation, this datum falls under the proposed generalizations earlier. The same may hold of the WI-sensitivity of *wat voor*-split, on the assumption that kinds are not individuals. But *wat aan*-phrases have an individual reading. Thus, *wat aan*-split suggests that split constructions are WI-sensitive, over and beyond whether they range over individuals or not. See also chapter 66.

5.8 Negative polarity (NPI) licensing (A8)

It has been known since Linebarger (1987) that the licensing relation between negative polarity items and their triggers is blocked by a variety of interveners. Honcoop (1998) argues that it is blocked by the same interveners that create WIs.

(133) John didn't give the beggar a red cent.
trigger: *not*; NPI: *a red cent*

(134) *Mary didn't ask <whether John gave the beggar a red cent>.

(135) *Mary didn't regret <that John gave the beggar a red cent>.

The *wh*-island and factive island tests give the desired result but, as Honcoop points out, the results may be irrelevant. To make sure that the NPI is not licensed by the intervener itself, a 'sensitive' NPI like *a red cent* needs to be used; but *a red cent* may require a clause-mate trigger, and these contexts block Neg-raising (Neg-lowering) as well. Thus, the conclusive demonstration of the WI-sensitivity of NPIs comes from a less-known set of WIs: scope islands. Scope islands will be detailed in (B6).

(136) *John didn't give <every beggar a red cent>.

(137) *John didn't give <at most three beggars a red cent>.

(138) *John didn't give <exactly three beggars a red cent>.

Honcoop's proposal that the blocking of NPI-licensing is a WI-phenomenon is very interesting for two reasons. One, this is the very first systematic explanation of the NPI-blocking facts. Two, the WI data base is now extended in a substantial and exciting manner. (P. Postal (p.c.) points out to me that Ross (1986, originally a 1967 dissertation) characterized NPIs as island-sensitive.)

5.9 Cross-sentential anaphora (A9)

Honcoop (1998) also observes an uncanny similarity between the expressions that create WIs and those that block cross-sentential anaphora when they take scope over the indefinite, e.g.:

(139) I saw a man$_i$ in the park. He$_i$ was tall.

(140) *I didn't see a man$_i$ in the park. He$_i$ was tall.

The pertinent data will be surveyed in section 7.5.2. We might list them here, along with the data in (A8), as new WI facts, but because Honcoop's proposal is to reduce the explanation of WI effects to that of the anaphora facts, it is expedient to discuss them along with his theory.

5.10 Elements of anti-pronominal contexts (A10)

The anti-pronominal contexts discussed in Postal (1993, 1994, 1997a, 1998), reviewed in section 3.4.3, in effect involve a set of WI-sensitive expressions. Some of these expressions clearly do not have individual reference. If this is correct, then their WI-sensitivity can be accounted for along the lines reviewed above, and if pronouns need to refer to individuals in the sense outlined above, the pronominal correlation might be predicted. To what extent one can make good on these suggestions remains to be investigated.

6 What contexts constitute weak islands? (B)

As was mentioned earlier, *wh*-islands are the classical WIs. Relativized Minimality revolutionized the study of WIs by bringing a host of further WIs within the scope of the theory. These include negative and factive islands, affective (downward entailing) operators, extraposition islands, etc. But this was only the beginning.

It is important to ask whether WI-sensitive extractions and WI-inducers are uniform in the sense that if a particular extraction is blocked by some weak island, it is blocked by all weak islands. The answer is generally assumed to be yes, as long as the relevant constructions can be checked at all. Therefore, in demonstrating what contexts constitute WIs, I will not check the effect against the full range of WI-sensitive extractions reviewed above. I will always pick one case that seems convincing enough. I assume that the choice is by and large arbitrary.

6.1 Wh-*islands (B1)*

As was mentioned in section 3.1, infinitival, modal, or subjunctive, *whether*-complements are the weakest islands, as illustrated by English below. Tensed constituent *wh*-questions are often strong islands. The cross-linguistic and cross-dialectal variation is poorly understood.

(141) a. Which man are you wondering <whether to invite ___>?
b. *How are you wondering <whether to behave ___>?

6.2 Negatives and other affective operators (B2)

That negatives block extraction was observed as early as in Williams (1974), together with the fact that only unstressed negatives do (the latter remains unaccounted for in the literature):

(142) *I asked how John <didn't behave ___>.

(143) I asked how John did NOT behave ___.

The island-inducing effect of negatives was analyzed systematically in Ross (1984), who called them Inner Islands:

(144) What did <no imitation pearls touch ___>?

(145) *What did <no imitation pearls cost ___>?

Rizzi (1990b) observes that the generalization extends to all items that are affective operators (i.e., NPI triggers) in the sense of Klima (1964).

(146) *How did <few men think that you behaved ___>?

(147) *How did <only John think that you behaved ___>?

(148) *How did <you deny that you behaved ___>?

In terms of Ladusaw (1980), affective operators are downward entailing (on the whole, or have such a component, as is the case with *only*). Compare:

(149) No one/Few men/Only John had ever been here.

(150) I deny that you have ever been here.

How does double negation behave in this context? Does it cancel out? Szabolcsi and Zwarts (1993) observe that in at least one case it does, but generally not. (The island-sensitivity of *as*-extraction comes from Rizzi 1990b.) See also Kuno and Takami (1997):

(151) John is our hero, as no one denies ___.

(152) *How did <no one deny that you behaved ___>?

Rullmann (1994, 1995) proposes a semantic explanation of the blocking effect of downward entailing operators. Because this theory is not intended to extend to other WIs (Rullmann regards those a matter of syntax), it is reviewed here, rather than in the theory section.

The proposal is essentially a generalization of Rullmann's account of maximality and intervention effects in comparatives. To see that comparatives give rise to maximality effects, consider (153), which means that John swam faster than the maximal speed at which Bill can run.

(153) a. John swam faster than Bill could run.
b. John swam faster than MAX({d: Bill could run d-fast})

where MAX is defined as the least upper bound of the set it operates on (i.e., MAX({1,2,3,4,5}) = 5, etc.). This account of the semantics of comparatives almost immediately explains the following contrast:

(154) a. John weighs more than Bill weighs.
b. John weighs more than everybody else weighs.
c. John weighs more than most people weigh.
d. John weighs more than many people weigh.
e. John weighs more than at least five people weigh.
f. John weighs more than Bill always/often weighs.

(155) a. *John weighs more than Bill doesn't weigh.
b. *John weighs more than nobody weighs.
c. *John weighs more than few people weigh.
d. *John weighs more than fewer than five people weigh.
e. *John weighs more than at most five people weigh.
f. *John weighs more than Bill never/seldom weighs.

The account essentially runs as follows. In both (156a) and (157a) the sets of degrees are finite and contain a maximum. However, their complements in (156b) and (157b) are infinite, and therefore do not contain a maximum. The set denoted by (157b), for example, contains all the degrees of weight d such that nobody weighs (exactly or at least) d-much. This set obviously does not have a maximum member.

(156) a. {d: at least five people weigh d-much}
b. {d: fewer than five people weigh d-much}

(157) a. {d: somebody weighs d-much}
b. {d: nobody weighs d-much}

Rullmann then argues that *wh*-questions in general give rise to maximality/exhaustivity effects as well. For example, a question that asks us to specify the maximal speed at which John can run is informally represented as follows:

(158) a. How fast can John run?
b. which d [d = MAX({d': John can run d'-fast})]

If so, then the ill-formedness of the following, for example, can be explained along the same lines as the ill-formedness of the examples above.

(159) *How fast can't John run?

What explains then that *wh*-adjuncts such as *how* and *why* are also sensitive to WIs? Consider first the examples in (160), which show that *who*, contrary to *how* and *why*, is not sensitive to WIs. Given maximality/exhaustivity, (160a) asks for the maximal plural individual that attended the party (i.e., the sum of all the people who attended the party). Question (160b) then asks for the sum of all people who were not at the party. To exclude irrelevant individuals such as Aristotle and Yeltsin from consideration, *who* must be D-linked.

(160) a. Who was at the party yesterday?
b. Who was not at the party yesterday?

The fact that *how* and *why* cannot be extracted across negation and quantificational expressions follows from the fact that *how* and *why* cannot be D-linked.

6.3 Response stance and non-stance in contrast to volunteered stance predicates (B3)

That factive contexts are WIs is well known from Cinque (1990). This is just a special case, though, as Hegarty (1992b) points out. The full picture is presented in Cattell (1978). Cattell distinguishes response stance, non-stance, and volunteered stance predicates. Reponse stance includes, alongside *deny*, items like *accept*, *confirm*, *verify*, *admit*, and others. Non-stance includes a big class of factives: *realize*, *know*, *regret*, *remember*, *surprise*, *notice*, etc. Finally, volunteered stance includes *think*, *believe*, *suspect*, *allege*, *assume*, *claim*, etc. Cattell's generalization is that the first two classes generally block adjunct extraction:

(161) *How did you accept that he behaved ___?
also: deny, confirm, verify, admit, . . .

(162) *How did you realize that he behaved ___?
also: know, regret, remember, surprise, notice, . . .

(163) How did you think that he behaved ___?
also: believe, suspect, allege, assume, claim, . . .

6.4 Extraposition islands (B4)

Again, this is one of the cases discussed in Cinque (1990). Whether extraposition islands constitute a separate case is not immediately evident, since they are overwhelmingly also factive islands, e.g.:

(164) *How <is it a scandal that he behaved ___>?

But here is at least one extraposition island quoted by Cinque that is not factive:

(165) *How <is it time to behave ___>?

On the other hand, the following extrapositions involve non-factive, non-negative predicates and do not appear to create islands (P. Postal, p.c.).

(166) How much wine is it possible/legal/fun/dangerous to drink ___ at a party?

This seems to indicate that extraposition per se is not the culprit. It is unclear to me exactly what makes *it is time to . . .* an island. Further relevant examples can be drawn from Heavy NP Shift.

6.5 VP-adverbs (B5)

Obenauer (1984/85) examines the following pattern:

(167) J'ai beaucoup conduit [___ de camions].
I have a lot driven of trucks.
'I drove many trucks.'

Although the phrase *beaucoup de camions* would be grammatical, Obenauer argues in careful detail that VP-initial *beaucoup* is not an extracted determiner but a VP-adverb. The quantified interpretation 'many trucks' is obtained through quantification of V in terms of 'many times'. He calls this phenomenon QAD (quantification at a distance). The presence of the adverb nevertheless blocks *combien*-extraction:

(168) *Combien as-tu <beaucoup consulté [___ de livres]>?

The analysis according to which a VP-initial quantifier renders split constructions ungrammatical without being derivationally related to the empty determiner slot of the DP is corroborated by the fact that iterative adverbs also block *wat voor* split (De Swart 1992):

(169) *Wat heb je <twee keer [___ voor boeken] gelezen>?
what have you two times for books read

It may be interesting to point out that these adverbs block *how*-extraction as well:

(170) *How did you <behave a lot ___>?
*How did you <behave twice ___>?

6.6 Scope islands (B6)

At least one important subset of the islands above, namely, *wh*-islands, negative (affective) islands, and adverbial islands, can easily be described as intervention islands: the WI is induced by the intervention of a certain element between the final locus of the extracted phrase and its extraction site. The intervention of other operators seems harmless, e.g., *every boy* may intervene between *how* and its extraction site, without making the sentence ungrammatical.

(171) How did every boy behave ___?

As we shall see, Rizzi's (1990b) generalization is that bad interveners are A-bar specifiers. Expressions in A-specifier or adjoined position do not matter. Universals are adjoined to some projection by QR, hence they cannot matter. But it turns out that the grammaticality of (171) type extractions is misleading. *Every boy* is an operator that may scope either below or above a *wh*-phrase; it may even be scopally independent from it. Let us illustrate the three possibilities with an example where the *wh*-phrase is immune to WIs:

(172) Which book did every boy read ___?
- (i) every > wh
  'For every boy, which book did he read?'
- (ii) wh > every
  'Which book is such that every boy read it?'
- (iii) independent scope (uniformity presupposition)
  'Taking for granted that every boy read the same book, what was this book?'

Reading (i) is often called a pair-list reading: it is answered by a list of pairs: 'Bill read *Magic Mountain*, Jim read *The Russia House*, . . .'. Readings (ii) and (iii) both ask for a single book that was read by every boy, but differ as to the possibility of what else each boy may have read. For instance, if Bill read *Jurassic Park* and *Tom Jones*, Jim read *Jurassic Park* and *Airframe*, and so on, reading (ii) is felicitous and the answer is '*Jurassic Park*'. Reading (iii) is not felicitous in the same situation: it presupposes that each boy read just one book, moreover, the same one, and merely asks to identify the book. The question is, are these three readings equally possible when *every boy* interacts with a WI-sensitive expression, rather than a *which*-phrase.

De Swart (1992) and Kiss (1993) make the fundamental observation that universals are harmless only when they (i) scope above or (iii) independently of the sensitive *wh*-phrase. When they scope below it (ii), they induce a WI. Kiss states the generalization for non-specific extractees, De Swart for split constructions:

(173) How did every boy behave ___?
- (i) every > *wh*
  'For every boy, how did he behave?'

(ii) *wh* > every
*'What was the common element in the boys' non-uniform behavior?'
(iii) independent
'Taking for granted that every boy behaved the same way, what was it like?'

(174) Combien ont-ils tous lu ___ de livres?
(i) *'For each of them, how many books did he read.'
(ii) *'For what n, they all read n or more books.'
(iii) 'They all read the same number of books; what (which) number was it?'

Because (174) contains a floated quantifier, it lacks an every > *wh* reading (i). It does have an independent reading (iii), especially if there is a contextually salient list of numbers. But crucially, it lacks reading (ii) where the universal would be scoping under *wh*. (I thank D. Sportiche and M. Starke for discussion regarding (174).) In sum, the fundamental observation is that it is not so much the nature of the syntactic position (A-bar specifier vs. other) but the scope of the intervener that matters: an operator that scopes between the WI-sensitive extractee and its extraction site blocks the extraction.

Why does the mere presence of the previously reviewed operators induce a WI? Because, for reasons of their own, they are unable to scope above (or independently of) the extracted phrase. For instance, *no one* or *twice* never induce pair-list questions at all:

(175) a. Which book did no one read?
*'For no one, tell me which book he/she read.'
b. Which book did you read twice?
*'For two occasions, tell me which book you read then.'

Following Kiss's and De Swart's insight, this point is demonstrated systematically in Szabolcsi and Zwarts (1993). Some further descriptive caution is in order, however. Based on a detailed investigation of pair-list readings, Szabolcsi (1997a) shows that the same quantifier may or may not induce a WI, depending on the syntactic context. *Fewer/more than five boys* blocks *how*-extraction in a matrix question and in a complement of *wonder* or *ask*, but not in a complement of *find out*. The presence of *only* in (178) enhances the felicity of this reading.

(176) *How did fewer than five boys behave ___?

(177) *I wonder how fewer than five boys behaved ___.

(178) I only found out how fewer than five boys behaved ___.
'I only found out about fewer than five boys how each behaved'

(179) ??How did more than five boys behave ___?

(180) ??I wonder how more than five boys behaved ___.

(181) I found out how more than five boys behaved ___.
'I found out about more than five boys how each behaved.'

These data correlate with the fact that these quantifiers are only capable of inducing a pair-list reading in *find out*-complements (irrespective of WIs):

(182) Which book did more than five boys read?
*'For more than five boys, tell me which book each read.'

(183) I wonder which book more than five boys read.
*'For more than five boys, tell me which book each read.'

(184) I found out which book more than five boys read.
'I found out about more than five boys which book each read.'

If inducing a pair-list reading can be described as the quantifier scoping above the *wh*-phrase, the WI data fall out. *More/fewer than five boys* can scope above the *wh*-phrase in *find out*-complements, hence it does not induce a WI. It cannot scope above the *wh*-phrase in the matrix or in *wonder*-complements, thus it causes a WI.

In what follows, the designation scope island will be used to refer specifically to the above data, although Szabolcsi and Zwarts (1993) argue that the scope generalization can be extended to most of the other island-inducers as well.

Finally, I note that quantifier intervention data discussed in Beck (1996b) and Kennedy (1997b) are, plausibly, special cases of weak islands, although the authors do not relate them to the weak island phenomenology. One reason may be that they are not aware of the exact range of interveners that create weak islands.

7 Theories

7.1 ECP and Subjacency for (A1)–(B1)

The historical starting point is the assumption, made in Huang (1982a), Lasnik and Saito (1984, 1992), Chomsky (1986a), that the paradigmatic (if not the only) case of weak (selective) islands is *wh*-islands (A1), and the expressions whose extraction is sensitive to WIs are adjuncts, as opposed to arguments (B1).

(185) Which problem are you wondering how to [t' [phrase t]]?

(186) ?Which student did he wonder whether to [t' [consider [t intelligent]]?

(187) How have you [t‴ [decided [t″ to [t′ [phrase the problem t]]]]]?

(188) *How are you [t″ wondering [which problem to t′ [phrase t]]]?
'what is the manner such that you are wondering which problem to phrase in that manner'

In all four examples, the lowest trace t is properly governed by t′, an intermediate trace adjoined to the closest VP. The distinction between arguments and adjuncts is drawn in the following way. An empty category that is in argument position is indelibly marked as to whether it is properly governed at S-structure. Thus in (185–186), t is marked as properly governed. Trace t′ itself is not properly governed when it is separated from its antecedent by a *wh*-island (since government requires 0-subjacency). However, intermediate traces can delete before Logical Form, because they are not needed for interpretation. Thus in (185–186), the only trace that must appear at LF is t, which is legitimate. On the other hand, non-argumental (adjunct) empty categories are marked for proper government as late as at LF, therefore intermediate traces need to be re- tained. In (187), the antecedent government chain <how, t‴, t″, t′, t> is unbroken by any subjacency violation. But in (188), t″ does not govern t′, since they are separated by a *wh*-island. Trace t′ cannot be deleted as t would then not be governed. Thus, on the whole, the extraction of an adjunct out of a *wh*-island inescapably involves an empty category that is not properly governed. As Cinque (1990) puts it, this theory forces adjuncts to move strictly successive cyclically, whereas arguments may, in effect, undergo long movement.

We see that this theory of weak islands is purely syntactic. The extraction of a phrase is sensitive to *wh*-islands simply because it originates in a non-argument position. Likewise, a moved *wh*-phrase creates an island purely with its bulk – by occupying the specifier position of CP and thus preventing the non-argument extraction from proceeding through that position.

7.2 Relativized Minimality for (A2, A3)–(B1, B2, B3%, B4, B5%)

The fact that a fronted *wh*-phrase blocks certain extractions can be attributed to the fact that, by occupying an escape hatch, it gives rise to a subjacency violation. But this explanation does not extend to negation or VP-adverbs, for instance: they do not occupy any escape hatch whatsoever. Relativized Minimality (Rizzi 1990b, Cinque 1990) is a particularly exciting theory because it pulls together a host of new islands and seeks to provide a unified account. Specifically, it seeks to account, besides *wh*-islands (B1), also for negative and affective islands (B2), factive islands, a subset of those discussed in (B3), extraposition islands (B4), and the islands created by VP-adverbs (B5). The expressions that are sensitive to WIs are defined as non-referential, as in (A2), which includes split constructions, as in (A3).

Rizzi (1990b) builds primarily on the theoretical analysis of QAD in Obenauer (1984/1985). Obenauer's insight is that a local relation between an operator and its variable is blocked by the intervention of any third party that may be derivationally totally unrelated to them but is sufficiently similar to the operator. In the same spirit, Relativized Minimality is a representational theory of 'like' intervention. This is the basic intuition as to what expressions create WIs. (For recent versions of Relativized Minimality, see the Minimal Link Condition in Chomsky 1995c and its revision in Manzini 1998.)

The assumption that WI-sensitive operators need to be connected to their variable by a series of local relations, while WI-immune operators may be linked to their variable long-distance is retained and is recast in the following way. Rizzi assumes that there are two (non-exclusive) ways to connect an operator and its variable:

(i) binding;
(ii) a chain of government relations.

Binding is an arbitrarily long-distance relation that requires the identity of referential indices; consequently, only operators that are referential can use it. Non-referential operators need to rely on a government chain. Rizzi makes intervention relevant specifically for government. Consequently, 'like' interveners block the government relation between a non-referential operator and its variable. This is the basic intuition as to what expressions are sensitive to WIs. Rizzi (1990b) defines referential operators as those that bear an event–participant thematic role like Agent, Patient, etc. Cinque (1990) adds the requirement that the operator must also be Discourse-linked. Non-referential *wh*-phrases are those that bear a role like Reason, Manner, Measure, etc. or are not D-linked.

The role of intervention is technically explicated as follows. *Barriers* incorporates a notion of minimality: a governor cannot govern into the domain of another, closer governor. Minimality is defined rigidly: only an intervening head governor counts, and it blocks both head and antecedent government. Rizzi proposes to relativize minimality to the kind of relation that obtains between governor and governee:

(189) **Relativized Minimality:**
X α-governs Y only if there is no Z such that
(i) Z is a typical potential α-governor for Y, and
(ii) Z c-commands Y and does not c-command X.

Rizzi finds it useful to distinguish four kinds of value for α: head government, antecedent government in an A-chain, antecedent government in an A-bar chain, and antecedent government in a head-chain. Since we are concerned with chains headed by a *wh*-phrase in A-bar specifier position, all and only A-bar specifiers are relevant interveners.

Rizzi analyzes *whether*, *who*, *beaucoup*, *not*, *no one*, *only John*, and *deny* as A-bar specifiers, at S-structure or at LF. In contrast, he points out that *everyone* and *two men* acquire their scope by adjunction, according to May (1985), so they are predicted not to block non-referential extraction. Extraposition islands and factive islands (and the other islands noted by Cattell, not mentioned by Rizzi or Cinque) are not covered by these considerations. To account for these, Cinque adds that the clause from which extraction occurs must be a sister of a theta-marking [+V] head.

While the general idea is very insightful, there are some analytical problems with this execution. One is the movement of *deny*, a head, to an A-bar specifier position at LF, and the assumption that the complement of *regret* is not a sister to the verb. These have an alternative solution within Relativized Minimality, however: the adoption of Progovac's (1988) and Melvold's (1991) proposals to place empty operators in the [Spec, CP] of the complements of *deny* and *regret*, which then serve as standard interveners.

More important perhaps is the problem posed by the cross-linguistic variation in the syntax of negation, attributed to the fact that the negative particle may be a head, a specifier, or an adjunct. This would suggest that the island-creating effect of negation varies accordingly, but it does not: we are not aware of any language in which negation does not create a weak island. Rizzi (1992) proposes to solve this problem by assuming an empty A-bar specifier when NEG is a head, and an empty head when NEG is a specifier. This proposal may well be correct, but it makes the original distinction of Relativized Minimality vacuous: how do we tell the effects of a head from a specifier? But there is a more important problem. The class of WI-inducers cannot be identified as intervening A-bar specifiers. This is highlighted by briefly considering another proposal that is closely related to Relativized Minimality. We turn to this proposal in section 7.3.

7.3 *Monotonicity for (A3, A4)–(B1, B2, B3%, B5%)*

Szabolcsi and Zwarts (1990) propose to recast Relativized Minimality in semantic terms. They argue against the pragmatic notion of referentiality in the analysis of WI-sensitivity. They propose that WI-sensitive expressions denote in a partially ordered domain, whereas WI-immune expressions range over discrete individuals (A3, A4).

As regards WI-inducers, the main proposal is that the interveners that create WIs share a semantic property: they are not upward monotonic but downward monotonic or non-monotonic. Specifically, *wh*-expressions (B1), negative and other affective expressions (B2), factive and negative predicates (a subset of those in (B3)), and certain VP-adverbs (a subset of those in (B5)) fit this semantic generalization; in other words, pretty much all the data discussed by Rizzi and Cinque, save for extraposition islands of the *it is time to . . .* type (B4).

The connection between the definitions of WI-sensitive expressions and WI-inducers is this. For a function to be upward monotonic means, precisely, that the partial ordering in the argument is preserved in the function value. In contrast,

a downward monotonic operator reverses, and a non-monotonic operator obliterates, partial ordering.

(190) Let ≤ be a partial ordering (e.g. the subset relation), and let A ≤ B.
If the function f is upward monotonic, then f(A) ≤ f(B).
If the function f is downward monotonic, then f(B) ≤ f(A).
If f is non-monotonic, neither entailment holds.

Extractees that denote in partially ordered domains require, for some reason, the preservation of this ordering, hence their WI sensitivity. On the other hand, discrete individuals cannot possibly be interested in the preservation of partial ordering, hence their immunity to WIs. The claim that it is the individual versus non-individual distinction that characterizes WI-immune vs. WI-sensitive extractees seems like a step in the right direction. But, as Szabolcsi and Zwarts (1993) explain in detail, the characterization of WI-inducers in monotonicity terms is seriously flawed. The main problem is that it seeks to provide a semantic definition of the class of interveners that Relativized Minimality finds relevant, and that is not the right class.

7.4 From Relativized Minimality to a scope theory

7.4.1 A major problem with Relativized Minimality

Recall a crucial background assumption of Relativized Minimality. The theory of LF that it relies on is that of May (1985). According to this theory, structure (usually) does not disambiguate scope. Example (191), for instance, is assigned a single structure in which *how* is higher than *everyone*, but they govern each other, so they can be interpreted in either scope order or even independently. The adoption of this theory for the purposes of Relativized Minimality results in the assumption that it does not matter which reading of the sentence we are considering; all we have to know is that *everyone* is in an adjoined position, so its intervention between *how* and its trace must be harmless. The question (192) is also assigned a single structure, but *no one* occupies an A-bar specifier position in it, whence it must block *how*-extraction.

(191) How did everyone behave?

(192) *How did no one behave?

Szabolcsi and Zwarts (1990) followed Relativized Minimality in this respect. The claim that certain interveners harm extraction because, being A-bar specifiers, they break a government chain was replaced by the claim that they harm because non-upward monotonic paths do not preserve partial order – but the assumption that upward monotonic interveners qua interveners are harmless became part and parcel of the theory.

As seen in section 6.6, results by Kiss (1993) and De Swart (1992) indicate that this assumption is wrong. For instance, sentences like (193) are ungrammatical on the reading where the universal takes narrower scope than the *wh*-phrase.

(193) Combien ont-ils tous lu de livres?
how many have-they all read of books
*'For what number n, they all read n or more books.'

7.4.2 Scopal intervention

Kiss (1993) and De Swart (1992) propose that any operator that scopes between the sensitive expression and its trace blocks the relation. Kiss identifies the class of sensitive expressions as non-specifics in the sense of Enç (1991), including nominals and adverbials. (See also Frampton 1991.) De Swart identifies sensitive expressions as those whose operator part is split off from the restrictive clause:

The Scope Generalization:

(194) Specificity Filter: if Op_i is an operator which has scope over Op_j and binds a variable in the scope of Op_j, then Op_i must be specific. (Kiss)

(195) A quantifier Q_1 can only separate a quantifier Q_2 from its restrictive clause if Q_1 has wide scope over Q_2 (or is scopally independent from Q_2). (De Swart)

These generalizations put the WI phenomenon in an entirely new light. Just as Relativized Minimality was based on the observation that the range of WI-inducers is much wider than Subjacency can account for, the Scope Generalization expresses the observation that both the range and the nature of WI-inducers is different from what Relativized Minimality (in its original form or in its monotonicity reincarnation) can take care of. We come back to the possible theoretical explanation of the generalization in section 7.5.

What is the coverage of these proposals? As regards island-sensitive expressions, Kiss's proposal that non-specific operators are island-sensitive essentially covers the classical data (A3, A4, A7) and event-related readings (A5), but it is not easy to see how functional *wh*-phrases (A5) and collectives (A6) can be said to be generally non-specific, since their determiner may be *which*; also, why the trigger – NPI relation (A8) might fall under the generalization is not obvious. De Swart's generalization is stated with reference to splitting: here the question is what data, beyond the classical ones (A7) might be analyzed as involving splitting. Many pieces of data involving anti-pronominal contexts (A10) fall outside both proposals.

As regards WI-inducers, it is easy to see that, with the obvious exception of purely syntactic WI-inducers like *it is time to* . . . extraposition and some of the constructions discussed by Postal, the known WI-inducers are scope-bearing operators and thus fall under the Kiss/De Swart proposal. The problem may be, rather, that there are expressions that some well-established theory or other

classifies as scope-bearing operators which nevertheless do not induce WIs. Examples are indefinite DPs and intensional verbs like *want*:

(196) How did a boy behave ___?

(197) How do you want me to behave ___?

Clearly, there are two ways out. One is to adopt analyses according to which indefinites and intensional operators are not scopal. Another is to draw some principled demarcation line between scopal expressions, predicting some of them to be innocuous.

7.4.3 Prospects for a revision of Relativized Minimality

We have seen that in order to capture the Scope Generalization, LF ought to disambiguate scope. But according to May (1985) it does not. Although this feature played a major role in diverting attention from some critical data, it is not very difficult to fix. It is not too difficult to imagine a scope theory which produces disambiguated LFs.

A second, more serious, aspect of the problem is that, if the spirit of Relativized Minimality is to be maintained, QR cannot be an adjunction rule. In Rizzi's proposal, movement to an A-bar specifier position is hindered only by an intervening A-bar specifier. QR should move the quantifier into an A-bar specifier position. This in turn requires that quantifiers all have designated landing sites. This requires a much more radical departure from May (1985). A theory that at least partially fulfils this expectation has been proposed recently, namely, by Beghelli and Stowell (1997). According to this theory, quantifier scope is a by-product of feature checking. Definites and specific indefinites check features in positions called RefP and ShareP; distributive universals check features in DistP. But Beghelli and Stowell argue, with equal force, that modified numeral (counting) QPs do not have comparable features and never move beyond their Case position. This accounts for the fact that they only marginally take inverse scope. This is a major stumbling block in the way of a revision of Relativized Minimality, because, as we saw above, *more/fewer than five boys* is as much of a WI-inducer as narrow scope *every boy*. But then it is difficult to see how the positions of, say, universals and modified numerals can be brought under a single heading. Likewise, if one goes beyond quantifiers, it is not obvious how all of Cattell's WI-creating predicates (B.3) can be placed in a position (or can be associated with an operator in a position) that falls under the same generalization. In other words, the Scope Generalization implies a radical widening of the set of WI-inducers, and it is not at all clear how all these might fit a single syntactic recipe.

The syntactic recipe does not necessarily have to make reference to A-bar specifier. But the beauty of Relativized Minimality was that it established a very tight connection between the properties that make extractees WI-sensitive and the properties that make interveners WI-inducers. The revision should recapture this explanatory connection. In fact, it is also not obvious how all WI-sensitive

expressions will fit a single syntactic recipe. Note that, alongside non-individual *wh*-phrases, WI-sensitive expressions include the amount and the event-related readings of numerical QPs, functionally interpreted *which*-phrases, definite dependents of one-time-only predicates, and negative polarity items. A somewhat different version of Relativized Minimality is to be found in Rizzi (2000a).

7.5 The Scope Theory

Kiss's and De Swart's generalizations suggest that the explanation of WI-phenomena should, at least to a great extent, be semantic. They themselves do not propose such explanations: as we saw above, the proposals are presented in terms of filters.

There have been two different lines of research that attempted to explain the Scope Generalization in formal semantic terms. Szabolcsi and Zwarts (1993) can be viewed, to some extent, as an attempt to provide a formal semantic explanation of Kiss's generalization. Honcoop (1998), on the other hand, can be viewed as an attempt to provide an extension and a formal semantic explanation of de Swart's generalization.

Szabolcsi and Zwarts (1993) was reprinted, with the addition of a handful of useful notes, as Szabolcsi and Zwarts (1997). In the discussion below, the latter, slightly expanded, version is assumed.

7.5.1 An algebraic approach to scopal intervention, for (A3, A4, A5, A6, A7%)–(B1, B2, B3, B5, B6)

The main contribution of Szabolcsi and Zwarts (1993, 1997) is an explanation of why certain expressions (the WI-sensitive ones) are unable to scope above certain others (the WI-inducers). They argue that scope assignment can go wrong in a directly semantic way, namely, it may produce a result that is strictly incoherent. They assimilate the ungrammaticality of *How much milk didn't you drink?* to the combination of a numeral with a mass noun, as in *six airs*. In both cases, interpreting the construction requires us to perform an operation, counting, or complement formation on a denotation which does not lend itself to that operation.

The article explicates a denotational semantic limitation on scope interaction using some simple notions of lattice theory. The nature of the argument can be best illustrated by way of an example. Overt *wh*-extraction creates a syntactic configuration with an extraction domain D containing a gap α. Let D contain another scopal element β, which the filler of the gap is supposed to scope over.

(198) [which books$_i$ [$_D$ did [$_\beta$ n't] you read [$_\alpha$ –$_i$]]]

(199) [how much milk$_i$ [$_D$ did [$_\beta$ n't] you drink [$_\alpha$ –$_i$]]]

To calculate the denotation of the whole sentence, the denotation of D needs to be calculated. The question is whether this is possible, in view of what α and β are.

The kind of denotation D has is determined to a large extent by what kind of gap it contains. *You read* [gap *of which books*] denotes a set of individuals, i.e., books. But *you drink* [gap *of how much milk*] arguably does not denote a set of amounts; Szabolcsi and Zwarts argue it denotes an amount. The reason why they find this distinction to be relevant is as follows. The claim is that the narrow-scope element β is interpreted by cashing out its contribution in terms of some operation(s) over the denotation of D minus β. For instance, *n't* in the examples above requires us to take the complement of that denotation. Sets of individuals form Boolean algebras. A Boolean algebra is a structure on whose elements the three well-known set-theoretic operations union, intersection, and complement – are defined. Therefore, if D minus β denotes an element of a Boolean algebra, the complement of this denotation is well-defined and is readily calculated. The segment *n't you read* [gap *of which books*] is coherent and denotes the complement of the set of things you read. Amounts, on the other hand, form structures in which complements, and probably also intersection, are not defined (these are called lattices and join semi-lattices, respectively). Now, interpreting *n't you drink* [gap *of how much milk*] should denote the complement of the amount (of milk) you drank. But the complement of an amount is not defined. The requisite denotation cannot be calculated, the string is incoherent.

How does this work with quantifiers as WI-inducers? Take, for example, universals. In Boolean terms, universal quantification is cashed out as performing intersections. Suppose there are altogether three girls, Kati, Mari, and Juli. In the course of interpreting *Which book did every girl read?* we need to intersect the set of books that Kati read with the set of books that Mari read and the set of books that Juli read. Precisely because *girl* A *read* [*gap of* which books] denotes a set of books, and intersection is defined for sets, the denotation of *every girl read* [gap *of which books*] can be calculated. But what happens when we try to interpret the following? Take (200) and (201):

(200) [how much milk$_i$ [$_D$ did [$_\beta$ every girl] drink [$_\alpha$ –$_i$]]]

(201) [how$_i$ [$_D$ did [$_\beta$ every girl] behave [$_\alpha$ –$_i$]]]

What girl *A* drank and how girl *A* behaved are not a set of amounts or a set of manners: D minus β denotes an amount and a manner, respectively. As noted above, amounts and manners arguably form join semi-lattices on whose elements not only the complement but also intersection is not defined. If so, the denotations of *every girl drink* [gap *of how much milk*] and *every girl behave* [gap *of how*] cannot be calculated. Thus, the essence of the proposal is this. An expression E can scope above an operator O if all the operations necessary to calculate the semantic effect of O can be performed in E's denotation domain. An expression E cannot scope above O and thus cannot escape the weak island induced by O if at least one operation necessary to calculate the semantic effect of O cannot be performed in E's denotation domain. It is further proposed that the relevant operations are the Boolean ones: complement, intersection, and union.

Recall the claim (A3, A4) that expressions that escape WIs are individuals, and those sensitive to WIs are non-individuals. Szabolcsi and Zwarts argue that the relevant notion of individuals is algebraic: individuals are discrete entities that can be collected into sets that form Boolean algebras. Non-individuals, in turn, are expressions that cannot be collected into such sets, either because they are non-referential, like expletives and idiom chunks, or because they denote entities that form operationally poorer structures: lattices (with union and intersection), join semi-lattices (with union), or simply partially ordered sets not closed under any of these operations.

Szabolcsi and Zwarts argue, often on the basis of independent proposals in the literature, that the whole gamut of WI-sensitive expressions that Relativized Minimality brought to light (reasons, manners, amounts, non-referential expressions, (A3, A4)) are non-individuals in this sense. Likewise, the collective arguments of one-time-only predicates discussed in (A6) are non-individuals: according to one standard analysis, collectives form join semi-lattices. Recall that the WI-sensitivity of these expressions was problematic for all other theories: they have referential theta-roles, can be definite and D-linked, and are of type e. Going beyond those data, Doetjes and Honcoop (1997) argue that the <event, object> pairs relevant in event-related readings (A5) form join semi-lattices: events are standardly thought to form such structures (there is no empty event that would turn semi-lattice into a Boolean algebra), and the pairs inherit this structure from the event component. A similar reasoning is applied to functional readings in Honcoop (2000).

Turning to WI-inducers, Szabolcsi and Zwarts argue that the calculation of the semantic effect of all the relevant WI-inducers involves, possibly in combination with union and other non-Boolean operations, the formation of complements and/or intersections. Specifically, the calculation of the semantic effect of *wh*-expressions, response stance and non-stance predicates, universal and numerical quantifiers (whether DPs or adverbs) involves at least intersections, and that of negative and other affective operators involves at least complements. This covers the data of B1, B2, B3, B5, and B6. In other words, it is argued that all these islands are scope islands (this means that the label used for (B6) is in fact too narrow).

On the other hand, plain indefinites like *a man* rely only on union, the operation that even join semi-lattices have, and is thus predicted not to cause trouble although it may well be analyzed as scopal. Intensional operators like *want* and *should* are also scopal, but their contribution is not in Boolean terms so they do not matter either. In other words, because this theory does not take the notion scopal to be an unanalyzed primitive, it is capable of distinguishing between scopal elements that are WI-inducers and ones that are not.

7.5.2 *A Dynamic Semantic approach to scopal intervention (A4, A5, A7, A8, A9)–(B1, B2, B3, B5, B6)*

Honcoop (1998) proposes an alternative account of the Scope Generalization. This account is based on a novel empirical observation. The observation is that

almost the same scopal interveners that create WIs also make an indefinite within their scope inaccessible to non-c-commanded pronominal anaphora. To see what inaccessibility is, compare (202) and (203). In (202), the non-c-commanded pronoun can refer back to the indefinite. In (203), where the indefinite is crucially within the scope of negation, the pronoun cannot refer back to it:

(202) I have a new coat$_i$. It$_i$ is blue.

(203) *I don't have a new coat$_i$. It$_i$ is blue.

Note that modal subordination improves the examples, e.g.,

(204) I don't have a new coat$_i$ yet. But I know that it$_i$ will be blue.

This, however, is an independent phenomenon that should be abstracted away from when constructing the basic data.

Now consider the following sets of examples.

The indefinite is within the scope of a *wh*-phrase, cf. (B1):

(205) *Who has a new coat$_i$? It$_i$ is blue.

(206) *Do you have a new coat$_i$? It$_i$ is blue.

The indefinite is within the scope of negation or some other affective operator, cf. (B2):

(207) *I don't have a new coat$_i$. It$_i$ is blue.

(208) *Nobody has a new coat$_i$. It$_i$ is blue.

(209) *Less than two people have a new coat$_i$. It$_i$ is blue.

(210) *I deny that I have a new coat$_i$. It$_i$ is blue.

(211) Only John has a new coat$_i$. It$_i$ is blue.

The indefinite is within the scope of a VP-adverbs, cf. (B5):

(212) *I twice had a Norwegian boyfriend$_i$. He$_i$ was tall.

The indefinite is within the scope of a quantifier (which does not fall under the above), cf. (B6):

(213) *Every kid has a new coat$_i$. It$_i$ is blue.

(214) *Most kids have a new coat$_i$. It$_i$ is blue.

(215) *More than one kid has a new coat$_i$. It$_i$ is blue.

(216) *Exactly five kids have a new coat$_i$. It$_i$ is blue.

(217) Exactly one kid has a new coat$_i$. It$_i$ is blue.

Only John and *exactly one kid* appear to go against the rule but it can be argued that in these cases, anaphora is based on an inference facilitated by unicity, not on the same mechanism that accounts for (202).

The domain within which there are indeed great differences is that of intensional operators and (non-affective) response-stance, non-stance, and volunteered-stance predicates (B3). Here, operators that do not induce WIs may create an inaccessible domain for anaphora, and vice versa. For example:

(218) *I regret that I have a new coat$_i$. It$_i$ is blue.

(219) I confirmed that he had a new coat$_i$. It$_i$ was blue. (*confirm* induces a WI)

(220) I remember that he had a new coat$_i$. It$_i$ was blue. (*remember* induces a WI)

(221) I know that he had a new coat$_i$. It$_i$ was blue. (*know* induces a WI)

(222) *I believe that he had a new coat$_i$. It$_i$ was blue. (*believe* induces no WI)

(223) *I imagined that he had a new coat$_i$. It$_i$ was blue. (*imagine* induces no WI)

(224) *I want to have a new coat$_i$. It$_i$ is blue. (*want* induces no WI)

Honcoop argues that the striking similarity between the two sets of troublemakers calls for a unified theory. (Naturally, the last set needs an explanation.) Inspired by De Swart (1992), Honcoop takes split constructions to be the paradigmatic WI-sensitive expressions and proposes an analysis for them that relies on particular assumptions of Dynamic Semantics (Groenendijk and Stokhof 1990; Dekker 1993; Chierchia 1995b). In what follows, the basic idea is presented without the formalism.

Just like Discourse Representation Theory (DRT: Kamp 1981a; Kamp and Reyle 1993), Dynamic Semantics seeks to account for the ability of indefinites to antecede non-c-commanded pronouns. But while DRT does so by interpreting indefinites as variables that pronouns may corefer with, Dynamic Semantics maintains that indefinites are existentially quantified noun phrases and bind the pronoun, although in a logically novel (dynamic) fashion. How this works does not concern us here. Relevant to us is the problem posed by pairs like those in (225).

(225) a. Usually, a new coat is expensive.
b. Most new coats are expensive.

The (a) sentence can be interpreted as the (b) sentence, which shows that an indefinite can apparently act as a variable bound by an adverb of quantification. This is not a problem for DRT but it is for Dynamic Semantics. If indefinites are existentially quantified, such binding is possible only if the existential quantifier can be removed. What is needed is an operation that removes the existential quantifier and turns *a new coat* into an expression denoting the property of being a new coat; a property that *usually* can take as its restriction much like *most* does. The operation that performs the trick is called Existential Disclosure (ED). How ED works is important to us. Roughly, it maps (226a) to (226b), the set of x's such that each x is identical to some new coat or other. In turn, (226b) is equivalent to (226c), the set of new coats:

(226) Existential Disclosure (ED):
a. there exists a new coat $\Rightarrow_{ED}$
b. {x: there exists a new coat_i and it_i is identical to x}
c. {x: x is a new coat}

It is crucial in the mapping from (a) to (b) that the proposition *it is identical to x* is added and *a new coat* binds *it*. Clearly, *a new coat* does not c-command *it*. Therefore, this binding and, consequently, the applicability of ED can only be well-formed in contexts that allow cross-sentential anaphora. If the indefinite is inside an inaccessible domain and the pronoun is outside, binding, and ED, are not possible:

(227) *{x: . . . OP [. . . indefinite_i . . .] and it_i is identical to x}

where OP creates an inaccessible domain for anaphora.

Honcoop's insight can now be summarized as follows. The operator in split constructions is related to the indefinite in the same way as an adverb of quantification is related to the indefinite it binds. In other words, *voor een boek* needs to be turned into a property that serves as the restriction of *wat*, to yield the interpretation 'what kind of book':

(228) Usually, *a new coat* is expensive.

(229) Wat denk jij dat Peter *voor een boek* heeft gelezen?
what think you that Peter for a book has read
'What kind of book do you think Peter read?'

But then ED is needed in both cases. Furthermore, in both cases ED is blocked if an expression that creates an inaccessible domain for pronominal anaphora intervenes scopally between the operator and the indefinite.

To summarize, given the reasonable assumption that the operator in split constructions uses the indefinite as its restriction, Dynamic Semantics augmented with Existential Disclosure automatically predicts that interveners that create inaccessible domains make splitting ungrammatical. Therefore, if the differences between the sets of WI-inducers and inaccessible domain inducers can be explained away, the Scope Generalization for classical split constructions falls out. Furthermore, any other construction that can be assimilated to splitting in the relevant respect is predicted to be subject to the same constraint.

Honcoop's work goes beyond De Swart's in two important respects: (i) the fatal effect of scopal intervention between the operator and its restriction is explained, not just stipulated, and (ii) it is argued that the same explanation carries over to various constructions that are not trivially split: at least to partial *wh*-movement, event-related readings, and NPI licensing.

To demonstrate the applicability of his proposal, Honcoop (1998) offers a series of innovative semantic analyses that would be difficult to do justice to here. Only the gist of some analyses is given and the reader is referred to the book for further details. Event-related readings (A5) involve quantification over event–object pairs. But both event arguments and indefinites come with their own existential quantifiers. These need to be removed in order for the pair to be formed. Removal is by ED. NPI licensing (A8) cannot be directly assimilated to splitting: although NPIs themselves may be treated as indefinites, not all licensors can be analyzed as unselectively binding them. However, all NPIs are associated with a scalar implicature. This requires computing entailment relations between alternative propositions, and the formation of these alternatives requires an application of ED.

The discrepancy between the inducers of WIs and inaccessible domains, surveyed in (218–224), is resolved by (i) providing an intensionalized version of ED; (ii) assuming that volunteered stance predicates introduce the meaning of their complement as a 'discourse referent'; and (iii) offering an E-type analysis of the anaphoric pronouns whose antecedent is in a response stance or non-stance context.

Pesetsky (2000) points out a further intriguing connection, arguing that *wh*-in-situ can be linked to a [+wh] complementizer in two distinct ways: by covert movement and by feature movement. He observes that the cases that he classifies as feature movement are vulnerable to intervention effects of the sort described in Beck (1996b). Pesetsky construes feature movement as an instance of an operator getting separated from its restriction, and refers to Honcoop (1998) as a theory that predicts that such a constellation will be sensitive to intervention. Since in Honcoop's theory, split constructions are sensitive to weak islands irrespective of whether they receive non-individual interpretations, if Pesetsky is correct, his book adds a whole new set of data to support this feature of Honcoop's theory.

7.5.3 How do the two scope theories compare?

In the cases where they are applicable at all, both the algebraic approach and the Dynamic Semantic (ED) approach get the weak island effects for free. This is

because they both reduce the effect to independent semantic facts. Providing that the proposals are internally logically correct, the semantic facts they point out will constrain the range of expressible meanings, irrespective of whether their consequences overlap with those of other syntactic or semantic considerations. It is thus possible for both theories to be correct at the same time, and their correctness is also compatible with the correctness of some other, say syntactic, explanation of some of the data.

With this important methodological comment in mind, let us ask how the two theories compare in coverage. There are data that both theories can account for, and there are data that only one or the other can. Let us start with WI-sensitive expressions. The algebraic approach can explain the WI-sensitivity of *how* (and probably, of *why* and other comparable expressions), while there seems to be no reason to assimilate them to split constructions under the ED-approach. There are expressions that denote amounts but are – at least overtly – not split: for instance (105) *Combien de cercles as-tu* (**beaucoup*) *dessiné?* and (110) *How much pain did*(**n't*) *you suffer?* These fall naturally under the algebraic approach, and also under the ED-approach if the latter assumes that they involve covert split into 'for what number n/degree d' and 'n many/d much NP'. The ED-approach is clearly good at accounting for their overtly split counterparts; the algebraic one is burdened with a need to explain why splitting forces an amount reading even on otherwise potentially ambiguous phrases.

Honcoop argues that *wat voor een boek* and *wat . . . voor een boek* have exactly the same readings, but that the non-split version is never WI-sensitive. These data fall only under the ED-theory, and so do the *wat aan*-facts, because this construction has only an individual reading. Of the more exotic data, event-related readings can be equally well accounted for in both approaches (both analyses are due to Honcoop). The WI-sensitivity of collective arguments and adjuncts of one-time-only predicates is predicted only by the algebraic approach. The fact that WI-inducers block NPI-licensing is accounted for by the ED-theory alone.

Turning to WI-inducers, islands caused by a +wh XP can, in principle, be accounted for by both theories but, as Honcoop points out, the tentative analysis in Szabolcsi and Zwarts (1997) does not extend to *whether*-islands. Both proposals account for the fact that response stance and non-stance, but not volunteered stance predicates induce WIs, but Szabolcsi and Zwarts offer only suggestions regarding the analysis. The observation that a set of quantifiers and other operators induce WIs is at the heart of both theories: naturally, both account for it equally well. The more interesting question is a deeper one: why is it that precisely those expressions whose algebraic semantic definition involves intersection and/or complement-formation create inaccessible domains for cross-sentential anaphora? Honcoop addresses this question and proposes, although in a preliminary fashion, that the algebraic properties can be used to explain the relevant Dynamic Semantic properties. If this line of reasoning is correct, the two theories may be viewed, to some extent, as two sides of the same coin.

8 Conclusion

There are two points that I would like to highlight in conclusion. The first point is that *wh*-islands are the classical example of weak islands, and adjuncts are the classical example of expressions that cannot escape from weak islands. The initial account of the facts was purely syntactic. But it has been demonstrated, first by Relativized Minimality and then by the Scope Theory, that huge sets of further data pattern along the same lines, calling for a unified explanation. Although we still do not have a fully unified theory at our disposal, it seems true beyond reasonable doubt that a substantial portion of this large phenomenon is genuinely semantic in nature.

The second point is that there is some syntactic residue: at least some extraposition islands and some of the anti-pronominal context data do not fall under the Scope Theory. Moreover, as was pointed out in section 3, in retrospect it does not seem entirely clear whether the presupposed demarcation line between weak and strong islands is as solid as one might want it to be.

It is to be hoped that further research will resolve the relation between these sets of data. One proposal that attempts to unify weak and strong islands is Starke (2001).

NOTE

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65 Stylistic Fronting

ANDERS HOLMBERG

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1 Introduction[1]

Stylistic Fronting is a phenomenon, known mainly from Icelandic, Faroese, and Old Scandinavian, where a category is moved to what looks like the subject position in finite sentences with a subject gap; that is, subject relatives, embedded subject questions, other embedded sentences with the subject extracted, and various types of impersonal sentences. The examples in this chapter are all Icelandic, except where indicated otherwise.[2]

(1) Þetta er versta bók sem **skrifuð** hefur verið. (J)
this is worst book that written has been
'This is the worst book that has ever been written.'

(2) Þeir voru að tala um hvað **hægt** hefði verið. (M)
they were to talk about what possible had been
'They were talking about what had been possible.'

(3) Ef **gengið** er eftir Laugaveginum . . . (RT)
if walked is along the Laugavegur
'If one walks along Laugavegur . . .'

(4) **Fram** hefur komið að **fiskað** hefur verið í leyfisleysi á chílensku
forth has come that fished has been illegally in Chilean
fiskisvæði.
fishing zone
'It has been revealed that illegal fishing has taken place in the Chilean fishing zone.'

In Maling (1980) this movement is called Stylistic Inversion. In more recent work (including the reprinted version of Maling 1980) it is mostly called Stylistic Fronting. I will henceforth use the abbreviation 'SF'. The attribute 'stylistic' is appropriate since the movement is optional in a sense to be detailed below, subject only to stylistic variation. This is most clearly the case in Icelandic; in Faroese SF is obligatory in most cases (see Barnes 1987). It is stylistic in a different sense than for example topicalization or heavy NP shift, since, unlike these operations, SF does not even seem to have any discourse semantic effects. In connection with subject extraction, as in (1) and (2), the alternative to SF is no movement, leaving the subject position (the position immediately preceding the finite verb) empty:

(5) a. Þetta er versta bók sem ___ hefur verið skrifuð.
this is worst book that has been written
b. . . . hvað ___ hefði verið hægt
what had been possible

In impersonal clauses, embedded as well as main, the alternative to SF is insertion of an expletive pronoun (EX = expletive pronoun):

(6) a. Ef **það** er gengið eftir Laugaveginum . . .
if EX is walked along the Laugavegur
b. **Það** hefur komið fram að . . .
EX has come forth that

In the context of generative grammar the key questions are: What kind of movement is SF? Does it fall into any of the established types of movement (A-movement, A-bar movement, head movement), or or is it a distinct, new type of movement? Is it movement in the phonological component? What function does it have, or, in other words, what is the movement trigger? Are there similar movements in other languages?

One of the things that makes SF interesting is that it looks like movement to a vacant subject position, but the categories that are moved are most of the time not at all subjectlike. In fact, in many cases they look like heads, and the movement has, indeed, been analyzed by some as head movement. The categories which may undergo SF include participles, infinitives, predicative adjectives, verb particles, adverbs, the negation, PPs and DPs. That phrases such as PPs and DPs may undergo SF is somewhat controversial, but as will be shown below, they do indeed undergo SF.

In the literature SF has been discussed in relation to V2 and the subject position (Maling 1980/90; Barnes 1987; Rögnvaldsson and Thrainsson 1990), null subjects, verb movement and the role of agreement (Platzack 1987; Falk 1993; Holmberg and Platzack 1995), locality (Jónsson 1991; Richards 1998), optionality (Poole 1996), the syntax-phonology interface (Holmberg 2000; Hrafnbjargarson 2004; Burton-Roberts and Poole forthcoming).

Broadly speaking, SF relates to the complex of problems concerning the 'subject position'. Looking at cases like (1), it might relate to the notorious *that-trace (that-t)* phenomenon: SF has the effect of masking a *that-t* configuration. On the other hand, looking at cases like (3) and (4), where SF alternates with an expletive pronoun, it seems to relate to the EPP, or, especially in the case of (4), the Germanic V2 condition. In many languages, including the Scandinavian languages, the subject position has to be filled, either by a thematic subject or, in the absence of a subject, an expletive pronoun. In Icelandic and some other languages it looks like SF is another way to fill that position.

In the following I will review some important works, each of which discusses the properties of SF in detail, and offers its own analysis of the construction/operation (sections 2–7). In sections 7 and 8, I discuss some alternatives that have not been seriously considered in the literature: that SF is a PF operation; and that SF is remnant XP-movement. Section 9 is a discussion of SF-like phenomena in other languages, and section 10 the conclusions.

2 Maling (1980/90)

This article, the first work discussing SF in a generative framework, was first published in *Islensk Mál* (1980), and later reprinted in Maling and Zaenen (1990).[3] I will discuss what I take to be the four most important findings of Maling (1980/90): the distinction between topicalization and SF, the characterization of the contexts of SF, the so-called accessibility hierarchy, and the partial complementary distribution of SF and the expletive pronoun.

2.1 Topicalization vs. SF

In her paper, Maling "[argues] for a distinction between two kinds of fronting processes, *topicalization* and another kind of movement referred to as *stylistic fronting*" (p. 71). Maling summarizes the differences between topicalization and SF as follows:

(7) **Topicalization:**

- applies to NPs, PPs, etc.,
- emphasis or focus on fronted constituent,
- uncommon in embedded clauses,
- judgments vary on fronting in relatives, questions, etc.,
- unbounded,
- subject gap not required.

Stylistic Fronting:

- applies to past participles, adjectives, some adverbs, particles, etc.,
- emphasis or focus on fronted constituents not necessarily present,
- common in embedded clauses,
- accepted by all speakers,
- clause bounded,
- subject gap required.

Maling's characterization of the dichotomy has by and large been confirmed by later research, except for one property: It appears that NPs and PPs, too, can undergo SF, as there are instances of NP or PP-fronting which exhibit all the other properties listed by Maling as diagnostic of SF, plus some other SF-like properties which are not on the list (but will be discussed below). This is most easily determined with regard to the subject gap condition. Consider first the following set of sentences, illustrating the subject gap condition (for expository reasons the category fronted by SF will be in bold type throughout the paper):

(8) a. hún sem var fyrst til að lýsa stílfærslu
she that was first to investigate Stylistic Fronting
b. hún sem **fyrst** var til að lýsa stilfærslu

(9) a. afleiðslan sem hún var fyrst til að lýsa
the derivation that she was first to investigate
b. *afleiðslan sem hún **fyrst** var . . .
c. *. . . sem **fyrst** hún var . . .
d. *. . . sem **fyrst** var hún . . .

Fronting the predicative adjective is possible in the subject relative (8) but not in the object relative (9), due to the presence of the (overt) subject in the latter. (10) and (11) present another example:

(10) a. Hver heldur þú að hafi stolið hjólinu? (J)
who think you that has stolen the bike
'Who do you think has stolen the bike?'
b. Hver heldur þú að **stolið** hafi hjólinu?

(11) a. Hvaða hjól heldur þú að hann hafi stolið?
which bike think you that he has stolen
'Which bike do you think that he has stolen?'
b. *Hvaða hjóli heldur þú að **stolið** hann hafi?
c. *. . . að hann **stolið** hafi?
d. *. . . að **stolið** hafi hann?

Fronting the participle is possible in the complement clause if the extraction gap is a subject gap, not if it is an object gap.

Now consider (12) and (13):

(12) a. Þeir sem hafa búið í Ósló segja að . . .
those that have lived in Oslo say that
b. Þeir sem **í Ósló** hafa búið segja að . . .

(13) a. Hver heldur þú að verði að taka þessa erfiðu ákvörðun?
who think you that has to take this difficult decision
b. Hver heldur þú að **þessa erfiðu ákvörðun** verði að taka?
who think you that this difficult decision has to take
'Who do you think has to take this difficult decision?'

(12) is a subject relative, where in (12b) the locative verb complement, a PP, has been fronted. (13) is a case of subject extraction from a complement clause, where in (13b) the object has been fronted. Now compare (12) with (14), and (13) with (15):

(14) a. vinnan sem hann hefur haft í Ósló
the job that he has had in Oslo
b. *vinnan sem hann **í Ósló** hefur haft
c. *vinnan sem **í Ósló** hann hefur haft
d. *vinnan sem **í Ósló** hefur hann haft

(15) a. þegar hann hafði tekið þessa erfiðu ákvörðun
when he had taken this difficult decision
b. *þegar hann **þessa erfiðu ákvörðun** hafði tekið
c. *þegar **þessa erfiðu ákvörðun** hann hafði tekið
d. *þegar **þessa erfiðu ákvörðun** hafði hann tekið

The generalization that emerges is: a PP or object DP can be fronted in embedded clauses only if there is a subject gap.[4] Later on we will see other evidence that fronting of PPs and object DPs in subject gap clauses has the properties of SF.

It is important to note that Topicalization and SF do not operate on disjunctive sets of categories. If they did, they could plausibly be two special cases of a more general phenomenon, the differences being explained by the choice of category.

As it is, the sets of categories which Topicalization and SF operate on are partially overlapping: predicative adjectives can undergo topicalization as well as SF. So can many adverbs, and as shown above, so can DPs and PPs.

2.2 The two contexts of SF

Maling (1980/90) showed that SF applies in two types of finite sentences: (i) sentences where the subject has moved out (subject extraction sentences), and (ii) impersonal sentences, which either have no (visible) subject at all (impersonal passives and sentences with a generic subject), or where the subject is realized in postverbal position (existential and presentational sentences and extraposition sentences). Maling only discussed embedded sentences. However, as pointed out by Rögnvaldsson and Thrainsson (1990) among others, SF occurs in impersonal main clauses as well (see section 10 on the stylistic status of the construction).

(16) **Keypt** hafa þessa bók margir stúdentar. (RT)
bought have this book many students

This sentence has the properties of SF, not Topicalization: the moved category is not among the categories which can be topicalized, there is a subject gap, and there is no focus or emphasis on the fronted category.

SF is not found in main clause subject questions:

(17) a. *Hver **lokið** mun hafa verkefninu á morgun?
who finished will have the assignment tomorrow
Intended meaning: 'Who will have finished the assignment tomorrow?'
b. *Hver mun **lokið** hafa verkefninu á morgun?
who will finished have the assignment tomorrow

(17a) may be ruled out as a 'violation of the V2 condition', but why is (17b) ill formed, if main clause questions have a subject gap, as is generally assumed for the Scandinavian languages?[5]

It is also noteworthy that SF is not found in control infinitivals, although they have a subject gap in the sense that there is no visible subject in the structure. This is all the more noteworthy since Icelandic control infinitivals have a word order which is superficially similar to that of finite clauses: the verb seems to move to a position in the I-field, in front of the negation and other sentential adverbs (see Sigurðsson 1989; Rögnvaldsson and Thráinsson 1990; Johnson and Vikner 1994).

(18) a. Ég ætla að hafa lesið þessa bók á morgun.
I intend to have read this book tomorrow
b. *Ég ætla að **lesið** hafa þessa bók á morgun.
c. *Ég ætla **lesið** að hafa þessa bók á morgun.

2.3 The accessibility hierarchy

Only one category per clause can be moved by SF. If there are several candidates for SF in the same clause, they move according to an 'accessibility hierarchy', as first observed by Maling (1980/90). Her formulation of the hierarchy is the following:

(19) *ekki* > predicative adjective > past participle/verbal particle

(20) and (21) illustrate this hierarchy:

(20) a. Það fór að rigna, þegar **búið** var að borða. (M)
EX went to rain when finished was to eat
'It began to rain when we had finished eating.'
b. . . . þegar **ekki** var búið að borða.
when not was finished to eat
c. *. . . þegar **búið** var **ekki** að borða.
when finished was not to eat

In the embedded clause in (20a), an impersonal passive, the participle has been fronted by SF. In the negative counterpart (20b) the negation has been fronted (the finite verb normally precedes the negation in Icelandic finite clauses). (20c) shows that the participle cannot be fronted if the negation is present (the fronted category as well as the blocking negation is in boldface):

(21) a. Þetta er nokkuð sem **hægt** er að gera við. (M)
this is something that possible is to fix PRT
b. . . . sem **ekki** er hægt að gera við.
that not is possible to fix PRT
c. *. . . sem **hægt** er **ekki** að gera við
that possible is not to fix PRT

In the relative clause in (21a), a predicative adjective is fronted by SF. In (21b), the negation is fronted. (21c) shows that the negation blocks fronting of the adjective.

(22) a. fundurinn sem **fram** hefur farið (J)
the meeting that forth has gone
b. fundurinn sem **farið** hefur fram
the meeting that gone has forth
'the meeting that has taken place'
c. fundurinn sem **ekki** hefur farið fram
the meeting that not has gone forth
d. *fundurinn sem **fram** hefur **ekki** farið
e. *fundurinn sem **farið** hefur **ekki** fram

(22a, b) show that either the verb particle or the verb (a participle) may undergo SF. (22c) contains a negation, which has been fronted. (22d, e) show that the negation blocks fronting of the particle as well as the verb.

The formulation of the hierarchy is controversial, however. To begin with, not only the negation, but any sentence adverb (or any adverb which can occur in preverbal position) blocks SF of any lower category (as observed by Jónsson 1991). Consider (23), which is like (21) except that the negation is substituted by the adverb *sennilega* 'probably'. As shown, the adverb undergoes SF (optionally; the usual position for adverbs in Icelandic is following the finite verb):

(23) a. . . . sem **sennilega** er hægt að gera við
that probably is possible to fix PRT
b. *. . . sem **hægt** er **sennilega** að gera við
that possible is probably to fix PRT

Second, the reason why Maling places adjectives higher than participles in the hierarchy is based on pairs such as (24b, c):

(24) a. Þeir voru að tala um hvað hefði verið hægt.
they were to talk about what had been possible
b. . . . hvað **hægt** hefði verið.
what possible had been
c. *. . . hvað **verið** hefði hægt.
what been had possible

The participle of *vera* 'be' does not block movement of the adjective, and does not itself undergo SF. But there is good reason to think that this is something special for *vera*, or more generally, for *vera* 'be' and auxiliary *hafa* 'have' (I will return to these later). Consider, for example, (25):

(25) a. maðurinn sem er talinn ríkur
the man that is considered rich
b. maðurinn sem **talinn** er ríkur
the man that considered is rich
c. *maðurinn sem **ríkur** er talinn
the man that rich is considered

Here the participle can undergo SF, but the predicative adjective (the head of a small clause) cannot. So adjectives are not in general 'higher on the accessibility hierarchy' than participles. As will be discussed in more detail later, the reason why the predicative adjective cannot undergo SF here is the fact that the participle is another candidate for undergoing SF, and being closer to the SF target, blocks SF of the adjective. In (24), the auxiliary *vera* is not a candidate for SF (for some reason), and hence does not block SF of the adjective.

Third, the generalization that the verb particle and the verb are equally accessible to SF is probably a special case of a more general phenomenon: a head and its complement are equally accessible to SF. Consider (26):

(26) a. þeir sem **búið** hafa í Ósló
those that lived have in Oslo
b. . . . **í Ósló** hafa búið
c. þeir sem **hitt** hafa konuna sina í Óslo
those that met have wife their in Oslo
d. *. . . **í Ósló** hafa hitt konuna sina

In (26a, b) the locative is a complement of the verb (selected by the verb), and either the verb or the locative may undergo SF. In (26d, e) the locative is an adverbial, not selected by the verb, and here the locative cannot undergo SF. Consider also (27) (N = nominative, A = accusative):

(27) a. hundurinn sem hefur drepið minkinn
the dog.N that has killed the mink.A
b. hundurinn sem **drepið** hefur minkinn
the dog.N that killed has the mink.A
c. hundurinn sem **minkinn** hefur drepið (M)
the dog.N that the mink.A has killed

The object *minkinn* is a complement of the verb/is selected by the verb. Again either the object or the verb may undergo SF.[6]

In the light of recent work on locality conditions on movement (Relativized Minimality, Shortest Move, the Minimal Link Condition) it seems fairly obvious that the accessibility hierarchy falls under some such general locality condition. This will be discussed in more detail in the next section. Meanwhile, note that the accessibility hierarchy provides another useful criterion to distinguish between SF and Topicalization, since the latter is not sensitive to the presence of an adverb, adjective, or participle, etc. between the launching site and the landing site of the movement.

2.4 SF and the expletive pronoun

As discussed by Maling, there are contexts in Icelandic where the expletive pronoun *það* and SF have complementary distribution, and other contexts where SF is possible but not *það*. In general impersonal sentences, main or embedded, accept *það* or SF, and furthermore must have one or the other:

(28) a. Ef **gengið** er eftir Laugaveginum . . . (RT)
if gone is along Laugavegur
b. Ef **það** er gengið eftir Laugaveginum
if EX is gone along Laugavegur
c. *Ef er gengið eftir Laugaveginum

(29) a. Ég veit að **ekið** er vinstra megin í Ástralíu. (M)
I know that driven is left side in Australia
b. . . . að **það** er ekið vinstra megin í Ástralíu
that EX is driven left side in Australia
c. *. . . að er ekið vinstra megin í Ástralíu.

Sentences where the subject gap is the result of movement generally accept SF or a gap, but not *það*:

(30) a. Hver heldur lögreglan að ___ hafi framið glæpinn? (M)
who think the police that has committed the crime
'Who do the police think committed the crime?'
b. Hver heldur lögreglan að **framið** hafi glæpinn?
c. *Hver heldur lögreglan að **það** hafi framið glæpinn?

Maling suggests that (30c) falls under a general prohibition against extraction from a clause headed by *það*. But as noted by Rögnvaldsson and Thrainsson (1990) and Jónsson (1991), extraction is marginally possible, subject to idiolectal variation, from *það*-headed clauses, as long as the extracted phrase is not the subject, as in (30c).

3 The analysis and function of SF

Maling does not actually present an explicit analysis of either SF or Topicalization, but Platzack (1987) does, based on her observations: SF is movement of a category to Spec,IP, while Topicalization is movement of a category to Spec,CP. Movement of non-subject categories to Spec,IP, normally the place where the nominative-marked subject is found, is possible in Icelandic, but not, for instance, in Swedish, since the nominative case normally assigned to Spec,IP is absorbed by an abstract pronominal element postulated in C in Icelandic but not in Swedish. (In Holmberg and Platzack 1995: ch. 5 the element absorbing the nominative case was redefined as AgrS, the contrast between Icelandic and Swedish being related to richness of agreement morphology – Icelandic, Faroese, and Old Scandinavian have rich agreement morphology compared with the Mainland Scandinavian languages.) This accounts for the subject gap condition, straightforwardly in the sense that if the subject is itself in Spec,IP there is no vacant target position for SF. One or more auxiliary assumptions are necessary, however, to account for subject extraction sentences, where Spec,IP would seem to be occupied by the trace of the nominative subject. Given that Spec,CP, but not Spec,IP, is associated with "emphasis and focus" it also follows that Topicalization but not SF will be different in this respect, and that Topicalization but not SF will be found mainly in main clauses.

As for the 'function' of SF, or (in derivational terms) the trigger of SF, Maling assumes that it is related to the V2 condition: "this kind of fronting can therefore

be viewed as a generalization of V2 to clauses that would otherwise begin with the finite verb" (p. 71). Maling does not discuss the ontological status of the V2 condition, but the idea is presumably that there is a global V2 condition which (in terms of a standard C-I-VP analysis of finite sentences) requires the filling of Spec,CP in case the finite verb happens to be in C, or Spec,IP if the finite verb happens to be in I, a condition which would hold in some languages but not others. Those who do not accept the idea of such a condition may prefer the following: the trigger is whatever it is that requires the Spec,IP position of finite clauses to be filled, where the filler may be the thematic subject, or an expletive pronoun, or a category fronted by SF, all subject to cross-linguistic variation. In other words, the trigger is (some version of) the EPP. This idea is elaborated in Holmberg (2000), and discussed below in section 6.

In either case, the optionality of SF, in those cases where it is optional, presents a complication. Recall the facts: In impersonal clauses SF has complementary distribution with the expletive *það*, but either SF or insertion/merge of an expletive pronoun must apply. In that sense SF is obligatory. In subject extraction clauses, on the other hand, SF alternates with an empty subject position. Assuming that the trace of the extracted subject counts as a filler for the purposes of the EPP, why does SF apply at all? Assuming that the trace does not count as a filler, how come SF is not obligatory?

Rögnvaldsson and Thráinsson (1990) take issue with Platzack's (1987) analysis of SF and Topicalization, and argue instead that both are movement to the same position, namely Spec,IP, construed as an A-bar position, or perhaps a mixed A and A-bar position along the lines of Diesing (1990b) and Rizzi (1991a). They conclude that "[topicalization and SF] are *syntactically* a unified process, even though they are certainly different *functionally* . . ." (p. 28, original emphasis). They do not, however, make any suggestions regarding how the observed differences between Topicalization and SF could be explained in functional terms. They do note another difference, though, between SF and Topicalization: SF in an embedded clause does not block extraction out of that clause, but Topicalization does (see also Jónsson 1991). (31a) exemplifies extraction across a category fronted by SF, and (31b) extraction across a category fronted by Topicalization (D = dative):

(31) a. Þennan mann$_i$ hélt ég [að **farið** hefði verið með t$_i$ á sjúkrahús]. (RT)
this man think I that gone had been to hospital
'This man, I thought had been taken to hospital.'

b. *Maríu$_i$ veit ég [að **þessum hring**$_j$ lofaði Ólafur t$_i$ t$_j$]. (RT)
Maria.D know I that this ring.A promised Olaf.N
'I know that Olaf promised Maria this ring.'

This clearly supports assigning different structures to the embedded clauses, along the lines of Platzack (1987). Topicalization blocks extraction by virtue of occupying or creating an A-bar position, namely Spec,CP, which extraction cannot skip, either because the movement needs Spec,CP as an escape hatch (following

Chomsky 1977b), or because some version of Shortest Move prohibits extraction (A-bar movement) across the A-bar position Spec,CP. SF, being movement to Spec,IP, does not have any such effect.[7] This difference can thus be used as another diagnostic to distinguish between SF and topicalization in critical cases.

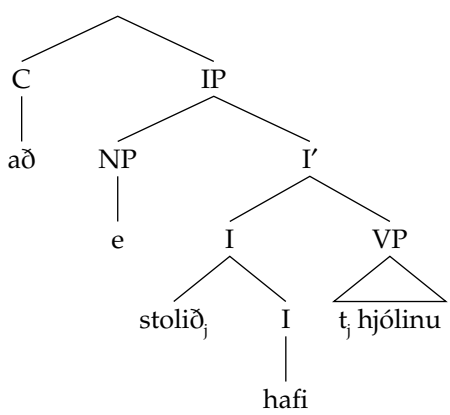
Let us summarize the diagnostic properties identified so far. The following is our revision of Maling's list of properties characteristic of SF:

(32) (i) It requires a subject gap.
(ii) It alternates with the expletive pronoun in impersonal clauses, it is optional in subject extraction clauses (in Icelandic but not in Faroese, to the same degree).
(iii) The categories which can undergo SF include nonfinite verbs, adverbs (including the negation), adjectives, particles, DPs, and PPs.
(iv) No emphasis or focus on the fronted category is necessary.
(v) Found in Icelandic, Faroese, and Old Scandinavian but not Mainland Scandinavian.
(vi) Locality: only the closest candidate for movement to an SF target T may move to T.
(vii) Extraction is possible across an SF target.

4 Jónsson (1991): SF as head movement vs. SF as XP-movement

The most detailed study of SF in Icelandic after Maling (1980/90) is Jónsson (1991), unfortunately published only as a working paper. Jónsson argues that SF is head-to-head movement: the moved participle, adverb, adjective, etc. does not land in Spec,IP but adjoins to I. The same hypothesis is elaborated in Holmberg and Platzack (1995) and Poole (1996). I will refer to it as 'the head movement hypothesis'. According to it the analysis of for example (10a) is roughly (33):

(33) hver . . .



Given that SF of participles, adverbs, adjectives and particles is indeed movement of a head, the analysis according to which the target is Spec,IP (as in Platzack 1987; Rögnvaldsson and Thráinsson 1990; and implicitly Maling 1980/90) obviously violates standard assumptions regarding movement and phrase structure within Principles-and-Parameters theory, according to which XPs move to Spec-positions or adjoin to XPs, while heads adjoin to heads. The head movement hypothesis does not have this problem. The other advantages of the head movement hypothesis discussed in the references mentioned are the following:

(i) The lack of emphasis or focus follows since the moved category is a form of clitic; clitics are generally not focused or emphasized.
(ii) The accessibility hierarchy can be subsumed under (an appropriate version of) the Head Movement Constraint (HMC; Travis 1984, 1991). Consider (34) (= (20c)), for example:

(34) a. *. . . þegar **búið** var **ekki** að borða
when finished was not to eat
b. [$_{IP}$ var+I [$_{NegP}$ Neg [$_{VP}$ búið . . .]]]

Given that the negation is a sentential head, as in (34b), it will block head movement of the participle to I by virtue of the HMC, which requires head movement to target the closest c-commanding head position.
(iii) Extraction is predicted to be possible across an SF target.
(iv) The fact that Mainland Scandinavian, in contrast with Icelandic, Faroese, and Old Scandinavian, does not have SF follows from the fact that Mainland Scandinavian has no general V-movement to I. Therefore there is nothing in I in these languages to which a head moved by SF could adjoin, assuming that adjunction/cliticization to an empty category is not possible. This point is elaborated in Holmberg and Platzack (1995 1f., 115ff.). It is consistent (by and large) with the findings of Falk (1993: 178ff.), who showed that SF disappeared from Swedish in connection with the loss of embedded V-to-I.

However, the head movement hypothesis of SF is obviously inconsistent with the observation that DPs and PPs may undergo SF: XP cannot adjoin to/be incorporated in X°. Jónsson 1991 as well as Holmberg and Platzack (1995) simply follow Maling (1980/90) in assuming that fronting of DPs and PPs falls under Topicalization (or possibly some other type of XP-movement) but not SF. Since the head movement hypothesis has been influential in recent years (see Poole 1996; Richards 1998), let us dispel any doubts that the cases of DP and PP movement discussed earlier have the properties expected of SF. Consider again (12), repeated here as (35):

(35) a. þeir sem hafa búið í Ósló segja að . . .
those that have lived in Oslo say that
b. þeir sem **í** **Ósló** hafa búið segja að . . .
c. þeir sem **búið** hafa í Ósló segja að . . .

According to the head movement hypothesis (c) is SF but (b) is something else. So let us see whether they differ from each other in any relevant respect. I will go through the properties listed in (32) one by one.

(i) *The subject gap condition*: It was shown in section 1 above that fronting of the locative PP requires a subject gap.

(ii) *Optionality*: A comparison of (35a, b) shows that fronting the PP is optional, in the subject extraction context. A comparison of (36a, b, c) shows that it is obligatory, in the relevant sense, in impersonal sentences:

(36) a. Hann spurði hvort **það** sé búandi í Ósló.
he asked whether EX is living in Oslo
'He asked whether one can live in Oslo.'
b. ?. . . hvort **búandi** sé í Ósló.
c. ?. . . hvort **í Ósló** sé búandi.
d. *. . . hvort sé búandi í Ósló.

Merger of *það* may be preferred to SF here, but crucially (36b) and (36c) are equally good, while (36d) is out.

(iii) *Categories*: This is what we are trying to establish.

(iv) *Focus*: (35b, c) or (36b, c) do not necessarily differ in terms of focus or other discourse semantic properties.

(v) *Distribution among the Scandinavian languages*: Constructions such as (35b, c) occur in Faroese and Old Scandinavian, represented here by Old Swedish:

(37) a. Tey sum **verið** hafa í Danmark, siga . . . (Faroese; Barnes 1987)
those that been have in Denmark say . . .
b. Tey sum **í Danmark** hafa verið, siga
c. En [. . .] som **likir** var enom hofman
one that alike was a courtier

On SF of PP's in Old Swedish, see Falk (1993: 181, n. 13). Constructions such as these are ill formed in the Mainland Scandinavian languages, though, represented here by Norwegian:

(38) a. de som har bodd i Oslo
those that have lived in Oslo
b. *de som **bodd** har i Oslo
c. *de som **i Oslo** har bodd

(vi) *Locality*: If the accessibility hierarchy of SF is explained by the HMC, the prediction is that movement of a PP or any other XP should not fall under it. However, fronting of a PP in a subject gap sentence is blocked by, for instance, a negation: the only category which can be fronted in (39) is the negation itself:

(39) a. þeir sem hafa ekki búið í Ósló
those that have not lived in Oslo
b. þeir sem **ekki** hafa búið í Ósló
c. *þeir sem **búið** hafa ekki í Ósló
d. *þeir sem **í** **Ósló** hafa ekki búið
e. tey sum **ikki** hafa verið í Danmark (Faroese; Barnes 1987)
those that not have been in Denmark
f. *tey sum **í** **Danmark** hafa ikki verið (Faroese; Barnes 1987)

This confirms on the one hand that fronting of the PP is indeed SF, and on the other hand that SF is not head-to-head movement. Consequently the accessibility hierarchy does not fall under the HMC, but under some more general locality condition.

(vii) *Extraction*: If PP-fronting in cases like (36c) is SF it is predicted that extraction across a fronted PP should not be any more marked than extraction across a fronted participle. Again the prediction is borne out:

(40) a. Hversu lengi heldur þú að **búið** hafi verið í Ósló?
how long think you that lived has been in Oslo
b. Hversu lengi heldur þú að **í** **Ósló** hafi verið búið?
how long think you that in Oslo has been lived
'How long do you think that people have lived in Oslo?'

(40b) should be compared with, for example, (41), where there is no subject gap, and the fronting accordingly has the properties of Topicalization:

(41) *Hversu lengi heldur þú að **í** **Ósló** hafi hann búið.
how long think you that in Oslo has he lived

We may safely conclude that fronting of the PP in (36b), (40b) and similar examples is a case of SF. Consequently, unless we are willing to accept adjunction of phrases to heads, SF cannot be derived by adjunction to I, at least not universally.

It could still be maintained that SF is sometimes adjunction to I, namely in those cases where the moved category is a head (in spite of the complications that this entails for stating the locality conditions on the movement). However, another serious drawback with the hypothesis that SF is adjunction to I is that within this theory there is no non-ad hoc explanation of the subject gap condition (as discussed in Holmberg 2000). The explanation that is given in Jónsson (1991), Holmberg and Platzack (1995), and Poole (1996) is that the head adjoined to I gets in the way of a crucial relation between I and Spec,IP, either Case (Jónsson and Poole) or agreement (Holmberg and Platzack). Therefore SF is impossible if Spec,IP is filled by a lexical (phonetically realized) DP. The only category which can occupy Spec,IP would be expletive *pro*, which does not need Case and does

not induce agreement. But there is no reason to expect adjunction of a verb, adverb, or adjective, etc. to I to have that effect. Consider a head-adjunction configuration such as (42):

(42) $[[_{H2}\ \alpha\ H1]\ [t]]$

The derived category H2 resulting from adjunction of α to H1 has all of the features of H1 (except possibly those which are checked by α). This is standard X-bar and movement theory. But then there is no reason why, say, a verb, adverb, or adjective adjoined to I would affect the Case-checking or agreement-checking properties of I, since they do not themselves check either Case or agreement. See Holmberg 2000 for additional arguments against the head movement hypothesis.[8]

We may conclude that the head movement hypothesis of SF has serious disadvantages.

5 Auxiliaries and locality

The role of the auxiliaries *vera* and *hafa* in SF was briefly noted above in section 2.3. Discussing Maling's accessibility hierarchy, Jónsson (1991) observed that SF of the copula verb *vera* 'be' is restricted.

(43) a. *Þeir töluði um hvað sem **verið** hefði hægt að gera.
they talked about what that been had possible to do
b. *Þetta er versta bók sem **verið** hefur skrifuð.
this is worst book that been has written
c. ??Þeir sem **verið** höfðu að mála voru orðnir þreyttir.
those that been had to paint were become tired
'Those who had been painting were tired.'
d. *Hetta er brotsmaðurin ið **verið** hefur dømdur.
this is the criminal who been has condemned

(Faroese; Barnes 1987)

This illustrates three uses of *vera* 'be': predicative, passive, and progressive, respectively. None of them undergoes SF. Instead, the next category down the tree may undergo SF, if it is a category of the right sort (which the infinitive *að mála* in (43c) is not).[9]

(44) a. Þeir talaði um hvað sem **hægt** hefði verið að gera.
they talked about what that possible had been to do
b. Þetta er versta bók sem **skrifuð** hefur verið.
this is worst book that written has been

c. Hetta er brotsmaðurin, ið **dømdur** hefur verið
this is the criminal who condemned has been
(Faroese; Barnes 1987)

Holmberg 2000 observed that the same is true of auxiliary *hafa* 'have':

(45) a. Þeir sem munu hafa skrifað verkefnið á morgun
those that will have written the assignment to morrow
b. *Þeir sem **hafa** munu skrifað verkefnið á morgun
c. Þeir sem **skrifað** munu hafa verkefnið á morgun

As shown in (b) the auxiliary cannot itself undergo SF, but allows the participle to be fronted instead.

Jónsson (1991) proposed that the reason why the copula is transparent to SF in this way is indeed that it cannot itself undergo SF. Essentially, in a configuration [X . . . Y . . . Z], where Y c-commands Z but not X, Y will block movement of Z to X only if Y can itself move to X.[10] Jónsson expressed this formally as a modification of Rizzi's (1990b) Relativized Minimality. The same idea is later codified by Chomsky (1995c: ch. 4) as the Minimal Link Condition within a theory where movement is triggered by properties of the target: a functional category C which has a feature F that needs to be checked will always attract the closest category capable of checking F. In that sense the closest category with F will block movement of a more distant category with F to C.

Whether or not all movement is triggered by properties of the target (by *Attract*, in terms of Chomsky 1995c: ch. 4) is an open question. However, in the case of SF there is little doubt that the trigger is some property of the target, not a property of the category that is moved. This is indicated by the fact that SF affects such a wide range of categories which on the face of it have virtually nothing in common apart from being in the 'domain of I' (leaving it open what this means exactly), having phonetic content, and (as indicated by the auxiliary facts discussed above) having semantic content. There is nothing about these properties that, in itself, would trigger movement.

As noted in Holmberg (2000), it is not even clear that the categories moved under SF have any discourse semantic feature in common. As shown by (46) the fronted category may be contrastively focused:

(46) a. . . . sem hafa GERT eitthvað, en ekki bara talað.
that have DONE something and not only talked
b. . . . sem **GERT** hafa eitthvað, en ekki bara talað. (S)

On the other hand, there is some evidence that the fronted category, if it is a DP, cannot be nonspecific. I will return to this question in section 7.

The generalization concerning auxiliaries is complicated by the fact that some occurrences of *vera* can undergo SF. Jónsson (1991) gives (47a, b) as well formed and (c) as marginal. See (37a) for an example from Faroese.

(47) a. Jón var í burtu meðan **verið** var að mála. (J)
Jon was way while been was to paint
b. þeir sem **verið** hafa veikir. (J)
those that been have ill
c. ?Völlurinn er mjög blautur þegar **verið** hefur rigning. (J)
the field is very wet when been has rain

As an additional complication, there seems to be considerable dialectal/idiolectal variation regarding these data.

6 Holmberg (2000): SF as expletive movement

An additional weakness of the head movement hypothesis of SF is that it is unclear what the trigger for SF could be. In Holmberg (2000) I reject the head movement hypothesis of SF, and propose that SF is triggered by a condition that Spec,IP must be overtly filled. This condition, formalized as a feature [P] in I, is taken to be one half of the Extended Projection Principle (EPP), the condition which, in its original form in Chomsky (1981) required every sentence to have a subject. The other half is a condition, formally a feature [D], which requires a nominal category in the checking domain of I. Together the two conditions (i.e., the two features) trigger the movement of a subject NP to Spec,IP in most transitive or unergative active clauses, or insertion of an expletive pronoun in clauses where the subject is, for various reasons, not available as a filler of Spec,IP.

In some languages the feature [D] can be checked by the agreement features on the finite verb (following Alexiadou and Anagnostopoulou 1998). In at least some of these languages this means that the expletive merged to check the feature [P] need not have nominal features. All that is needed to check [P] is an overt category, that is a category with a phonological matrix. This is, then, what SF does: it moves a category with a phonological matrix to Spec,IP to satisfy the 'phonological half' of the EPP. The claim is, therefore, that the category fronted by SF is an expletive in its derived position. This hypothesis is, furthermore, embedded in a theory assuming feature movement, along the lines of Chomsky (1995c: ch. 4). The claim is that just as formal (syntactic) features can move without pied-piping the rest of the category, including the phonological matrix (pp. 261ff.), the phonological matrix can move without pied-piping the formal features. The latter would be the case in SF. In this sense the fronted category is, indeed, a pure expletive, a piece of pure form moved to satisfy the phonological half of the EPP.

Let us see how this accounts for the properties of SF.

(i) *The subject gap condition*: This follows straightforwardly: A subject moved overtly to Spec,IP will check the feature [P], excluding SF. On SF in connection with subject extraction, see below under 2:

(ii) *Optionality*: It follows that SF alternates with the expletive pronoun in impersonal constructions; SF is just another form of expletive. More needs to be said about the optionality of SF in subject extraction contexts, though. The following is a possibility: there are two routes for subject extraction – either the extracted subject moves via Spec,IP, in which case it will check the feature [P] once it reaches Spec,IP, or the subject moves directly from its base-position, say Spec of vP, to Spec,CP, skipping Spec,IP. In the latter case the feature [P] has to be checked by an expletive, provided by SF (why the expletive pronoun will not do in that case is another problem to which I will return briefly, below).

(iii) *Distribution of SF among the Scandinavian languages*: Essentially following Platzack (1987) and Holmberg and Platzack (1995), I assume in Holmberg (2000) that the finite verb in Mainland Scandinavian does not have the nominal features it takes to check the [D]-feature in I. Therefore these languages have to have a nominal, D-marked category moved to or merged in Spec,IP, that is either the subject DP moves to Spec,IP, or a nominal expletive is merged in Spec,IP. SF is never an option (as will be discussed in section 9, this may actually be too strong a statement, though).

(iv) *Categories that undergo SF*: This theory predicts that, in fact, any category which is accessible for movement to Spec,IP at all (that is not, for example, too deeply embedded) can undergo SF, since the movement only affects the phonological matrix of the category anyway. That the range of categories affected by SF is so wide is therefore expected. The problem is, instead, that in fact not quite any category can undergo SF. As mentioned, the auxiliaries *vera* and *hafa* do not undergo SF, nor do infinitival clauses.

(v) *Absence of focus*: Since the fronted category is an expletive, it is predicted not to have any focus or emphasis.

(vi) *Locality*: The prediction is that SF should affect the closest category with a phonological matrix. More exactly, the feature [P] in I will attract the closest category with a phonological matrix. If it is the subject, then the subject moves, if it is the negation, then the negation moves, if it is a participle, then the participle moves, etc. If two categories are equally close to the target, as in the case of a verb and its complement PP or DP, either may move. Hence the fact that, for instance, the negation blocks movement of a participle as well as a PP is accounted for. What need to be explained away are all those cases where the category which undergoes SF to target T is not strictly the closest phonologically realized category to T (cf. the problem of the auxiliaries). For example, it is predicted that a verb and its complement are equally good candidates for SF since they are equally close to the target T. But in fact, without additional assumptions, the theory predicts that neither should undergo SF separately, but instead the VP containing both the verb and its complement should do so, being closer to T than its constituent parts.

(vii) *Extraction*: Since SF is movement of an expletive to Spec,IP it is predicted that it should not affect extraction. The theory does not, however, predict a difference between SF and expletive pronoun insertion with regard to extraction.

As noted by Jónsson 1991, not only does SF not affect the discourse-semantic properties of the sentence, but SF also does not affect the scopal properties of the category moved. For instance SF of the negation has no effect on the scope of the negation. From the point of view of LF, or more generally, semantic interpretation, it is as if SF had not occurred. This is consistent with the idea that the moved category is an expletive, and as such invisible at LF.

Why, however, if the moved category is an expletive, is an expletive pronoun not an alternative to SF in subject extraction sentences? In Holmberg (2000) I note that some languages in fact have an expletive subject pronoun in subject extraction sentences. The following is an example from the Romansh dialect Vallader, provided by Taraldsen (2002):

(48) a. Qual giat crajast **chid** es gnü per prüm?
which cat think-you that is arrived first
b. [CP ch- [IP id es+I VP]]

As Taraldsen shows, the form *chid* is a contracted form of the complementizer *ch(a)* and the expletive pronoun *i(d).*This form is used only when there is a subject gap, that is in subject extraction sentences and impersonal sentences. Taraldsen's analysis of (48a) is shown in (b): the expletive pronoun occupies Spec,IP. This suggests that the absence of the expletive pronoun option in the Icelandic subject extraction sentences is a historical accident, or an effect of some relatively superficial parameter: see Holmberg (2000) for discussion and references.

7 SF as a PF-operation

The fact that SF appears to have no effect on the semantic interpretation of the sentence suggests that SF does not belong to 'narrow syntax' (in Chomsky's 2000 terminology) but to the phonological component, following spell-out.[11]

This hypothesis is rejected in Holmberg (2000), for reasons which I will comment on below. There is a problem, however, pertaining to the theory in Holmberg (2000), concerning SF in connection with subject extraction, which disappears if SF is relegated to the phonological component. Assume, for the sake of argument, that SF is a movement in narrow syntax, prior to spell-out. By standard assumptions the underlying order of the embedded sentence in (10), repeated here as (49a) is (b), prior to SF and *wh*-movement: the agentive *wh*-phrase is merged as a specifier of V (or perhaps more precisely the functional verb *v*, in a multiheaded VP; see Hale and Keyser 1993b; Chomsky 1995c, ch. 4; and others).

(49) a. Hver heldur þú að stolið hafi hjólinu?
who think you that stolen has the bike
b. [IP hafi+I [VP hver [V′ stolið hjólinu]]]

Assuming a derivational theory observing strict cyclicity,[12] at the point when SF applies, the closest visible category to the SF target is the as yet unmoved *wh*-phrase, which therefore should block movement of any lower category, which apparently it does not do in (49a) (but perhaps does do in subject extraction clauses where SF has not applied, for instance (5a, b)).

This problem disappears if SF is considered as an operation of the phonological component, following spell-out. Given that *wh*-movement is an operation in narrow syntax, we do not expect any interaction between *wh*-movement and SF: at the point when the structure is spelled out, there is only the trace of *wh*-movement in Spec,VP, which does not count as a visible category.

This will also solve a related problem pertaining to theories where SF is movement to Spec,IP: by standard assumptions the relativized subject or extracted *wh*-phrase moves through this position (to trigger agreement and be assigned nominative case). But if SF is movement to Spec,IP in narrow syntax, it will erase the trace, which arguably should not be allowed (alternatively it will block *wh*-movement to Spec,IP, depending on which applies first). In the phonological component the trace of *wh*-movement is invisible/not represented, and hence cannot prevent SF to Spec,IP.[13]

Finally, the fact that SF appears to be interested only in whether a category is overt (has a phonological matrix) or not, paying virtually no attention to its syntactic categorial features, is consistent with the hypothesis that it belongs to the phonology rather than narrow syntax. But, as discussed, SF is not totally blind to non-phonological features: in particular, the fact that the auxiliaries *hafa* 'have' and *vera* 'be' do not undergo SF seems to show that SF is sensitive to the presence or absence of semantic features. This is one of the arguments in Holmberg (2000) against locating SF in the phonological component. Another argument is that SF clearly is sensitive to syntactic hierarchic structure, not just to linear order. Consider for example the fact that either of two sister categories may undergo SF, while a (visible) category c-commanding the two sisters will block movement of either of them.

We may conclude that if SF applies in the phonological component, as part of the derivation of PF, then the phonological component must have a subcomponent with operations which are syntactic in the sense that they operate on syntactic categories (words and syntactic phrases), are dependent on syntactic hierarchic structure, and have access maybe not to individual semantic features but to the presence or absence of semantic features. They would differ from the operations of Narrow Syntax in that they have no effect on LF: they affect only form, not content. In this sense (only) they are phonological. Chomsky (2000, 2001b) argues that head movement in general may belong to such a component, as suggested by the fact that it is typically triggered by morphological needs (the need to merge an affix and a head) and does not affect the scope or other semantic properties of the moved head. See also Aoun and Benmamoun (1998), who argue for a distinction between syntactic movement and post-spell-out PF-movement.

As we have seen, in impersonal constructions SF alternates with expletive insertion. Apparently they satisfy the same condition. If SF is phonological, then expletive insertion is too, presumably. If the conclusion is that the trigger of SF and expletive insertion is the EPP, then the EPP is phonological. The consequences of locating SF in the phonological component are thus far-reaching, but certainly worth investigating in greater detail.

The following is an exception to the generalization that SF has no semantic effect: in the following example it looks as though a nonspecific DP does not undergo SF, while the specific counterpart does:

(50) a. hundurinn sem minkinn/*minka drap (M)
the dog.N that the mink/minks.A killed
b. hundurinn sem drap minkinn/minka
the dog.N that killed the mink/minks.A

The example is from Maling (1980/90), where it is classified as a case of Topicalization. However, it has the diagnostic properties of SF: it requires a subject gap (see (51)); it is optional (see (52)); it is not found in Mainland Scandinavian (see (53)); it is local in the manner of SF, being blocked by an adverb (see (54)); and it permits extraction, at least marginally (see 55)):

(51) *hundurinn sem hann minkinn sýndi
the dog.D that he the mink.A showed
Intended reading: 'The dog that he showed the mink to.'

(52) hundurinn sem drap minkinn/minka
the dog that killed the mink/minks

(53) *hunden som minken bet (Swedish; *with the interpretation shown)
the dog that the mink bit
'the dog that bit the mink'

(54) *?hundurinn sem minkinn hefur sennilega drepið
the dog.N that the mink.A has probably killed

(55) ?Hvaða hundur heldur þú að minkinn hefur drepið?
which dog.N think you that the mink.A has killed
'Which dog do you think has killed the mink?'

The specificity effect is not predicted under the expletive movement hypothesis of Holmberg (2000), nor under the hypothesis that SF is part of the phonology.[14] It is compatible with either hypothesis, however, under an analysis where (50) is derived by first applying object shift (see chapter 46), followed by SF. (56) is an example of object shift (see Holmberg and Platzack 1995: ch. 6; Holmberg 2000):

(56) Hundurinn drap minkinn/*minka ekki.
the dog.N killed the mink/minks.A not

Like object shift (scrambling) in Dutch and German, Scandinavian object shift moves only specific DPs, to a high position in the sentential middle field, left of the negation and other sentence adverbs. However, it cannot move an object across a (visible) verb, which is to say that it is found only in sentences where the main verb itself has moved to I or C:

(57) *Hundurinn hefur minkinn ekki drepið.
the dog.N has the mink.A not killed

This obviously complicates the hypothesis that (50) is derived by first applying object shift, followed by SF. Furthermore, since object shift moves the object higher than the negation (or other sentence adverbs), we would not then expect the negation to block SF of the object. The prospects do not look good for the hypothesis that (50) is derived by a combination of object shift and SF, and so this remains a problem for a theory where SF is part of phonology, unless the scope of phonology is widened even more to also include operations like object shift and scrambling.

8 SF as remnant movement

We have shown that SF is not restricted to heads, but moves (some types of) phrases to Spec,IP. According to Holmberg (2000), following Platzack (1987), all SF is movement to Spec,IP, which violates standard assumptions about movement and landing sites in those cases where the moved category is a head. We should therefore seriously consider the possibility that all of the categories moved by SF are, in fact, phrasal, but that some of them consist of nothing but a head.

The categories moved by SF include nonfinite verbs, adverbs, predicative adjectives, prepositions, and verb-particles. The hypothesis that SF moves heads is primarily based on the case of the non-finite verbs, since only in that case does the movement leave behind a complement of the head, as in (58) (= (10b)):

(58) Hver heldur þú að **stolið** hafi hjólinu?
who think you that stolen has the bike

In all the other cases the fronted category may well be a complete maximal phrase, but consisting of just a head. In the case of adverbs this is entirely uncontroversial; adverbs, including the negation adverb, are known to undergo movement to Spec,CP, triggering V2 in Icelandic and the other Scandinavian languages.[15]

(59) Ekki kann ég að tala rússnesku.
not can I to speak Russian
'I certainly can't speak Russian.'

(60) Loksins kom Jón.
finally came Jon
'Finally Jon came.'

In the cases where a preposition has undergone SF it is very likely that we are dealing with PP-movement:[16]

(61) a. maðurinn sem **um** var rætt.
theman that about was talked
'the man that was talked about'
b. *þeir sem **í** hafa búið Ósló
those that in have lived Oslo

According to Sigurðsson (1997), a preposition can undergo SF if and only if the complement of the preposition is itself extracted, as in (61a), unlike (61b). This suggests that the analysis of (61a) is (62):

(62) maðurinn$_i$ sem [$_{IP}$ [$_{PP}$ um t$_i$]j var rætt t$_j$]

The situation for particles is similar. It seems that the particle can undergo SF only if the verb-particle complex is intransitive or passive. Cf. (63a), where the verb-particle complex is passive, (63b) where the sole argument is an extraposed clause, and (63c) where the verb-particle complex is transitive:

(63) a. Verðbólgan varð verri en **við** hafð verið búist. (M)
the inflation was worse than PRT had been expected
b. **Fram** hefur komið [að fiskað hefur verið í leyfisleysi á
forth has come that fished has been illegally in
chílensku fiskisvæði]
the Chilean fishing zone
c. *stelpan sem **út** hefur sloppið kettinum
the girl that out has let the cat

This follows if the particle head cannot undergo SF on its own. What does undergo SF is a Particle Phrase, consisting of just the particle and in some cases the trace of an extracted or extraposed object.

It is not inconceivable that even SF of a participle is derived by first evacuating the VP by movement of the object and other VP-constituents to a position just outside VP, and then moving the remnant VP to Spec,IP, by SF. See Hinterhölzl (1999) and Hróarsdóttir (2000) for theories where remnant XP-movement is used extensively to account for the word order of Germanic languages.[17]

Once it is recognized that SF can move phrases, a crucial and interesting question is: Why is it that SF can move for instance a DP which consists of a string of words and has a fairly complex internal structure, as in (13b), for example, but cannot move a VP or a PartP, unless it consists of a single word (under the remnant movement hypothesis)?

(64) a. *sá sem **skrifað þessa** **bók** hefur
he that written this book has
b. *stelpan sem **út** **kettinum/kettinum** **út** hefur sloppið
the girl that out the.cat/the.cat out has let
c. *kosningarnar sem **farið** **fram** hafa
the elections that gone forth have

9 SF in other languages

Most linguistic research today, certainly within generative grammar, assumes as a guiding principle that languages are more alike than they appear to be on the surface. So an obvious question to ask at this point is, do other languages than a few Scandinavian ones have something corresponding to SF?[18] There is one phenomenon, quite extensively studied in the context of European languages, which resembles SF at least superficially, namely Long Head Movement (LHM). There is another phenomenon or set of phenomena which also resembles SF, but in a different way, namely phenomena related to *that-trace*. I will deal with LHM first.

9.1 LHM

LHM is the name of a construction/operation known from various South and West Slavic languages, Old Spanish, pre-twentieth-century European Portuguese, and Breton, characterized by Borsley et al. (1996) as "a process which moves a verb directly to C over certain intervening heads" (p. 53; all the examples of LHM are from Borsley et al. unless stated otherwise).

(65) a. Napisal som list. Slovak
written have.1SG letter
'I have written a letter.'
b. Lennet en deus Yann al levr. Breton
read 3SGM has Yann the book
'Yann has read the book.'
c. Dar-te he un exemplo. Old Spanish
give you will.1SG an example
'I will give you an example.'

In the literature on LHM, Scandinavian SF is never counted as LHM, due to some obvious differences, mainly the fact that SF applies in embedded clauses, while

LHM is a root phenomenon (Luisa Rivero, p.c.; see also Jónsson 1991). But as noted, SF applies in main clauses, too, and when it does, the resemblance is striking. LHM and SF have at least the following properties in common:

(i) The moved category is generally a one-word expression (hence looks like a head).
(ii) The movement has no effect on the semantic interpretation. LHM and SF both have the character of last resort movement in order to fill a 'first position', unlike Topicalization.
(iii) They are clause bounded.
(iv) They are blocked by a negation.
(v) They are blocked by a fronted XP, for instance a *wh*-phrase or a fronted subject.

Property (iv) is exemplified by (66a, b), and property (v) by (67a, b):

(66) a. Ne sum procel knigata. Bulgarian
Neg have.1SG read the.book
b. *Procel ne sum knigata.

(67) a. Al levr en deus lennet Tom. Breton
the book has read Tom
b. *Al levr lennet en deus Tom.

In the Slavic and Romance languages LHM is associated with 'second position clitics'. The movement can be seen as triggered by the need to find a lexical host for an enclitic moved to sentence-initial position, either C or I – although for instance Borsley et al. do not adopt this view. The explanation why LHM is not found in embedded clauses would then be that the complementizer is a licit host for the clitics, and the reason why the negation blocks LHM is that the negation is also a licit host for the clitic.[19] Breton does not have second position clitics, though, so at least in the case of Breton the trigger cannot be the need to find a host for a clitic. This makes the comparison of Scandinavian SF and Breton LHM particularly interesting. The impression one gets from Schafer (1995) is that LHM of a nonfinite verb in Breton is a last resort operation used when no other category is available as a filler of the highest Spec in root clauses, presumably Spec,CP (although Borsley et al. argue that the movement targets C, not Spec,CP). This seems to hold true of SF in main clauses as well, except that Icelandic and Faroese (but not Old Scandinavian; see Falk 1993; Rögnvaldsson 1996) also have the option of inserting an expletive pronoun. That Breton does not have LHM in embedded clauses is then not surprising, in view of the fact that Breton is strictly verb-initial in embedded clauses. Effectively, Breton does not have a Spec,IP position which embedded LHM could target – assuming that it targets a Spec-position.

This suggests that LHM and SF may after all be varieties of the same movement, with Breton the missing link, as it were, between Slavic-Romance LHM and Scandinavian SF (see Jouitteau 2005 for recent work).

9.2 That-trace *phenomena*

The effect of SF in embedded clauses is to mask or obliterate (depending on the analysis) a *that-t* configuration. If we ignore SF in main clauses, we might indeed regard this as the function of the movement, in some sense.[20]

Languages resort to a variety of means to avoid *that-t*. As already mentioned, there are languages where an expletive pronoun appears in what looks like the position of the subject gap (see (48)). Other languages resort to a resumptive pronoun, for example Northern Norwegian, according to Fiva (1991):

(68) Han Paul trur æ ikke at han har læst denne søknaden.
he Paul think I not that he has read this application
'I don't think that PAUL has read this application.'

And then there are languages where the *that-t* effect disappears if an adverb appears between the complementizer and the verb. In connection with English this is known as the adverb effect (see Culicover 1992; Browning 1996). Consider standard Norwegian, where there is a fairly clear contrast between (69a, b):

(69) a. ?Hvem sa du at ville komme.
who said you that would come
'Who did you say was coming?'
b. Hvem sa du at ikke ville komme.
who said you that not would come
'Who did you say wasn't coming?'

The syntax of embedded clauses in Modern Scandinavian places the negation in front of the finite verb regardless of the presence of a subject gap, so we cannot detect any movement here. Still, apparently the adverb does something in relation to the subject gap, which may be essentially what it does in Icelandic, except that in Icelandic you have to move the adverb into that position.

Dutch presents an interesting case. A *that-t* structure where the complementizer is followed directly by the finite verb seems to be quite generally unpreferred:

(70) *Wie denk je [dat komt]?
who think you that comes

One way of avoiding this is inserting the expletive *er*:

(71) Wie denk je dat **er** komt?
who think you that EX comes
'Who do you think is coming?'

For some speakers, a nonfinite verb in front of the finite auxiliary improves acceptability (in subject gap clauses), so that there is a contrast between (72a, b):

(72) a. Wie denk je dat **komen** zal?
who think you that come shall
'Who do you think will come?'
b. ?Wie denk je dat zal komen.

For some speakers even just an adverb between the complementizer and the finite verb helps (according to Reuland 1985):

(73) Wie denk je dat **morgen** komt?
who think you that tomorrow comes
'Who do you think is coming tomorrow?'

Finally, if there is an object (which by virtue of the word order rules of Dutch will be preverbal), the sentence is fine:

(74) Wie denk je [dat **het vlees** snijdt]?
who think you that the meat cuts
'Who do you think cuts the meat?'

See Holmberg (2000) for discussion. Note in particular (73a), which is strikingly similar to SF. But (73) and even (74) can be analyzed as SF, in the sense of movement of a category to the subject gap position, although the movement in this case will be string-vacuous.

It appears, then, that SF falls together with a group of operations, including movements and lexical insertions, which all serve to mask or obliterate a *that-t* configuration. Why that should be needed in the first place remains a controversial question.

But SF in main clauses, and perhaps more generally, in impersonal clauses, has no such function. There, it seems that SF, much like LHM in Breton, serves to fill a 'first position' as a last resort, that is it has to do with V2 and/or the EPP. Whether this first position is Spec,CP or Spec,IP, and whether it is the same position in main and embedded clauses is open to debate. The answer will depend in part on which theory of V2 one condones (see Branigan 1996).

Still, as we have seen, SF is subject to the same conditions in the two cases, regarding the choice of categories moved and the locality conditions. Apparently the grammar of the languages concerned makes available a movement operation moving a category to the position of a subject gap. This movement has a different function in subject extraction clauses and impersonal clauses. We would therefore not be surprised to find a language which has one but not the other. In fact, according to Cecilia Falk (p.c.) it could be noted that Falk (1993) claims that Old Swedish does not seem to have main clause SF, while SF is common in embedded clauses.

10 Conclusion

In the introduction I posed the following questions, identified as key questions in the study of SF: What kind of movement is SF? Does it fall into any of the established types of movement (A-movement, A-bar movement, head movement), or is it a distinct, new type of movement? Is it movement in the phonological component? What function does it have, or, in other words, what is the movement trigger? Are there similar movements in other languages?

I believe we can be fairly confident that SF is not head-to-head movement, in spite of the claims that have been made to that effect in the literature. At least it cannot be head-to-head movement universally, since what are unmistakably XPs undergo SF, in particular PPs, but also DPs. As argued, there are other reasons, as well, to reject the analysis where the fronted category is adjoined to I. The possibility was discussed that all SF is fronting of a phrase which in some cases is emptied of all constituents except the head. The question raised by such an analysis is, why must the fronted phrase be emptied in this way, in some cases? Why can't, for example, a ParticleP with verb and particle and possibly an object undergo SF?

It may well be argued that SF is a form of A-bar movement: the fronted category does not check case or agreement in the target position, and it is presumably 'reconstructed' in the sense that it is interpreted in its pre-movement position. On the other hand, as discussed already by Maling (1980/90) it differs in several crucial respects from classical cases of A-bar movement such as Topicalization and focus movement. For instance, it does not affect scope relations or information structure. This is consistent with the hypothesis that SF is in some sense phonological; it satisfies some condition which purely concerns form, and has no direct relation to meaning, similar in this sense to a phonological condition or rule (say, word stress rules or contraction rules). In a T-model grammar this could be formally expressed by locating SF after spell-out, on the PF-side. Some complicating factors were discussed, though; in particular the fact that SF treats purely functional auxiliary verbs differently from other verbs, implying that it is sensitive to the presence or absence of semantic features.

It was suggested that the function of SF in subject extraction contexts can be characterized as 'avoiding *that-t*'. As discussed, languages seem to use a variety of means to avoid *that-t*, some of which look rather similar to SF. In impersonal clauses SF seems to be a last resort operation to lexically fill the subject position, which is to say, it is related to the EPP and/or to V2. It is formally similar to LHM, perhaps more so than has been acknowledged in the literature.

As mentioned, the operation is aptly called stylistic, since its use is governed only by stylistic considerations. The stylistic considerations vary from case to case, though. Many cases of SF in main clauses, including (4) and (16), belong to a formal, or even archaic, register. But (75) may occur in informal discourse:[21]

(75) Greinilegt er að okkur vantar meiri peninga.
obvious is that we need more money
'It's obvious that we need more money.'

SF in embedded impersonal clauses can be found in colloquial registers as well as formal ones, and this is also the case with SF in subject relatives, while SF in embedded questions, or in connection with subject extraction from an object clause, again belongs to a formal, literary style. The optionality of SF in subject extraction contexts may, in fact, be a peculiarity of Icelandic, where *that-t* happens to be a perfectly acceptable configuration. In Faroese *that-t* is not acceptable (see Thráinsson et al. 2004: 216f.), and, as mentioned, SF is not generally optional in Faroese. The Dutch or Norwegian counterparts to SF discussed in section 9 are also not optional in quite the same sense as SF is in Icelandic.

NOTES

1 Many thanks to Thorbjörg Hróarsdóttir and Halldór A. Sigurdsson for their help with the Icelandic data.

2 The examples are mainly taken from the literature. The source is shown within parentheses. The abbreviations are:

J = Jónsson (1991)
M = Maling (1980/90)
RT = Rögnvaldsson and Thrainsson (1990)
S = Sigurðsson (1997)

3 There are a couple of small changes in the revised version. One is that the term 'stylistic inversion' is replaced by 'stylistic fronting'. The page numbers refer to the (1990) version.

4 There is topicalization in embedded clauses in Icelandic; see Rögnvaldsson and Thrainsson (1990). The examples are chosen to exclude this possibility, though: it does not occur in relative clauses, adverbial clauses, or in combination with extraction from an embedded clause.

5 So (17b) may be construed as an argument that there is no overt *wh*-movement in main clause subject questions in languages which have SF.

6 In (25) the adjective is not a complement of the verb, and is thus predicted not to undergo SF. Why, however, cannot the whole small clause move (given that some phrasal categories do undergo SF)? This is a question which we have no answer to, at present. It is interesting that the verb-particle construction appears to fall under the generalization that the head and its complement may both move, since the particle is not universally analyzed as a complement of the verb, but rather as the head of a small clause which is the complement of the verb. See for instance Den Dikken (1995c).

7 Rögnvaldsson and Thráinsson obviously want to avoid this conclusion, but their counterargument is unconvincing.

8 There is a curious exception to the locality of SF in Poole (1996):

(i) þetta er maðurinn sem ljúka vildi aldrei bókinni.
this is the man who finish wanted never the book

We expect fronting of the infinitival to be blocked by the adverb *aldrei*. As it happens, this is a case where there Icelandic speakers and linguists seem to disagree strongly:

Of the three that I have consulted, two assign (i) a star, while one (Poole's informant) regards it as acceptable, especially if the adverb is the negation *ekki*.

9 Neither the infinitive *að mála*, nor any one of its constituents can undergo SF, for some reason.

10 Jónsson needed this also to explain why, for instance, the negation blocks SF (analyzed as head movement to I) but does not block verb movement to I (V-to-I). The reason would then be that V-to-I is adjunction to the tense and agreement affix in I, which the negation cannot itself do, while SF is adjunction to V+Tns/Agr, which the negation can do. Therefore the negation blocks SF of a lower head but does not block V-to-I.

11 The term 'narrow syntax' implies that there is something like 'broad syntax', which would include at least some of the post-spell-out phonological component; see the text below.

12 That is a theory where sentences are derived strictly from bottom up by adding categories one by one to a derived structure, and movement is strictly cyclic in that once a movement has targeted a position P in the structure, no subsequent movement can target a position lower than P. See Chomsky (1993).

13 Cf., however, the classical analysis of *wanna*-contraction in Chomsky (1976), according to which a *wh*-trace blocks the contraction.

14 As observed by Halldor Á. Sigurðsson (p.c.) there are various complications regarding SF of DPs (perhaps not surprising, given that they are marginal to begin with). For instance, there is a contrast between (i) and (ii), which has to do with abstract vs. concrete reference. On the other hand, as shown by the (iii), in this case there is no clear specificity effect.

(i) þeir sem þessa erfiðu ákvörðun verða að taka
those that this difficult decision have to take

(ii) ?þeir sem þessa leiðinlegu bók verða að lesa
those that this boring book have to read

(iii) þeir sem erfiðar ákvarðanir verða að taka
those that difficult decisions have to take

15 Predicative adjectives cannot be topicalized in Icelandic, unlike Mainland Scandinavian, a fact which may or may not be significant in this connection.

(i) a. Syk er han ikke. Norwegian
sick is he not
'He is not SICK.'
b. *Veikur er hann ekki. Icelandic
sick is he not

VP-fronting, too, is not permitted in Icelandic, unlike Mainland Scandinavian; see Holmberg and Platzack (1995: 222).

16 Note, however, that Delsing (2001) has found some examples in Old Swedish of SF of a preposition whose complement is stranded, as in (i):

(i) huiuitna thz som vnder ær himblenom
everything that under is heaven
'everything that is under heaven'

17 Note that this will put the question of locality in a new light, though. Under the remnant movement hypothesis the category that is moved by SF in a case like (i) is not the category that is closest to the target position of SF (even abstracting away from the problem caused by the *wh*-subject, discussed around (49) above). In fact, since the structure prior to SF will be something like (ii), the category that is moved by SF is the category that is furthest away from the target position, namely the VP which has been evacuated by all its constituents except the main verb:

(i) Hver heldur þú að **stolið** hafi hjólinu?
who think you that stolen has the bike
'Who do you think has stolen the bike?'

(ii) $[_{IP}$ hafi+I [hjólinu$_i$ [(hver) $[_{VP}$ stolið t$_i$]]]]

18 Middle English seems to have SF, which is not surprising as it has several other properties of the sort which go together with SF in the sense that they are found in Icelandic, Faroese, and Old Scandinavian, but are lacking in Mainland Scandinavian and modern English; see Platzack (1987).

(i) bigat upon his wyf, that called was Prudence, a daughter which that called was Sophie. (Traugott 1972: 156)

19 In some of the LHM-languages the negation appears to move along with the verb, though.

20 Faroese has an interesting instantiation of this, noted by Barnes (1987), discussed also by Vikner (1995: 118) and Thráinsson et al. (2004): in subject relatives the 'relative complementizer' *sum* (the proper analysis of this category is controversial; see Holmberg 2000 for some discussion) can be omitted but only if SF applies:

(i) Tær konurnar, sum skulu vera heima, eru burturstaddar.
those women that should be home are away

(ii) *Tær konurnar, skulu vera heima, eru burturstaddar.

(iii) Tær konurnar, heima skulu vera, eru burturstaddar.

21 This word order (predicative adjective-BE-extraposed clause) is possible even in modern Swedish (in a somewhat formal style):

(i) Tydligt är att vi behöver mer pengar.
obvious is that we need more money

This suggests that we are not dealing with SF proper, but topicalization of a predicative AP.

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66 Subextraction

NORBERT CORVER

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1 Introduction

Displacement is a core property of human language. Constituents can be rearranged in syntactic structure. In (1a), for example, the direct object noun phrase (*this car*) has been moved to the left periphery of the clause and no longer occupies its base position, i.e., complement to V, as in (1b):

(1) a. *This car* I really like.
    b. I really like *this car*.

In (1a), the noun phrase selected by the verb *like* is moved to a landing site within the so-called extended projection of that verb (cf. Grimshaw 1991), which is the clause (i.e. CP). The direct object remains within the structure projected from the verb, so to speak.

Turning to (2), the direct object *this car* is no longer part of the extended projection of the selecting verb *to like*. Rather, the direct object noun phrase has been moved out of the embedded clause and finds its landing site within the matrix clause.

(2) *This car* I believe [that you will really like –]

This instance of displacement is a case of *subextraction*: the direct object noun phrase is extracted from within the embedded clause. That is, it is moved to a landing position which is external to the extended projection of the head (*like*) with which it stands in a certain base relationship (in this case, a thematic relationship).

In the spirit of the search for restrictions on displacement, the question should be raised what restrictions hold on subextraction. Can any element be freely removed from the extended projection of some head X to which it stands in a particular relation? Schematically:

(3) $[_{yp} \ldots \alpha \ldots [_{xp} \ldots \beta\ X \ldots]]$
where α is the landing site and β the extraction site (order of X and β is irrelevant).

When X and β in (3) stand in a predicate–argument relationship, subextraction is generally allowed in a language like English:

(4) a. $[_{CP}$ *Whose throat* did you stick your finger $[_{PP}$ into –]]?
b. the man $[_{CP}$ *of whom* I saw $[_{DP}$ several pictures –]]
c. a man $[_{CP}$ *of whom* I'll never be $[_{AP}$ proud –]]

In these examples it is the complement to a lexical head (P, N, A) that has been extracted from the extended projection (PP, DP, AP) of this head.

Displacement very often does not apply to what is traditionally (cf. Chomsky 1970) called the specifier system of a phrase.[1] As illustrated in (5–8), for example, the specifier system of the noun phrase is inaccessible to movement operations: determiners carrying demonstrative or interrogative force and possessors like *whose* cannot be removed from the nominal domain. As shown by the b-examples, the entire noun phrase has to be fronted. Under the assumption that it is some grammatical property of the specifying element (e.g., a *wh*-feature) that triggers the displacement process, we can say that the determiners and the nominal possessor drag along the rest of the noun phrase. This phenomenon in which a category properly containing a category targeted for movement is displaced is termed *Pied-Piping* (cf. Ross 1986). (See chapter 50.)

(5) a. **This* I really like [– car]!
b. *This car* I really like –!

(6) a. **Which* do you like [– car]?
b. *Which car* do you like –?

(7) a. **What* he is [– a fool]!
b. *What a fool* he is –!

(8) a. **Whose* do you like [– car]?
b. *Whose car* do you like –?

As shown by (9) and (10), it is not only the specifier system of the noun phrase that is inaccessible to movement. Such modifying elements as attributive APs cannot be removed from the noun phrase either.

(9) a. **That big* John bought [– a car]!
b. *That big a car* John bought –!

(10) a. **How big* did John buy [– a car]?
b. *How big a car* did John buy –?

Examples (11) and (12) illustrate the inaccessibility of the specifier system for the adjectival domain: degree words like *that* and *how* cannot be extracted from the adjectival phrase. Also in this case, preposing must apply to the entire adjective phrase. More precisely: the degree word that is targeted for movement carries along (i.e., pied-pipes) the other material contained within the dominating AP.

(11) a. **That* she certainly isn't [– tall]!
b. *That tall* she certainly isn't –!

(12) a. **How* are you [– tall]? / *How* you are [– tall]!
b. *How tall* are you –? / *How tall* you are –!

The following question, of course, arises: what blocks subextraction of those (left-branch) specifiers and modifiers from within the nominal and adjectival domain?[2] A first attempt to answer this question was given in Ross (1986), who proposed his Left Branch Condition to account for the above-mentioned facts (see section 2). After Ross's formulation of this island constraint, alternative analyses were proposed that try to capture the impossibility of extracting left-branch elements from within the nominal and adjectival system in a language like English. These analyses are discussed in section 3.

Another question which arises: is this restriction on subextraction from noun phrases and adjective phrases a universal one? As Ross pointed out himself

(section 2), the answer is 'no'; there are languages (e.g., Russian and Latin) that quite freely permit extraction of specifying and modifying elements from within the nominal and/or adjectival domain. The question then, of course, arises what underlies this cross-linguistic variation in subextraction behavior. Section 5 discusses a number of proposals that have been made to account for this cross-linguistic variation. Besides languages quite freely permitting subextraction from noun phrases and/or adjective phrases, there are languages that in general exclude such subextraction but have one or more construction types that exceptionally permit subextraction. In section 4 one such construction will be highlighted, namely, the so-called *wat voor N*-construction in Dutch ('what kind of N'), a construction type which is also found in other Germanic languages. This nominal construction has the exceptional property that the left-branch interrogative element *wat* can be moved out of the noun phrase.

2 The Left Branch Condition

Ross (1986) was one of the first who observed the immobility of elements that specify or modify nominal and adjectival constituents. In order to account for this restriction on subextraction, he formulated his Left Branch Condition:[3]

(13) **Left Branch Condition (LBC):**
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

Reference to the notion 'left branch' is prompted by the fact that determiners, possessors like *whose*, and (AP-internal) degree words occupy a position to the left of the nominal/adjectival projection line. In the formulation of the condition it is the linear property of 'leftmostness' that determines the non-extractability of certain elements, i.e., NPs according to Ross. We should add immediately here that for Ross the categorial label 'NP' applies not only to a lexical item like *whose* in (8), but also to adjective phrases (as in (9–10)) and such degree words as *that* and *how* in (11–12). Given this assumption, the LBC correctly predicts the ill-formedness of the a-examples in (5–12).[4] In (8a), for example, the NP *whose* is the leftmost element within the containing NP and therefore cannot be moved out of it. In (12a), the NP *how* is extracted from the larger NP (*how tall*). Since *how* is the leftmost element within the larger NP, subextraction yields a LBC-violation. In (10a) it is the *wh*-degree word *how* that is targeted for movement. *How* itself cannot be fronted since it is the leftmost element within the NP *how big*: **How did John buy [[– big] a car]?* The NP *how big* cannot be fronted either; it is the leftmost element within the NP *how big a car*. The only legitimate displacement is movement of the entire direct object NP. So the interrogative degree word *how*, which is targeted for movement, drags along the dominating attributive AP and the dominating NP.

A question which obviously arises is whether the inaccessibility of left-branch elements (in the nominal and adjectival domain) is a universal property of human language. That is, is the LBC a universal constraint? As Ross (1986) himself already observed, in certain languages (e.g., Russian, Latin) subextraction of left-branch specifiers and modifiers is permitted. Consider, for example, the following examples from Polish, where a specifying or modifying element is removed from the containing noun phrase (examples from Rappaport 2000):

(14) a. *Czyją ukradłeś* [– książkę]? Polish
whose you-stole – book
'Whose book did you steal?'
b. *Jaką* kupiłeś [– książkę]?
what-kind-of$_{\text{Fem.Sg.Acc}}$ you-bought-book$_{\text{Fem.Sg.Acc}}$
'What kind of book did you buy?'
c. *Jak duże* widziałeś [– auto]
how big you-saw – car
'How big a car did you see?'

About those languages which do not display the LBC-effect Ross (1986: 146) remarks, "As far as I know, it is only in highly inflected languages, in whose grammar the rule *Scrambling* appears, that the Left Branch Condition is not operative, but it is not the case that it is not operative in all such languages. [e.g., Finnish, NC] At present, therefore, I am unable to predict when a language will exhibit the Left Branch Condition and when not."[5] In section 5, a number of proposals will be discussed that try to account for this cross-linguistic variation in subextraction behavior.

Besides those languages which rather freely admit subextraction from the nominal and/or adjectival system, there are also languages which, on the whole, obey the LBC, except for some special construction(s). Consider, for example, the following cases:

(15) a. *Wat* heeft Jan [– voor boeken] verkocht? Dutch
what has John – for books sold
'What kind of books did John sell?'
b. **Welke* heeft Jan [– boeken] verkocht?
which has John – books sold
'Which books did John sell?'

(16) a. *Combien* a-t-il vendu [– de livres]? French
how-many has-he sold – of books
'How many books did he sell ?'
b. **Quels* a-t-il vendu [– livres]?
which has-he sold – books
'Which books did he sell?'

(17) a. *Ki-nek* akarod, hogy halljam [– a hang-já-t]? Hungarian
who-Dat you-want that I-hear – the voice-Poss.3SG-Acc
'Whose voice do you want me to hear?'
b. **Melyik* akarod, hogy halljam [a – hang-t]?
which you-want that I-hear the – voice-Acc
'Which voice do you want me to hear?'

In the a-examples in (15), (16), and (17), a left-branch element is removed from a containing noun phrase. In (15a) the *wh*-element *wat* has been extracted out of a so-called *wat voor N*-construction, yielding a discontinuous noun phrase. In (16a) the interrogative quantifier *combien* has undergone subextraction from within the noun phrase. In (17a), finally, a nominal possessor has been reordered out of the containing noun phrase (cf. Szabolcsi 1983). These subextractions are exceptional in those languages. In general, left-branch elements cannot be removed out of the noun phrase in those languages, as is illustrated by the b-examples.

Some instances of left-branch extraction have been noted for the adjectival domain. (cf. Grosu 1974; Bracco 1980; Rivero 1980; Rizzi 1990b; Corver 2000):

(18) a. *¿Cómo* dices que es [– de inteligente]? Spanish
how you-say that he-is – of intelligent
'How intelligent do you say he is?'
b. **Tan* es [– intelligente]
so-much he-is – intelligent
'He is so intelligent.'

(19) a. *Cît* e Maria [– de frumoasă]! Romanian
how-much is Mary – of beautiful
'How beautiful Mary is!'
b. **Ce* e Maria [– frumoasă]!
what is Mary – beautiful
'How beautiful Mary is!'

(20) a. *Quanto* è [– alto]? Italian
how-much he-is – tall
'How tall is he?'
b. **Troppo* è [– alto]!
too-much he-is – tall
'Too tall he is!'

The limited subextraction phenomenon exemplified in the a-examples in (15–17) and (18–20) raises the question why extraction is permitted in those cases. That is, in what way do these constructions differ from normal noun phrases or adjective phrases, which do not permit subextraction. In section 4, one construction type will be highlighted, namely, the *wat voor N*-construction, which is exemplified in (15).

3 Constraints on left-branch subextraction

We discuss here a number of analyses that have been given to account for the Left Branch effect. Each of these analyses relates the impossibility of subextraction to some grammatical property of the syntactic structure: (a) the linear or hierarchical position of the subextracted element (section 3.1); (b) the nature of the phrase dominating the left-branch element that is targeted for movement (section 3.2); (c) the licensing (i.e., proper government) of the trace left behind after subextraction (section 3.3); (d) the morphological or phonological interpretability of the syntactic structure after subextraction has applied (section 3.4).

3.1 Constraints in terms of the extraction site

In Ross (1986), the immobility of NP- and AP-internal left-branch specifiers and modifiers was noted. According to his LBC, the factor determining their immobility is their syntactic placement within the containing phrase (i.e., NP); that is, when some element α is leftmost within NP, α cannot be extracted out of that NP. Strictly speaking, the formulation in (13) does not account for the ungrammaticality of the following examples:

(21) a. **Very pretty* I saw [John's – daughter].
b. **Very intelligent* I met [several – girls].

In these examples the attributive AP is not the leftmost constituent of the containing NP. Nevertheless, subextraction is not permitted. Evidently, reference to leftmostness is too weak.

Emonds (1976, 1980, 1985) proposed various reformulations of Ross's LBC. In Emonds (1985) the following definition is given:

(22) **Generalized Left Branch Condition (GLBC):**
No syntactic category C^j to the left of the lexical head of an X^2 can be analyzed as a C^j by a transformation.

Like Ross's LBC, the GLBC states that the (linear) property of being to the left of the (lexical) head of a phrase is the relevant factor that accounts for non-extractability. Emonds's reformulation differs, however, in one crucial respect from Ross's LBC: the GLBC refers to all material to the left of the head of a phrase, not only to the constituent which is leftmost of the head of a phrase. So the ill-formedness of the examples in (21) is predicted.

Chomsky (1973: n 10) gives a reinterpretation of Ross's LBC as a condition that would prevent extraction of the specifier of an NP or an AP. He argues that the ungrammaticality of sentences such as (5–10) "can perhaps be attributed to a principle that requires that if the specifier of a noun phrase or an adjective phrase [. . .] is extracted, then the whole phrase must be extracted." As opposed to

Ross's LBC, which refers to the property of leftmostness, Chomsky's Specifier Constraint refers to the property of being in a certain hierarchical position within the phrase, namely, the specifier position of a phrase XP.

A similar reinterpretation of Ross's LBC is proposed by May (1977). He formulates the following condition:

(23) **Condition on Analyzability:**
If a rule Ø mentions SPEC, then Ø applies to the minimal [+N]-phrase dominating SPEC, which is not immediately dominated by another [+N]-phrase.

This condition states that if a transformational rule targets an element occupying the specifier position of a [+N]-projection (i.e., NP and AP), the dominating [+N]-projection is the category that is displaced. The addition "which is not immediately dominated by another [+N]-phrase" excludes displacements like (24):

(24) **Whose father's* did you see [– car]?

The *wh*-element *who*(*se*) is targeted for *wh*-movement. The containing NP (*whose father*) cannot be fronted, however, since it is immediately dominated by another NP (i.e., [+N]-projection).

The four constraints mentioned here (LBC, GLBC, the Specifier Constraint, and the Condition on Analyzability) all try to account for the impossibility of left-branch subextraction in English in terms of a property of the extraction site. This could be either the linear property 'leftmostness' or 'being to the left of the head', or the hierarchical property of being in the specifier position. The former refers to a string-peripheral position, the latter to a hierarchically peripheral position.

It is interesting to see that in the generative literature conditions have been proposed that claim exactly the opposite. These conditions state that extraction of some element A from within a phrase is only possible if A is in a string-peripheral/hierarchically peripheral position. An example of a condition stating the accessibility of string-peripheral positions is De Haan's (1979) Accessibility Condition.[6]

(25) **Accessibility Condition:**
No transformational rule can involve X^1, Y or X^2, Y in the structure:
$\ldots X^1 \ldots [_\alpha \ldots Y \ldots] \ldots X^2 \ldots$
where α is a bounding node,
unless Y is left peripheral in α, or
Y is right peripheral in α, respectively.

According to this condition, some targeted constituent Y can leave the dominating phrase (α) only if Y is in a peripheral position: left-peripheral for leftward subextraction, right-peripheral for rightward subextraction.

An example of a constraint stating that structurally peripheral positions are accessible to movement is Van Riemsdijk's (1978a) Head Constraint:[7]

(26) **The Head Constraint:**
No rule may involve X_i/X_j and Y_i/Y_j in the structure
$\ldots X_i \ldots [_H n \ldots [_{H'} \ldots Y_i \ldots H \ldots Y_j \ldots]_{H'} \ldots]_H n \ldots X_j \ldots$
(where H is the phonologically specified (i.e., non-null) head and H^n is the maximal projection of H, and H ranges over V, N, A, P.)

Van Riemsdijk points out that in a language like Dutch certain complements of P (namely, pronominal elements such as *het* 'it', *wat* 'what', *dat* 'that') are moved to [Spec, PP], where they change their formal appearance, i.e., they become R-pronouns (*er* 'there', *daar* 'there', *waar* 'where'). Due to this PP-internal movement the R-pronoun is no longer within the complement domain of P (i.e., H in (26)). Being in the specifier position of PP, the R-pronoun is accessible to transformation rules:[8]

(27) a. *Daar*$_i$ heeft Jan [$_{PP}$ t'$_i$ [$_{P'}$ op t$_i$]] gerekend. Dutch
there has John – on – counted
'That, John counted on.'
b. *Waar*$_i$ heeft Jan [$_{PP}$ t'$_i$ [$_{P'}$ op t$_i$]] gerekend?
where has John – on – counted
'What did John count on?'

As shown by the ill-formedness of (28), nominal elements that remain in the complement position within the PP cannot be reordered out of the PP (cf. (28a); pied-piping of the dominating PP is required, as in (28b)).

(28) a. **Wie*$_i$ heb je [$_{PP}$ [$_{P'}$ op t$_i$]] gerekend? Dutch
who have you on – counted
'Who did you count on?'
b. [Op wie] heb je gerekend?
on who have you counted
'Who did you count on?'

Obviously, if the Left Branch effect is not explained in terms of a distributional property of the extraction site (i.e., leftmost/string-peripheral within projection XP or hierarchically peripheral within XP), some other linguistic property must be found that is responsible for the non-extractability of NP- or AP-internal left-branch elements in a language like English.

3.2 Subextraction and the containing extraction domain

In section 3.1 several approaches to left-branch subextraction were discussed that tried to characterize the inaccessibility of certain constituents in terms of the (structural or linear) position of the element targeted for movement. Other approaches to the non-extractability of left-branch specifiers/modifiers have

emphasized properties of the extraction domain, i.e., the category (or categories) that contain the left-branch element.

3.2.1 The Relativized A-over-A Condition

Bresnan (1976c) tried to account for the restrictions on left-branch subextraction in terms of her Relativized A-over-A condition (RAOAC). This condition is a reformulation of Chomsky's (1964a) A-over-A Condition, which is stated in (29):

(29) **A-over-A Condition:**
In a structure $\ldots [_{A \ldots} [_{A} \ldots] \ldots] \ldots$, if a structural description refers to A ambiguously, then the structural description can only analyze the higher, more inclusive, node A.

The A-over-A Condition accounts for the facts in (30): fronting can only apply to the maximal (i.e., more inclusive) NP.

(30) a. **Whose* do you like [– car]?
b. *Whose car* do you like –?

Bresnan reformulates Chomsky's A-over-A Condition in two respects. First of all, she states that a phrase of type A (= the target predicate) that a transformation effects must be maximal, not in the absolute sense of Chomsky's condition given in (29), but with respect to the context predicates (i.e., the constant factor not operated on by the rule) of the structural condition in the transformational rule. Secondly, maximalization is considered to be a function of the categorial features (+/–N, +/–V) mentioned in the structural description of the transformational rule, rather than a function of the categories as such.

Consider now Bresnan's rule of question movement, which is a cross-categorial rule affecting such constituents as NP, AP, ADVP, and QP that begin with an interrogative morpheme (*wh*):

(31) $[_{S'}$ Q - W_1 – $[_{XP}$ *wh* – $W_2]$ - W3
1 2 3 4 5 →
2 4 2 0 5
(where Q represents the question complementizer)

The maximal projection XP in (31) is the target predicate, i.e., the element operated on by the transformational rule. Q (= Comp) is a context predicate; it dominates the node into which the *wh*-phrase is moved. The RAOAC predicts that the transformational rule of question movement can apply only when a proper analysis assigns a maximal value to XP for the fixed values Q and S' (i.e., the context predicates of the structural condition). Subextractions like in (30a) above and (32a) violate the RAOAC. The [+wh] possessor-NP and the [+wh] attributive AP satisfy the question movement rule (i.e., [+wh]NP/AP are constituents that

can substitute for Comp), but they are not the maximal values in relation to Comp. Movement of the entire direct object-NP, as in (30b) and (32b), satisfies the maximalization requirement.

(32) a. **How big* did he buy [– a car]?
b. *How big a car* did he buy?

3.2.2 The Subjacency Condition

Another constraint which ascribes the impossibility of certain movement operations to the configuration that contains the node to be moved is Chomsky's (1973, 1977b) Subjacency Condition.[9] This locality constraint states that a transformational rule cannot move a constituent from position Y to position X in a configuration like (33) if α and β are bounding nodes (NP and S being bounding nodes for English).

(33) . . . X . . . [$_{\alpha}$ . . . [$_{\beta}$ . . . Y . . .] . . .] . . . X . . .

Chomsky points out that various island constraints – the Complex NP Constraint, the *Wh*-island constraint, and the Subject Condition, for example – are subsumed under the Subjacency Condition. The possibility of deriving the ill-formed subextractions in (5–10) is not discussed in Chomsky (1973, 1977b).[10] Movement of determiners, possessors, and attributive APs from within the nominal domain to Comp always crosses two bounding nodes in English, namely, NP and S. So it seems that at least for English, part of the LBC-effects can be reduced to the Subjacency condition as formulated above.

Chomsky (1981: 168), however, points out that a Subjacency account of the ill-formed sub-extraction examples in (5–10) is unlikely, given the fact that similar sub-extractions are ill-formed in a language like Italian (cf. (34) and (35)), which, as argued by Rizzi (1982b), has NP and S' as bounding nodes for Subjacency. If Italian has S' rather than S as a bounding node, left-branch extraction out of a noun phrase is not blocked.

(34) **Questi* hai incontrato [$_{NP}$ – ragazzi]? Italian
which you-have met – boys
'Which boys did you meet?'

(35) *Quanti hai incontrato[$_{NP}$ – ragazzi]?
how-many you-have met – boys
'How many boys did you meet?'

In view of the fact that the LBC-effect cannot be subsumed under the Subjacency Condition, we should try to find some other principle of grammar to which it can be reduced. Chomsky (1981: 168) suggests that the Empty Category Principle (ECP) is a good candidate for explaining the impossibility of left-branch subextraction from NP. The ECP is discussed in section 3.3.

3.3 Subextraction and proper government

Another approach towards the restrictions on left-branch subextraction is in terms of the empty category (i.e., trace) left behind after movement. The principle of grammar regulating the distribution of (non-pronominal) empty categories is the Empty Category Principle (ECP) (cf. Chomsky 1980a, 1981). This principle requires that traces be properly governed (i.e., locally identified) by a proper governor. In Chomsky (1981), the relation of proper government is defined as follows:

(36) **Proper government:**
A properly governs B iff A governs B, and
(i) A is lexical (= X^o), or
(ii) A locally binds B

Under this approach, subextraction of NP- and AP-internal specifiers and modifiers is blocked due to the fact that the trace is not properly governed.

Chomsky (1981: 168) contains a short discussion of the non-extractability of left-branch possessor noun phrases from within NPs in English (e.g., **Whose did you see book?*). He accounts for the ill-formedness of this possessor-subextraction by stating that even though N governs the trace in the specifier position of NP, it does not *properly* govern this empty element; that is, N does not belong to the set of proper governors. This account of the non-extractability of left-branch possessors from within NP obviously extends to other left-branch effects, e.g., those involving determiners (cf. (5), (6)) and attributive APs (cf. (9), (10)).

Chomsky's analysis relies on the assumption that the trace occupying the specifier position of NP cannot be properly governed from outside. If proper government of the empty category in [Spec, NP] by a noun phrase-external proper governor (e.g., V) were possible, subextraction (e.g., of *whose*) should be permitted. Thus, the question arises as to what blocks proper government of the trace in [Spec, NP] by an external governor, say V. As pointed out earlier, Chomsky assumes that even though the trace is not properly governed by N, it falls within the government domain of N (for reasons of genitive-case assignment). Implicit in this analysis is the idea that potential proper governors that are external to NP do not have access to [Spec, NP] if this position falls within the government domain of the lexical head N. So, a trace always falls within the government domain of a single head. Giorgi and Longobardi (1991: 101) state this explicitly in terms of their Uniqueness Constraint on Government:[11]

(37) **Uniqueness Constraint on Government:**
If a position β is governed by a lexical head α, it has no other governors

They point out that left-branch possessors, attributive APs, and other left-branch elements that cannot be removed from within NP fall within the government domain of N; the reason is that these left-branch elements enter into a

case-dependency with N (i.e., N assigns genitive case to the possessor) or into an agreement relationship with N (e.g., in number or gender). With Chomsky, they assume that even though N governs these left-branch positions, it does not properly govern them.

Rizzi (1990b) also proposes an ECP-account for such ill-formed specifier extractions as *Whose did you see [– car]?* In contrast with Chomsky (1981) he adopts a conjunctive definition of the ECP. More specifically, he states that a non-pronominal empty category must be (i) properly head-governed and (ii) antecedent-governed or theta-governed (cf. Rizzi 1990b: 32). The former component of this formulation of the ECP captures the formal licensing relation; i.e., it characterizes the formal environment in which the null element can be found. The second component is the principle of identification, which recovers some contentive property of the null element on the basis of its immediate structural environment. As for the formal licensing relation, Rizzi assumes that a trace must be head-governed within the immediate projection of the head. In other words, complements to a head H are properly head-governed, specifiers are not. As a consequence, specifier (or modifier) extractions like those in (5–8) and (9–10) from within the nominal domain are impossible, given the fact that the trace left behind after subextraction falls outside the proper-head government domain of the head (N). It is furthermore assumed that potential proper governors (like V) do not have access to the NP- or AP-internal specifier position. In other words, government into the nominal domain is excluded. This opacity of the NP is determined as follows: even though N does not head-govern the specifier position, it has m-command over the specifier position. This way, the lexical head N always intervenes between the specifier of N and the external governor.

Giorgi and Longobardi (1991) and Rizzi (1990b: 111, n. 4) point out that the impossibility of specifier extraction from within AP (cf. (11), (12)) can be explained along the same lines: A is not a proper governor for the trace in [Spec, AP]. Government of the trace in [Spec, AP] by some external governor (say V) is blocked because the lexical head A protects its Spec-position for government from outside.

Thus far, it was shown that the restrictions on subextraction from NP and AP can be explained in terms of the theory of proper government (ECP), if it is assumed that N and A are not sufficient governors and that NP-/AP-external governors cannot govern into the nominal or adjectival domain. Of course, there are cases where subextraction is permitted: subject noun phrases in [Spec, IP] can be extracted from within IP (cf. (38)), and *wh*-phrases in [Spec, CP] (via successive cyclic movement) can be removed from CP (cf. (39)).

(38) *Who* (do you think) [$_{IP}$ – left]?

(39) *What* did she say [$_{CP}$ – [$_{C'}$ that [$_{IP}$ John bought –]]]

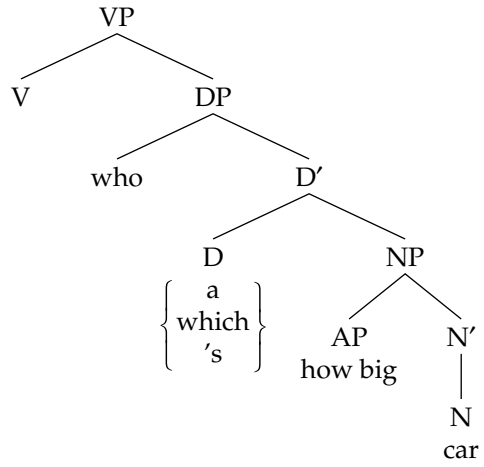
These examples show that certain specifier positions are accessible to subextraction. Giorgi and Longobardi (1991: 101) and Rizzi (1990b) relate this contrast in Spec-accessibility to the lexical/non-lexical distinction: Specifiers of I and C are available to external government, specifiers of lexical categories (e.g., N, A) are not.

The proper government-approaches discussed so far adopt the so-called lexical head analysis for noun phrases and adjective phrases: that is, specifying elements like *that*, *which*, *whose*, and *how* occupy the specifier position of a lexical head (N/A):

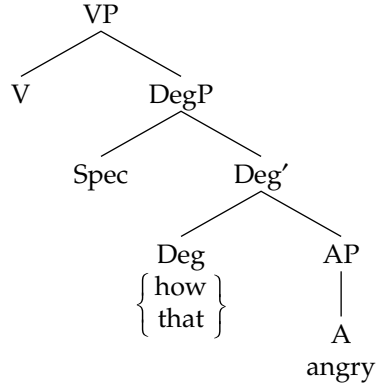
(40) a. [$_{NP}$ that/which/whose [$_{N'}$ car]]
b. [$_{AP}$ how [$_{A'}$ tall]]

In Corver (1990, 1992, 1997a, b) a proper-government approach towards the Left Branch effect is developed which makes use of the DP- and DegP-hypotheses for nominal and adjectival structures (cf. Abney 1987). The relevant structural configurations are then as in (41) and (42).

(41)



(42)



Adopting a Barriers-type theory of locality (cf. Chomsky 1986a), Corver accounts for the left-branch extraction effects in the following way. Subextraction of the *wh*-determiner *which* in (41) is blocked by ECP (and Subjacency). Being a head (D), *which* must move directly to the left periphery of the clause (CP). The *wh*-determiner cannot escape the barrierhood of intervening maximal projections (VP and IP) by

adjoining to them; this is due to the structure preservation requirement that a X°-category cannot adjoin to an XP-category. So, movement to the left periphery of the clause crosses two barriers: VP and IP (the latter by inheritance according to Chomsky's 1986a theory). This is represented schematically in (43).

(43) $[_{CP}$ Spec $[_{C'}$ C $[_{\mathbf{IP}} \ldots . [_{\mathbf{VP}}$ V $[_{DP} [_{D}$ *which*$]$ $[_{NP}$ car$]]]]]]$

After having been moved (directly) to the left periphery of the clause, the *wh*-determiner would not be able to antecedent-govern the trace. Moreover, Subjacency would be violated since two barriers (i.e., bounding nodes) would have been crossed.

The non-extractability of the attributive AP is explained as follows. Under the Barriers theory, both the NP and the DP would be barriers. NP is an inherent barrier because it is not governed by a lexical category (i.e., it is governed by D), and DP is a barrier by inheritance, i.e., it immediately contains an inherent barrier. Direct movement of the attributive AP out of DP would yield a subjacency violation. It should be noted, though, that the AP could escape a Subjacency violation by moving into [Spec, DP] before leaving the DP. This intermediate step crosses only one barrier, namely, NP. Even though a Subjacency violation may be circumvented this way, the trace in the original position of the moved attributive AP would not satisfy ECP. The trace is not lexically governed (i.e., N does not stand in a theta relation to the AP), nor is it antecedent governed; the NP-projection protects the trace in the original position from government from outside.[12]

The non-extractability of *whose* in (41) is explained as follows. With Abney (1987), Corver assumes that this possessor is not a constituent: *who* occupies [Spec, DP] while *-s* is the D-head. Given the fact that only constituents can move, *whose* is frozen in situ; fronting is possible only if the rest of the noun phrase is pied-piped.

Consider next the adjectival structure in (42). Extraction of the degree word is out for the same reason why determiners cannot be extracted. The Deg° must be moved directly to the left periphery of the clause; it cannot escape the barrierhood of intervening XP-categories (e.g., DegP, VP, IP) due to the fact that a X° cannot adjoin to a maximal category (XP). Fronting of the degree word makes it cross three barriers, yielding ECP- and Subjacency violations. Schematically:

(44) $[_{CP}$ Spec $[_{C'}$ C $[_{\mathbf{IP}} \ldots . [_{\mathbf{VP}}$ V $[_{\mathbf{DegP}} [_{Deg}$ how$]$ $[_{AP}$ angry$]]]]]]$

3.4 Subextraction and morphological/phonological constraints

Movement operations have often been formulated in terms of the category that is moved. For example, in a *wh*-movement construction like *Which car did you see?*, it is the *wh*-word *which* that is targeted by the movement rule. In Chomsky (1995c) it is not so much the category itself (say, D) that is targeted for movement, but rather some property of the feature inventory making up the category. In the case of a *wh*-determiner like *which*, it is a *wh*-feature rather than the category D

(i.e., the element instantiating the entire feature structure) which is targeted. It is further assumed that this feature associated with a lexical item is raised to some position in the functional domain where this feature is checked off (i.e., where it enters into a matching relation with a functional head which is specified for this grammatical feature). Chomsky (1995c: 262 ff.) assumes that for reasons of economy, the operation Move just seeks to raise the feature F (e.g., *wh*). More material is moved along (i.e., pied-piped) with the raised feature if this is needed for getting an interface representation that is interpretable. Chomsky argues that it is especially properties of the phonological component that require such pied-piping. Isolated features and other scattered parts of words may not be subject to phonological rules; the representation will be "unpronounceable". Chomsky further notes that there may be a morphological requirement that features of a single lexical item must be within a single X^o (cf. McGinnis 1995). Or, to put it differently, subextraction of a feature F from within the feature constellation making up a lexical item is impossible (at least in overt syntax). The targeted feature will move along the rest of the feature constellation making up the lexical item, and possibly other material will be moved along.

Chomsky gives the following example of this approach toward 'phonology driven' pied-piping: a *wh*-word like *who* has three components: the *wh*-feature, an abstract element underlying indefinite pronouns, and the feature [± human]. The operation of *wh*-movement raises just the *wh*-feature. Movement of this feature (i.e., subextraction from within the word) alone would result in an illegitimate PF-representation; the features making up the word would be scattered and consequently be unpronounceable. Therefore, at least the whole word *who* will have to be pied-piped in overt movement. Chomsky further points out that in a string like (45a) with the representation (45b), the *wh*-feature must drag along the entire DP.

(45) a. whose car
b. $[_{DP}$ who $[_{D'}$ -s(e) $[_{NP}$ car]]]

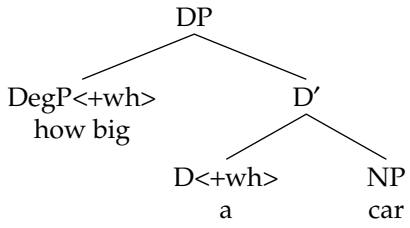
Raising of *who* alone leaves behind the sequence *-'s book*, which is an illegimate PF-object. *Who's* (= *whose*) cannot raise either since it is not a syntactic object (i.e., not a constituent), and hence not input to any movement operation (see also Corver 1990; 172). So, it is the entire DP (*whose car*) that must be moved in order to get a legitimate PF-representation. Thus, according to Chomsky (1995c), LBC-effects reduce to phonological and morphological requirements, rather than syntactic requirements like the ECP. Certain subextractions, that is, yield representations that cannot be interpreted by morphological or phonological rules.

Kennedy and Merchant (2000), too, argue that the principles underlying the LBC must be formulated in terms of PF representations. In line with the idea of Full Interpretation (cf. Chomsky 1995c), they argue that (at least) all terminal nodes must have a phonological value. In the Late-insertion model of Halle and Marantz (1993) the notion of 'having a phonological value' is implemented in terms of the presence or absence in the lexicon of lexical items instantiating the

featural combinations on syntactic objects. So, the syntax feeds the PF-interface by supplying the latter with feature bundles which the morphology must then make sense of, namely, by finding lexical items that correspond to the various feature combinations and inserting the items under the relevant nodes, which may then be pronounced. If the lexicon lacks an item with a particular feature specification, the derivation crashes: the PF representation is uninterpretable.

Kennedy and Merchant, who focus on the extractability of DP-internal APs, point out that the impossibility of extracting an attributive adjective phrase is due to an uninterpretable feature-combination created by agreement between a [+wh]DegP and the head of the nominal constituent in which it originates. Under the assumption that DegP-extraction from within DP proceeds through [Spec, DP] and that Spec–Head agreement takes place between a functional head and its specifier, the [+wh] feature on DegP is passed to the head of DP, deriving the structure in (46).

(46)



Subsequent subextraction of DegP does not alter the feature values in DP, leading to a PF-representation in which there is an occurrence of the [+wh]-feature on D. Such a representation, they claim, is uninterpretable because there is no D-element of English vocabulary that can be inserted into this context. Since Full Interpretation requires all symbols in the PF-representation to have a phonological interpretation (i.e., instantiated by lexical insertion), the derivation crashes.

Movement (i.e., pied-piping) of the entire DP (*how big a car*) to [Spec, CP] avoids a violation at PF. When the entire DP is pied-piped along with DegP, the [+wh]-feature on D (as well as DegP) is checked off in [Spec, CP] by a [+wh] C-head. Since the +wh-feature is no longer present on D, the indefinite article *a* can be lexically inserted in D.

4 Subextraction from the *wat voor N*-construction

4.1 Introductory remarks on the wat voor N-*construction*

As was noted in section 1, there are languages that do not permit (left-branch) subextraction from the nominal (or adjectival) domain, except for some special constructions. Dutch is such a language. Subextraction of specifying elements from within the nominal domain is ruled out in general. There is a nominal construction, however, which permits removal of a left-branch specifying element, namely, the so-called *wat voor N* ('what kind of N') noun phrase. This nominal construction

asks for the nature, quality, or sort of person or object. As shown in (47b), subextraction of the *wh*-element *wat* from within the noun phrase is permitted.[13] Sentence (47a) shows that the containing noun phrase can be pied-piped.[14]

(47) a. [Wat voor (een) boek]$_i$ heb je t_i gelezen?
b. Wat$_i$ heb je [t_i voor (een) boek] gelezen?

This same extraction pattern is found in many other Germanic languages:[15]

(48) a. *Was* hast du [– für ein Buch] gelesen? German
what have you – for a book read
'What kind of book did you read?'
b. *Hva* leser du [– for ei bok]? Norwegian
what read you – for a book
'What kind of book do you read?'
c. *Vad* läser du [– för en bok]? Swedish
what read you – for a book
'What kind of book do you read?'

Subextraction of *wat* obviously poses a problem for Ross's Left Branch Condition (or any of its reformulations; cf. sections 2 and 3.1). The *wh*-element is the leftmost constituent within the noun phrase and should therefore not be accessible to movement operations according to the LBC. Under Bresnan's Relativized A-over-A condition (section 3.2.1), the possibility of extracting the nominal element *wat* out of the containing noun phrase (*wat voor een boek*) is not expected either: it is the containing NP which is the maximal target predicate for question formation. As regards the Subjacency condition (section 3.2.2), the question obviously arises why movement of an element from within the noun phrase to the left periphery of the clause does not yield a violation of this locality constraint; this under the assumption that NP and S are the bounding nodes for Dutch.[16] And if one adopts an approach towards subextraction possibilities in terms of proper government (i.e., ECP), the question should be raised why the trace left behind in (47) is accessible to proper goverment, whereas a trace of some other *wh*-determiner (e.g., *welke* 'which') is not; see (49):

(49) **Welk* heb je [– boek] gelezen? Dutch
which have you – book read
'Which book have you read?'

All in all, the question that arises is the following: what property does the *wat voor N*-construction have that other nominal constructions also featuring a *wh*-determiner (e.g., *welke auto* 'which car') lack? In what follows, a number of analyses of the discontinuous *wat voor N*-construction will be presented. At the outset it should be pointed out that one logically possible analysis should be rejected immediately, namely, an analysis according to which (47b) does not

feature subextraction of *wat* but, rather, involves fronting of the entire noun phrase and subsequent extraposition of the sequence *voor (een) boek*. Such an analysis is excluded for the simple reason that the sequence *voor N* does not occupy an 'extraposed' position. In (50a), for example, the sequence *voor boek* precedes the verb and hence occupies a clause-internal (i.e., non-extraposed) position. If extaposition were involved, we would have the structure in (50b).[17] Notice also that the string *voor N* can be followed by an obligatory constituent selected by the verb; cf. (51).

(50) a. *Wat* heb je [– voor boek] gekocht? Dutch
what have you – for book bought
'What kind of book did you buy?'
b. #*Wat* heb je gekocht *voor boek?*
what have you bought for book
'What kind of book did you buy?'

(51) *Wat* heeft Jan [– voor boeken] op tafel gelegd?
what has Jan – for books on table put
'What kind of books did Jan put on the table?'

4.2 *Approaches to the split* wat voor N-*construction*

4.2.1 *Categorial change: the* wat voor N-*phrase as a [–V]-category*

Den Besten (1985) argues that the proper treatment of the split *wat voor*-construction involves subextraction of the question word *wat*. He assumes that extraction of *wat* from within the NP changes the categorial status of the containing noun phrase. After subextraction, the [t_i *voor N*]-phrase changes from [+N, –V]^3 into [–V]^3.

(52) [$_{-V3}$ wat [$_{-V2}$ [$_{-V1}$ [$_{-V}$ voor] [$_{NP}$ een auto]]]]

According to Den Besten, this categorial change is due to the presence of the preposition *voor*, which becomes the head of the [–V]^3-category after subextraction of *wat*. The [–V]^3-internal trace gets properly governed by the verb via the preposition which is the head of the [–V]^3-phrase. It is further argued that the switch from [+N, –V]^3 to [–V]^3 accounts for the absence of subjacency effects in the split wat voor-construction.[18] Under the assumption that [–V]^3 is not a bounding node, no subjacency violation is triggered if *wat* is moved to Comp, because S is the only bounding node separating the moved *wh*-element and its trace.

(53) Ik vraag me af [$_{S'}$ wat [$_{S}$ Jan [$_{VP}$ [$_{-V3}$ – voor een auto] koopt]]]. Dutch
I wonder Refl Prt what John – for a car buys
'I wonder what kind of car John will buy.'

Notice that this account holds only if the Subjacency condition is considered a condition on representations and not a condition on rule application. That is, the condition must apply to the output of the movement rule.

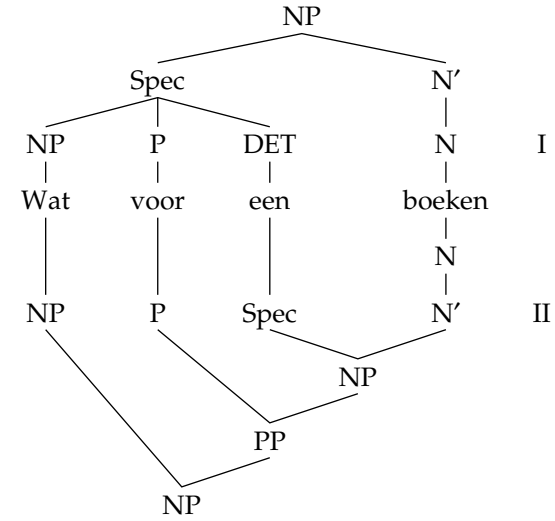
Den Besten further argues that the Left Branch Condition effect, which is said to be reducible to the ECP, is suspended because the trace of *wat* is licensed by the preposition *voor*. He claims that *voor* will not suffice as a proper governor itself since it is a weak governor. It is assumed that the lexical category V properly governs the trace of *wat* through the head of the new category $[-V]^3$, i.e., through the preposition *voor*. The property of proper government trickles down to the head [–V] (cf. section 3.3 for discussion of proper government of V into the noun phrase). So the *wh*-trace in $[-V]^3$ will be licensed (= properly governed) by a chain of governors.

In short, it is the categorial change of the containing noun phrase from [+N, –V] into [–V] that is of importance in this analysis: the [–V]-projection is not a bounding node for Subjacency; furthermore, this projection is accessible to government from outside. A noun phrase like *welke auto* ('which car'), which lacks a prepositional element like *voor*, does not permit such a categorial change. Subextraction of *welke* will be from within the maximal projection of [+N, –V] (i.e., NP) and consequently yield a Subjacency-violation and an ECP-violation (under the assumption that [Spec, NP] is not accessible to external governors; see section 3.3).

4.2.2 *The* wat voor N-*construction as a reanalyzed structure*

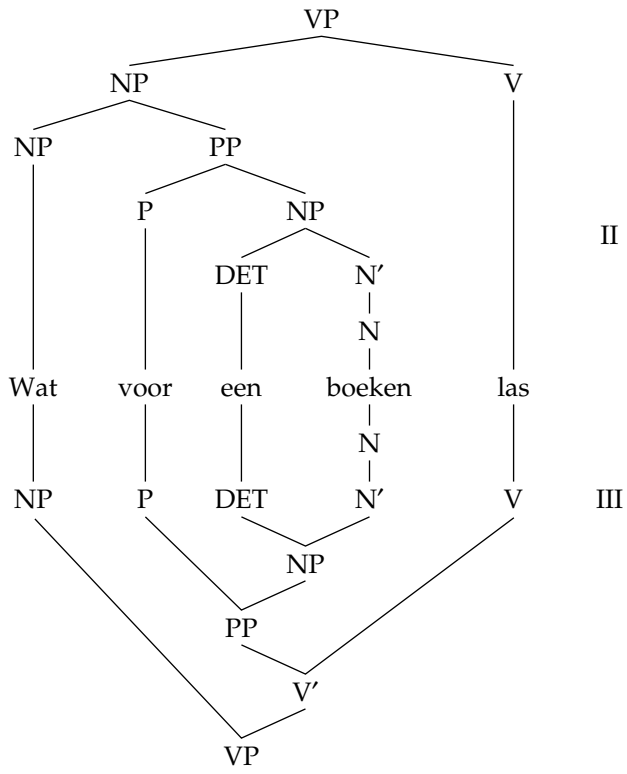
Bennis (1983) proposes that the string *wat voor N* is best viewed as a co-analyzed or reanalyzed structure. Co-analysis refers to a situation in which a string is assigned more than one structural analysis because of the ambiguous behavior of some linguistic element. The co-analyzed structure can be represented by a 'double tree representation', i.e., a tree with two dimensions. Under this reanalysis approach, the string *wat voor N* is assigned two structural representations: one in which *wat voor* forms a unit separate from N (dimension I in (54)) another in which *voor N* forms a unit that combines with *wat* (dimension II in (54)). The tree is displayed as two coexisting dimensions, each of which is a tree with its own properties.

(54)



Bennis notes that movement rules can apply to both levels of representation. He further argues that the reanalyzed structure in (54) as such cannot account for the split pattern. Removal of the question phrase *wat* would still be from within NP and consequently violate such principles as the LBC, the Subjacency Condition, and the ECP. It is therefore suggested that a second reanalysis operation applies to the output of the first reanalysis operation (i.e., the lower dimension in (54)). This yields a triple tree structure. For the sake of clarity, (55) only gives the two reanalyzed dimensions.

(55)



Dimension III permits extraction of the question word *wat*, which is no longer within the noun phrase after the second reanalysis operation has applied. The LBC is not violated in this dimension since the question word is not a left-branch specifier of the noun phrase in this third dimension. The Subjacency Condition is not violated either in dimension III because movement of *wat* crosses only the bounding node S. ECP is also satisfied, since the verb properly governs the trace of the moved question word.

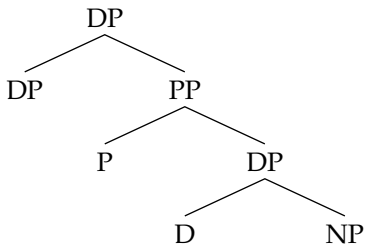
What distinguishes the *wat voor N*-construction from nominal constructions that do not permit left-branch subextraction is the property of reanalysis. The noun phrase *wat voor N* can be restructured in such a way that the *wh*-element *wat* is no longer part of the noun phrase. The underlying assumption is that

similar restructurings are not possible with such noun phrases as *welke auto* ('which car'), that do not allow subextraction of the *wh*-element.

4.2.3 The wat voor N*-construction as an adjunction configuration*

In Corver (1990; 1991b) it is argued that the proper analysis of a *wat voor N*-phrase like *wat voor een auto* is the one given in (56).

(56)



The interrogative element is the head of this phrase; the string *voor* (*een*) *N* forms a PP which is base-adjoined to DP. The optional article *een* occupies the lower D-position and takes an NP-complement. It is assumed that the DP *wat* is not an argument of some predicate; e.g., it is not assigned a theta role by the verb.[19] It is the entire *wat voor*-phrase which is the argument of the verb. It is further proposed that the PP headed by *voor* behaves as predicative phrase with regard to *wat*. Support for the predicative status of the PP headed by *voor* is given by the following examples, where *voor* also shows up in predicative contexts.

(57) a. Ik schold hem uit [voor (een) bedrieger].
I called him Prt for (an) impostor
'I called him an impostor.'
b. Ik hield het [voor waar].
I held it for true
'I took it to be true.'

Adopting a Barriers-type framework, Corver accounts for the possibility of subextracting *wat* in the following way. In (58) *wat* has been reordered out of a direct object noun phrase. Neither the Subjacency Condition nor the ECP is violated since the fronted *wat* can reach [Spec, CP] without crossing any barrier (i.e., a maximal projection that is not L-marked). The direct object-DP itself is L-marked (i.e., assigned a theta role by a lexical category) and therefore does not constitute a barrier for extraction. The potential barrierhood of VP can be voided via adjunction to it, and IP is not a barrier by stipulation. Schematically (note that the finite verb has been moved to C):

(58) $[_{CP}$ wat$_i$ $[_{C'}$ heb $[_{IP}$ je $[_{VP}$ t$_i'$ $[_{VP}$ $[_{DP}$ t$_i$ voor boek] gekocht]]]]]

(e.g., *welke auto*, 'which car') that do not feature subextraction. The former involves an adjunction configuration: a predicative PP is base-adjoined to the DP *wat*. In a nominal construction like *welke auto*, the *wh*-determiner *welke* heads the DP-projection and takes the NP *auto* as its complement: [$_{DP}$ [$_{D'}$ *welke* [$_{NP}$ *auto*]]]. The D-head cannot be extracted from within the containing DP; see Corver's analysis of the left-branch effect in section 3.3.[20]

4.2.4 *The* wat voor N-*construction as a predicate displacement construction*

The analyses presented thus far assume that the *wh*-element *wat* is base-generated as a left peripheral element within the containing noun phrase. Contrary to those analyses, Bennis et al. (1998) claim that the *wh*-element *wat* is in a derived position. They assume that *wat* originates as a DP-internal nominal predicate which is moved to the left periphery of the extended nominal projection (i.e., [Spec, DP]).[21] Obviously, this *wh*-movement process is similar to *wh*-movement within the clausal domain. According to this analysis, a noun phrase like *wat voor boeken* 'what for books' has the underlying structure in (59a). In this structure, the noun phrase contains a Small Clause structure (XP), which configurationally defines the predication relationship between *boeken* and *wat*. After predicate displacement has applied to the *wh*-word, *wat* ends up in [Spec, DP], which is the leftmost position within the nominal domain. This derived structure is given in (59b).[22]

(59) a. [$_{DP}$ [$_{D'}$ voor$_{[+wh]}$ [$_{XP}$ boeken [$_{X'}$ X wat]]]]
b. [$_{DP}$ wat$_i$ [$_{D'}$ voor$_{[+wh]}$ [$_{XP}$ boeken [$_{X'}$ X t$_i$]]]]

As depicted in (59), *voor* is taken to be a [+WH] operator head, i.e., a prepositional head with interrogative force. Evidence for this analysis comes from the fact that many southern varieties of Dutch and substandard Dutch in fact use *voor* as the infinitival complementizer in constructions that feature operator (OP) movement to [Spec, CP].

(60) een boek [OP$_i$ *voor* [$_{IP}$ t$_i$ in te kijken]] Dutch
a book OP for – into to look
'a book to look into'

(61) Dit is een man [OP$_i$ *voor* [$_{IP}$ PRO t$_i$ in het oog te houden]].
this is a man OP for PRO – in the eye to keep
'That is a man to keep an eye on.'

The subextraction phenomenon is not dicussed by Bennis et al., though it is quite clear that the subextraction possibility should be related to the fact that the fronted *wat* occupies the highest A'-position within the extended nominal projection. Analogous to subextraction from the clausal domain via [Spec, CP], elements leave the noun phrase via [Spec, DP]. On the assumption that the

specifier position of functional projections (like IP, CP, and DP) is accessible to an external proper governor, say, V, (cf. section 3.3) the extractability of *wat* is compatible with the ECP-constraint. Notice also that subextraction is compatible with Kennedy and Merchant's theory on subextraction (cf. section 3.4). They argued that subextraction from within a noun phrase (i.e., DP) is blocked if after subextraction has applied a nominal configuration is created with a feature specification on D for which no lexical item with a matching feature constellation can be found in the lexicon. Since the prepositional determiner *voor* carries the [+wh]-feature, subextraction of the *wh*-element *wat* from within DP does not yield an uninterpretable phonological representation.

4.3 A subject–object asymmetry

As first observed in Den Besten (1981), the *wat voor*-noun phrase can be split (by subextraction of *wat*) if it occupies the direct object position, but not when it is in the subject position of the clause, i.e., [Spec, IP] (see also Hoekstra 1984b; Koster 1987). Sentence (62) exemplifies subextraction of *wat* from a direct object noun phrase. The examples in (63) show that subextraction is not permitted when the *wat voor*-phrase is in [Spec, IP].

(62) a. *Wat* heb je [– voor boeken] gelezen? Dutch
what have you – for books read
'What kind of books have you read?'
b. *Wat* denk je dat Jan [– voor boeken] heeft gekocht?
what think you that John – for books has bought
'What kind of books do you think John bought?'

(63) a. **Wat* hebben [– voor mensen] gisteren hun huis verkocht?
what have – for people yesterday their house sold
'What kind of people sold their house yesterday?'
b. **Wat* denk je dat [– voor mensen] hun huis hebben verkocht?
what think you that – for people their house have sold
'What kind of people do you think have sold their house?'

Den Besten explains this subject–object asymmetry in terms of the Empty Category Principle (ECP). In (62), the trace left behind after subextraction of *wat* is properly governed by the verb which takes the noun phrase as its complement. The verb is able to govern the specifier position of the direct object noun phrase. For subjects, however, there is no proper governor, which explains the ungrammaticality of the examples in (63). Interestingly, a similar contrast can be observed in examples like (64) and (65).

(64) a. *Wat* werd hem gisteren [– voor iets] aangeboden?
what was him yesterday – for something offered
'What kind of thing was offered to him yesterday?'

b. *Wat* zijn hem toen [– voor rampen] overkomen?
what are him then – for disasters happened-to
'What kind of disasters happened to him?'

(65) a. **Wat* werd [– voor iets] hem gisteren aangeboden?
what was – for something him yesterday offered
'What kind of thing was offered to him yesterday?'
b. **Wat* zijn [– voor rampen] hem toen overkomen?
what are – for disasters him then happened-to
'What kind of disasters happened to him?'

If the contrast between (64) and (65) is to be explained in terms of ECP, it should be concluded that the grammatical subject *wat voor iets/wat voor rampen* (i.e., the noun phrase that agrees with the finite verb) occupies the (VP-internal) direct object position. Only in this position is the (specifier position of the) noun phrase properly governed by the verb. In (64a) it is a passive verb which acts as a proper governor; in (64b) an ergative verb properly governs the trace. In the ill-formed examples in (65) the grammatical subject is in the structural subject position, i.e., [Spec, IP], hence, no longer within the proper government domain of the verb. Consequently, subextraction is not permitted.

5 Subextraction in Slavic languages

As Ross (1986: 145ff.) himself already observed, left-branch-specifying or modifying elements can be removed from the nominal domain in a language like Russian:[23]

(66) a. *Č'ju knigu* čitaješ –? Russian
whose book you-are reading-
'Whose book are you reading?'
b. *Č'ju čitaješ* [– knigu]?
whose you-are-reading – book
'Whose book are you reading?'

Given the well-formedness of the subextraction in (66), Ross concludes that the LBC is not operative in Russian. The question, of course, arises whether this difference in subextraction behavior can be reduced to some grammatical property on which languages can vary. As was already hinted at by Ross, languages violating the LBC are characterized by a rich morphology. One might therefore want to propose that discontinuous patterns are possible as long as the dependency between the extracted specifier (e.g., in (66)) and the remote head (*knigu*) is morphologically recoverable. This is the approach taken by Horn (1974, 1978, 1983). He proposes a condition called the Noun Phrase Constraint (NPC), which excludes removal of any element from within the noun phrase. So this

locality constraint rules out left- and right-branch extractions out of the English noun phrase:

(67) a. **Which* did you destroy [– book]?
b. **About whom* did you destroy [a book –]?

Horn points out that in a language like Polish, subextraction of an agreeing element – which typically occurs on a left-branch – is permitted, while extraction of a non-agreeing constituent (e.g., a PP) is not:

(68) a. *Jakie* pożyczyłeś [$_{NP}$ – książki] z biblioteki? Polish
which-Acc you-borrow – books-Acc from library
'Which books did you borrow from the library?'
b. **O kim* on zniszczył [$_{NP}$ książkę –]?
about whom he destroyed book-Acc
'He destroyed a book about whom?'

Adjectival forms like *jaki* are marked morphologically to agree with the head noun that they are related to in gender, number, and case. In contrast, PPs are not marked according to whether they occur in an NP. On the basis of the asymmetry in (68), Horn concludes that "the NPC is valid in Polish, but can be overridden just in case there are morphological markers present in the surface structure that can function to associate a constituent in Comp with an empty node elsewhere in the structure" (Horn 1983: 188).

In Corver (1990, 1992), a different approach is taken to the asymmetry between left-branch subextraction languages and non-subextraction languages. He relates the contrast to the configurational structure of the noun phrase, more specifically, the presence of the DP-layer within the extended nominal projection. That is, languages whose nominals project to DP do not permit subextraction of specifying or modifying elements. Languages whose nominal projections lack the DP-level (i.e., 'bare' NPs) permit subextraction from the nominal domain.[24] The impossibility of subextraction from DP in a language like English has been discussed in section 3.3. As regards the transparancy of bare NPs, consider the following structural environment, where α is the left-branch element targeted for movement:

(69) [$_{CP}$ . . . [$_{VP}$ V [$_{NP}$ α [$_{N'}$ N]]]]

In a Barriers framework, the extractability of left-branch specifiers (and modifiers) follows directly. The NP is L-marked by the verb and therefore does not constitute a barrier. Via intermediate adjunction to VP, the left-branch element can reach [Spec, CP] without violating Subjacency or the ECP. Schematically, (68a) has the following derived structure:

(70) [$_{CP}$ *Jakie*$_i$ [$_{C'}$ [$_{IP}$ . . . [$_{VP}$ t$_i$'[$_{VP}$ [$_{NP}$ – [$_{N'}$ książkę]]]]]]]

As pointed out by Corver (1990: 332), potential support for the claim that languages like Russian, Czech, and Polish lack a DP is the fact that they do not have articles corresponding to *the* or *a* in English (cf. also Zlatić (1997)). Clearly, articles are the canonical realizations of D.[25]

(71) Ptak patrzy na kota. Polish
bird looks at cat
'The/a bird is looking at the/a cat.'

Corver further argues that potential candidates for the category D, like demonstratives, possessive pronouns, etc., should be analyzed as adjectives (see also Horn 1978, 1983). Being adjectives, they are part of the NP-projection. Evidence for their adjectival status comes from the fact that demonstratives and possessive pronouns have (declension) endings similar to normal adjectives.

As pointed out in Rappaport (2000), a bare NP-analysis for those languages that permit left-branch subextraction raises the question why subextraction of right-branch elements (e.g., PPs) is not permitted either (see also Horn 1974, 1978, 1983). If V takes a bare NP-complement containing a PP, this PP should be able to leave the NP, since the latter is L-marked by the verb and, therefore, not a barrier for extraction. As shown by the following examples, however, PPs cannot be removed from within the noun phrase (see also Horn); examples taken from Rappaport (2000):

(72) a. **Z czym* postrzelili przed domem [chłopca –]? Polish
with what he-shot in-front-of house boy
'With what did they shoot [a boy –] in front of the house?'
A: Ze skakanką
with jump.rope
A: with a jump rope
b. **Od kogo* zniszczyłeś [list –]?
From whom you-destroyed letter –
'From whom did you destroy [a letter –]?'

In English, right-branch adjunct-PPs cannot be removed either from within the noun phrase:

(73) a. Peter kissed [a girl with red hair].
b. *With what did Peter kiss [a girl –]?

As Culicover and Rochemont (1992) noted, the ill-formedness of (73b) can be explained straightforwardly if one adopts the DP-hypothesis. The category NP, by which the adjunct-PP is dominated, forms a barrier for extraction. Rappaport argues that if right-branch PP-extractions are blocked in English by the presence of a DP, the Polish facts in (72) suggest that NPs are associated with a DP in this

language as well. In other words, the 'right-branch effect' provides support for the presence of a DP-layer.[26]

If languages permitting left-branch subextraction and those blocking it share the same nominal phrase structure (i.e., DP), the question arises how to account for the left-branch subextraction asymmetry. Following ideas proposed by Giorgi and Longobardi (1991) in their account of possessor-extraction phenomena, Rappaport argues that extraction of some element Y from within the nominal domain is possible if (i) [Spec, DP] is available as an intermediate landing site for Y, and (ii) the trace in [Spec, DP] can be lexically governed from outside (e.g., by V) (cf. section 3.3). As regards the first condition, it is stated that only those elements can move through [Spec, DP] that enter into a Spec–Head agreement relationship with D (this is under the assumption that D is the locus of phi-features and case). This implies that agreeing elements like attributive APs, possessive pronouns, and agreeing *wh*-elements can move through [Spec, DP] whereas non-agreeing modfiers like PPs cannot. The second condition states that the element in [Spec, DP] can leave this position only if the trace left behind can be lexically governed from outside, e.g., by V. In languages like Polish and Russian, V is able to govern into DP: [Spec, DP], that is, is accessible to government from outside. In a language like English (and other languages blocking left-branch subextraction), V is not able to govern the specifier of a DP-complement. Thus, on this analysis, the parametric distinction between Polish and Russian, on the one hand, and, say, English, lies in whether or not V has the ability to govern inside its DP-complement.[27]

6 Conclusion

Displacement is a core property of natural language: satellite constituents of the verbal predicate can be reordered within the clausal domain, for example to [Spec, CP]. It was shown that it is sometimes not the entire satellite of the verbal predicate (say a direct object noun phrase) that moves to [Spec, CP], but a subpart of it (e.g., a left-branch *wh*-determiner). In those cases, subextraction applies to the satellite-XP: a left-branch element is moved out of the larger phrase that functions as an argument or a predicate within the clause. In certain languages, left-branch subextraction is blocked in general and is only found in certain construction types (e.g., subextraction of *wat* from within the *wat voor N*-construction). In other languages (e.g., Russian, Polish) subextraction of left-branch elements applies much more freely. The central questions that were addressed in this study were: (a) what grammatical property accounts for the inaccessibility of left-branch elements in those languages that generally block left-branch subextraction? (b) why are certain left-branch elements (e.g., *wat* in the *wat voor N*-construction) available for subextraction in those languages that generally do not allow subextraction? (c) what grammatical property explains the rather free accessibility of left-branch elements in such languages as Polish and Russian?

NOTES

1 Left-branch subextraction is permitted from the prepositional domain (cf. Emonds 1985; Corver 1990):

(i) a. *How far* did he go [– into the woods]?
b. *How many meters* did he raise his head [– above the water]?

2 Right-branch modifiers typically cannot be removed either from within the nominal domain (cf. Bach and Horn 1976):

(i) a. **With how many wheels* did John see [a car –]?
b. **From which shelf* did Susan read [a book –]?

This chapter focusses on left-branch subextractions; see section 5 for a brief discussion on right branch subextractions.

3 The impossibility of removing an NP from a larger, containing, NP is also captured by Chomsky's (1964a) A-over-A principle. This condition asserts that if a phrase X of category A (say, NP) is embedded within a larger phrase ZXW which is also of category A (say, NP), then no rule applying to category A applies to X (but only to ZXW); see also section 3.2.1.

4 Ross (1986: 127 ff.) does not discuss instances of determiner extractions, e.g., *Which did he buy [– car]?* Obviously, these cases of subextraction fall under the LBC, assuming that determiners are nominal (i.e., NPs).

5 Ross claims that the grammar of each language is provided with what he calls a *conditions box*, in which all language-particular constraints (e.g., the LBC) are stated once for the whole language. By a universal convention of interpretation, all conditions in the conditions box will be understood to be conditions on the operation of every rule in the grammar (topicalization, relative clause formation, question formation, etc.).

6 The idea that the periphery of a phrase is accessible to movement operations is also proposed in Chomsky (2000, 2001b). He formulates his Phase Impenetrability Condition (PIC), which states that the domain of a head H is not accessible to operations outside HP, but only H and its edge. The edge is defined as the residue outside of H-bar, i.e., SPECs or elements adjoined to HP. Direct extraction of an element from the complement position of H to a position external to HP is not allowed. Extraction from HP must always proceed via the edge of HP.

7 Van Riemsdijk notes that the Head Constraint can be interpreted in terms of the c-command relation: an element cannot be extracted out of a maximal projection if it is within the c-command domain of the head of that maximal projection.

8 Pied-piping of the entire PP is also possible; e.g., *Daarop heeft Jan gerekend* and *Waarop heeft Jan gerekend?*

9 Another locality constraint that captures the Left Branch effect is Horn's (1974, 1978, 1983) Noun Phrase Constraint (see also Bach and Horn 1976). According to this condition, no element can be removed from within NP. See also section 5.

10 Chomsky's (1973) n. 10 suggests that he does not assume that the Left Branch effect reduces to a locality constraint like Subjacency (see section 3.1. for discussion).

11 As Giorgi and Longobardi point out, their Uniqueness Constraint on Government can be subsumed under the Minimality condition (Chomsky 1986a).

12 The question arises why English allows such strings as *how big a car*. If these are derived by movement of the AP to [Spec, DP], one would expect an ECP-violation. Corver (1990: 320) tentatively proposes that such strings as *how big a car* are not derived by syntactic movement of *how big* to [Spec, DP] but rather by a PF-process that lowers the 'indefinite article' to a position in between the attributive AP (which is NP-internal) and the noun. See Kennedy and Merchant (2000), though, for an analysis in which the DegP moves to [Spec, DP] in syntax.

13 Certain exclamative constructions in Dutch also display a split noun phrase. As shown in (ia), the entire exclamative noun phrase can be fronted. (ib) exemplifies the split pattern, which arguably involves subextraction of the *wh*-element *wat*.

(i) a. *Wat een boeken* heeft Jan – gekocht!
what a books has John – bought
'The books John bought!'
b. *Wat* heeft Jan *een boeken* gekocht!

In Corver (1990) it is argued, though, that the split construction in (ib) does not involve subextraction from within the noun phrase; he points out that the element *wat* can be 'removed' from a noun phrase that is contained within an island (e.g., a PP-island; cf. (ii)).

(ii) a. *Wat* is Jan [$_{PP}$ met [*een leuke vrouw*] getrouwd!
what is John with a nice woman married
'John is married to such a nice woman!'
b. [$_{PP}$ Met [*wat een leuke vrouw*]] is Jan getrouwd!

Note that a *wat voor N*-noun phrase does not permit subextraction from such an island context (cf. (iiia)); pied-piping of the PP is required, as in (iiib).

(iii) a. *Wat is Jan [$_{PP}$ met [– voor een vrouw]] getrouwd?
what is John with – for a woman married
'What kind of woman is John married to?'
b. Met wat voor een vrouw is Jan getrouwd?

The phenomenon of subextraction from exclamative noun phrases has also been studied for Romance languages. See, for example, Gérard (1980), Milner (1978b), Obenauer (1976), and Radford (1982).

14 The indefinite article *een* is optional in the Dutch *wat voor N*-construction. A remarkable property of this indefinite article in Dutch is its cooccurrence with a plural N: *wat voor een boeken* ('what kind of books'). In Bennis et al. (1998), it is claimed that this (spurious) indefinite article does not belong to the following noun (and nor to the preceding *wh*-element). They argue that *een* is the head of a DP-internal Small Clause, i.e., X, in (59).

15 The *wat voor N*-construction has also been examined for other Germanic languages. See, e.g., Lie (1982) for Norwegian, Borjärs (1992) for Swedish, Den Besten (1981), and Beermann (1997) for German.

16 On the basis of the Swedish *hva for N*-construction, Lie (1982) proposes that S' rather than S is the bounding node for Subjacency in Swedish.

17 The observation that the string *voor N* may undergo PP Extraposition was made in Bennis (1983). There is vacillation about the well-formedness of such split patterns involving PP-extraposition (see Den Besten 1985).

18 Den Besten takes NP and S as bounding nodes for Dutch.

19 Evidence for the nonargument-status of *wat* comes from a number of phenomena: (a) movement of *wat* across a *wh*-island yields a strong (i.e., ECP) violation (cf. (i)); (b) *wat* cannot be moved across negation (i.e., sensitivity to the negative island effect; cf. (ii)); (c) the trace of *wat* cannot license a parasitic gap (*pg*) (cf. (iii)). See Corver (1990, 1991b), Honcoop (1998) for discussion.

(i) **Wat* vraag jij je af [wanneer Jan [– voor boeken] gekocht heeft]?
what wonder you Refl Prt when John – for books bought has

(ii) **Wat* heeft Jan niet [– voor boeken] gelezen?
what has John not – for books read
'What kind of books didn't John read?'

(iii) Wat heeft Jan [zonder PRO [*pg* voor tijdschriften] te lezen [– voor boeken] weggegooid?
what has John without PRO pg for magazines to read – for books thrown away

Extraction of argumental *wat* does not display the above-mentioned effects.

(iv) ??*Wat* vraag jij je af [wanneer Jan – gekocht heeft]?

(v) *Wat* heeft Jan niet — gelezen?

(vi) *Wat* heeft Jan [zonder PRO *pg* te lezen] – weggegooid?

20 Borjärs develops an analysis of the Swedish *vad for N*-construction in which *vad* is analyzed as the D-head and *for N* as the PP-complement of the *wh*-element. She points out that such an analysis leaves unaccounted for the subextraction contrast between a *vad for N*-construction and a nominal construction like *vilken N* (which N). She explores the possibility that *vad* is base-generated in [Spec, DP], a position which is accessible to movement.

21 See Postma (1994, 1995) and Bennis (1995) for a discussion of the meaning of *wat*. They both come to the conclusion that the meaning of *wat* is determined by the structural configuration in which it occurs. That is, if *wat* remains in its base position (e.g., complement to V), it gets an indefinite reading (cf. (i)), and if it occurs in the specifier position of an interrogative C, it gets an interrogative interpretation under Spec–Head agreement (cf. (ii)).

(i) Jan heeft wat gegeten.
John has what eaten
'John has eaten something.'

(ii) *Wat* heeft Jan – gegeten?
what has John eaten
'What did John eat?'

Bennis et al. (1998) assume that the element *wat* in the *wat voor N*-construction gets its interrogative force by occupying the Spec position of an interrogative (prepositional) determiner, namely, *voor*.

22 Bennis et al. (1998) argue that in *wat voor N*-constructions featuring the (spurious) indefinite article *een*, two types of predicate-movements take place. First, the nominal predicate *wat* undergoes Predicate Inversion (i.e., A-movement) to the Spec-position of some higher functional head F. This movement of the nominal predicate across the subject of the DP-internal Small Clause (*boeken* in (i)) can apply only if the indefinite article heading the SC has raised to the higher functional head F; this is so for reasons of locality (i.e., Equidistance, cf. Chomsky 1995c). The second step involves movement of *wat* from [Spec, FP] to the operator-position [Spec, DP]. Schematically:

(i) $[_{DP}\ wat_i\ [_{D'}\ voor\ [_{FP}\ t'_i\ [_{F'}\ X_j\ (= een) + F\ [_{XP}\ boeken\ [_{X'}\ t_j\ t_i]]]]]]$

23 In Rappaport (2000) it is claimed that the Left Branch Condition is observed in Polish for extraction from Adjective (and Adverb) Phrases. He gives the following examples:

(i) a. *Jak Piotr jest [– mądry]?
how Peter is – smart
'How smart is Peter?'
b. Jak mądry jest Piotr?

(ii) a. Jak on [– ładnie] recytuje wiersze?
how he well recites poetry
'How well does he recite poetry?'
b. Jak ładnie on – recytuje wiersze?
How well he – recites poetry

In Horn (1983), it is argued that sometimes left-branch subextraction from AP is possible. He gives the following examples from Polish:

(iii) *Bardzo* czuł się [– niepewnie].
very he-felt Refl – uncertainly
'He felt very uncertain.'

(iv) ?*Bardzo* studenci w mojej grupie są [– wysocy].
very students in my group are – tall
'The students in my group are very tall.'

In Borsley (1981), finally, it is observed that the uninflected *wh*-degree word *jak* ('how') cannot be removed from within the adjectival phrase in Polish (see also Rappaport 2000). He argues that subextraction is possible, however, when *jak* is inflected (cf. (vi)). As shown by the b-examples, pied-piping of the entire AP always yields a well-formed sentence:

(v) a. *Jak Jan jest przystojny?
how John is handsome
'How handsome is John?'
b. Jak przystojny jest Jan?

(vi) a. Jaki Jan jest przystojny?
b. Jaki przystojny jest Jan?

24 For other studies in which a bare-NP analysis is defended, see, among others, Rozwadowska (1995a), Willim (1997, 2000), Zlátić (1997), Stjepanović (2000).
25 See also Uriagereka (1988) for the observation that left-branch extraction correlates with the 'richness' of D. The Left Branch Condition, he argues, holds for languages with D rich.
26 For further studies on the Slavic noun phrase, in which a DP-structure is adopted, see, e.g., Fowler and Franks (1994), Babyonyshev (1998), Engelhardt and Trugman (1998, 2000), Progovac (1998).
27 In the final part of his paper, Rappaport (2001) presents a minimalist account of the left-branch effects, making use of Chomsky's Phase Impenetrability Condition (Chomsky 1998, 1999). See note 6.

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67 Subject Clitics and Complex Inversion

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> Jamais des observations isolées, faites suivant les vues particulières de chaque observateur, ne peuvent remplacer un système de recherches, s'étendant sur les différents points du globe où les sciences ont pénétré, embrassant non la durée active de la vie d'un seul homme, mais celle de plusieurs générations.
>
> Condorcet, *Cinquième Mémoire sur l'Instruction Publique*

1 Introduction: on the syntax of questions in French

As has often been noted in the generative literature over the last 30 or so years – see, e.g., Kayne (1972) and (1975) and their references – the syntax of yes/no and *wh*-questions in Modern French is bafflingly rich; whereas 'well-behaved' languages like English treat their subjects, auxiliary verbs, and *wh*-phrases in all question types in a uniform fashion, as (1) shows, French has a much more intricate system, which distinguishes syntactically pronominal subjects and non-pronominal subjects (cf. (2), (4)), *wh*-questions and yes/no questions (cf. (3), (4)), and different types of *wh*-words (cf. (5) and (6)):

(1) a. (When, who) will {Yves, he} phone?
b. I don't know whether/when/who Yves/he will phone.
c. *I don't know whether/when/who will Yves/he phone.

(2) a. (Quand) va-t-il téléphoner?
when will-t he phone
b. *(Quand) va(-t-) {Yves, cet homme} téléphoner?
when will(-t){Yves, this man} phone
c. Quand va téléphoner {Yves, cet homme}?
when will phone {Yves, this man}
d. *Quand va téléphoner il?
when will phone he
e. À qui pense-t-il téléphoner?
to who thinks he (to) phone
f. *À qui pense(-t-) {Yves, cet homme} téléphoner?
to whom thinks {Yves, this man} (to) phone
g. À qui pense téléphoner {Yves, cet homme}?
to whom thinks to phone {Yves, cet homme}
h. *À qui pense téléphoner il?
to whom thinks to phone he
i. Quand téléphonera*(-t-)il?
when will-phone* (-*t*) he
j. Quand téléphonera(*-t-){Yves, cet homme}?
when will-phone(*-*t*){Yves, this man}

(3) a. Va-t-il téléphoner?
will-*t*-he phone
b. *Va téléphoner {Yves, cet homme}?
will phone {Yves, this man}

(4) a. Je ne sais pas {quand, à qui} il va téléphoner.
I don't know {when, to whom} he will phone
b. Je ne sais pas {quand, à qui} Yves va téléphoner.
I don't know {when, to whom} Yves will phone

c. *Je ne sais pas {quand, à qui} va-t-il téléphoner.
I don't know {when, to whom} will he phone
d. Je ne sais pas {quand, à qui} va téléphoner {Yves, cet homme}.
I don't know {when, to whom} will phone {Yves, cet homme}

(5) a. {À qui, quand}, à ton avis, a téléphoné Yves?
{to whom, when}, in your opinion, has phoned Yves
b. {À qui, quand}, à ton avis, a-t-il téléphoné?
{to whom, when}, in your opinion, has-*t* he phoned

(6) a. *Que, à ton avis, lui a téléphoné Yves?
what, in your opinion, to him has phoned Yves
b. *Que, à ton avis, lui a-t-il téléphoné?
what, in your opinion, to-him has-*t* he phoned

Examples (2a, b) and (2e, f) show that an auxiliary verb like *aller* or a main verb like *penser* can 'invert' with pronominal subjects like *je, tu, nous, vous, il(s), elle(s),* which thus come to precede infinitives or participles, although they cannnot 'invert' with non pronominal proper nouns like *Yves*; on the other hand, (2c, d) and (2g, h) show that a proper noun like *Yves* and a full DP like *cet homme*, unlike pronominals like *il*, can occur in post-infinitival or post-participial position.

In sentences with only one finite main verb like (2i, j) the pronominal- vs. non-pronomimal-subject distinction shows up in another guise; third person pronouns *il*(*s*) and *elle*(*s*) require the presence of the so-called 'epenthetic' *-t-* which full NPs like *Yves* ban, even though *il* and *Yves* are minimal pairs phonologically – [il] vs. [iv] – and differ only in their final consonant, which simply could not be responsible for the required presence/absence of *-t-*.

Taking up a time-honored terminonology – the justification of which we come back to presently – let us say that sentences like (2a, e) and (3a) are cases of Subject Clitic Inversion (SCLI) and (2c, g) and (4d) cases of Stylistic Inversion (SI); facts like (1) to (4) show, then, that SCLI is restricted to main (yes/no or *wh-*) questions while SI is restricted to ('local' – see Kayne and Pollock 1978, 2001: section 18) *wh*-contexts and can (optionally) occur in embedded clauses.[1]

In addition to SCLI and (some, see n. 2) SI sentences, French and Valdôtain[2] have a third type of mono-clausal[3] interrogative construction, the so-called complex inversion (CI) (see Kayne 1972, 1983; Rizzi and Roberts 1989a;[4] Roberts 1993a) which neither English nor most of the other Romance languages have; CI is examplified in (7):

(7) a. (Quand) {Yves, cet homme} va-t-il téléphoner?
(when) {Yves, cet home} will-t he phone
b. (À qui) {Yves, cet homme} va-t-il téléphoner?
(to whom) {Yves, cet home} will-t he phone
c. Martin mindze-të de seuppa?
Martin eats he the soup Valdôtain, Aosta

b. Pequè lo mèinô medze-t-i la pomma?
why the child eats-t-he the apple Valdôtain, St Nicholas

As has been repeatedly emphasized in the literature (cf., e.g., Kayne 1972, 1983), CI in French contrasts sharply with clitic left dislocations like (8) not only in terms of the position DPs like *Yves*, *cet homme* etc. stand with respect to the *wh*-phrase but also prosodically, as the obligatory coma intonation of (8) indicates:

(8) a. {Yves, cet homme}, (Quand) va-t-il téléphoner?
b. {Yves, cet homme}, (À qui) va-t-il téléphoner?

Furthermore, quantified DPs like *tout le monde*, *chaque homme* and bare QPs like *tout* or *rien* can occur in the preverbal position in (7) in French, though not in the CLLD position of (8), as (7′) and (8′) show:[5]

(7′) a. Quand rien ne s'est-il passé?
when nothing Neg Refl-is it happened
'When has nothing happened?'
b. Pour qui tout est-il toujours un problème?
for whom all is-it always a problem

(8′) a. *Rien, quand ne s'est-il passé?
nothing when Neg Refl-is it happened
b. *Tout, pour qui est-il toujours une problème?
all for whom is-it always a problem
c. *Tout le monde, pourquoi est-il parti?
everybody why is he gone
d. *Chaque homme, pourquoi n'aime-t-il pas la linguistique?
every man, why Neg-likes-he not linguistics?

It would thus appear that *Yves* and *cet homme* in (7) stand in the same position with respect to the *wh*-phrases as the 'ordinary' subjects of embedded questions like (9):

(9) a. Je ne sais pas quand {Yves, cet homme} va téléphoner.
I do not know when {Yves, this man} will phone
b. J'ignore à qui {Yves, cet homme} va téléphoner.
I don't know to whom {Yves, this man} will phone
c. On voudrait savoir quand rien ne s'est passé.
one would like to know when nothing happened
d. Dis moi pour qui tout est toujours un problème.
tell me for whom everything is always a problem

Put in another way, elementary facts like (7) vs. (8) or (7′) vs. (8′) provide fairly direct evidence that the position in which *Yves*, *cet homme*, *tout*, *rien* are standing

in (7) and (7′) is closer to the ordinary subject position of simple statements like (10a, b, c) than to the CLLD position of (10d, e, f):

(10) a. {Yves, cet homme} va téléphoner.
{Yves, this man} will phone
b. Rien ne s'est passé.
nothing happened
c. Tout est toujours un problème pour Paul.
everything is always a problem for Paul
d. {Yves, cet homme}, il va téléphoner.
{Yves, this man}, he will phone
e. *Rien, il ne s'est passé.
nothing it happened
f. *Tout, il est toujours un problème pour Paul.
everything, it is always a problem for Paul

However, like SCLI but unlike SI and, of course, simple statements like (10a, b, c), CI is restricted to root (interrogative)[6] contexts:

(11) a. *Je ne sais pas quand Yves va-t-il téléphoner.
I don't know when Yves is he going to phone
b. *Dis-moi à qui Yves va-t-il téléphoner.
tell me when Yves is going to phone
c. *L'homme à qui Yves va-t-il téléphoner s'appelle Jean.
the man to whom Yves will he phone is called John
d. *C'est Jean à qui Yves va-t-il téléphoner.
it's Jean to whom Yves will-he phone

The explanatory task of the linguist attempting to shed light on CI is thus by no means trivial: he must both account for the properties shared by CI and SCLI – in particular he must offer an account of the two constructions that explains their common restriction to root (interrogative) contexts, say, why both require what we have dubbed empenthetic *-t-* on the finite verb with postverbal third person pronouns and why the postverbal position of CI and SCLI is restricted to pronominals – and somehow capture the traditional grammarians' intuition that CI is at the same time a 'non-inverted' structure. In addition he should also say in what way and why CI and SCLI differ from SI.

We shall try to answer all these questions in this chapter. The essential element in the analysis to be developed will consist in claiming that the displacements to the left periphery at work in CI and SCLI share one important property with the computations that yield SI configurations on the analysis of Kayne and Pollock (2001): they are yet another instance of Remnant IP movement to the Comp area. Sections 2, 3, and 4 lay the groundwork by providing an analysis of subject clitics and an account of their non occurrence in SI. Sections 5 and 6 will introduce the Remnant Movement analysis of SCLI and CI and show in what way it is superior

to previous head movement analyses, whether taken to involve overt or covert computations to the left periphery; section 7 will develop an account of the morphology–syntax interface in SCLI and CI that will shed light on further properties of these constructions in French and Valdôtain and explain why the two constructions yield the spell-out strings that they do. Section 8 concludes and summarizes the chapter.

2 Subject clitics[7]

In saying that paradigms like (2), repeated here as (12),

(12) a. (Quand) va-t-il téléphoner?
when will-t he phone
b. *(Quand) va(-t-) {Yves, cet homme} téléphoner?
when whill(-t){Yves, this man} phone
c. Quand va téléphoner {Yves, cet homme}?
when will phone {Yves, this man}
d. *Quand va téléphoner il?
when will phone he
e. À qui pense-t-il téléphoner?
to who thinks he (to) phone
f. *À qui pense(-t-) {Yves, cet homme}téléphoner?
to whom thinks {Yves, this man} (to) phone
g. À qui pense téléphoner {Yves, cet homme}?
to whom thinks to phone {Yves, cet homme}
h. *À qui pense téléphoner il?
to whom thinks to phone he
i. Quand téléphonera*(-t-)il?
when will-phone* (-t) he
j. Quand téléphonera(*-t-){Yves, cet homme}?
when will-phone(*-t){Yves, this man}

show that French SCLI and SI treat pronominal and non-pronominal subjects differently, we have been insufficiently precise since this terminology would lead one to expect strong – or 'tonic' – pronouns like *lui* or *toi* to behave like *il* in SCLI constructions, contrary to facts; such strong pronouns behave exactly like proper nouns and full DPs:

(13) a. *Quand va {lui, toi} téléphoner?
when will {him, you} phone
b. *Quand va(-t-) {Yves, cet homme} téléphoner?
when will(-t-) {Yves, this man} phone
c. *À qui pense {lui, toi} téléphoner?
to who thinks {him, you} (to) phone

d. *À qui pense(-t-) {Yves, cet homme} téléphoner?
to whom thinks {Yves, this man} (to) phone

Pairs like (12a–13a) and (12e–13c) should, of course, be tied to other well-known differences between the two classes of pronominal forms: *je*, *tu*, *il*, *elle*, *nous*, *vous*, *ils*, *elles* – also *ce* and *on* –[8] are nominative *weak* or *clitic* pronouns while *moi*, *toi*, *lui*, *eux*, *elles* are strong or tonic pronouns.[9] Independently of their specific role in SCLI or CI, *je*, *tu*, *il*, *elle*, *nous*, *vous*, *ils, elles*, *ce*, and *on* exhibit a number of characteristic properties that distinguish them from strong pronouns (cf. Kayne (1975, section 2.4)):

(i) Unlike strong forms, (nominative) clitics cannot be modified:[10]

(14) a. Partiront-ils *(deux)?
will go they two
b. Partirez vous *(autres).
will go you others
c. Ils *(deux) partiront demain.
they (two) will go tomorrow
d. {Eux, nous} deux partiront demain.
{They, us} two will go tomorrow

(ii) Unlike strong forms and full DP subjects they cannot be conjoined:

(15) a. Partiront-ils *(et elles).
will go they (Masc.) and they (Fem.)
b. Viendrez-vous *(et Jean).
will come-you and John)
c. Ils *(et elles) partiront demain.
they (Masc.) and they (Fem.) will-go tomorrow
d. Eux et elles partiront demain.
they and they will go tomorrow

(iii) Unlike strong forms and full DP subjects they cannot be felicilitous answers to *wh*-questions:

(16) A. Qui viendra?
'Who will come?'
B. a. *il, *tu, *on, (he, you, one)
b. lui, nous, vous, Jean (he, we, you, John)

(iv) Unlike strong pronouns and full DP subjects, they cannot be separated from the finite verb by anything except other clitics (accusative *le*, *la*, *les*, etc.), dative (*lui*, *leur*), subnominal (*en*),[11] or locative (*y*); so, for example, parentheticals cannot occur in between clitics and the finite verb, while they can intervene between strong pronouns, full DPs and the finite verb:

(17) a. *Il, paraît-il, aime la linguistique.
he, it appears likes linguistics
b. *Tu, m'a-t-on dit, partiras bientôt en vacances.
you, I have been told, will soon go on vacation

(18) a. Lui, paraît-il, aime la linguistique.
Him it appears likes linguistics
b. Yves, m'a-t-on dit, partira bientôt en vacances.
Yves, I have been told, will go soon on vacation

(v) Unlike strong pronouns and full DP subjects, (nominative) clitics cannot occur in Clitic left dislocated positions:

(19) a. *Il, il viendra.
he he will-come
b. *Tu, tu te trompes.
you you are mistaken

(20) a. Lui, il viendra.
him, he will-come
b. Toi, tu te trompes.
you, you are mistaken
c. Yves, il est parti en vacances.
Yves, he is (=has) gone on vacation

(vi) Plural nominative clitics trigger obligatory /-z/ liaison with the following finite verb while ordinary singular /z/ 'liaison' is impossible with proper nouns (cf. (21b) and plural liaison is never obligatory (cf. (21c, d)); on (21c, d), see note 27:

(21) a. {Ils, elles, nous, vous} *(-z) {ont, avons, avez} compris.
{they, we, you} *(-z) have understood
b. Yves (*-z) a compris.
Yves (*-z) has understood
c. Mes amis (-z) ont compris.
my friends (-z) have understood
d. Eux (-z) ont compris.
them (-z) have understood

3 Subject clitics, strong pronouns, 'pro', and stylistic inversion[12]

We shall start our analysis of subject clitics with an account of the ungrammaticality of examples like (22),

(22) a. *Quand va téléphoner il?
b. *À qui ont téléphoné ils?
c. *Où ai été je?
d. *À qui as parlé tu?

which show that they cannot occur in SI; as in Kayne and Pollock (2001: section 6), we shall claim that (22) is to be seen in the same light as (19), on the one hand, and gerunds like (23) (= (58) in Kayne and Pollock 2001) on the other:

(23) a. Jean ayant dit la vérité, tout va bien.
John having told the truth, all goes well
b. *{Il, tu, je, nous, vous} ayant dit la vérité, tout va bien. he, you, I, . . .

Our claim is that these facts are tied to the overt case properties of the weak clitic forms *il*(*s*), *elle*(*s*), *je*, *tu*, etc. that distinguish them from morphologically caseless strong pronouns like *lui*, *eux* or full DPs like *cet homme*, *Jean*; we shall suggest further that the case properties of those two different types of pronominal subjects should be tied to the respective syntactic status of the clitic forms and the strong forms: the former are heads while the latter are phrases.[13]

As noted in Kayne and Pollock (2001: section 6) SI is compatible with strong (deictic[14]) third person pronouns:

(24) a. Qu'a mangé LUI?
what-has eaten he/him
'What has HE eaten?'
b. Quand ont téléphoné EUX?
when have telephoned they/them?

LUI and *EUX* can also surface in preverbal position:

(25) a. LUI a téléphoné.
he/him has telephoned
b. EUX ont téléphoné.
they/them have telephoned

First and second person strong pronons are excluded both in postverbal position in SI and in preverbal 'canonical' subject position:

(26) a. *Quand ai téléphoné MOI?
when have telephoned I/me
b. *Qu'as mangé TOI?
what have eaten YOU
c. *Quand avez téléphoné VOUS?
when have telephoned you
d. *Qu'avons mangé NOUS?
what have eaten we/us

(27) a. *MOI ai téléphoné hier.
I/me have telephoned yesterday
b. *TOI as mangé un gâteau.
you have eaten a cake
c. *VOUS avez téléphoné hier.
you have telephoned yesterday
d. *NOUS avons mangé un gâteau.
we/us have eaten a cake[15]

Any analysis of such contrasts should take into account the fact that (27) has an acceptable counterpart with an overt (nominative) subject clitic:

(28) a. Moi, j'ai téléphoné hier.
I/me I have telephoned yesterday
b. Toi, tu as mangé un gâteau.
you you have eaten a cake
c. Vous, vous avez téléphoné hier.
you you have telephoned yesterday
d. Nous, nous avons mangé un gâteau.
we/us we have eaten a cake

The preverbal third person strong pronouns of (25), although they do not need to, can co-occur with a subject clitic:

(29) a. Lui, il a téléphoné.
he/him, he has telephoned
b. Eux, ils ont téléphoné.
they/them, they have telephoned

Example (25) is somewhat 'recherché' whereas (29) is more colloquial. We now claim that (25) contains a covert subject clitic while (28) and (29) contain an overt one. We can now make use of Kayne and Pollock's (2001) principle (45), repeated here as (30),[16]

(30) Silent clitics in French are limited to the third person.

to account for the contrast between (24) and (26), and (25) and (27): these pairs follow if all of them necessarily contain a silent (preverbal) subject clitic; since (24) and (25) have third person subjects, they can without difficulty contain one in [Spec, Infl]. But in (26) and (27) that silent clitic would have to be first or second person, as (28) shows. Therefore (26) and (27) necessarily violate (30). Clearly, our use of (30) to explain pairs like (24) and (26) crucially relies on the idea that SI involves leftward movement of the subject out of IP to the Specifier of a higher functional projecton in the left periphery of the clause. What (30) says is that that movement leaves behind a covert subject clitic (on this and much else see Kayne and Pollock 2001).

Adapting ideas about complex inversion in Kayne (1972)[17] we say with Kayne and Pollock (2001) that the postverbal SI subject starts out as the DP specifier of a silent subject clitic that heads a larger DP, a Clitic Phrase. Once that larger DP reaches [Spec, IP], its DP specifier moves out into the Spec of another higher functional projection FP. In SI constructions, IP itself moves past [Spec, FP] to the Specifier of a still higher functional category GP – see also Rizzi (1997), Pollock et al. (2003) on the 'split' Comp domain thus presupposed. Abstracting away from the *wh*-phrase and representing the covert subject clitic as 'pro', a sentence like (31) would thus have the partial derivation in (32):[18]

(31) Le jour où a téléphoné Jean
the day when has telephoned John

(32) $[_{IP}$ Jean-pro a téléphoné $] \Rightarrow [_{FP}$ Jean$_i$ F^0 $[_{IP}$ t$_i$-pro a téléphoné$]] \Rightarrow$
$[_{GP}$ $[_{IP}$ t$_i$-pro a téléphoné$]_j$ G^0 $[_{FP}$ Jean$_i$ F^0 t$_j$$]]$

Granted this, we now come back to pairs like (33):

(33) a. Le jour où téléphonera Jean.
the day when will-telephone John
b. *Le jour où téléphonera il. . . . he

Sentence (33a) contains a silent clitic in addition to the postverbal lexical subject. As noted above, lexical subject and subject clitics also cooccur in cases like (34):

(34) a. {Jean, lui}, il mangera ce gâteau.
John, HE, he will-eat that cake
b. Il mangera ce gâteau, {Jean, lui}

Replacing the lexical subjects in (34) with a subject clitic leads to sharply ungrammatical sentences:

(35) a. *Il, il mangera ce gâteau.
he, he, he will-eat that cake
b. *Il mangera ce gâteau, il.

As in Kayne and Pollock (2001: section 6), though in a slighly different way, we attribute the unacceptability of (35) and (33b) – which contains two subject clitics, one of which is covert – to a factor also at work in pairs like (23), which we repeat and enrich in (36):

(36) a. Jean ayant dit la vérité, tout va bien.
John having told the truth, all goes well
b. {Eux, lui, elle} ayant passé l'examen, . . .
them, him, her having passed the exam, . . .

c. *{Il, ils, je, tu} ayant dit la vérité, tout va bien
he, they, I, you . . .
d. *{Moi, nous, vous, toi} ayant passé l'examen, . . .
{me, us, you} having passed the exam, . . .

The gerund form of the verb allows lexical subjects, including strong third person pronouns, as in (36b), but no clitic subject or strong first and second person pronoun;[19] It is worth noting that the first and second vs. third person contrast at work in (36) and SI pairs like (24) and (26) does not show up in infinitives like (37):

(37) {Eux, nous, vous, toi, moi} passer l'examen? Jamais!
{them, us, you, me} to take the exam, never

Let us start with the ungrammaticality of (36c). It will follow simply on the assumption that French subject clitics must check a nominative feature in an AgrS projection and that AgrS is missing in gerunds. If so, (36a, b) require that the (non-morphological) Case feature of third person strong pronouns and full DPs be checked some other way; we posit it is because such subjects can be in (a chain with a null pronominal in) [Spec, (finite) TP], which gerunds unlike infinitives have, as sketched in structure (38):[20]

(38) $[_{FP}$ {eux, lui, elle}$_i$ $[_{TP}$ [t_i pro] [ayant T^0] . . .]]

We say that the case feature (of pro, hence also that) of *eux*, *lui*, *Jean*, *cet homme*, etc. is checked off against that of finite T^0; in (39), however,

(39) $[_{FP}$ {il, je, tu}$_i$ $[_{TP}$ [pro t_i] [ayant T^0] . . .]]

the morphological case feature of clitics *il*, *je*, *tu*, etc. cannot be checked since they are not in the checking relation with the $AgrS^0$ they require; this, then, accounts for (36c); we exclude (36d) by claiming that for (40) to be acceptable clitic pro would have to be first or second person, which it cannot be, by (30).[21]

(40) $[_{FP}$ {moi, toi, nous, vous}$_i$ $[_{TP}$ [[t_i pro] [ayant T^0] . . .]]

As for (35), it has only one AgrS projection; one of the two subject clitics will therefore remain with an unchecked case feature, which results in the derivation crashing.[22]

Let us now at long last go back to unaccceptable SI sentences like (33b); on the derivation sketched above (33b) has the spell-out parse in (41):

(41) $[_{GP}$ $[_{AgrSP}$ t_i AgrS] $[_{TP}$ $[_{DP}$ pro t_i] [a T^0] . . . téléphoné]]$_j$ G^0 $[_{FP}$ il_i F^0 t_j]]

Structure (41) contains a complex DP subject – Kayne's (1972) clitic phrase – in which *il* is the (displaced) head and phrasal pro the specifier. If phrasal pro always had to check its Case feature in AgrSP the unacceptability of (33b) would be accounted for since there would be one nominative pronoun too many in such sentences, just as there is in (35). But ordinary gerunds like, say, *Ayant compris le problème, (je suis allé au cinéma)* ('having understood the problem, (I went to the cinema)') almost certainly have a phrasal pro subject whose (non-morphological) case must have been checked in [Spec, TP]; therefore in SI sentences like (33b) as well phrasal pro could be expected to check its Case in [Spec, TP], as (41) shows; *il* could then check its own morphologically overt case in AgrS before moving up to [Spec, FP], which should incorrectly allow (41) to converge. In short, an account of the ban of nominative clitics in SI sentences like (33b) in purely case theoretic terms requires that phrasal pro share all its case properties with overt nominative *clitics*, which would be unexpected for phrasal pro in the first place and which ordinary null subject gerunds show cannot be right.

We will correctly ban unwanted derivations like (41) if nominative clitics cannot undergo the movement to [Spec, FP] at work in SI. In line with much previous work on nominative clitics we claim that this is because they are heads[23] at the relevant point in the derivation, which will disallow the final displacements in (41), on the assumption that checking [+F] – a topic-like feature (see Kayne and Pollock (2001: note 21) – in derivations like (41) cannot be accomplished by head movement (in French).

4 (Subject) clitics as heads

Let us say that clitics like *il*, *elle*, *je*, etc. move as phrases from their input position in [Spec, vP][24] to [Spec, TP] – because they are the head of a clitic phrase and it is the clitic phrase as a whole that moves from [Spec, vP] to [Spec, TP] – but have to adjoin to $AgrS^0$ as heads. We claim further that unless final-head adjunction to $AgrS^0$ takes place a nominative clitic cannot check its uninterpretable case feature. We thus tie the case requirements of French nominative clitics to their status as heads: whereas phrases need only move to the Specifier position of finite IP – e.g., finite TP, as in gerunds – nominative clitics must head adjoin to $AgrS^0$.[25] Let us now say that once a string has adjoined as a head to some functional projection, it can no longer move as a phrase to a higher functional projection, in the spirit of Emonds's (1970) structure-preserving constraint; it follows, as desired, that nominative clitics cannot move from their $AgrS^0$ position to [Spec, FP] in (41).

In addition to this welcome result, we are now also in a position to account in the same terms for the properties of nominative clitics listed in (i) through (vi) in section 2. Let us start with the assumption that modification by numerals like *deux*, *trois*, etc., or by *autres* – as in, say, *nous deux*, *vous autres* – requires *nous*, *vous*, etc. to move to the specifier of the numerals or *autres*, *tous*, etc. This will exclude (14), repeated as (42), straightforwardly:

(42) a. Partiront-ils *(deux)?
will-go they *(two)?
b. Partirez-vous *(autres).
will-go you others
'Will you guys go?'
c. Ils *(deux) partiront demain.
they (two) will-go tomorrow
d. Eux deux partiront demain.
them (two) will-go tomorrow

Again, since *ils*, *vous* and *ils* in (42a, b, c) are clitics, they must adjoin to $AgrS^0$; if so they can no longer move to the specifier of the numerals or *autres*, *tous* etc. since this would require them to be phrases, which they can no longer be after adjoining to $AgrS^0$, again by some version of Emonds's structure preserving constraint. Should they fail to adjoin to $AgrS^0$, their uninterpretable nominative feature would survive at LF, causing the derivation to crash; sentences like (43),

(43) a. Partiront-ils *(et elles).
will-go they (Masc.) and they (Fem.)
b. Viendrez-vous *(et Jean).
will-go you and John
c. Ils *(et elles) partiront demain.
they (Masc.) and they (Fem.) will-go tomorrow
d. Eux et elles partiront demain.
them (Masc.) and them (Fem.) will-go tomorrow

can be dealt with in essentially the same way if (*et*) conjunctions have the simplified structure in (44) (cf. Kayne (1994: chapter 6)):

(44) $[_{ConjP}$ XP $Conj^0$ YP]

Clitics like *il*, *elle* in e.g. (43a) would rather require the structure in (45):

(45) $[_{ConjP}$ $[_{Cl^0}$ ils] $[_{C^0}$ et] $[_{Cl^0}$ elles]]

However, Kayne's LCA bans all such configurations – see Kayne (1994: chapter 6). If the clitics were merged as XP or YP phrases in (44) they would not be able check their uninterpretable Case feature since the conjunct *phrase* cannot head-adjoin to $AgrS^0$, evidently. This would prevent the case feature of the clitics from being adequately checked. In sum, none of the derivations that could yield (43a, b, c) will ever converge.

The fact that clitics cannot occur in (46B) (= (16B)) follows likewise from the natural idea that utterances in general and short answers like (46Bb) in particular can only be phrases. If *il*, *tu*, and *on* are so analyzed they fail to check their case feature, thus leading to ungrammaticality once more.

(46) A. Qui viendra?
B. a. *il, *tu, *on,
b. lui, nous, vous

The fact that unlike strong pronouns and full DP subjects, nominative clitics cannot be separated from the finite verb by a parenthetical, as (47) (= (17)) shows, would follow if parentheticals can merge only with the maximal IP projection AgrSP (and the maximal projection of the CP field, ForceP (see Poletto and Pollock 1999).[26]

(47) a. *Il, paraît-il, aime la linguistique.
b. *Tu, m'a-t-on dit, partiras bientôt en vacances.

As for the final morphosyntactic property that nominative clitics trigger obligatory /-z/ liaison with the following finite verb – cf. (21) – while strong pronouns, proper nouns, and full DPs cannot or need not, it follows from the hypothesized spell-out parse under the assumption that subject–verb 'liaison' can take place only between a head and its complement; on that view subject–verb liaison is comparable to obligatory liaison between a plural article and the following AP or NP as in, say, *les* *(-*z*) *enfants* ('the children'), *les* *(-*z*) *autres solutions* ('the other solutions'); here too *les* is a head and the liaison is between the final /-z/ in that head and the initial vowel in the following lexical item. In *Eux ont compris*, where no obligatory liaison takes place, on the other hand, *eux* is not a head but a phrase standing in the specifier of (some functional projection above) TP.[27]

In sum, it appears that all the specific (morpho)syntactic properties of (nominative) clitics reviewed above can be derived from their status as heads in conjunction with a set of fairly reasonable hypotheses concerning modification and coordination. We have also suggested a structural hierarchy for two different types of subject: strong (third person) pronouns and full DPs stand in [Spec, (finite) TP] while nominative clitics stand in $AgrS^0$ in a higher layer of the IP domain, missing in gerunds and infinitives.[28]

5 SCLI, CI, and movement to the CP field

As noted in section 1, the first major syntactic property of SCLI and CI constructions like (48),

(48) a. Quand ({Jean, Marie}) viendra-t-{il, elle}?
when ({John, Mary}) will-come {he, she}
b. À quoi penses-tu?
of what think-you
c. Partirons-nous?
will-go we

d. Qu'avez-vous compris?
What have you understood

is that it is sensitive to the root vs. non-root dimension:

(49) a. *Sais-tu quand ({Jean, Marie}) viendra-t-{il, elle}?
know you when ({John, Mary}) will-come {he, she}?
b. *Dis moi à quoi penses-tu?
tell me of what think-you
c. *J'ignore si partirons-nous?
I do not know whether will-go we
d. *Qu'as-tu dit qu'avez-vous compris?
what have you said that have you understood?

Since at least Den Besten (1983) such contrasts have been taken to follow from the fact that the CP domain of embedded clauses does not make available the position(s) to which the inflectional projection and the finite verb it hosts move in root clauses like (48); two variants of that idea have been explored in the literature on SCLI and CI in French; Kayne (1983), Roberts and Rizzi (1989), Laenzlinger (1998, section 3.1), among others, claim that in both constructions $Infl^0$ and the V^0 it hosts move in overt syntax to a position typically occupied by *que* in embedded clauses; on usual recoverability of deletion assumptions (cf. Chomsky (1965)) it follows that SCLI or CI cannot occur in embedded contexts, on the assumption that embedded C^0 is always lexically specified, even when it remains null (as in (49a, b)). Hulk (1993), Kayne (1994: chapter 6), Sportiche (1993b), and Friedemann (1997), on the other hand, claim that some such constraint is operative only at LF in (48) and they account for pairs like (50) and (51),

(50) a. *Sais-tu quand Paul viendra-t-il?
know you when Paul will-come he
b. *Dis moi à quoi Marie pense-t-elle?
tell me of what Mary thinks she

(51) a. Quand Paul viendra-t-il?
when Paul will-come he
b. À quoi Marie pense-t-elle?
of what Mary thinks she

by stating that although *Paul* and *viendra* stand in Spec IP and I^0 in (51) at Spell Out, I^0 must check some feature in the CP field at LF. Since no such feature is available in embedded contexts, (50) crashes while its presence in root contexts allows (51) to converge.

In this chapter we will not make use of the overt–covert distinction, in line with a radical interpretation of minimalist guide lines (see Chomsky 1995c, 1998, 2001b) attempting to eliminate feature movement, the last instance of covert

movement (see Kayne 1998), and we will claim, as Kayne (1983), Rizzi and Roberts (1989), and Laenzlinger (1998) did, that both CI and SCLI involve overt movement to the CP field;[29] like them, we shall maintain that the feature that triggers movement is non-existent in embedded clauses, thereby adopting an account of (48) vs. (49) and (50) vs. (51) very close in spirit to Den Besten's (1983): if this is right both (48) and (51) do involve overt, pre-spell out computations to the Complementizer area.

At the same time, we shall take seriously Kayne's (1994: section 4.6) arguments that negative, locative, subnominal, direct and indirect object clitics are not adjoined to the verb in sentences like (52):

(52) a. Pierre me l'a donné.
Peter to me it has given
b. Pierre ne lui a pas parlé.
Peter Neg to him has not spoken
c. Il ne m'en donnera pas.
he Neg to me of it will-give not
d. Elle m'y conduira.
she me there will-take

Rather, as in Kayne (1994) and Sportiche (1993b), we shall claim that those clitics are heads adjoined to specific functional projections – which Sportiche calls clitic voices – distinct from that to which the verb has adjoined. This conclusion is forced by the LCA, which we made use of in section 4 and therefore cannot disregard, and by independent arguments developed in Kayne (1994: section 4.6); to mention just two, he points out that certain clitics can fail to be adjacent to the verb, as in literary examples like (53a) and Classical French examples like (53b, c, d), from *Les lettres* de Madame de Sévigné,

(53) a. Il a dû en fort bien parler.
he must have of it very well spoken
b. [. . .] elle dit qu'elle lui doit tout son bonheur, par le soin qu'elle a eu de la bien élever.
she says she owes her her happiness because of the care she has had to her well bring up
c. [. . .] ils ont été affligés de ne vous point voir.
they were sorry to Neg you not see
d. Nous faisons une vie si réglée qu'il n'est quasi pas possible de se mal porter.
we lead such an orderly life that it is almost impossible to SE ill bear (= to be in poor health)

which suffice to show that (French) clitics need not/have not always adjoin(ed) to the verb; in addition, Kayne notes that claiming that they sometimes do would leave us without an account for the fact that referential expressions are typically

banned from appearing within words (compare OK *a self hater* and **an {it, her, you} hater*). Note also, with Hulk (1993: section 3.3), Kayne (1994: 45), and Terzi (1999: section 2), that on the standard assumption that in Romance imperatives the verb *does* move to some 'high' head position in the the CP field – see Terzi (1999) – the fact that in (54a) the clitics are obligatorily stranded by the verb is in itself an argument that no verb movement has applied in SCLI and CI sentences like (54b, c):

(54) a. Donne le lui!
give it to-him
b. Le lui donnera-t-il?
it to-him will-give you?
c. Pierre le lui donnera-t-il?
Peter it to-him will-give-*t*-him

Hulk (1993) and Terzi (1999) and her references – observes further that the negative head *ne*[30] blocks head movement in imperatives, as (55) shows:

(55) a. *Ne donne le lui pas.
b. Ne le lui donne pas.

and points out that if head movement was involved in (54b, c) one would expect, everything else being equal, perfectly fine SCLI and CI sentences like (56) to be ungrammatical, contrary to facts:

(56) a. Ne le lui donnera-t-il pas?
Neg it to him will-give you not
'Won't he give it to him?'
b. Pierre ne le lui donnera-t-il pas?
Peter Neg it to him will-give you not

Finally, Hulk (1993) makes the important observation that on Sportiche's (1988) account of Kayne's (1975) 'R-tous' configurations, in which the floating quantifiers are stranded by (the rest of the) DP moving to some higher position, we would expect CI constructions like *Mes amis n'ont-ils pas tous téléphoné?* (my friends NE have they not all phoned?) to have as an acceptable variant the ungrammatical **Mes amis n'ont-ils tous pas téléphoné?* (my friends NE have they all not phoned?). If the quantified subject *Tous mes amis* overtly moved from its subject position to some position in the Comp domain, as claimed in Kayne (1983), Rizzi and Roberts (1989), and Laenzlinger (1998), it is unclear why *tous* could not be stranded in the position it occupies in the well-formed *Tous me amis n'ont pas téléphoné*; so *tous* should be able to occur to the left of *pas* at Spell Out, contrary to facts.

We conclude, then, like Hulk (1993), Kayne (1994), and Sportiche (1993b) that SCLI and CI do not involve Verb movement to C and that the preverbal subject DP in CI is not independently attracted to some position in the CP field.

6 SCLI, CI, and Remnant Movement to the complementizer area

6.1 Remnant Movement

The two conclusions reached in the previous section are evidently paradoxical; we have claimed both that the root-non-root asymmetry displayed by SCLI and CI is the reflex of an overt displacement to the CP domain and, at the same time, that there is no verb movement to C^0 in SCLI or CI or subject movement to C in CI. Indeed, Hulk (1993), Kayne (1994), and Sportiche (1993b) all concluded from the facts mentioned in section 5 and from the functional position of clitics in such sentences that no overt movement to the CP field could have taken place. They all resorted to the idea that movement took place after Spell Out, at LF. Conversely, those linguists that have continued to claim that overt movement to the left periphery was involved in SCLI and CI, like Laenzlinger (1998), have attempted to deny that Kayne's or Sportiche's analyses of object clitics were correct.

Assuming they are indeed correct, as our arguments in the previous section indicate, note that the conclusion reached by Hulk (1993), Kayne (1994), and Sportiche (1993b) is the only logically valid one if and only if the computation to the CP field in SCLI and CI is head movement – i.e., I^0/V^0; suppose rather, extending to another syntactic context the spirit of Kayne and Pollock's (2001), Poletto and Pollock's (1999), Pollock et al.'s (2003) Remnant Movement analyses, that the entity displaced in those two constructions is in fact a phrase. Everything else being equal, nothing in the facts mentioned in section 5 would then prevent the XP phrase (57),

(57) $[_{XP}$ le $[_{YP}$ lui $[_{ZP}$ donnera . . .]]]

from being attracted to the specifier of some head in the CP field of root questions to check some (uninterpretable) feature.

Now, of course, on anyone's analysis object clitic + finite verb strings are typically not constituents. They are not in (58), for example:

(58) a. Pierre ne le lui donnera pas.
Peter Neg it to-him will-give not
b. Il ne m'a pas parlé.
he Neg to-me has not spoken
c. Je n'y suis pas allé.
I Neg there am not gone

Therefore for any such proposal to be a candidate for the analysis of SCLI and CI it has to be the case that XP in (57) can move as a constituent because the elements included in the '. . .' have vacated their input position; in short, any overt phrasal movement analysis of SCLI and CI is necessarily a Remnant XP

Movement analysis. The derivations that would have to be posited to yield the sentences in (59), for example, would of necessity involve previous displacement (topicalization) of the negative phrase *pas* in (59a), of the infinitival clause *lui prêter un livre* in (59b), or of the participial phrase *envoyé un livre à Paul* in (59c), followed by remnant movement, as sketched in the much simplified derivations of (60):

(59) a. Ne le lui donnera-t-il pas?
Neg it to-him will-give him not
b. Va-t-elle lui prêter un livre?
will she to-him lend a book
c. Avez-vous envoyé un livre à Paul?
have you sent a book to Paul

(60) a. Il ne le lui donera$_i$ [pas [t$_i$]] ⇒ Il [pas [t$_i$]]$_j$ [ne le lui donera$_i$ t$_j$] ⇒ [ne le lui donera$_i$ t$_j$]$_k$ il [pas [t$_i$]$_j$ t$_k$]
b. Elle [va [lui prêter un livre]] ⇒ Elle [lui prêter un livre]$_i$ [va t$_i$] ⇒ [va t$_i$]$_j$ elle [lui prêter un livre] t$_j$]
c. Vous [avez [envoyé un livre à Paul] ⇒ Vous [envoyé un livre à Paul]$_i$ [avez t$_i$] ⇒ [avez t$_i$]$_j$ vous [envoyé un livre à Paul]$_i$ t$_j$]

Of course if such an analysis is to become more than just another technical trick, among many other conceivable ones, we will have to specify what types of constituent topicalize to what position and why. We shall tackle the problem in section 7. Before we do so, however, it is worth pointing out here that the remnant T/XP analysis of SCLI and CI sketched in (60) has a number of clear advantages over its head-movement predecessors, whether taken to apply in overt syntax, as in Kayne (1983), Rizzi and Roberts (1989), Laenzlinger (1998), or covert syntax, as in Hulk (1993), Kayne (1994), Sportiche (1993b), and Friedemann (1997).

6.2 CI, preverbal subjects, and clitics

Given our analysis of clitic phrases in section 2 and what was said in section 3 of the way full DPs and nominative clitics check their respective case, the approach to SCLI sketched in (60) carries over naturally to CI sentences like (61a, b):

(61) a. Pierre ne le lui donnera-t-il pas?
Peter Neg it to-him will-give him not
b. Marie va-t-elle lui prêter un livre?
Mary will she to-him lend a book

Before the left periphery is merged, the possible parses for (61a, b) are (61c, d):

(61) c. [$_{AgrS^0}$ il$_i$ AgrS^0] [$_{XP}$ [$_{DP}$ Pierre t$_i$] ne le le lui donnera pas . . .]]
d. [$_{AgrS^0}$ elle$_i$ AgrS^0] [$_{TP}$ [$_{DP}$ Marie t$_i$] va [lui prêter un livre]]

Topicalization/adjunction of the constituents [*pas . . .*] and [*lui prêtre un livre*] to (a head immediately above) X/TP must also have taken place, followed by remnant X/TP movement to some pojection – call it HP – in the left periphery; this yields (62):

(62) a. $[_{HP}\,[_{XP}\,[_{DP}$ Pierre $t_i]$ [ne le le lui donnera $t_j]_k$ H^0 $[_{AgrS^0}$ il_i $AgrS^0]$ [pas . . . $]_j$ $t_k]$
b. $[_{HP}\,[_{TP}\,[_{DP}$ Marie $t_i]$ va $t_j]_k$ H^0 $[_{AgrS^0}$ $elle_i$ $AgrS^0]$ [lui prêter un livre$]_j$ $t_k]$

Two prominent features of these structures deserve pointing out. First, the preverbal subjects *Pierre* and *Marie* are just standing in the same subject position as in sentences like *Pierre ne le lui donnera pas*, *Marie va lui prêter une livre*, etc.; in other words, (62) provides a natural way of expressing the traditional intuition – see section 1 – that in CI constructions the preverbal subject is indeed an ordinary subject. As such, it can be a bare quantifier like *tout* or *rien*, a quantified DP like *chaque homme*, *tout le monde*, etc. Furthermore, granted something like (62), there is no need to assume the CP field allows for some special A-bar-like A position to host the preverbal subject, a move forced on Kayne (1983), Rizzi and Roberts (1989), and Laenzlinger (1998: section 2.11) and others by their head-movement analyses. Note also that on a Remnant Movement analysis the preverbal subject of CI does not move to the CP field independently of the finite verb and its clitics. Therefore we do not expect that the stranding of quantifiers in CI will be any different from what it is in simple sentences; in short Hulk's (1993) **Mes amis n'ont-ils tous pas téléphoné?* (my friends ne have they all not phoned?) is excluded for the same reason that **Mes amis n'ont tous pas téléphoné* (my friends ne have all not phoned) is, despite the fact that the subject DP of CI constructions has indeed moved to the Comp area: a Remnant Movement analysis of CI allows one to have one's cake and eat it!

Second, neither *Pierre* nor *Marie* c-commands *il* and *elle* in (62); this solves another major problem in past analyses of CI, namely, how come CI constructions allow their preverbal subject to be interpreted as coreferent with a following pronominal in the same sentence? Why doesn't that constitute a Principle B violation, on the view, shared by Kayne (1983), Rizzi and Roberts (1989), and Friedemann (1997), that the preverbal subject in CI constructions c-commands the postverbal clitic? What the analysis underlying (62) does, rather, is deny that assumption; as a consequence it clearly does not need to appeal to the idea that *il* and *elle* are (exceptional) expletives[31] in such constructions, as Kayne (1983) did, or that in questions – and only in questions, for mysterious reasons, as Laenzlinger (1998: section 3.1) observes – they are 'pure' agreement markers of the NID variety, as Friedemann (1997) did; the Remnant Movement analysis of CI solves the problem by simply alligning it with the standard Binding Theoretic account of the possible coreference of *Pierre* and *le* in sentences like [*la mère* [*de Pierre*$_i$]] [l_i*'aime*]. This is clearly a step forward, out of reach of both the overt and covert head movement analyses of CI put forward in the literature.

In sum, our Remnant Movement analysis of CI immediately solves in a principled way three major empirical problems with all previous accounts known to

us; this should be enough for anyone to take it very seriously; the three additional arguments to which we now turn will give it further weight.

6.3 CI and restrictions on preverbal pronouns

CI inversion bans weak nominative clitics from the preverbal position:

(63)	a.	*Où il est-il allé?	where he is he gone
	b.	*Où je suis-je allé?	. . . I . . . I . . .
	c.	*Où tu es-tu allé?	. . . you . . . you . . .
	d.	*C'est-il vrai?	that is it true
	e.	*Où on est-on arrivé?	where we are we arrived
	f.	*C'est-ce fini?	that is that finished

These facts follow as an automatic consequence from the analysis of subject clitics adopted in section 4: the input structure of such ungrammatical sentences would have to contain a complex Clitic Phrase of the form $[_{ClP}$ il $[_{Cl^0}$ il]], $[_{ClP}$ je $[_{Cl^0}$ je]] . . . Since there is only one $AgrS^0$ position in the higher functional field of the sentences, one of the two will of necessity remain incapable of checking its Case feature, causing the derivations of (63) to crash at LF.[32]

CI constructions also display a surprising pattern of strong preverbal pronouns. Third person strong pronouns are acceptable but first and second persons are banned:[33]

(64) a. Quel livre lui a-t-il apporté?
what book him to-him has he brought
b. Quel livre eux ont-ils apporté?
what book them to-him has they brought

(65) a. *Quel livre toi as-tu apporté?
what book you to-him have you brought
b. *Quel livre moi ai-je apporté?
. . . me . . . I . . .
c. *Quel livre nous avons-nous apporté?
. . . us . . . we . . .
d. *Quel livre vous avez-vous apporté?
. . . you . . . you . . .

On the analysis of CI sketched above the input structure of (64) and (65) would be something like (66) and (67) is the Spell Out parse resulting from topicalization/adjunction to (a head above) TP, remnant TP movement to HP and *wh*-movement to the highest layer of the CP field, ForceP:

(66) $[_{AgrS^0}$ Clitic$_i$ AgrS$^0][_{TP}$ $[_{DP}$ strong pronoun $t_i]$ a apporté . . .]]

(67) $[_{ForceP}$ Quel livre$_m$ Force^0 $[_{HP}$ $[_{TP}$ $[_{DP}$ Strong pronoun $t_i]$ V $t_j]_k$ H$^0[_{AgrS^0}$ clitic$_i$ AgrS$^0]$ [apporté $t_m]_j$ $t_k]]]$

The idea that we would like to entertain is that the pairs in (64) and (65) should be seen in the same light as (25) and (27), repeated here as (68) and (69):[34]

(68) a. LUI a téléphoné. he/him has telephoned
b. EUX ont téléphoné. they/them have telephoned

(69) a. *MOI ai téléphoné hier. I/me have telephoned yesterday
b. *TOI as mangé un gâteau. you have eaten a cake
c. *VOUS avez téléphoné hier. you have telephoned yesterday
d. *NOUS avons mangé un gâteau. we have eaten a cake

We can easily achieve this result if we analyze such contrasts as resulting from the principle in (70), which is just (30) – repeated as (71) – seen in a 'static' light:[35]

(70) Only strong third person pronouns can remain in [Spec, TP].

(71) Silent clitics in French are limited to the third person.

Note that only on a Remnant Movement analysis of CI – in which the preverbal subject of CI sentences is a real subject in [Spec, TP] – can (64–68) and (65–69) be dealt with in a uniform fashion. We take it that the fact that it can express this generalization is a further argument in its favor. In addition, this analysis also explains contrasts like the following (adapted from Friedemann 1997: 164):

(72) a. *Pourquoi vous ne viendriez-vous pas à la fête?
why you Neg would-come you to the party
b. Pourquoi ta femme et toi ne viendriez-vous pas à la fête?
why your wife and you Neg would-come you to the party
c. *Où nous somme-nous invités?
where we are we invited
d. Où moi et mes enfants sommes-nous invités?
where me and my children are we invited

They simply follow from the fact that coordinations like *moi et mes enfants* or *ta femme et toi* can remain in [Spec, TP], unlike strong first and second person pronouns.[36]

6.4 Remnant Movement to the CP field and clitic sequences in imperatives

The fact that some instances of verb movement to the Comp area can profitably be (re)analyzed as Remnant Movement to the specifier of various heads in that domain may be argued for independently of CI and SCLI on the basis of the clitic ordering in French imperatives. As is well known, French affirmative sentences exhibit two dative–accusative orderings, depending on the person–non-person dimension:

(73) a. Pierre me le donnera.
Peter to-me it will-give
b. *Pierre le me donnera.
Peter it to-me will-give
c. Pierre te le donnera.
Peter to-you it will-give
d. *Pierre le te donnera.
Peter it to-you will-give

(74) a. Pierre le lui donnera.
Peter it to-him will-give
b. *Pierre lui le donnera.
Peter to-him it will-give

The corresponding clitic sequences in imperatives differ considerably; the 'standard' order for first and second person is (75),

(75) a. Donne le moi!
give it me
b. Mets le toi dans la poche!
put it you in the pocket

which, modulo the *me* ~ *moi* and *te* ~ *toi* alternations, corresponds to the *le me*, *le te* orders of unacceptable affirmatives like (73b, d); only in colloquial French can (75) also surface as (76), which displays the expected dative accusative ordering of (73a, c).

(76) a. Donne moi le!
give me it
b. Mets toi le dans la poche!
put you it in the pocket

In third person pronoun cases standard French imperatives show the expected ordering of (74a):

(77) Donne le lui!
give it him

However, colloquial French also has the order in (78),

(78) Donne lui le!
give him it

which is that of the unacceptable (74). How can one make sense of such data?

We shall assume the null hypothesis that the underlying order of clitics in all French sentence-types is the same, specifically that of affirmative sentences. For our present purposes it will suffice to assume that there are two such orders, given in (73a, c) and (74a), respectively. Our second hypothesis is that some imperative feature high in the Comp area must be checked off by verb adjunction; in short we follow Kayne (1994), Hulk (1993), Terzi (1999), and many others in claiming that the obligatory enclitic configuration in positive imperatives results from verb movement to that high position, 'stranding' the clitics. For the sake of clarity, let us call the high position to which the imperative verb must head adjoin Imp^0.[37]

If ordinary verb movement was all there was to imperatives, these assumptions would only allow us to derive (77) and (76); we would have nothing to say concerning the standard French ordering of first and second person in (75) or the colloquial third person order of (78). Suppose, rather, that only the last leg of the displacement to Imp^0 is head movement, and that intermediate position(s) in the CP field can accommodate various (remnant) phrases; let us posit more specifically that (remnant) IP moves to the specifier of what we called HP in the previous sections;[38] suppose further that ForceP stands between Imp^0 and HP; adopting Sportiche's terminology for the sake of illustration we now say that the accusative-voice phrase in (79a) and the dative-voice phrase of (79b),

(79) a. $[_{HP}\ [_{TP} \ldots [_{\text{Dative voiceP}}$ {me, te, nous, vous} $[_{\text{Accusative voiceP}}$ {le, la, les} V]]]$_i$ H^0 t_i]
b. $[_{HP}\ [_{TP} \ldots [_{\text{Accusative voiceP}}$ {le, la, les} $[_{\text{Dative voiceP}}$ {lui, leur} V]]]$_i$ H^0 t_i]

can be pied-piped to the specifier of ForceP before the verb finally moves as a head to Imp^0; this will yield (80a, b):

(80) a. $[_{Imp^0}$ donn{e, ons, ez}$_k$ $Imp^0]$ $[_{\text{ForceP}}$ $[_{\text{Accusative voiceP}}$ {le, la, les}$t_k]_j$ $Force^0[_{HP}[_{\text{Dative voiceP}}$ {moi, toi, nous, vous} $t_j]_i$ $H^0]$ $[t_i]]$
b. $[_{Imp^0}$ donne$_k$ $Imp^0]$ $[_{\text{ForceP}}$ $[_{\text{Dative voiceP}}$ {lui, leur} $t_k]_j$ $Force^0[_{HP}[_{\text{Accusative voiceP}}$ {le, la, les}$t_j]_i$ $H^0]$ $[t_i]]$

This, I claim, is how the standard order of first and second person imperatives and the colloquial order of third person imperatives are derived – modulo the *me* ~ *moi* and *te* ~ *toi* suppletion.[39] When such pied-piping does not take place we derive the non-standard (76) and the standard (77).

Naturally, this is only a plausible sketch, and other conceivable executions of the same basic idea come to mind;[40] nonetheless, I believe the main point of this discussion should be clear: even in imperatives, which, unlike CI and SCLI sentences, do seem to require verb movement to the (highest layer of the) Comp area, there is evidence that verb related displacements to lower layers of the left periphery can take the shape of (Remnant) Phrasal Movement. Without that assumption it is difficult to see how all the possible clitic sequences of French positive imperatives could be derived syntactically.[41] The plausibility of our Remnant Movement approach to SCLI and CI is thus enhanced by the syntax of clitics in French imperatives.

7 Fine-tuning Remnant Movement in CI and SCLI

7.1 V2 and Remnant Movement

Accepting the conclusions of section 6, we must now go back to our task of defining the properties of Remnant Movement to HP in CI and SCLI more precisely than we have done so far. There are two conceivable tacks one might take; one tack would attempt to maximize the scope of the results reached in the previous section, the other would restrict it to Romance, perhaps even to French and Valdôtain.

On an approach of the first type – a priori the more appealing one by far – CI and SCLI in French should most probably be seen in the same light as so-called Subject–Aux inversion in English and its various V2 analogues in the Germanic languages. It would argue that French CI and SCLI and English Subject–Aux inversion share too many properties – e.g., their root–embedded asymmetry, the fact that in English as well the subject must immediately follow the 'inverted' finite verb (an auxiliary for independent reasons (see, e.g., Pollock 1989, 1997, Chomsky 1995c: chapter 1, and Cinque 1999) – to warrant two different analyses; this would mean, then, that English Subject–Aux inversion, too, involves the sort of Remnant Movement operative in French CI and SCLI. One would then have to look for an explanation of the previous topicalization of the negative phrase, the infinitival phrase or the participial phrase in examples like (81),

(81) a. Has he not understood?
b. Should he go?
c. Has he phoned you?

that would carry over to the (almost) identical French cases in (82):

(82) a. (Pierre) n'a-t-il pas compris? (Pierre) + (81a)
b. (Pierre) devrait-il partir? (Pierre) + (81b)
c. (Pierre) t'a-t-il téléphoné? (Pierre) + (81c)

The second approach would bank on the one major syntactic difference between English Subject–Aux Inversion and French SCLI – *Has John phoned?* vs. **A Jean téléphoné?*; see section 1 – on the comparative diachronic facts alluded to in note 45 (on the analysis sketched there) and on the necessary presence of the evidently language specific 'epenthetic' *-t-* in French CI and SCLI to argue that the two types of languages and constructions should be construed differently, despite their common restriction to root contexts and the similarity in their spell-out strings; this may in turn lead one to wish to continue analyzing English Subject–Aux inversion in terms of I^0 (head) movement to the left periphery – in line with all work on that topic known to us – and to look for an account of the way previous topicalization works in the Remnant Movement process at work in French and Valdôtain SCLI/CI that would be specific to those languages (or to Romance).

In part for the sake of execution and in part because the more ambitious line clearly lies beyond the scope of the present pedagogical presentation, we shall now tentatively develop an analysis of the second sort.

7.2 -t- in CI and SCLI

Let us start with the one prominent feature of CI and SCLI which we have failed, up to now, to integrate into our analysis, namely, the epenthetic *-t-* of examples like (83):

(83) a. Où Pierre va *(-t-) il aller?
Where Peter will *(*-t-*) he go
b. À qui Marie va *(-t-) elle s'adresser?
To whom Mary will *(*-t-*) she talk
c. Où va *(-t-) elle?
Where goes *(*-t-*) she
d. Où va (*-t-) Yves?
Where goes (*-*t-*) Yves

As (83) shows, *-t-* is obligatorily present in such sentences. It is often taken to be a purely epenthetic consonant introduced at PF to avoid two consecutive vowels. This seems unlikely; if it was, as was noted in section 1, one would expect it to surface also in SI cases like (83d), especially since liaison is indeed possible in sentences like *Où vont (/-t/) Yves et Marie?* Furthermore, the data in (88a, b),

(84) a. Ven-lo-li? come-Interr marker-they 'Are they coming?'
Morgeux, Provençal
b. Ven-lo-lou? come-Interr marker-she 'Is she coming?'

from Morgeux, a Provençal dialect, seem to show clearly that this purely morpho-phonological approach is insufficiently general; in Morgeux Standard French *-t-*

surfaces as *lo* but its insertion cannot be a purely PF phenomenon since neither *-li* (they) nor *-lou* (she) are in need of an epenthetic consonant.[42]

We shall hypothesize rather that *-t-* in French and *lo* in Morgeux have syntactic import and are the H^0 morphemes of main clause interrogatives. More precisely, we follow much traditional work in claiming that French *-t-* and Morgeux *lo* are 'conjugation interrogative' markers, [+interrogative] finite tense morphemes merged in H^0. They thus bear an uninterpretable [+interrogative] feature and attract a constituent so marked to their specifier. In CI and SCLI the entire sentence – what we have called XP or TP in our analyses so far, save the constituents that have been extracted at previous stages of the derivation – moves to check it. Put slightly differently, French *-t-* and Morgeux *lo* are the elements that 'type' the sentence in their specifier as (root) questions. A little bit more technically, we say that the head of the 'sentence', I^0, $AgrS^0$, or T^0, as the case may be, is marked [+interrogative] in the numeration; as a consequence its maximal projection is so marked too and it is attracted to Spec H^0 to delete H^0's uninterpretable [+interrogative] feature; in sum, CI and SCLI are cases of – obligatory, see below – pied-piping. This, we take it, provides the syntactic characterization of *-t-* (and Morgeux *lo*) we need here. In addition, we claim that French *-t-*[43] has two defining morpho-phonological characteristics:

(85) a. *-t-* is a morphological enclitic; therefore, as a tense morpheme, it must be right adjacent to a finite verb at PF.
b. *-t-* is a deficient morpheme at PF, i.e., it cannot in and of itself bear word-final stress; it must therefore be left adjacent to a term that can play the part of an additional stress bearing suffix;

Concerning (85b) we will make the following hypothesis:

(86) Nominative clitics can bear main stress and can be morphological suffixes.

Adopting the spirit of recent work by Bošković (cf. Bošković (2001)) on Slavic clitics and Shlonsky on the construct state in Semitic (cf. Shlonsky 2004), but at variance with one aspect of much recent work in the distributed morphology literature, we will also make the following crucial assumption concerning the syntax–PF interface:

(87) Morpho-phonological processes do not reorder terms.

Hypothesis (85), in combination with (87), will act as a PF filter on syntactic computations; whenever the syntactic output turns out to be inconsistant with the morphophonological requirements on *-t-* listed in (85) a PF violation will result, and so the whole derivation will crash.

Let us illustrate how the system works by considering ill-formed sentences like (88):

(88) a. *Où a Yves mangé?
where has Yves eaten

b. *Où va-t Yves aller demain?
where will-go Yves eat tomorrow
c. *Où Pierre va aller demain t-il?
where Pierre will go tomorrow he
d. *Où Pierre croit que je suis t-il?
where Peter thinks that I am-*t*-he
e. *Où sa femme mettra les livres qu'il lit t-elle?
where his wife will put the books that he reads -*t* she
f. *À qui il va-t parler?
to whom he will-go-*t* speak

In (88a) -*t*- has failed to merge in H^0, so, on our analysis so far Remnant TP Movement to [Spec, HP] should not have applied but has; furthermore, for that sequence to be generated Remnant Movement should have applied to a TP of the form $[_{TP}$ t a t], which in turn would have required the full DP *Yves* to move out of [Spec, T]. On the assumption that no additional feature of *Yves* requires movement to the left periphery – as would be the case in SI constructions under the analysis of Kayne and Pollock (2001) – this is impossible if our sections 2 and 3 analysis of nominative Case-checking is correct; a full DP checks its (non-morphological) case in [Spec, TP]. It is therefore 'frozen in place' in TP; (88a) is thus exluded for two reasons: the Remnant (TP) Movement we have developed so far is not defined here and it could not yield the word order of (88a) if it were.

Example (88b) differs from (88a) in having merged -*t*- in H^0, which allows Remnant TP Movement to apply licitly; *aller demain* has moved out of TP; but again the sequence *va-t Yves* could only have been generated if *Yves* had also moved out of [Spec, T], which is impossible in SCLI – though possible in SI – for the reasons just stated. In sum, neither (88a) nor (88b) can be generated on our analysis. In addition, in (88b) the PF requirement that -*t*- be adjacent to a stress-bearing suffix cannot be met: although *Yves* can evidently bear stress, it cannot become part of a morphological word (i.e., *Yves* and full DPs cannot be PF suffixes).

Sentence (88c) has -*t*- in H^0. Remnant TP Movement can thus apply licitly; the clitic head of the clitic phrase in [Spec, T] has adjoined to $AgrS^0$, as it must; but nothing else has moved out of TP, so the complement of the finite verb is still part of TP when it is attracted to [Spec, HP], and that part of the sentence therefore stands in between the finite verb and -*t*-; as a consequence, one half of the morphological requirements on -*t*- cannot be met: it should be a morphological enclitic on a (finite) verb, i.e., right adjacent to it, but cannot be in (88c) which consequently crashes at PF.

The monstrous ungrammaticality of (88d) and (88e) forces us to refine the meaning of the predicate 'adjacent' as used in (85) – "-*t*- is a morphological enclitic; therefore, as a tense morpheme, it must be right adjacent to a finite verb at PF". Clearly if such examples are to be excluded, string adjacency will not suffice and some structural notion must be involved; we will say, then, that -*t*- can form a prosodic word with a finite verb if and only if it is not separated from it by more than one sentence boundary. Granted this interpretation, such examples

will be correctly excluded; the derivation of sentences built on the same numeration will thus have to involve previous topicalization of the sentential complement or the relative and its antecedent followed by the familiar Remant Movement, yielding the grammatical *Où Pierre croit-il que je suis* (where Peter thinks he that I am) and *Où sa femme mettra-t-elle les livres qu'il lit?* (where his wife will-put-she the books that he reads).[44]

As for the ungrammatical (85f), it would be derived by topicalization of *parler à qui*, Remnant AgrSP Movement to HP and *wh*-movement; what goes wrong here is that (85b), the second morphological requirement on *-t-* cannot be met; the derivation yielding (88f) therefore crashes at PF, once more. Finally, consider the outrageously ungrammatical (89b, d, f):

(89) a. Les a-t-il lus?
them has he read
b. *A-t-les il lus?/*A-t-il les lus?
has them he/he them read
c. Y partira-t-il bientôt?
there will-go he soon
d. *Partira-t-y il bientôt?/Partira-t-il y bientôt?
will-go there he/he there soon
e. En a-t-il parlé?
of it has he spoken
f. *A-t-en il parlé?/A-t-il en parlé?
has of it he/has he of it spoken

There is a straightforward account for why SCLI cannot strand non nominative clitics, as such sentences show; suppose that SCLI and CI in Modern French[45] never involve head movement of the verb to the Comp area; then for (89b, d, f) to be accceptable clitics like *les*, *y*, and *en* would have to topicalize out ot XP before XP moves to spec H^0; but of course we know that clitics can never topicalize out of their Case checking position (see section 3), so the relevant examples in (89) are excluded for the same reason the totally inconceivable sentences in (90) are:

(90) a. *Le, j'ai lu — it, I have read
b. *Y, il partira bientôt — there, he will-go soon
c. *En, il a parlé — of-it he has spoken

In summary, the two morpho-phonological properties of *-t-* in (85) combine to require that the constituents following the finite verb in T/XP topicalize out of T/XP to a position in between T/XP and $AgrS^0$; the same two properties converge to require T/XP to move to [Spec, HP] and exclude Remnant AgrSP Movement; if CI and SCLI can never be instances of V-movement to the Comp area in Modern French, the analysis also straightforwardly accounts for why non-subject clitics cannot be stranded in those two constructions.

7.3 -ti *in CI and SCLI*

On the analysis just summed up, the fact that the whole AgrSP cannot be attracted to [Spec, HP] is a consequence of (85b). Suppose that (some variety of) French had a [+question] morpheme merged in H^0 like *-t-* that did not have any such deficient property; everything else being equal, we would then expect AgrSP attraction to [Spec, H^0] to be possible; that morpheme does exist, as the facts in (91) show:

(91) a. Elle viendra-ti?
she will-come-*ti*?
b. Pourquoi il vient-ti pas?
why he come-*ti* not
c. Je réussirai-ti?
I will-succeed-*ti*
d. Tu viendras-ti?
you will-come-*ti*
e. On est-ti prêt?
we are-*ti* ready
f. Ce serait-ti enfin la fin?
that will-be-*ti* at last the end

Sentences like (91) – common in Québec French (where *-ti* surfaces as *-tu*) and in a variety of regional (both rural and urban) dialects in France – share most of SCLI and CI's defining properties; in particular they are restricted to root contexts – cf. **Dis moi quand elle viendra-ti?* – but they contrast minimally with (92) in allowing preverbal nominative clitics:

(92) a. *Elle viendra-t-elle?
she will-come she
b. *Pourquoi il vient-il pas?
why he come-he not
c. *Je réussirai-je
I will-succeed-I
d. *Tu viendras-tu
you will-come-you
e. *On est-il prêt?
we are-we ready
f. *Ce serait-il enfin la fin?
that will-be-it at last the end

In our system the root–non-root sensitivity that (91) shares with standard French SCLI and CI means that Remnant Movement to HP in the Comp domain must have applied; we can now say descriptively that in the sociolects and dialects that have (91) the sequence *-t*(+*i*) indeed works like the H^0 morpheme of

Standard French but because, unlike *-t-*, it does have the sufficient amount of vocalic structure for it to be a stressable syllable it has no need for a(n extra) clitic to its right, which is why (91) are well-formed at PF.

Of course the question arises of what the vowel *i* in *-ti* is. To answer that question we capitalize on Poletto's (2000) analysis of the complex system of nominative clitics in the NIDs; more precisely, we hold that *i* is comparable to the invariable subject clitics present in many Veneto, Lombard, and Emilian dialects; the paradigm of the Lugano variety in (93) (from Poletto 2000: 12) illustrates an invariable SCL pattern:

(93)	a.	A vegni mi.	Inv. SCl come I	'I come'	Lugano
	b.	A ta vegnat ti.	Inv. SCl SCL come you	'you come'	
	c.	A vegn luu.	Inv. SCl come he	'he comes'	
	d.	A vegnum.	Inv. SCl come	'we come'	
	e.	A venguf.	Inv. SCl come	'you come'	
	f.	A veng lur.	Inv. SCl come they	'they come'	

On the view that *i* in the dialectal *-ti* construction of French is *-t-* + *i*, *i* an invariable subject clitic analogous to the Lugano *a*,[46] we can furthermore use Poletto's (2000: 20) (much simplified) structural hierarchy in (94) to account for (91):

(94) $[_{FP1}$ Invariable SCLs $[_{FP2}$ number SCLs/person SCLs $[_{FP3} \ldots]]]$

We say that the input structure of such sentences is something like (95).

(95) a. $[_{HP} [_{H^0}$ -t] $[_{FP1}$ i $[_{FP2}$ elle $[_{FP3} \ldots]]]]$
b. $[_{HP} [_{H^0}$ -t] $[_{FP1}$ i $[_{FP2}$ il $[_{FP3} \ldots]]]]$
c. $[_{HP} [_{H^0}$ -t] $[_{FP1}$ i $[_{FP2}$ je $[_{FP3} \ldots]]]]$
d. $[_{HP} [_{H^0}$ -t] $[_{FP1}$ i $[_{FP2}$ tu $[_{FP3} \ldots]]]]$

and that (Remnant) Movement to [Spec, H^0] applies to FP2; of course, since *-t-* (+*i*) continues to be an enclitic tense marker, it must abide by the morphophonological requirement in (85a) – "*-t-* is a morphological enclitic; therefore, as a tense morpheme, it must be adjacent to a finite verb on its left at PF" – and consequently, all phrases following the finite verb must move out FP2 before FP2 is attracted to Spec *-t-*; this explains why the '*-ti* Complex Inversion' construction of Regional and non-Standard French also strands negation, participial clauses and infinitives, as in, say, *Elle a-ti compris?* (she has-*ti* understood), *Tu voudrais-ti pas m'aider?* (You would-like-*ti* not me help), etc.[47]

7.4 Valdôtain SCLI and CI

Valdôtain SCLI and CI constructions share the sensitivity of their French counterparts to the root non-root distinction (cf. Roberts 1993a: 324) and should

therefore be amenable to essentially the same Remnant Movement analysis to the Comp area; they also conspicuously differ from French in that, in compound tenses – i.e. when auxiliaries *have* and *be* are present – all varieties of Valdôtain SCLI require a preverbal clitic, in addition to the standard French-like obligatory postverbal clitic; similarly, Valdôtain CI in compound tenses may have its initial DP subject followed by pre and post auxiliary clitics:

(96) SCLI:

a. **N**'èn-**neuy** mïndja
we have we eaten — Ayas
(Roberts 1993a: (7b))

b. **T**'o **heu** vu ton laon
you have you seen your uncle — St Nicholas
(Roberts 1993a: (8b))

c. Cen que **dz**'i **dzo** fe
what that I have I done — Aosta
(Roberts 1993a: (9a))

(97) CI: Ton ommo **l**'est-**e** dza torna?
your man he is he already come back — Aosta
(Roberts 1993a: (41))

In simple tenses the postverbal clitic is obligatory and has the same form as in complex tenses, but no preverbal clitic need appear, depending on whether the corresponding affirmative sentence has a preverbal clitic or not;[48] so, for example, the present tense forms of first and second plural persons of the verb 'go' in St Nicholas do not require a preverbal clitic and they show none in the following SCLI sentences:

(98) a. Yòi allèn-nò
where go we?
(Cf. French *Où allons-nous?*) — St Nicholas
(Roberts 1993a: (11a))

b. Yòi allôde-vò
where go you
(Cf. French *Où allez-vous*?) — St Nicholas
(Roberts 1993a: (11b))

The same holds true of the following CI sentences:

(99) a. Martin mindze-të de seuppa?
Martin eats he of soup
'Martin mange-t-il de la soupe?' — Aosta
(Roberts 1993a: (38a))

b. Pequè lo mèinô medze-t-i la pomma?
why the child eats he the apple
'Pourquoi l'enfant mange-t-il la pomme?' St Nicholas
(Roberts 1993a: (40a))

If we put aside complex tenses for a while, those facts would seem to be very similar to Standard and/or dialectal French facts and can be dealt with in essentially the same terms; so an overt or covert *-t-* morpheme will be claimed to have merged in H^0 in the Comp domain of Valdôtain as well, attracting the counterparts to the French functional projections undergoing the same computation. On the assumption that the morpho-phonological properties of Valdôtain *-t-* are comparable to those of French we expect a post-*t-* clitic pronoun to be obligatory in Valdôtain as well, despite the fact that it is otherwise a null-subject language in affirmative sentences. We thus derive in a principled way Chenal's (1986) observation quoted in Roberts (1993a: 351) that in interrogatives "la présence du pronom sujet est obligatoire partout" ('the presence of a pronominal subject is obligatory everywhere').

As in Dialectal French, the postverbal clitic of Valdôtain may sometimes be an invariable form, as the following Châtillon examples (= Roberts' (1993a, (51)) unambiguously show:

(100) a. **Me** minjo **ty** ina pomma?
Je mangerai-ti une pomme?
'Shall I eat an apple?'
b. **Y'**at **te** vi lo barba?
Vous avez-ti vu l'oncle?
'Have you seen your uncle?'

Cases like these clearly can, most probably should, be derived from a French-like structure analogous to (95) as sketched in the previous section.

Aside from the question of complex tenses, nothing in what precedes directly covers examples like (101), in which both a preverbal and a variable postverbal clitic appear:

(101) Dze medzo-dzò an pomma? St Nicholas
I eat I an apple
(Roberts (1993a: (8a))

Sentence (101) is unexpected because it looks like the word-for-word analogue of the ill-formed French example (102):

(102) *Je mangerai-je une pomme? (Same as (101))

We know what excludes (102): there are two nominative subject clitics and only one $AgrS^0$ position, which means one nominative clitic too many since at least

one uninterpretable (nominative) case feature will fail to be checked in such sentences. If, as claimed above, that is the correct way of looking at (102), we are forced to assume that one of the two clitics in (101) is not a 'real' nominative clitic. Let us indeed claim that the preverbal *dze* in (101) has migrated into the TP domain, where it either checks its case like an ordinary DP or, more likely, has no case to check at all, just like the St Nicholas third person singular, second and third person plural endings; granted this, the spell-out parse of the St Nicholas affirmative sentence *Dze medzò* (I eat) would be something like (103), and it thus contrasts minimally with (104), the spell-out parse of Standard French *je mange*:[49]

(103) $[_{TP}\,[_{ClP}$ pro dze] $[[_{T^0}$ medzò] . . .]]]

(104) $[_{AgrS^0}$ je$_i$ $[_{TP}\,[_{ClP}$ pro t$_i$] $[[_{T^0}$ mangerai] . . .]]]]

This difference in structure now accounts for the contrast between (101) and (102): if the [+interrogative] (null *-t-*) H^0 morpheme is merged in the left periphery of (103) and (104), TP will be attracted to [Spec, HP] in both cases, but although this will yield the well-formed *Mangerai-je?* in French, no acceptable structure will be derived from (103) since principle (85b), one of the two defining morphological properties of French and Valôtain interrogative H^0 – "*-t-* is a deficient morpheme at PF in that it cannot in and of itself bear word final stress; it must therefore be left adjacent to a term that can play the part of an additional stress bearing suffix" – will not be met.[50] The (much simplified)[51] input structure to (101) must rather be (105),

(105) $[_{AgrSP}$ pro$_i$ $[_{AgrS^0}$ dzò] $[_{TP}\,[_{ClP}$ t$_i$ dze] $[[_{T^0}$ medzò] . . .]]]

in which *dzò* is the $AgrS^0$ counterpart of *dze* in TP; (105), contrary to (103), will yield a well-formed PF output after merging of H^0 and TP attraction to [Spec, H^0]; note in passing that in (105) *dzò* 'agrees' with *dze* because it 'agrees' with a (raised, phrasal) pro subject, which itself agrees with *dze*.

We can now come back to complex tenses and to the question of why *ëtre* ('be') and *avèi* ('have') in Valdôtain always require a subject clitic although their morphology is rich, as St Nicholas paradigms like (106) (= (1c) in Roberts (1993a)) show:

(106)

Dz'i medjà	(I have eaten)
T'ô medjà	(you . . .)
L'a medjà	(he . . .)
N'èn medjà	(we . . .)
Vèi medjà	(you . . .)
L'an medjà	(they . . .)

Despite the morphological variability of auxiliary verbs, complex tenses always have 'SCL1 Aux SCL2 . . .' sequences in SCLI, as (107) (= (8b) in Roberts (1993a)) shows:

(107) **T'ô-heu** vu ton laon
you have you seen your uncle
French 't'as tu vu ton oncle?'

In the spirirt of (105), we say, fairly naturally I believe, that (107) is derived as sketched in (108):[52]

(108) $[_{HP}\ H^0[[_{AgrSP}\ pro_j\ [_{AgrS^0}$ **heu**$]\ [_{TP}\ [_{ClP}\ t_j$ **T'**$]\ [[_{T^0}$ ô$]\ [t_j$ vu ton laon$]]]]$
Topicalize $[t_j$ vu ton laon$]$ to TP $\Rightarrow$
$[_{HP}\ H^0[[_{AgrSP}\ pro_j\ [_{AgrS^0}$ **heu**$]\ [t_j$ vu ton laon$]_i\ [_{TP}\ [_{ClP}\ t_j$ **T'**$]\ [[_{T^0}$ ô$]\ t_i]]]$
Attract [+question] to Spec $H^0 \Rightarrow$
$[_{HP}\ [_{TP}\ [_{ClP}\ t_j$ **T'**$]\ [[_{T^0}$ ô$]\ t_i\ ]]_k\ H^0[[_{AgrSP}\ pro_j\ [_{AgrS^0}$ **heu**$]$ [vu ton laon$]_i\ t_k]$

Finally, to account for the necessary presence of the preverbal clitic in ***T'ô*** in (107) we use of Roberts' (1993a) idea that auxiliaries *ëtre* and *avèi* are not theta-assigners (see also Pollock (1989: section 4.1)) in the following way. Suppose the person endings of Valdôtain finite verbs, where they exist, are only 'residually' able to identify a pro subject in the sense that they also need to assign it a theta-role to do so. Since auxiliaries by definition do not have any (external) theta-role to assign they necessarily require a lexical clitic in TP.

7.5 Keeping the house in order

Before concluding, let us briefly go back to French and spell out in more detail some consequences of our analysis of SCLI and CI for the syntax of simple affirmative sentences.

Suppose a subject-clitic phrase is merged in some sentence and that no H^0 is merged in the left periphery; we would then expect totally ungrammatical sentences like (109a) to surface with the spell-out parse in (109b):

(109) a. *Il Pierre a téléphoné. he Peter has phoned
b. $*[_{AgrS^0}\ il_i\ AgrS^0]\ [[_{ClP}\ Pierre_i\ t_i]$ a téléphoné]]

What excludes such structures? Granted (109b) we shall say, fairly naturally, that (109a) is a Principle C violation. If so, what is the spell-out structure of (110)?

(110) Il a téléphoné ('He has phoned')

It would be unlikely to suggest that it is (111) since that structure should be a Binding Theory violation too, with the null pronominal violating Principle B.

(111) $*[_{AgrS^0}\ il_i\ AgrS^0]\ [[_{ClP}\ pro_i\ t_i] \ldots]$

Let us say rather that its spell-out parse is (112):

(112) $[_{AgrSP}\ pro_i\ [_{AgrS^0}\ il_i\ AgrS^0]\ [[_{ClP}\ t_i\ t_i] \ldots]]$

and claim that in such configurations the nominative clitic *il* – similarly *je*, *tu*, etc. – count as agreement markers and are thus immune from the strictures of Principle B. The null (phrasal) pro in their specifier of (112) is to be seen in the same light as null (phrasal) pro the reanalyzed clitics of the NIDs license. We note in passing that what undergoes Remnant Movement in SCLI is TP, as the parse of (113) in (114) shows:

(113) A-t-il téléphoné?
'Has he phoned?'

(114) $[_{HP}\,[_{TP}\,[_{DP}\,t_i]$ a $t_j]_k\,[_{H^0}$ -t-$]\,[_{AgrSP}\,[$pro il$_i$ $]$ AgrS$^0]$ [téléphoné$]_j\,t_k]]]$

In short, although Kayne and Pollock's (2001) claim that all sentences undergoing Remnant Movement have a null (pro or trace) subject is too strong if our analysis of CI is correct, it nonetheless seems true of SCLI and SI in Standard French (and Valdôtain).

Let us now ask whether a simple sentence like (115) has a complex clitic phrase as its subject. Suppose it does; the clitic phrase would then evidently have to have a null clitic as its head, as shown in (116);

(115) Pierre a téléphoné.
'Peter has phoned.'

(116) $[_{TP}\,[_{ClP}$ Pierre$_i$ pro$_i]$ [a téléphoné]]

Two possibilities arise at this point. The first is that clitic pro could attempt to check its null, though arguably morphological nominative, case by moving up to AgrS^0, as (117) shows.

(117) $*[_{AgrS^0}$ pro$_i$ Agr$^0]\,[_{TP}\,[_{ClP}$ Pierre$_i$ $t_i]$ a téléphoné]

But (117) will yield a Principle C violation, as above; that violation could only be alleviated if the lexical DP itself could move to spec pro. We shall say that in Standard French this still yields an ungrammatical configuration because pro cannot be reanalyzed as an agreement marker; if the basic intuition underlying all work on the null subject parameter in Romance is correct, only an *overt* lexical head can be so reanalyzed;[53] therefore moving *Pierre* to [Spec, AgrSP], as in (118), will still run afoul of Binding Theory's Principle B, unlike what happens in (112) and the like.

(118) $*[_{AgrSP}$ Pierre$_i\,[_{AgrS^0}$ pro$_i$ Agr$^0]\,[_{TP}\,[_{ClP}\,t_i\,t_i]$ a téléphoné]]

By the same token (119) will also be excluded,

(119) $*[_{AgrSP}$ Pierre$_i\,[_{AgrS^0}$ il$_i$ Agr$^0]\,[_{TP}\,[_{ClP}\,t_i\,t_i]$ a téléphoné]]

if, as we have just sugggested, it is only when pro stands in the specifier of a nominative clitic that the clitics reanalyze as agreement markers, immune to Binding Theory; therefore a fine sentence like *Pierre, il est venu* (Peter, he has come) is necessarily a Clitic Left Dislocation in standard French, in which *Pierre* has vacated its input position and moved to a position much further up in the IP or CP domains. It could be, of course, that that constraint on the reanalysis of clitics as agreement markers is lifted in the more innovative sociolects or dialects of French (which Anne Zribi-Hertz's 1994 dubs 'français avancé') as it is in the NIDs. We would then expect bare quantifiers, negative quantifiers, quantified DPs, etc. to replace *Pierre* freely in (119), as they in fact do in many NIDs and in Valdôtain – cf., e.g., Poletto's (2000: 142) Friulian example *Nisun al mi capiss* (no one he me understands), Chenal's (1986: 401) example *Gneun l'ayet inco vu de bataille parë* (no one he had yet seen a battle like it) cited in Roberts (1993c) – and as they typically do not do for speakers of Standard French even in the most colloquial varieties they can speak.[54]

The second possibility is to assume that clitic pro was allowed to stay in its input position. We could then say that it (exceptionally) checks its case in [Spec, TP]; but then it would be impossible for the DP *Pierre* in its specifier to check its own case, on the standard view that the uninterpretable feature of T is deleted once it enters a checking relation with an appropriately marked specifier. In short, on that derivation too the input showed in (116) will fail to yield a converging LF output.

We see, then, that a simple statement like (115) cannot have a Clitic Phrase in its subject position; therefore such sentences have a 'simple' DP subject:

(120) $[_{TP}\ [_{DP}$ Pierre] a téléphoné]

We thus reach the same conclusion as Kayne (1972); in that article the nominative clitics in the various Clitic Phrases were obligatorily deleted if the rules that derived CI did not apply. We are saying the same thing, although, evidently, the technical tools we have been using to express that basic intuition are very different from the rule-based algorithms Kayne made such fruitful and innovative use of 28 years ago.[55]

8 Conclusion

This chapter has capitalized on the rich body of empirical findings that the work on clitics, SCLI, and CI conducted in Generative Grammar over the last thirty years has made available to the linguistic community at large; it has also made crucial use of many of its insights and generalizations. Indeed, none of its new suggestions could have been made without that previous work, whence the quotation from Condorcet at the beginning of the chapter.[56]

Its novel contribution lies chiefly in the claim developed in sections 5 and 6 that SCLI and CI require pre-spell-out computations to the Comp area and that

those computations can be profitably reinterpreted as Remnant Movement to the specifier of a functional projection in that layer of the sentence, specific to root interrogative clauses, which we have (arbitrarily) called HP.

On the analysis proposed here IP – AgrP or TP – movement to HP is driven by the need to check an interrogative feature on the H^0 head of the left periphery of questions; thus, IP movement to HP is an ordinary instance of displacement as characterized in minimalist work; put in slightly different, more neutral, terms, one may say that H attracts IP to its specifier to 'type' it as a question.

As we have repeatedly stressed, it is not the whole IP that is attracted to HP, but rather *Remnant* IP. We have developed a morphological, language-specific account of *the raison d'être* of this crucial property in section 7.2. It is argued there that the necessity to topicalize various constituents out of the phrase later moving to HP stems from the need to comply at PF with the morphological properties of the (overt or covert) H^0 head; more specifically, we have claimed that the *-t-* morpheme of SCLI and CI in French and Valdôtain is merged in H^0 and is both a morphological enclitic and a tense morpheme. As such it must be right-adjacent to a finite verb at PF. In addition, *-t-* has been claimed to be a prosodically 'deficient' morpheme; as such it must be (structurally) adjacent to a term that can be a stress-bearing suffix; this requires it to be left-adjacent to nominative clitics at PF; on this account, then, it is the independent requirements on the LF and PF interfaces of syntactic derivations that combine to yield the correct spell-out strings of SCLI and CI constructions.

On the highly plausible view that the left periphery of the clause is the locus of the discourse–syntax interface where notions like topic, focus, presupposition, and ground acquire syntactic import – see Rizzi (1997) – our 'HP' will ultimately have to find a principled position in the hierachy of projections that define that conceptual domain, a task we have not undertaken here.[57] Still, our HP and the properties we have given it should be evaluated on their own ground, on the basis of the empirical and theoretical generalizations it makes possible. In that perspective it is worth noting that if we are right, all question related verb movements in French are cases of Remnant Movement. In particular, Stylistic Inversion only differs from SCLI and CI in that its Remnant IP targets a different layer of the Comp domain, Kayne and Pollock's 'GP' – see, e.g., the derivation in (32) above – rather than the HP layer specific to root questions which attracts Remnant IP in SCLI and CI. The unitary approach to the verb related computations to the CP domain thus made possible by our analysis can be regarded as a step forward.[58]

A specific view of the syntax–morphology interface is crucial to the system we have developed; it claims that morphology does not reorder the strings that the syntactic computations feed to PF, although, evidently, it reanalyzes them;[59] if so the alternations in clitic ordering mentioned in section 6.4., for example, must be a consequence of syntactic computations, as Bošković (2001) also argues for Slavic clitics in other contexts, extremely convincingly in our view. Like him, we have been defending the view that language-specific morphological properties can act as filters on the output of syntactic computations, although the two modules are completely blind to one another. If our tentative language-specific,

morphological, account of the restrictions on remnant movement in French SCLI and CI is on the right track, this is one important suggestion of this chapter. It must be pointed out, however, that the arguments put forward in sections 5 and 6 in favor of the Remnant Movement approach to SCLI and CI are not conceptually dependent on this aspect of the analysis. It remains to be seen whether those facts and arguments do in fact require our Remnant Movement approach conceptually, as we have claimed. It is the task of the reader to check that they do.

NOTES

This chapter is a short, (it is hoped) pedagogical version of the second chapter of Poletto and Pollock (2004). Although this version is signed only by Pollock, many of the ideas and analyses are due to Cecilia Poletto and/or interaction with her. Thanking her here is thus a very inadequate measure of my debt. As will soon become apparent my debt to Richard Kayne's work is equally great; both commented extensively on a previous version of the chapter and thus helped me avoid many pitfalls. Many thanks also to the audience at a talk I gave on an early version of this chapter in Geneva in June 2000 and to Ur Shlonsly, Eric Laenzlinger, Yves Charles Morin, and two anonymous reviewers for critical remarks and suggestions. As usual, none of these people should be blamed for any foolish ideas or mistakes that the reader may find here.

1 As is well known, SI is not restricted to questions at all, as relatives and clefts like (i) and (ii) show:

(i) L'homme à qui a parlé Marie s'appelle Jean.
'The man to whom has spoken Mary is called John.'

(ii) C'est Jean à qui a parlé Marie.
'It is John to whom has spoken Mary.'

This is why the 'trigger' for SI is a *wh*-phrase in the left periphery, not some question feature as in SCLI and CI; on the (dispensable) notion 'trigger', see Kayne (1972), and Kayne and Pollock (1978, 2001).

2 Valdôtain is a Franco Provençal dialect spoken in the Italian Val d'Aoste, which, although in Italy, is part of the traditional Franco-Provençal area that covers French-speaking Switzerland except the Jura Canton and the French Rhône–Alpes area. All the Valdôtain examples in this chapter are from Roberts (1993a).

3 SCLI, SI, and CI are mono-clausal since they do not involve any extra layer of sentential subordination, unlike the *est-ce que/qui* questions in (i) which, despite their interpretation, are arguably derived from clefts (see Obenauer 1981, 1994):

(i) a. (Quand) est-ce que {Yves, cet homme} va téléphoner?
(when) is-it that {Yves, this man} will phone
b. (À qui) est-ce que {Yves, cet homme} va téléphoner?
(to whom) is-it that {Yves, this man} will phone
c. Qui est-ce qui a téléphoné?
who is it that has phoned

On *est-ce que/qui* questions, see also Munaro and Pollock (2005).

4 Also appears as chapter 3 of Belletti and Rizzi (1996).
5 Those crucial facts were first noted and analyzed in Kayne (1972).
6 And 'residual V2' constructions in the sense of Rizzi (1996), as in (i) (from Kayne (1972: 81)):

(i) a. À peine (Jean) était-il parti que Marie est entrée.
hardly (John) had-he left that Mary walked in
b. Sans doute (Cette fille) reviendra-t-elle.
no doubt (this girl) will-come back she
c. (Cette fille) reviendrait-elle que je ne serais toujours pas content.
(this girl) would-come back she that I still would not be happy
'Even if that girl came back I still wouldn't be happy.'

Similarly, the regional *-ti* construction of French (on which see section 7.3) has non interrogative – e.g., exclamative – uses, as in (ii):

(ii) C'est-ti pas malheureux! 'Isn't that shameful!'

7 Like quite a few other Romance languages – cf. Poletto (2000) – French has both subject clitics and direct object, indirect object, locative, and partitive clitics. Most of the tests used in this section would treat all types on a par. That nominative clitics should be distinguished syntactically from the others is shown by a variety of further tests, the most prominent of which being coordination (cf. Kayne 1975, 1994; Poletto 2000): while one may fail to repeat subject clitics in coordinations like (i), it is impossible to omit non-subject clitics in the same way, as (ii) shows:

(i) Il a mangé de la viande et a bu du bon vin.
'He has eaten meat and has drunk good wine.'

(ii) a. Il les a lus et *(les) a commentés.
he them has read and *(them) has commented
b. Il en a acheté et *(en) a expédié par la poste.
he of them has bought and *(of them) has sent off by post

In addition, of course, object clitics, unlike subject clitics, do not 'invert' with the verb in SCLI and CI:

(iii) a. Les as-tu lus?
them have you read
b. (Pierre) Les lui a-t-il portés?
(Peter) them to him has-t-he taken
c. *As les tu lus?/*As tu les lus?
have them you read/Have you them read
d. *(Pierre) A les lui-t-il portés/*A-t-il les lui portés?
(Peter) has them to-him he brought/Has he them to him brought

On the reason for this difference see sections 6 and 7; our analysis of subject clitics will not rest on the tripartition between strong, weak, and clitic pronouns argued for in Cardinaletti and Starke (1999), which the reader is nevertheless strongly encouraged

to read. When compared to many northern-Italian dialects, French is a relatively unsophisticated language since it does not (overtly) distinguish between invariable and deictic clitics and number and person clitics the way many NIDs do; on this see Poletto (2000: chapter 2). French does show a person–non-person distinction in strong subject pronouns, however; see Kayne and Pollock (2001) and section 3; that there is more than meets the eye in French subject clitic sequences is shown by the facts discussed in notes 35 and 43.

8 That *ce* and *on* are nominative clitics is shown by SCLI sentences like *Est-ce vrai?* (is this true?), *est-on arrivé?* (is one arrived?), and by the ungrammaticality of **c'est-il vrai?* (this is-it true) **On nous attend-il?* (one (for) us waits he) (see Kayne (1975: 89) and section 7.3). That they do not share all the properties of the other nominative clitics is shown by the fact that they do not yield acceptable CI sentences in Standard French **Depuis quand cela est-ce connu?* (since when this is-this known) **A qui Marie et moi doit-on parler?* (to whom Marie and me must-one speak) – vs. *Depuis quand cela est-il connu?* (since when this is-it known) *A qui Marie et moi devons-nous parler*? (to whom Marie and me must we speak). On this see note 36.

9 *Elle*, *nous* and *vous* are ambiguous and function as clitics in SCLI constructions like *Partirez-vous? partirons-nous?* (will-go you/we), but can also be strong forms, as *nous* is in (14d); when so analyzed they permit modification, are felicitous answers to *wh*-questions, as in *Qui viendra? Nous*, *vous*, *lui* (Who will come? you/we/him). When *nous* and *vous* are clitics, they cannot be modified, conjoined etc. (see (14a, b), (15b). Strong pronouns, unlike clitics, can be used as deictic pronouns (always capitalized in the rest of this article). Two other important properties of strong pronouns in French must be born in mind: (a) they have no morphological Case distinctions; (b) they never take (obligatory) liaison (see (vi) below). So, except for *elle*, strong pronominal subjects can in principle always be distinguished phonetically from their nominative clitic counterparts.

10 The properties listed here under (i–vi) hold of all clitic forms, not only of nominative clitics, although nominative clitics differ syntactically from non-nominative ones in other respects (see note 7); as noted in Kayne (1975) the two sets of clitics also differ prosodically: while it is somewhat marginally possible to have (iB) as a well-formed continuation of (iA) in a dialogue, the same is not true of non-nominative clitics, as the sharp ungrammaticality of (ii) shows:

(i) A: Il va arriver en retard.
'He is going to be late.'
B: Qui ça il?
who that he
'Who do you mean he?'

(ii) A: Pierre {les a rencontrer, lui a donné un livre, en parlera, y part demain}
Pierre{them has met, to him has given a book, of it will-speak, there goes tomorrow}
B: *Qui ça {les, lui}; *De quoi en; *Où ça y
who that {them, to him}; of what *en*; where that there}

We interpret this contrast as showing that nominative proclitics are not prosodic suffixes, unlike non-nominative proclitics: they can bear main stress and thus need

not form a prosodic word with a following element, unlike *les*, *lui*, *en* and *y*; because no such prosodic 'prop' is present in (iiB) the strings are ill-formed at PF, unlike (iB). In addition, on our analysis of case checking in section 3, (iB) is syntacticvally acceptable – i.e. it converges at LF – because *il* being a metalinguistic quote in (1B), it is exempted from having to check its uninterpretable nominative feature; alternatively it could be that *il* does check it by adjoining to some covert $AgrS^0$ head-specific to such elliptical contexts.

11 See Pollock (1998).

12 This section is essentially a partial rephrasing of Kayne and Pollock (2001: section 6).

13 For considerable elaboration of this idea see Cardinaletti and Starke (1999). See also notes 26 and 27.

14 Postverbal strong pronouns in SI must be deictic (see Kayne 1972, note 2) and Kayne and Pollock (2001: section 6)). Example (24) are often considered (very) awkward, but everybody agrees they contrast sharply with the totally unacceptable (26).

15 The liaison *-s* of *VOUS* and *NOUS* in (27c, d) must not be pronounced. If it is, those examples become irrelevantly acceptable, with *nous* and *vous* then (the stressed variants of) nominative proclitics.

16 Principle (30) is to be related to the fact that various instances of clitic pro in French, Italian, and English are also limited to third person; see Kayne (2000). The silent clitic 'pro' referred to in (30) should be carefully distinguished from the phrasal 'pro' of null subject languages which has no such restriction. On phrasal pro see Cardinaletti (1997) and below.

17 See also Kayne (1994), (2000: chapter 9), Pollock (1998), and Sportiche (1993b) on clitic doubling in other contexts.

18 On this view SI sentences crucially involve remnant (IP) movement (see Kayne and Pollock 2001); on Remnant Movement, see Den Besten and Webelhuth (1987). On remnant IP movement, see also Pollock et al. (1999), Poletto and Pollock (1999, 2004), and sections 6 and 7 in this chapter.

19 Despite the fact that *-ant* forms and finite verbs behave similarly with respect to the placement of adverbs (cf. Kayne 1975: section 1.3 and Pollock 1989: 408).

20 Structure (38) could in fact be analyzed as in (i) if one adopted (ii) the 'static' version of principle (30), as we shall do in section 6 (cf. (70)):

(i) $[_{TP}$ [{Eux, lui, elle}] $[_{T^0}$ ayant] . . .]]

(ii) Only strong third person pronouns can remain in [Spec, TP].

On that analysis *eux*, *lui*, *elle*, etc. simply check their (non-morphological) case feature by entering the usual checking relation with finite T^0 and they do not move to any higher functional projection; as shown in (i) they are not part of a clitic phrase; rather they make up a 'simple' subject DP; on the reason for this see section 7.5.

21 On this analysis acceptable infinitives like (i) (= (36) in the text above)

(i) {Eux, nous, vous, toi, moi} passer l'examen? Jamais!
'them, us, you, you, me} to take the-exam, never'

cannot have a pro subject in [Spec, Infl]; this comes as no surprise if the subject of infinitives is the null-pronominal anaphora PRO of Chomsky (1981). PRO cannot

occur in gerunds because if it did it would have null case, which it bans (cf. Chomsky and Lasnik (1993)) and pro cannot occur in infinitives since it cannot have null Case. In the text's example below *Ayant compris le problème, je suis allé au cinéma* ('Having understood the problem, I went to the movie') the phrasal pro-subject checks its case in [Spec, TP] and the coreferential clitic *je* (similarly *tu*, *il*, *nous*, etc.) checks its own morphological case in $AgrS^0$ in the main clause; so in gerunds of this type *je*, *tu*, *nous*, etc. can be interpreted as coreferent with an empty pronominal, despite Kayne's principle (30).

If this is correct, the lexical subjects of examples like (i) must have a different Case and check it in a crucially different way; it would be tempting to say that such infinitives have a vocative subject (=[{*moi?*, *toi? lui?*} [PRO *passer l'examen*]] . . .) and tie their existence to this. Gerunds should then exclude such vocative structures, for reasons unclear. As Cecilia Poletto suggests (p.c.), perhaps vocatives are too high for the gerunds to activate, a property which might be related to the more marked character of Aux to Comp constructions in infinitives than in gerunds. See Poletto and Pollock (2004).

22 The reason is that the LF form thus produced will contain an uninterpetable case feature; if clitics are only heads – see section 4 and note 27 – the input of (33) would have to contain two subject clitic phrases, which is independently banned by other UG constraints (e.g., one of those two clitic phrases would have its EPP features unchecked).

23 On the idea that clitics are heads, see, e.g., Kayne (1975, 1983, 1994: chapter 6), Rizzi and Roberts (1989), Cardinaletti and Starke (1999), and many others.

24 See Sportiche (1988), Larson (1988b), and Koopman and Sportiche (1991b).

25 This analysis thus rests crucially on the existence of a 'split' in the IP field between TP and AgrSP, as argued originally in Pollock (1989) and much subsequent work in the same vein leading over the years to a refined exploration of the functional structure of the sentence, culminating in the detailed cross linguistic investigation of Cinque (1999). Chomsky (1995c) has proposed a significant step in the other direction and argued that what we have been calling AgrS should be eliminated from the inventory of functional categories, mostly because AgrS has no autonomous interpretive import; assuming that LF interpretability does constrain the existence of functional categories, what we call AgrS in the text could be replaced by a higher substantive functional head, a move not entertained by Chomsky (1995c) but consistent with his guidelines (cf. also Pollock 1997). The distribution of full DP/strong pronouns and clitic pronouns in gerunds in French is in itself an argument for the existence of (at least) two distinct positions in the higher functional field of the sentence, each with its specific case checking properties. On the need for more than these two functional positions see also Cardinaletti and Roberts (1990), notes 35 and 43 below, and Poletto (2000). Aside from the very many arguments in its favor in the comparative-syntax literature over the last fifteen years or so, the split between TenseP and AgrSP has been argued for by Guasti and Rizzi (2002) and Neidle and MacLaughlin (2002) on two other totally different bases, namely, language acquisition and the syntax of American Sign language, respectively; in itself the convergence of these different fields of linguistic research provides strong confirmation for the Split-Infl hypothesis.

26 If this account of (47) is correct, the acceptability of (i),

(i) a. Pierre, paraît-il, aime la linguistique.
'Peter, it seems, likes linguistics.'

b. Lui, paraît-il, aime la linguistique
'Him, it seems, likes linguistics.'

must mean that the strong pronouns and full DP of such sentences have been extracted from their [Spec, TP] position to a position to the left of AgrSP (on this, see Belletti 1990), which can host indefinites and quantified DPs and is thus *not* a clitic left dislocated position (compare (8′)); similarly *wh*-phrases like *quand*, *à qui*, *comment*, etc. in sentences like (ii) must also have moved from their [Spec, Force] position to some superordinate position in the CP field; the unacceptability of (iii) means, then, that *que* cannot move up to that position:

(ii) a. Quand, à ton avis, partira Jean?
when in your opinion, will-go John
b. À qui, à ton avis, a-t-il téléphoné?
to whom in your opinion, has he phoned
c. Comment, selon toi, Marie va-t-elle s'excuser?
how in your opinion Mary will-she apologize

(iii) *Que, à ton avis, a fait Jean?
What, in your opinion, has done Jean

Sentence (iii) might itself then be profitably tied to Bellunese pairs like (iv) – on which see Pollock et al. (2003):

(iv) a. A-tu magnà che?
have-you eaten what
b. *Che a-tu magnà?
what have-you eaten

27 In extremely formal style it is possible to say *Mes amis z-ont compris*, *Eux z-ont compris*; such cases of liaison are never obligatory, even in highly conservative French; the style that has such exceptional cases of plural liaison is in fact plain snobbish, and it evidently relies on very different structural conditions.

In bare phrase-structure terms (cf. Chomsky 1993, 1995c), all lexical items, including strong pronouns like *eux*, *lui*, *moi*, etc. are heads in the numeration. What distinguishes them from pronominal clitic heads is that they 'project' to a phrase, which clitic heads cannot do as a matter of course; they can only if they merge with a designated class of lexical items – coreferential pro/strong pronouns/full DP – yielding a clitic phrase in the sense of Kayne (1972) and Sportiche (1993b). That inability they share with articles, among others grammatical items; articles too fail to 'project' a maximal projection unless they take a NP (or AP) complement; put slightly differently, articles are part of the 'extended projection' of the noun, just as clitics are part of the verb's extended projection, in Grimshaw's (1991) sense. It appears, then, that liaison – like reduced pronounciation in English – is sensitive to that property and ignores the fact that the structural relationship between a nominative clitic and the following verb or clitic phrase probably differs from that of an article and its AP or NP complements; (this refinement of) the text analysis (still) leaves unexplained the obligatory liaison in *Eux z-autres*, *Vous z-autres*, unfortunately. On the status and

position of articles in the functional projections of the DP, which these inadequate remarks do not do justice to, see Giusti (2000) and her many references.

28 The structural hierarchy we have argued for here is at variance with that proposed in Cardinaletti (1997); we have in effect reversed the order of embedding of the two functional positions hosting clitics and full DP/strong pronouns which she suggests (see e.g. her (73), p. 53); the contradiction may well only be apparent, however, and it is tempting to claim that in the simple affirmative sentences she examines strong pronouns and full DPs (though not clitics) eventually move from the low position countenanced here up to a higher functional layer, perhaps akin to the Topic-like position to which they alone move in SI on Kayne and Pollock's (2001) analysis. On this see also note 26.

29 As Poletto (2000) demonstrates, the NIDs provide empirical arguments in favor of overt, pre-spell-out movement in SCLI; let me repeat two of her arguments here; first, in the dialect of Rodoretto di Prali it is possible to coordinate SCLI constructions and *wh*-structures with an overt complementizer, as in (i) (cf. Poletto (2000: chapter 3, (21)):

(i) L'achetà-tu ou qu' tu l'achette pa? Rodoretto di Prali
it buy-you or that you buy not

On the well-supported assumption that coordination is always coordination of two identical phrases *l'achetà-tu* must have activated the Comp field whose presence in the second conjunct is overtly signaled by *qu-*; therefore SCLI in Rodoretto di Pralese must involve overt computation to the CP field.

Second, in Fassano – the dialects spoken in the Fassa valley – SCLI is only possible when the verb has crossed the position of a 'new information' particle that has been shown to be a CP particle in Poletto (2000: 46–49)):

(ii) a. Olà vas-t pa? Fassano
where go you Ptcl
b. Olà pa tu vas
where Ptcl you go
c. *Olà pa vas-t?
where Ptcl go you
d. *Olà tu vas pa?
where you go Ptcl

In (iia), SCLI has taken place and both the verb *vas* and the subject clitc *-t* precede the Comp particle *pa*; in (iib) SCLI inversion has not taken place – as is possible in many varieties, including colloquial French (cf. *Où tu vas?* = 'Where you go?') – and *pa* precedes the subject clitic and the verb; (iic) shows that *pa* cannot precede the verb and the clitic when SCLI has taken place and (iid) that the particle cannot follow them when it has not. Evidently, (ii) can be explained neatly if SCLI is a computation that overtly displaces the verb and the subject clitic to the Comp field, more precisely, to a position higher than *pa*. On further arguments of this sort, see also Poletto and Pollock (2004).

30 In colloquial French *pas* does not block head movement in imperatives, as shown by the fact that at that stylistic level (i) is acceptable for many speakers, including the author:

(i) Donne le lui pas!
give it him not

Sentence (iia) is also fine in a slightly less colloquial style and alternates with the 'standard' (iib)

(ii) a. Le lui donne pas!
it him give not
b. Ne le lui donne pas!
Neg it him give not

Example (i) should clearly be interpreted as missing *ne* altogether; speakers that accept (iia) have an invisible *ne* which, like its overt counterpart, blocks head movement. Sentence (i) then shows that for speakers of colloquial French, *pas* can be generated as sentential negation, presumably in the 'low' position described by Zanuttini (1997) for some NIDs. We return to imperatives from a different perspective in section 6.4.

31 Because they show gender and number distinctions, which expletives typically do not – although the NIDs show that expletive pronouns can be morphologically masculine or feminine.

32 This analysis of (63) thus derives the effects of Kayne's (1983) principle (59), repeated here under (i), without having to posit it belongs in UG.

(i) Given a chain C with case K, K can be realized morphologically on at most one element of C.

33 Those facts were originally noted in Morin (1979), who gave contrasts like the following (see also Kayne (1983: 219)):

(i) a. Pourquoi lui seul a-t-il été prévenu?
why he only has-he been told
b. *Pourquoi toi seul as-tu été prévenu?
why you only have-you been told

To my ear (ia) becomes less acceptable if *elle* replaces *il* and if *seule* is dropped:

(ii) a. ?Pourquoi elle a-t-elle été prévenue
why she has-she been told

Weak but clear contrasts as that between (ia) and (iia) have a garden-path flavor; when it is not in a CLLD position, preverbal position *elle* seems to be preferably interpreted as a clitic pronoun, which its morphology makes possible (see note 9); the later occurrence of the postverbal clitic in CI makes this impossible for the reasons discussed in section 4, whence the garden-path problem; this is why presence of the modifier *seule* helps: it makes the analysis of *elle* as a clitic impossible (see section 4), so no parsing problem arises; adding *autres* or *trois* to preverbal *nous/vous* in (65c, d) does not make them totally acceptable in my French, probably because to my ear ?{*Nous, vous*} {*autres*, *seuls*, *trois*} {*avons*, *avez*} *apporté un livre* remain less than perfect;

in this they differ from their gerund counterparts: {*Nous autres*, *moi seul*, *toi seul*, *vous deux*} *ayant passé l'examen . . .* , are fine and contrast minimally with *{*Nous*, *moi*, *toi*, *vous*} *ayant passé l'examen* (cf. discussion of (36d)); such contrasts will follow from principle (70) below if strong first and second person pronouns *can* remain in [Spec, TP] when modified by *autres*, *seuls*, and numerals.

34 On the unacceptability of (69c, d) see n. 15.

35 The idea that only third person pronouns can remain in [Spec, TP] goes in the same direction as the descriptive generalizations on clitic doubling in Poletto (2000: chapter 6). Although we have no conceptual explanation for why there is a special slot for first and second person pronouns in the structural hierachy of the clause, it does appear that some such property also holds for object clitics. Zanuttini (1997: 18) observes that first and second person object clitics occur in front of a preverbal negative marker while third person pronouns occur after it, as shown in (i) (Cairese, a Val Bomida dialect):

(i) a. U n li sent nen.
SCL not him hears not
'He does not hear him.'
b. U mi-n sent nen.
SCL me-not hears not
'He does not hear me.'

On this basis it would be tempting to say that (some principled reformulation of) (70) should carry over to all first and second person pronouns, independently of their subject or object status. See Poletto and Pollock (2004).

36 Compare (69a, b) and, say, *Ma femme et moi avons téléphoné* ('My wife and I have phoned'), *Ta femme et toi avez téléphoné* ('Your wife and you have phoned'), etc. We therefore do not need to appeal to Kayne's (1983) thematic criterion account of the contrast between (68) and (69) which rested on his (74), repeated in (i):

(i) A first or second person pronoun must be an argument.

Criterion (i) is falsified, as Friedemann (1997: 164) notes, by examples like (72b, d); Kayne's (1983) idea that the post-verbal clitic in CI – though not in SCLI – was an expletive also rested on contrasts such as that between (i) and (ii).

(i) Depuis quand est-ce vrai? since when is this true

(ii) *Depuis quand cela est-ce vrai? since when this is this true

which he analyzed as a theta-criterion violation with *ce* and *cela* both arguments. Friedemann (1997: 164) notes that some speakers accept (ii), others perceive a clear contrast; for the latter class our analysis may have to state that although *ce* and *on* are nominative heads in a clitic phrase, they only accept a null pro in their specifier, unlike *il* which accepts *cela*, bare quantifiers like *tout*, quantified DPs like *chaque homme*, etc. as well as (phrasal) pro; examples and contrasts like (iii):

(iii) a. {Cela, tout} est-il bien attaché?
{that, all} is-it well fastened

b. {Cela, tout} va tomber parce que c'est mal attaché
{that, all} will fall because that is badly fastened
c. *{Cela, tout} va tomber parce qu'il est mal attaché
{that, all} will fall because it is badly fastened

must then mean that in (iiib) *cela*, *tout* are interpreted as coreferent to (phrasal) pro in the Spec, *ce* of the subject clitic phrase in the subordinate clause:

(iv) $[_{ClP}\,[_{NP}\,\{cela,\ tout\}]_i\ pro]\ \ldots\ [_{ClP}\,[_{NP}\,pro]_i\ ce]$

As for (v), the structure of the ill-formed (iiic),

(v) $*[_{ClP}\,[_{NP}\,\{cela,\ tout\}]_i\ pro]\ \ldots\ [_{ClP}\,[_{NP}\,pro]_i\ il]$

it might be excluded because of a conflict in gender or vagueness if the *pro* specifier of *il* has to be masculine/non vague, which *cela*, *tout* are not; if so $[_{ClP}\,[_{NP}\,pro]_i\ ce]$ in (iv) is fine because *ce* imposes no such requirement on pro, perhaps because of its deictic nature.

37 Perhaps to check some modal feature, as in Belletti (1990), Rivero (1994), Rizzi (2001b), and Terzi (1999).

38 H^0 is a head that can be merged only in root sentences and it can be associated with various (uninterpretable) features, like [+question] – which then triggers the CI and SCLI phenomenology for reasons discussed later – and [+imperative]; (true) imperatives are indeed restricted to root contexts.

39 In (very) colloquial French that suppletion is not obligatory for first person dative *me* and most speakers of Standard French have probably caught themselves saying, half in jest, things like *donne le me*, *donne me le* ('Give it me/give me it'); the same does not appear to be true of the second person dative; even as a joke I don't think I could say **Mets le te dans la poche*, **Mets te le dans la poche* ('Put {it you, you it} in the pocket'). Suppletion *is* obligatory in simple imperatives like *aide moi*(**me*); see Kayne (2000: chapter 8).

40 Terzi (1999) develops a head movement account of a similar alternation in Standard and Cypriot Greek consistent with Kayne's LCA resting on two different input structures for clitic sequences; in one the consecutive dative and accusative clitics are adjoined to two different functional heads, as in the text; in the other, the two clitics are adjoined to one another and are adjoined as a unit to a single functional projection (see Terzi 1999: 102–103); V^0 movement to the C domain above the clitic sequence must first adjoin to the closest functional projection because of Chomsky's (1995c) 'shortest move'; the relevant clitic projection is then 'dragged along' by V^0 movement and so the two input structures yield the two alternative orderings of Greek imperatives. Terzi refrains from extending her analysis of Greek to French and adopts Laenzlinger's (1998) morphological approach, which capitalizes on the tonic properties of *moi/toi/lui* in e.g. *Donne le moi*, *donne moi le*, etc. The latter approach is incompatible with our view of morphology (see next section) and it does not seem to carry over very easily to the clitic sequences variations in (very) popular French in which *moi* does not replace *me*, as in *donne me le*, *donne le me*. See previous note.

41 On the non-availability of morphological accounts, see next section.

42 Laenzlinger (1998: 3.1 and 3.2.1) suggests that the *-t-* of SCLI and CI is related to the so-called *fausse liaison* or *pataques -t-* of popular French sentences like (i):

(i) a. Il ira seul -/t/-à Paris.
he will-go alone /t/- to Paris
b. Il devra-/t/-y avoir du monde.
it must -/t/-there be of people
'Lots of people will be there.'

where *pataques* *-t-* is the marker of third person agreement. This would then account for the absence of *-t-* in first and second person SCLI:

(ii) a. Partirons (*t) nous?
will-go (*t) we
b. Partirez (*t) vous?
will-go (*t) you

I find the clever *rapprochement* between the two sorts of *-t-*s unconvincing; first, as Laenzlinger (p. 112) himself notes, /-z/ in popular French is an equally acceptable *fausse liason* consonant for third person:

(iii) Il reviendra -/z/ à Paris.
he will-go back -/z/ to Paris

although it indeed is typically a first or second person agreement marker, as in *fausse liaison* examples like (iv) (= Laenzlinger's (110a)):

(iv) J'irai/tu iras/nous irons finalement -/z/- à Paris.
I/you/we will-go finally -/z/- to Paris

On Laenzlinger's analysis of SCLI and CI *-t-*, one should expect (v) to be a possible variant of (83c, d), which they clearly are not:

(v) a. *Parlera-/z/-{il, elle}?
will speak -/z/- {he, she}
b. *Parlent-/z/-{ils, elles}?
speak -/z/- {he, she}

If what accounts for (v) is that /z/ is preferably a second person marker, we would still expect (vi) to surface, again contrary to facts:

(vi) a. *Parlera-/z/-tu?
speak -/z/- you (Sg)
b. *Parlerez-/z/-vous?
speak-/z/ you (Pl)

In any case the Morgeux data show that the analysis is insufficiently general; this criticism of Laenzlinger's analysis of SCLI and CI *-t-* does not extend to his extremely interesting account of the 'epenthetic' /z/ of imperatives like *Donne* *(z) *en*. See his section 3.1.

43 We shall say that *-t-* has a null counterpart '*ø*' in first and second person pronoun SCLI sentences, as in *Quand partons-nous*, *À qui parliez-vous?* ('when leave-we', 'to

whom spoke-you') and that '-ø-' has the same morpho-phonological properties as its overt counterpart. The first person singular clitic *je* can only invert in SCLI with auxiliaries *avoir*, *être*, and *aller*, with modals like *devoir* and *pouvoir* – the latter only in its otherwise obsolete *puis* form of *'Puis-je?'* ('Can I?') (cf. **peux-je*) – and with main verbs in the future and conditional:

(i) a. Suis-je arrivé? am I arrived
b. Ai-je compris? have I understood
c. Vais-je partir? will I go
d. Dois-je partir? must I leave
e. Puis-je dormir? can I sleep

(ii) a. Arriverai-je? will-arrive I
b. Comprendrai-je? will-understand I
c. Partirai-je? will-go I
d. Dormirai-je? will-sleep I
e. Partirais-je si je savais que . . . ? would-leave I if I knew that . . .

(iii) a. ?*{Arrive-je, Arrivais-je}? arrive {Prst, Past} I
b. ?*{Comprends-je, comprenais-je}? understand{Prst, Past} I
c. ?*{Pars-je, partais-je}? go {Prst, Past} I
d. *{Dorme-je, dormais-je}? sleep {Prst, Past} I

Such contrasts recall the parallel restrictions on Subject–Aux Inversion in English (cf. Pollock 1989) and would follow on an analysis of that type if *je* moved or was merged 'very high' in the IP field, to or in a position that only 'auxiliary phrases' could cross over under Remnant Movement (see section 6) and if future or conditional verb forms moved up to that position in virtue of the fact that their future or conditional tense endings are identical to those of auxiliary *avoir* in the present tense and *imparfait*; this would then be a very surprising reflex in synchronic syntax of the bimorphemic origin of the construction 2,000 years ago, on which see Benveniste (1974) and Roberts and Roussou (1995).

44 The structural interpretation of the predicate 'adjacent' just adopted comes dangerously close to building a syntactic property into morphology. This may well indicate that the language specific morphological analysis entertained in this section is not optimal; if so, the more ambitious syntactic analysis alluded to in section 7.1 should be taken up seriously in future research; see Poletto and Pollock (2004).

45 As is well known, Old French had questions in which accusative and dative clitics did follow the verb; (i) from Foulet (1928: 116), provides relevant examples:

(i) a. Si dist: Sire, ai le ge bien fait? Old French
thus said, Sire, have it I well done
b. Conois la tu?
know her you
c. Pere, avés les vos obliées?
father have them you forgotten
d. Plairoit vos oïr un son d'Aucassin, un franc baron?
please you (to) hear a song by A . . .

Since Old French also allowed 'Germanic' questions – see, e.g., Rutebeuf's famous *Que sont mes amis devenus?* ('What have my friends become?') and for much discussion Rizzi and Roberts (1989), Cardinaletti and Roberts (1990), and Roberts (1993) – it is tempting to say that both types involved (at least final) head movement to (some high head in) the CP field, a conclusion forced on us if Kayne (1994: 44) is right in assuming that such strings as *A Jean compris?* (*'Has John understood?'*) only obtain via V^0 movement to a head in (some) Comp (layer). In this diachronic perspective a reduction of the syntactic scope of verb movement to the CP field seems to have been a long term tendency in French. Conversely, Old German and Old English had V3 (V4, etc.) structures like (ii), discussed in Cardinaletti and Roberts (1990) and Tomaselli (1995):

(ii) a. Erino portun ih firchnussu. Old German
iron doors I shatter
(Tomaselli 1995: (1b))

b. Dhes martyrunga endi dodh uuir findemes mit urchundin dhes heilegin chiscribes.
'His martyrdom and death we demonstrate with evidence of the Holy Writings.' (Tomaselli (1995: 1c))

c. After his gebede he ahof that child up. Old English
after his prayer he lifted the child up
(van Kemenade 1987: 110, (3a))

d. Thas thing we habbath be him gewritene.
these things we have about him written
(van Kemenade 1987: 110, (3b))

It would be tempting to analyze such examples as cases of Remnant Movement to the Comp area of nominative clitic voice phrases – various non-nominative clitic voice phrases could also move like this in Old English (see van Kemenade (1987) for a head-movement analogue of this idea); this only obtained when the highest CP layer was not occupied by a *wh*-phrase, negation, and the adverbial *þa* 'then'; for such cases one might hypothesize final V^0 movement to the head of forceP in the specifier of which *wh*-phrase, negation, and þa would be standing, much as in the analysis of French imperative sketched out in section 6.4; if this is the right way to look at such facts – but see Cardinaletti and Roberts (1990) for an early alternative account exploiting a double Agr structure – Romance and Germanic would seem to have taken two opposite courses, for reasons that would deserve an investigation that cannot be undertaken here.

46 On a similar view of *i* arrived at from a totally different angle – that of the *que to qui* rule – see Taraldsen (2001). In Piedmontese and Fruilian dialects, *i* is what Poletto calls a 'deictic' SCL, i.e., first and second person clitics, which jibes well with the view that at least Québec French *-tu* is historically derived from Standard French second person singular clitic *tu* (see Vinet 2000). On Poletto's analysis, deictic clitics are in the same structural position as invariable clitics.

47 This account evidently presupposes that *i* does not have any morphologival case to check (in $AgrS^0$), which should be tied to its complete lack of person features (see Chomsky 1999); one might wonder why on the *-t-(+i)* strategy just described it is impossible to remnant move only FP3 in (95), yielding ill-formed strings like (i):

(i) *Viendra-t-i elle?
will-come *ti* she

I believe that (i) should be excluded for the same reason (ii) is:

(ii) a. *I j'ai compris.
i I have understood
b. *I elle a compris.
i she has understood

To our knowledge no dialect of French allows 'Invariable SCL + Variable SCL' strings to surface; in this respect French differs from many NIDs; in the Italian dialects that do accept such sequences Poletto (2000: 23) shows that the invariable clitics move to the CP domain and have pragmatic and discourse import; suppose that it is only when they play such a derivative discourse role that invariable clitics can c-command lower level variable clitics, because they then cease being analyzed as referential entities; assume French *ti* dialects do not allow for *i* incorporation into the CP domain; *-i* therefore remains referential; since it is necessarily coreferential with the lower clitics, it will cause a Principle B violation unless the computations to the CP field create structures in which it is neither c-commanded by nor c-commands the variable clitics. This will exlude both (i) and (ii), as desired, by forcing the maximal FP2 in (95) to undergo Remnant Movement to [Spec, HP]. On similar ideas in other contexts, see section 7.5.

What was said earlier in section 3 predicts that in the *-ti* sociolects and dialects sentences like (iii) should be well-formed but (iv) excluded:

(iii) a. Lui viendra-ti?
him will-come-*ti*
b. Eux viendront-ti?
them will-come-*ti*

(iv) c. Moi viendrai-ti?
me come-*ti*
d. Toi viendras-ti?
you come-*ti*

This is because *moi* and *toi* cannot remain in FP2, unlike *lui* and *eux.* To the (limited) extent that my intuitions about those sociolects are reliable, I am inclined to believe that the prediction is correct.

It is often said that the *ti/tu* dialects and sociolects ban *wh*-extraction altogether; the facts are not crystal-clear, however; Yves-Charles Morin (p.c.) and Québec French native speakers like Monique Lemieux and Marie Thérèse Vinet (p.c.) do seem to accept as perfectly grammatical only yes/no questions like (v) and find examples like (vi) fairly outlandish:

(v) a. Il va-tu bien? Québec French
he goes-*ti* well
'How is he feeling?'
b. Je suis-tu arrivé?
I am-*ti* arrived
'Have I got there?'

(vi) a. Quand tu pars-tu?
when you go-*ti*
'When are you leaving?'
b. Comment elle va-tu?
how she goes-*ti*
'How is she doing?'
c. Où je suis-tu arrivé?
where I am-*ti* arrived
'Where have I arrived?'

However, Yves Charles Morin notes (p.c.) that in his French *-ti* dialect the counterpart of (vib) "s'améliore avec le complémenteur *que*" and gives as acceptable (vii),

(vii) Et comment qu'a va-ti, ta vache, à c'theure? Québec French
and how that it goes-*ti* your cow now
'And how is your cow doing now?'

I will therefore refrain from attempting to speculate on why (vi) and the like in Quebec French are often judged less than optimal; the remarks on Québec French *-tu* constructions in this footnote do not even scratch the surface of its complex properties, on which see Vinet (2000) and her references.

Aside from clear Topic drop cases like the famous question *Où qu'est-ti?*, *Où qu'est-ti?* (where that is-*ti*) asked by Michel Simon in an equally famous French movie in the thirties – the null topic here is a card that Michel Simon keeps moving around and that onlookers must spot if they are to win their bets – the *ti* constructions require preverbal subjects, which simply follows from the EPP on our analysis, which also claims that the *que* of (vii) and of Michel Simon's question must be the surface realization of the head of a (very) 'high' functional layer of the CP field, perhaps ForceP.

48 The different Valdôtain dialects can differ a lot in that respect; according to Roberts (1993: 320) the Châtillon and Val Ferret dialects have only one second person singular preverbal clitic in simple tenses, while the Ayas and St Nicholas dialects have three. Despite this considerable variation, all dialects require a proclitic on the auxiliary in all persons in compound tenses.

49 Structure (104) is simplified; see section 7.5.

50 Most NIDs have subject clitics (cf. Poletto 2000) yet they do not allow for the SCL1–V–SCL2 sequences of SCLI of Regional French or Valdôtain. Similarly, they do not have CI constructions. So, for example, in Friulian **Al vegnial* (he comes he) and the like are excluded although *vegnial* (comes he) is fine; in our terms that must mean that their subject clitics have not been reanalyzed as TP elements, i.e., as 'pure' agreement markers, as in Valdôtain, and that full DPs are in the specifier of the $AgrS^0$ nominative clitics (see next section); in short full DPs are too high in the structure of the clause in most NIDs for Remnant TP movement to the specifier of HP to drag them along, as Poletto (2000) already argued.

51 We have omitted the previous topicalization of the direct object *an pomma* (an apple).

52 We ignore the cycle here to make the derivations easier to read.

53 As is well known the basic assumption taken up here that the null-subject agreement markers have to be overt raises tricky problems for Italian third singular and, more generally, for Chinese-type null-subject languages, on which see Huang (1989).

54 See Poletto (2000: chapter 6) for the refinements that the NIDs require concerning what elements their nominative clitics can double.

55 In addition to their role in SCLI configurations, clitic phrases (with a non-lexical clitic head) play a major role in SI (see Kayne and Pollock 2001); the text analysis allows for that since the null-clitic pro fails to be c-commanded by the topicalized DP and the latter fails to be c-commanded by the formeer in the spell-out structures generated by derivations like (i) (= (32) in text above), at work in SI sentences like *À qui a téléphoné Jean?*

(i) $[_{IP}$ Jean-pro a téléphoné]
$\Rightarrow [_{FP}$ Jean$_i$ F^0 $[_{IP}$ t$_i$-pro a téléphoné]]
$\Rightarrow [_{GP} [_{IP}$ t$_i$-pro a téléphoné$]_j$ G^0 $[_{FP}$ Jean$_i$ F^0 t$_j$]]

56 Unfortunately, the analysis developed above has not much to contribute to the understanding of a mysterious set of robust facts uncovered in Morin (1985). Morin observes that what he convincingly analyzes as the (subjectless) verbs *voilà/voici* allow the postverbal clitic to 'agree' with the objective feminine clitic *la/les*, as in sentences like (ib, c).

(i) a. Ne la voilà-t-il pas prisonnière de ses mensonges
'Isn't she a prisoner of her own lies?'
b. Ne la voilà-t-elle pas prisonnière de ses mensonges
'Isn't she a prisoner of her own lies?'
c. Ne les voilà-t-elles pas prisonnières de leurs mensonges
'Aren't they prisoners of their own lies?'

This is in addition to the acceptable, and expected SCLI pattern of (ia), in which *il* is arguably an expletive subject clitic comparable to that of e.g. *lui semblait-il que la terre était plate*? (to him appeared-it that the earth was flat, 'did it seem to him that the eath was flat?') – despite the subjectless form *voici-voilà* affirmative sentences take at spell-out (see the account of a similar asymmetry in Valdôtain in 7.4); the same pattern of exceptional postverbal clitic agreement holds in CI sentences like (iib, c) with a verb like *gêner*:

(ii) a. Cela la gêne-t-il?
this her bother-t-it
'Does that disturb/bother her?'
b. Cela la gêne-t-elle?
this her bother-t-she
'Does that disturb/bother her?'
c. Cela les gêne-t-elles?
this them bother-t-they
'Does that disturb/bother them?'

Cases like (iib, c) make it difficult to analyze the peculiar 'agreement' pattern of (ib, c) as resulting from the (exceptional) reanalysis of *la* as an objective subject clitic occupying the specifier position of a subject clitic phrase of the form in (iii),

(iii) $[_{ClP}$ {la, les} $[_{Cl^0}$ elle(s)]]

all the more so as sentences such as, *Depuis quand cela la gêne-t-elle?* ('How long has this bothered her?') seem to have the same acceptability as (iiib), unless it could be

claimed that *qu*-phrases like *depuis quand* can move to a position further left (i.e., higher) than that to which object *wh*-phrases can move. Morin (1985: 796) notes that the acceptability of the feminine clitic in (iib, c) and the like seems to depend on the thematic roles and animacy of both subjects and objects; compare:

(iv) a. Depuis quand Pierre la gêne-t-il?
'How long has Peter disturbed/bothered her?'
b. *Depuis quand Pierre la gène-t-elle?
(same)
c. Marie, cela va-t-elle la déranger?
'Mary, is this going to disturb/bother her?'
d. ?*La pièce, cela va-t-elle la déranger?
The room, is this going to put it in disarray?

Morin (1985: 797) makes the further very important obervation that the acceptable exceptional clitic agreement of (iib, c) never extends to subject/verb agreement, whence contrasts like (v):

(v) a. *Cela les gêneront-elles?
this them bother(Fut + Pl) they
'Will that bother them?'
b. Cela les gênera-t-elles?
this them bother(Fut + Sg)-t-they
'Will that bother them?'

In short, although (v), (iia), (iva vs. b), (ivd) are straightforwardly explained by the analysis developed in this chapter, the (perfect) acceptability of (ib, c) and (iib, c) does not follow from anything we have said. On equally ill-understood contrasts in animacy with something of the same flavor in other constructions, see, e.g., Kayne (1975: 320–323, 159, and note 107).

57 See Poletto and Pollock (2004).

58 For this to be a genuine breakthrough one would need to explain why Remnant IP Movement to GP, as in SI, crucially depends on the previous topicalization of the subject while in CI and (regional *-ti*) SCLI Remnant IP Movement to HP is not subject to this requirement; see Poletto and Pollock (2004). In addition, our analysis raises the general problem of why UG should allow for two radically different types of computations, head movement and Remnant movement, yielding identical strings at spellout; see section 7.1.

59 So for instance the string *est-il* ('is he') in *Quand (Pierre) est-il venu?* (when (Peter) is he come) is crucially analyzed as a morphological unit, a prosodic word, although it is not a syntactic object in our system.

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68 Subjunctives

JOSEP QUER

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1 Introduction

Subjunctive is the traditional label for one of the possible values of the grammatical category 'mood' (in some grammatical traditions also known as conjunctive). It minimally contrasts with the mood category displayed in main assertive clauses, indicative. It usually surfaces in subordinate clauses (Greek *hypotaktiké* 'subordinated'), but independent uses of subjunctive are attested as well. In many languages this category is typically realized as a separate finite verbal paradigm with specific inflectional morphemes (see the verbal ending in (1a)), but it can also be materialized in inflectional particles (such as Greek *na* in (1b)) or in the C-system (note the Russian subjunctive complementizer *ctoby* in (1c)).

(1) a. Volen que dimiteix*i*. Catalan
want.3PL that resign.SUB.3SG
b. θélun *na* pareti**θ**í Greek
want.3PL SUB resign.3SG
'They want her/him to resign.'
c. Ja zhelaju cto-*by* ona ushla. Russian
I desire.1SG that-BY she go.PST
'I desire that she should go.'[1]

A wide range of syntactic phenomena have been argued to depend on the co-occurrence of subjunctive. However, subjunctive does not constitute a syntactically uniform object, either cross-linguistically or even within the same language. For instance, some of the subjunctive-related phenomena described for one language do not hold for other languages having subjunctive mood. Similarly, some allegedly subjunctive-related phenomena show up in a subset of the subjunctive clauses in a language, but not in all of them. These facts indicate that subjunctive may be essentially seen as an epiphenomenon derived from other lexical, syntactic, or semantic factors and that as such it does not allow us to identify subjunctive clauses as one class. We concentrate here on the syntactic properties that have beem claimed to pertain to subjunctive subordination, mainly argument clauses. The interpretive effects of this mood category are put aside, unless considered essential for the explanation.[2]

First, we will examine three phenomena that have been linked to the syntactic transparency of subjunctives as clausal domains. Next, in section 3, we will review the approaches that take subjunctive clauses to be a syntactic object different from indicative clauses, subject to specific licensing conditions. Finally, in section 4, we will concentrate on the different aspects of the functional structure of subjunctive clauses to the extent that they show specific traits vis-à-vis indicative clauses.

Most work on the syntax of subjunctives has concentrated on Romance and Balkan languages, which will also provide the empirical evidence for this survey.

2 Syntactic transparency

Subjunctive clauses have been argued to constitute more transparent domains than indicative ones with respect to a number of syntactic relations. Some of the explanations concentrate on one or more of the transparency effects, or on a certain group of languages, which makes it difficult to characterize the notion of subjunctive transparency in a unified fashion. The biggest difficulty, though, lies in the fact that the purported transparency of subjunctive clauses does not seem to be a property of subjunctives as such, but rather of a subset thereof, and that the determining factor for transparency has to be found ultimately in the lexical semantic properties of the item licensing or selecting them.

2.1 Obviation

In most Romance languages, subjunctive clauses embedded under volitional and directive predicates display obviation effects, that is, a ban on coreference between the embedded and the matrix subject, as in (2).

(2) a. *Queremos$_i$ que ganemos$_i$. Spanish
want.1PL that win.SUB.PRS.1PL
'We want to win.'
b. Queremos$_i$ que ganen$_k$.
want.1PL that win.SUB.PRS.3PL
'We want them to win.'

Picallo (1984, 1985) ascribes the coreference restriction between matrix and embedded subjects to the defective Tense specification of subjunctive clauses (see section 3.1). This defectivity enforces the establishment of a T(ense)-chain between the tense features of the subjunctive Infl node and the Infl antecedent. As a result of this, the binding domain for the embedded subject is extended and the first accessible subject for the embedded subject turns out to be the matrix subject.[3] By Principle B of the Binding Theory, the embedded pronominal Agr is forced to be free in its binding domain, thus excluding coindexation with the matrix Agr.

The restriction on the reference of the embedded subject is operative only with respect to the matrix subject, though, and it does not apply when coreference is established with an internal argument in the main clause.[4] In Picallo's account this is derived through the Case Resistance Principle (Stowell 1981), which forces extraposition of the embedded clause. As a result of this, the internal argument of the main clause does not c-command the embedded subject and they can freely corefer.

(3) Les$_i$ pidió que se callaran$_i$. Spanish
to-them ask.PST.3SG that REFL be-quiet.SUB.PST.3PL
'S/he asked them to be quiet.'

Obviation was originally taken to be a defining property of subjunctive as a whole, but it has been shown that it is a property only of a set of subordinating predicates in some languages (Romance, but not Balkan, languages possess this characteristic). While restricting obviation to the relevant set of subjunctive selecting predicates (volitionals, directives, causatives), many accounts of obviation build on Picallo's insight that the defectivity of subjunctive tense lies at the bottom of subject disjoint reference (see the reference to the analyses by Progovac and Raposo in section 3.1). Alternatively, Suñer and Padilla-Rivera derive obviation from a lexical feature specified in the relevant set of predicates. However, on the accounts of subjunctive as an operator (section 3.2), obviation effects are seen as the consequence of operator movement: though enforced by other requirements,

the displacement of the operator ends up creating a configuration where the matrix and the embedded subjects must be disjoint in reference.

It is important to note that obviation effects do not arise in operator triggered subjunctive (Polarity Subjunctive, in Stowell's terms, see section 3.3 for the distinction), as in (4):

(4) No $cree_i$ que $vaya_i$. Spanish
not believe.3SG that go.SUB.PRS.3SG
'S/he doesn't think s/he'll go.'

Farkas (1992a) follows a rather different path from the accounts reported so far and explains obviation as a case of blocking by infinitival clauses in canonical (subject) control contexts: in order to encode the subject dependency, infinitives are then selected over subjunctives, which mark the broader notion of world dependency. Another alternative account has recently been suggested by Dobrovie-Sorin (2001), who argues that subjunctive clauses in Romance languages other than Romanian do define a governing category for their subjects. The need to use an infinitival clause in a subject-control structure where both subjects are coreferent would derive from a principle that requires choosing an anaphor instead of a pronoun whenever possible (see Bouchard 1982). A potential problem for this explanation is created by operator-triggered subjunctives as in (4), because, everything else being equal, an infinitival should surface instead of a subjunctive.

However robust the core obviation cases might be, there are a number of factors that lift subject disjoint reference effects (see Ruwet 1984, 1991 for a more detailed discussion):

(i) a modal in the embedded clause

(5) $Espero_i$ que $pueda_i$ ir. Spanish
hope.1SG that can.SUB.PRS.1SG to-go
'I hope to be able to go.'

(ii) focus on the embedded subject

(6) $Espero_i$ que $gane_i$ sólo yo ahora. Spanish
hope.1SG that win.SUB.PRS.1SG only I now
'I hope to win alone now.'

(iii) passive subjects in the matrix or the embedded clause

(7) a. $Espero_i$ que sea_i autorizado a ir. Spanish
hope.1SG that be.SUB.PRS.1SG allow.PPL to to-go
'I hope to be allowed to go.'
b. Fue_i convencido de que se $marchara_i$
be.PST.3SG convince.PPL of that REFL leave.SUB.3SG
'He was persuaded to leave.'

(iv) coordinated complements

(8) ?Je veux que tu partes et que je reste. French[5]
I want.3SG that you leave.SUB.2SG and that I Stay.SUB.1SG
'I want you to go and for me to stay.'

(v) prefective aspect in the complement clause

(9) Je voudrais que je sois déjà parti! French
I want.COND.1SG that I be.SUB.1SG already leave.PPL
'I would like for me to be already gone!'

At face value, these cases pose serious problems to purely syntactic accounts of obviation effects.

2.2 *Long-distance anaphoric binding and NPI-licensing*

Subjunctive appears to be a prerequisite for simplex long-distance anaphors (i.e., logophoric use of reflexive pronouns) to be licensed in some languages like Icelandic, Italian, and French.[6]

(10) Jón$_i$ segir að Pétur$_j$ raki sig$_{i/j}$. Icelandic
John say.3SG that Peter shave.SUB.3SG self
'John says that Peter shaves himself.'

(11) Jón$_i$ veit að Pétur$_j$ rakar sig$_{*i/j}$.
John know.3SG that Peter shave.IND.3SG self
'John knows that Peter shaves himself.'[7]

However, subjunctive is a necessary, but not a sufficient condition for the licensing. Reuland and Sigurjónsdóttir (1997) point out that the Icelandic logophor *sig* in subjunctive clauses is regulated by discourse conditions (its antecedent has to bear the point of view of the utterance, whether it c-commands the logophor or not), as opposed to *sig* in infinitival clauses, where grammatical constraints are at play.

Licensing of NPIs and negative indefinites can also happen at a distance (over a clause boundary or more) if the embedded clause containing the licensee is in the subjunctive. Indicative blocks this kind of long-distance licensing. Furthermore, Kayne (1981) and Rizzi (1982) noted a subject–object asymmetry in French and Italian: while a preverbal NPI subject licensed by matrix negation gives an ungrammatical result, the structure is grammatical if it involves an NPI object in the same configuration:

(12) a. Non pretendo che tu arresti nessuno. Italian
not require.1SG that you arrest.SUB.2SG no one
'I do not require that you arrest anyone.'

b. *Non pretendo che nessuno ti arresti.
not require.1SG that noone you arrest.SUB.3SG
'I do not require that anyone arrests you.'[8]

Related facts were discussed in Kayne (1984) involving NPs headed by *de* 'of' in French, as in (13): the empty QP heading the *de*-N NP [$_{NP}$ [$_{QP}$ e] *de* N] can be licensed long-distance by *pas* across a subjunctive clausal boundary, but only if the NP is in object position. For a detailed account of these facts, see Kampers-Manhe (1992).

(13) a. Jean ne voudrait pas que tu boives de bière. French
John NE want.COND.3SG NOT that you drink.SUB.2SG of beer
'John wouldn't like for you to drink beer.'
b. *Jean ne voudrait pas que de bière lui coule dessus.
John NE want.COND.3SG NOT that of beer him spill.SUB.3SG on
('John wouldn't like it if beer were spilled on him.')

Under the assumption that the NPI in (12) has to move covertly to the matrix negation marking its scope, Picallo (1984) attributes the ill-formedness of a case like (12b) under the purported reading to the inability of subjunctive Infl to properly govern the trace in preverbal subject position. In a different vein, Progovac (1993, 1994) suggests that the domain extension of the embedded subjunctive which would be required for the NPI to be licensed by matrix negation does not take place in (12b) because the preverbal NPI subject triggers negative agreement on that Infl node, thus blocking Subjunctive Functional Deletion (see section 3.1).

Nevertheless, subjunctive as such again does not suffice for long distance licensing of NPIs and NIs, as other factors like the existence of a single T-domain between the embedded and the main clause seem to be involved. For a detailed discussion, see Giannakidou and Quer (1997) and for reinterpretations of that proposal, see Giannakidou (1997, 1998).

2.3 Raising

Subject raising out of subjunctive clauses has been described and analyzed for Balkan languages like Romanian and Greek, illustrated here by (14) and (15), respectively.

(14) Studenţii trebuiau [t să plece]. Romanian[9]
students-the must.3PL SUB leave.3PL
'The students must have left'

(15) Ta pedhia arxisan na trexun. Greek[10]
the children start.PST.3PL SUB run.PRS.3PL
'The children started to run.'

Subjunctives, unlike infinitives, display finite morphology with subject agreement. Raising from a finite clause poses theoretical problems, as it contradicts the generalization that raising to subject is allowed only for case reasons out of non-finite clauses.[11] Subjunctive morphology can independently license lexical subjects in the embedded clause, as can be observed in the counterpart to (14):

(16) Trebuia [ca studenţii să plece]. Romanian
must.3SG that students-the SUB leave.3PL
'It must have been the case that the students left.'

This has been taken to be sufficient evidence to exclude raising to subject out of subjunctive clauses in Balkan languages (Philippaki-Warburton 1987). However, some proposals have been made that do analyze these types as instances of raising. Dobrovie Sorin (2001), for example, reduces both raising and control in Balkan subjunctive clauses to anaphoric binding. Roussou (2001) also brings them together by arguing that the functional domain of subjunctive CPs lacks the projections of both Fin (in the C system) and AgrS (in the IP system). Drawing on Manzini and Roussou's (1998) framework, she suggests that the 'raised' DP in the matrix clause is actually sitting in a topic position and that the main AgrS attracts the thematic feature of the embedded predicate, which triggers morphological agreement between the matrix and the embedded predicate. This replicates in more recent terms the traditional view that complements to raising verbs are defective in some sense, i.e., IPs instead of CPs. An important fact to take into account in this connection is that the presence of an overt complementizer blocks raising out of the subjunctive clause, as illustrated in (17):

(17) Toţi doctorii s-au nimerit (*ca) să Romanian
all doctors-the REFL-have.3PL happen.PPL that SUB
fie de acord.
be.3PL of agreement
'All the doctors happened to agree with each other.'

3 Syntactic licensing of subjunctive clauses

The dependent character of subjunctive clauses has been reinterpreted in different ways: as a result of dependent Tense, of the need for operator licensing, or of narrow scope properties of the mood itself. Some of the properties of subjunctives reviewed in section 2 have been argued to derive naturally from the kind of analysis put forth.

3.1 Subjunctive as defective Tense

The tense properties of subjunctive forms are argued to be defective, as they rely on the full tense specification of the matrix. This surfaces in the restrictions on

sequence of tense in subjunctive dependents that do not show up in indicative dependents. This can be observed in the Catalan examples (18): while a CP complement in the indicative allows for both present and past tenses (18a), the past form is excluded in a subjuntive clause embedded under a present tense (18b).

(18) a. Sabia que telefona/ Catalan
know.IMPF.1SG that phone.IND.PRS.3SG
telefonava.
phone.IND.IMPF.3SG
'I knew that s/he calls/that she used to call.'
b. Desitja que telefoni/ *telefonés.
desire.PRS.3SG that phone.SUB.PRS.3SG phone.SUB.IMPF.3SG
'S/he wishes that s/he calls/called.'[12]

Relying on these basic facts, Picallo (1984, 1985) develops the hypothesis that even displaying morphological tense oppositions such as [± Past] – though they do not always do so – subjunctive forms do not have an independent temporal interpretation. In this respect, they are defective if we compare them with indicative forms, whose tense is contentful. This characteristic prevents them from appearing independently in assertive root clauses, as in (19).

(19) a. *Daniel haya llamado. Spanish
Daniel call.SUB.PERF.3SG
'Daniel has called (SUB).'
b. *Ahir plogués. Catalan
yesterday rain.SUB.IMPF.3SG
'Yesterday it rained (SUB).'

The core of Picallo's proposal consists in characterizing subjunctive Infl as [–Tense, +Agr], whereas its indicative counterpart would be [+Tense, +Agr]. The defectivity of subjunctive Infl forces it to rely on the content of the superordinate Infl for its tense interpretation, which materializes in an anaphoric-like link between the temporal features of the subjunctive and those of the root Infl.[13] Given that in root contexts there is no tense specification available, the subjunctive tense in sentences like (19) remains unbound and leads to ungrammaticality, in the same fashion as unbound nominal anaphors.[14]

The tense dependency of subjunctive is argued to give rise to several transparency effects affecting the subordinate clause: disjoint reference between the embedded and the matrix subjects (obviation), long-distance anaphoric binding and NPI-licensing across a CP boundary, subject raising from a finite domain, etc. (see section 2).

The syntactic dependency of subjunctive Infl and the phenomena deriving from this property are analyzed as the result of different mechanisms. Picallo (1985) claims that a T(ense)-chain is established between the tense features of the subjunctive Infl node and those of the antecedent Infl. The extension of the binding

domain of the embedded clause to the matrix one is seen as the consequence of such a T-chain formation. Under this view, what establishes a transparent domain for binding are the tense properties of subjunctives rather than the agreement ones. Progovac (1993, 1994) argues that domain extension with subjunctives takes place under a more general condition at LF: according to her, subjunctive Infl/Comp projections become invisible (or rather, delete) at LF up to recoverability, under the assumption that they are unnecessary for interpretation. She discusses three phenomena that would be sensitive to functional deletion; long distance licensing of negative polarity items, long distance reflexivization, and disjoint reference effects between embedded and matrix subject. However, functional deletion is not contingent on the existence of subjunctive in a given grammar. In fact, a language like Serbian–Croatian, without a subjunctive paradigm, displays the effects of domain extension under volitional predicates.

Despite the general treatment of subjunctive clauses as transparent domains, it has been widely acknowledged that different sets of embedded subjunctives have to be distinguished as not all of them have the described properties. A clear divide exists between subjunctive complements to volitional and directive predicates (*want*, *order*) and subjunctive complements to factive and epistemic predicates (*regret*, *believe*). In her proposal, for instance, Progovac restricts the application of functional Infl/Comp deletion to clausal complements of volitional predicates, because they select a Comp without a truth value and an Infl without independent tense. The complements to factive predicates, on the other hand, cannot undergo functional deletion because they realize a C with a truth value, which would not be recoverable if deleted. Raposo (1985), though taking the same basic facts as Picallo as departure point, does not reduce them to the indicative–subjunctive opposition, but to the selectional properties of the embedding predicates. He identifies two basic classes: E-predicates (including epistemics and declaratives) and W-predicates (comprising volitionals, non-factive emotives, and verbs of influence, permission and necessity). The former would select a [+Tense] operator in their C, while the latter would not select it, leading to a [–Tense] specification of their C. Only in the first case would opacity be triggered by the presence of the [+Tense] operator. If absent, the subjunctive tense must be bound by the tense specification of the matrix indicative, giving rise to transparency effects.[15]

Nevertheless, Raposo (1985) clearly dissociates mood choice from the temporal interpretation of the complement: whereas W-predicates typically select for subjunctive mood, there are also E-predicates that take subjunctive when negated or questioned, but still do not give rise to transparency effects[16] (see (20), where coreference between matrix and embedded subjects is allowed).

(20) O Manuel$_i$ não acredita que (ele)$_i$ ganhe a corrida. Portuguese
the Manuel not believe.3SG that he win.SUB.3SG the race
'Manuel does not believe that he will win the race.'[17]

Suñer and Padilla-Rivera (Suñer and Padilla-Rivera 1985, 1987, 1990; Padilla-Rivera 1990; Suñer 1990) have extensively argued against the claim that subjunctive clauses lack tense in Spanish. They show that strict temporal dependencies arise exclusively in the complements of subjunctive-selecting predicates and they attribute this fact to the presence of a [–Precedence] feature that bars non-agreeing sequences of tense like [–past . . . +past], as exemplified in (18b), or [+past . . . –past], as in (21).

(21) Quería que telefonearas/ *telefonees. Spanish
want.IMPF.3SG that phone.SUB.IMPF.2SG phone.SUB.PRS.2SG
'S/he wanted you to phone.'

They point out, though, that the feature [–Precedence] is not exclusive of predicates that select subjunctive: the sequence of tense restrictions triggered by this feature also surfaces in the complement of indicative-selecting predicates like *prometer* 'to promise'. In addition, they dissociate subject obviation, an alleged transparency effect, from subjunctive as a category and attribute it to the lexical feature [WILL]. Zaring (1985) essentially aligns with Suñer and Padilla-Rivera's position on tense restrictions in subjunctive complements and proposes a feature system that distinguishes Portuguese inflected infinitives (which are tenseless but display agreement) from subjunctive by means of a [±Indicative] feature: subjunctive would not simply be [–Tense, +Agr] (the feature composition of inflected infinitives), but rather [–Tense, +Agr, –Indicative].

3.2 Subjunctive as operator

Subjunctive clauses (or rather, a subset thereof) have been claimed to possess an idiosyncratic complementizer with operator-like properties. The idiosyncratic tense and binding properties of subjunctive dependents are made to follow from the syntax attached to the special C.

Kempchinsky's (1986, 1987, 1990) main insight is that subjunctive complements to verbs of volition, influence, and command are in some sense like embedded imperatives. In her proposal, the main predicate selects an imperative operator in the subordinate C which has to be identified by the subjunctive I head. This identification requirement is satisfied at LF in languages like Spanish by covert I-to-C movement, as schematized in (22).

(22) $[_{CP}\ [_{C^0}\ C\ [_{I^0}\ I\ [V]_i\ ]_j\ ]\ [_{IP}\ NP\ [_{I'}\ e_j\ [_{VP}\ e_i\ \ldots\ ]]]]$

Through this movement the subjunctive Infl head ends up co-indexed with one of the arguments of the main predicate, and this would constitute the explanation for the subject–obviation effects. The restrictions on the sequence of tense are argued to stem from the presence of the imperative operator, which imposes a future interpretation on the embedded eventuality.

In languages like Romanian, which display an overt subjunctive C, such an identification requirement would not be operative, and I-to-C movement would not take place. Similarly, subjunctive-taking verbs that do not belong to the volitional or directive type do not select such an imperative operator, and consequently I-to-C movement does not apply. As a result, no subject obviation or sequence of tense effects arise.

Avrutin and Babyonyshev (1997) view the Russian subjunctive complementizer *ctoby* (see (1c)) as an operator that must raise by head movement up to the matrix V in order to be able to bind the two event variables of the matrix and embedded predicates. In order to reach the appropriate c-command configuration, the complex formed by V-to-I-to-C movement (claimed to be universal, either overtly or covertly) adjoins to the V head in the main clause. From that position, it binds the main and embedded event variables, thus imposing a temporal ordering between the two eventualities. Given that the matrix V also undergoes V-to-I-to-C movement, at LF the embedded C–AgrS–T–V complex ends up adjoined to the matrix C–AgrS–T–V one. In this configuration the main AgrS c-commands the embedded AgrS. Under the assumption that the two heads are co-indexed when main and embedded subjects are coreferential, they induce a Principle B violation, which would constitute the explanation for the obviation phenomena. They have to stipulate that the C selected by epistemic predicates, though identical in form to the one selected by volitionals, does not raise to the matrix V because their subjunctive complements do not show sequence of tense restrictions or obviation effects.

3.3 Subjunctive as a dependent nominal

The parallelism drawn between subjunctive clauses and nominal indefinite expressions originates in the observation that subjunctive tense is not referential and needs independent licensing. This is different from stating that it simply picks up reference in the main clause anaphorically and it allows us to account for the existing past shifted, future shifted, and simultaneous readings of embedded subjunctives.

Tsoulas (1994, 1995) draws the parallel between indefinite nominals and infinitive/subjunctive clauses on the basis of wh-extraction patterns: wh-movement out of an indefinite NP or an infinitival/subjunctive clause gives a better result than extraction out of a definite NP or an indicative CP (compare (23) and (24)).

(23) a. De qui veux-tu voir une photo? French
of who want.PRS.2SG-you to-see a picture
'Who do you want to see a picture of?'

b. *De qui veux-tu voir la photo?
of who want.PRS.2SG-you to-see the picture
'Who do you want to see the picture of?'

(24) a. Que te demandes-tu qui a exigé que
what REFL ask.PSR.2SG-you who have.PRS.3SG require.PPL that
Sóphie écrive?
Sóphie write.SUB.3SG
'What do you wonder who required that Sóphie write?'

b. *Que te demandes-tu qui a dit qu' Alex
what REFL ask.PSR.2SG-you who have.PRS.3SG say.PPL that Alex
a vu?
have.PRS.3SG see.PPL
'What do you wonder who said Alex saw?'

Tsoulas proposes that indefiniteness in the clausal domain amounts to temporal indefiniteness, which derives from the impossibility to assign a truth value to the embedded proposition. Subjunctive complements to factive verbs are analyzed as the correlates of specific indefinites, which also block extraction.

As an indefinite Tense, subjunctive has to be licensed by a sentential operator in the relevant syntactic configuration (head-to-head dependency, c-command). Under the view that subjunctive CPs are the clausal analogues of NPIs or indefinites, they have to appear in the scope of the a certain type of operator in syntax (intensional, non-veridical, etc.). By contrast, indicative clauses have to escape from the scope of such operators (anti-polarity or positive polarity effects).

Manzini (2000) gives a syntactic interpretation of Tsoulas's proposal by positing that subjunctive is an indefinite T that has to be licensed in a head-to-head dependecy bound by an intensional operator such as negation, a question operator, or conditional *if*. Subjunctive morphology constitutes the spell-out of such a T-dependency; otherwise the mood that surfaces is indicative. The main motivation for this type of approach is the sensitivity of subjunctive dependecies to island and parasitic gap-like configurations. Long distance reflexivization and obviation effects are argued to rest on the presence of the syntactic dependency established by the subjunctive.

The apparent scopal behavior of mood morphology has also been interpreted as a consequence of the polar status of the subjunctive morphology itself. Giannakidou (1994, 1995) establishes a direct link between the semantic licensing of subjunctive and (negative) polarity items: both are legitimate in non-veridical contexts. By contrast, indicative behaves as a positive polarity item that escapes non-veridical triggers. The scopal behavior of indicative/subjunctive had been also proposed in Kampers-Manhe (1991) for French relative clauses.

The polarity approach to mood has been pursued in a number of syntactically oriented studies. The foundations of such approaches can be sought in Stowell's (1993, 1995a, 1995b) theory of tense. Stowell's basic insight that sequence-of-tense phenomena have to be understood as a consequence of the polar properties of tense morphology is argued to be applicable to mood morphology as well. In such an account, mood has an impact on the derivation to LF, as scope might have to be determined covertly: while subjunctive clauses must remain in

the scope of its licenser, yielding a narrow-scope effect, indicative CPs have to undergo LF movement in order to get out of the scope of an intensional operator. Brugger and D'Angelo (1994, 1995) develop these ideas by stating that the (Italian) subjunctive is an intensional-operator polarity item, whereas indicative is an anti-intensional-operator polarity item, and explore the interaction of the polarity properties of tense and mood. Laka (1990, 1995) pursued similar ideas on the licensing of indicative and subjunctive clauses, but she placed the burden of the explanation on the polarity properties of C, arguing for the existence of a negative complementizer that has to remain in the scope of its licenser.

This sort of approach also has to distinguish two types of subjunctives: those lexically selected by a (strong intensional) predicate and those licensed by a clausal operator like negation. Stowell (1993) calls them Intensional Subjunctive and Polarity Subjunctive, respectively. The two types show opposite behavior with respect to the following properties, which are argued to follow from the polar properties of tense and mood morphology:

(i) Possibility of displaying past morphology under a matrix present tense (compare (25) with (18b) above).

(25) No recorda que s'hi assemblés. Catalan
not remember.3SG that REFL-DAT resemble.SUB.IMPF.3SG
'S/he doesn't remember whether s/he looked alike.'

(ii) Alternation with indicative clauses (compare (26) with (25) and (27)).

(26) No recorda que s'hi assemblava.
not remember.3SG that REFL-DAT resemble.IND.IMPF.3SG
'S/he doesn't remember that s/he looked alike.'

(27) *No vol que surten.
not want.3SG that go-out.IND.3PL
'S/he doesn't want them to go out.'

(iii) Multiple subjunctive embedding under the same trigger (compare (28) with (29)).

(28) No crec que recordi que s'hi
not believe.1SG that remember.SUB.3SG that REFL-DAT
assemblés.
resemble.SUB.IMPF.3SG
'I don't think s/he remembers whether s/he looked alike.'

(29) *Vull que recordi que s'hi assemblés.
want.1SG that remember.SUB.3SG that REFL-DAT resemble.SUB.3SG
'I don't want that s/he remembers whether s/he looked alike.'

(iv) Subject-obviation effects (compare (30) with (31)).

(30) No crec que hi vagi.
not believe.1SG that LOC go.SUB.PRS.1SG
'I don't think I'll go.'

(31) *No vull que hi vagi.
not want.1SG that LOC go.SUB.PRS.1SG
'I don't want to go.'

4 Functional syntax of subjunctive forms

Different answers have been given to the question of where mood features reside in clause structure. Such answers have different implications for clausal architecture and syntactic derivation. In the following sections we will discuss some of these answers.

4.1 The locus of subjunctive: I vs. C, I-to-C movement

Subjunctive surfaces most frequently in the verb complex, either as a specific verb-ending or as an inflectional particle. However, the core cases of subjunctive dependents are triggered through lexical selection by a superordinate predicate. Given that lexical selection is a local head-to-head relationship, the embedded C must be involved somehow in the establishment of the dependency. This can be directly observed in languages that have special C forms for subjunctive dependents, such as Romanian (*ca*), Albanian (*që*), and Salentino (*ku*).

(32) a. Ion vrea ca să manince. Romanian[18]
John want.3SG that (SUB) SUB eat.3SG
'John wants him/her to eat.'

b. Jani do që të hajë. Albanian
John want.3SG that (SUB) SUB eat.3SG
'John wants him/her to eat.'

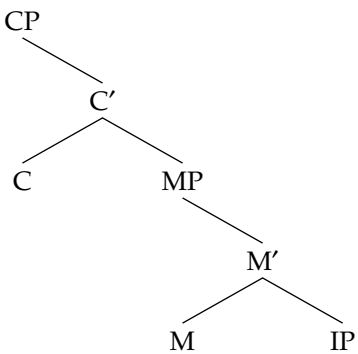
For languages that do not display specialized Cs overtly, the same divide has sometimes been postulated. In a language like Greek, subjunctive marking is superficially ambiguous between an inflectional element and a C-like element. This has led researchers to provide arguments for both positions: Philippaki-Warburton and Veloudis (1984), Philippaki-Warburton (1987), and Rivero (1994) analyze the subjunctive marker *na* as an Infl particle, whereas Agouraki (1991), Dobrovie-Sorin (1994b), and Tsoulas (1995) defend its C status. As a C-like element, the subjunctive particle is sentence initial, preceding negation and clitics, and can head embedded clauses in the absence of any other C-element. As an I-like element, it must be adjacent to the verb cluster, it must be repeated under

conjunction and it can cooccur with *Wh* phrases. An analysis featuring I-to-C movement (either overt or covert) constitutes a third kind of approach that reconciles both points of view by explaining the ambiguity and at the same time straightforwardly accounts for the long-distance selection problem, namely how is subjunctive selected by a matrix element despite the intervening heads? In some analyses this view is cast in terms of feature movement (see Svenonius 1994, for instance).

4.2 Mood Phrase

In the context of the proliferation of verbal functional categories beyond IP and CP, MoodP has been proposed in order to host mood features and to account for some of the subjunctive-related phenomena. It is mostly represented as an intermediate projection between the IP and the CP domains (Terzi 1991, 1992, 1997; Rivero 1994; Philippaki-Warburton 1991); see (33). The need to check a subjunctive feature on this head may trigger overt movement to such a high position, which in some accounts explains the C-like properties of a subjunctive verb complex. Terzi makes crucial use of the [Spec, MP] position as a host for the PRO subject in control structures. Her reasoning is that M, by not bearing finiteness features, can check the Null Case that the PRO subject bears. In doing this, she is forced to establish a different structure for non-control structures, where the verbal complex moves all the way up to C, from where a pro subject is licensed in [Spec, MP].

(33)



By contrast, Kempchinsky (1998), making use of the MP projection, suggests that subjunctive complements to volitionals are not CPs but MPs.

4.3 Subject licensing and Control

Languages such as Greek and Romanian display obligatory control with finite subjunctive clauses in the same environments where other languages resort to non-finite subordination structures. Iatridou (1993) pointed out that in Greek some predicates trigger real control, as the embedded V must display the same

agreement specification as the matrix one (34), no lexical subject can appear in the embedded clause (35) and the embedded V cannot have independent tense (36). For her, lack of Tense implies lack of nominative Case: the embedded subject must then be a PRO licensed by Null Case.

(34) O Janis kseri na kolimbaj/ *kolimbao. Greek
the John know.3SG SUB swim.3SG swim.1SG
'John knows how to swim/Janis can swim.'

(35) *O Janis kseri na kolimbaj i Ana.
the John know.3SG SUB swim.3SG the Anna
'John knows how to swim Anna.'

(36) *O Janis kseri na kolimbuse.
the John know.3SG SUB swim.IMPF.3SG
'John knows how to swim (PAST).'

However, in cases of optional control, lexical embedded subjects are possible despite the tense restrictions (1b). Terzi (1992, 1997) interprets this as indicating that we are dealing with a different structure where V-to-C movement and a *pro* subject are involved. Roussou (1991) sets volitionals apart from control predicates and argues that they do have a full CP structure and AgrS; in her account, subject coreference derives from associating the matrix and the embedded AgrS.

(37) O Janis theli na kolimbisi/*-e (i Ana). Greek
the John want.3SG SUB swim.PRS/PST.3SG the Anna
'John wants to swim/Anna to swim.'

Varlokosta and Hornstein (1992) also distinguish two types of subjunctive clauses on the basis of the presence or absence of temporal reference in the embedded clause. Whereas *pro* would be the empty subject in the former case, in the latter PRO can be identified as the subject category, because it forbids split antecedents, it only permits sloppy readings under ellipsis, and it requires a *de se* interpretation. This same divide is exploited by Krapova (2001), who defends the existence of two different types of subjunctive.

At the same time, other analyses maintain that *pro* is uniformly the empty subject category of subjunctives, while control must derived from other factors. Philippaki and Catsimali (1999) defend this point of view by showing that predicate adjectives, NP-modifiers, and intensifiers of the embedded subject are necessarily marked with Nominative morphology in Greek. In addition, examples can be constructed featuring an NP-subject to the right of the embedded V but still to the left of a constituent in the subordinate clause. Finally, the PROarb that is typical of languages that have control is not attested in subjunctive complements. They take this as conclusive evidence that PRO should be banned from control subjuntives in Greek.

Dobrovie-Sorin (2001) follows a different path on this issue by explaining both control and raising as instances of anaphoric binding.

4.4 Subject inversion

Subject (stylistic) inversion in French is allowed only in contexts where there is some kind of operator present, such as a *Wh* or a relative operator. Subjunctive clauses, being one of such subject postposing contexts, are claimed to involve a covert operator that licenses the inversion (Kayne and Pollock 1978).

(38) Je veux que parte Paul. French
I want.1SG that leave.SUB.3SG Paul
'I want Paul to leave.'

However, this type of alleged inversion is not allowed in all subjunctive clauses, as Kampers-Manhe (1998) points out: it is limited to ergative, passive, and certain unergative verbs, it is only allowed when the matrix is of a certain type (volitional, verb of fear, etc., but not factive–emotive or a negated epistemic), and with a definite subject no inversion is possible if a VP-final constituent co-occurs. In her analysis, that the subject DP be within focus is claimed to be a requirement for the inverted order to be grammatical in combination with the defective properties of subjunctive tense under volitionals: with these verbs there is no Tense feature in C, which determines that the Case feature on the T head is weak and consequently it does not need to be checked overtly, so the DP subject can stay in situ. What this analysis amounts to is that the postverbal subject remains in its base generated position under the required conditions.

4.5 C-deletion

In some Romance varieties, such as Italian,[19] the overt C introducing an argument clause can be absent in certain subjunctive CPs.[20] An example of this phenomenon, called Complementizer Deletion or C-deletion (CD), is reproduced under (39):[21] (39a) is the CD case corresponding to (39b).

(39) a. Credo lo faccia. Italian
think.1SG it do.SUB.PRS.3SG
b. Credo che lo faccia.
think.1SG that it do.SUB.PRS.3SG
'I think he does it.'

Beyond a slight register difference (CD is perceived as somewhat more formal), both variants are interpreted as equivalent, thus rendering CD completely optional. However, there are four clear restrictions on the application of CD.

(i) It occurs only in the presence of subjunctive morphology in the embedded verb (compare (39a) with (40)).

(40) Ha detto *(che) è partito. Italian
have.3SG say.PPL that be.IND.3SG leave.PPL
'S/he said he has left.'

Some speakers, though, accept CD with an embedded future or conditional tense as well:[22]

(41) a. Credo sarà interessante.
believe.1SG be.IND.FUT.3SG interesting
'I think it will be interesting.'
b. Credo funzionerebbe meglio.
believe.1SG work.COND.3SG better
'I think it would work better.'

(ii) CD is only possible if the embedded CP occurs in its argument position, and not when it is in a left dislocated or focalized position:

(42) a. (Che)* fosse partito, lo credeva.
that be.SUB.3SG leave.PPL it believe.IMPF.3SG
'That he had left, he believed it.'
b. (CHE)* FOSSE PARTITO credeva.
that be.SUB.3SG leave.PPL believe.IMPF.3SG
'THAT HE HAD LEFT, he believed.'

(iii) Not all verbs allow for CD. Typically, epistemic and volitional predicates admit it, but factives do not, as in example (25).

(43) Si rammarica *(che) sia partito.
REFL regret.3SG that be.SUB.3SG leave.PPL
'S/he regrets that he has left.'

Some adjectives and nouns taking sentential complements can also display CD to a certain degree:

(44) Sono certo tu lo possa fare.
be sure you it can.SUB.2SG to-do
'I'm sure you can do it.'

(iv) It should be differentiated from Aux-to-Comp movement (Rizzi 1982), as a lexical subject cannot intervene between the raised finite form and the participle:

(45) *Credeva fosse Gianni arrivato.
believe.IMPF.3SG be.SUB.3SG John arrive.PPL
'S/he thought John had arrived.'

This phenomenon, originally noted in Rizzi (1982), has received different kinds of analysis. Scorretti (1991) interpreted CD as the optional absence of the CP projection in the complement clause of certain predicates, much as in the non-finite complements of raising verbs. Apart from the problem deriving from the optional selection of CP/IP by the same matrix element, this analysis fails to explain CD and the embedded V2 phenomenon in Germanic languages under the same light. By contrast, Poletto (2001) capitalizes on the observation that the set of Italian verbs allowing CD basically coincides with the class of bridge verbs permitting embedded V2 in German and Mainland Scandinavian and develops an account based on V-to-C movement for CD. The Italian CD phenomenon derives, according to her, from the presence of a [–realis] feature in a low C position that attracts the V if the lexical complementizer is absent. Such a feature can only be checked by an overt complementizer or by the relevant verbal morphology (i.e., subjunctive, plus future/conditional in the corresponding varieties). The relevant set of predicates would select such a feature in the embedded C domain. Additional evidence for her position is constructed on the basis of adverb placement vis-à-vis CD in Cinque's (1999) framework, as well as subject placement in CD cases.

Giorgi and Pianesi (1997) reject the V-to-C analysis for CD on different grounds. The fact that most Italian verbs that allow CD coincide with bridge verbs that display embedded V2 in Germanic does not constitute a strong argument for adopting the essentials of the analysis for embedded V2. There are even some CD verbs in Italian that correspond to non-bridge verbs in Germanic. Moreover, under a V-to-C analysis the ungrammaticality of a subject between the fronted verb and the past participle as in (45) is unexpected, because [Spec, AgrSP] should in principle be available. However, a consistent group of speakers reject a preverbal subject in CD cases, which does not follow from an alternative analysis where the subjunctive verb stays in AgrS:

(46) %Credeva Gianni fosse arrivato. Italian
believe.IMPF.3SG John be.SUB.3SG arrive.PPL
'S/he thought John had arrived.'

Giorgi and Pianesi follow a different path and argue that CD is the consequence of selecting a lexicalized syncretic category Mood/Agr in the complement clause. Agr stands for the phi-features and nominative Case, and Mood for the feature corresponding to the subjunctive complementizer, which is different from the one introducing indicative clauses. The split between speakers concerning the grammaticality of CD cases with preverbal subjects like (46) can be reduced to the properties attributed by both groups to [Spec, Mood/Agr]: an A-position for those accepting the preverbal subject, and an A'-position for those rejecting it. Under this analysis, no subject position is available between the raised verb and the participle, which explains the ungrammaticality of cases like (45). Movement of the verb to the Mood/Agr head is overt because the Agr features are strong. Alternatively, the relevant features can also be scattered in two separate

projections MoodP and AgrP; in such a situation the verb raises only to Agr overtly and the complementizer is lexically realized; the verb will only move covertly to check the [+mood] feature. They derive the impossibility of CD with factive or interrogative predicates from the assumption that a feature like [+fact] or [+Wh] cannot be lexicalized by a subjunctive verb, and the scattered projection is forced, whereby the complementizer lexicalizes as *che* and *se* respectively.

5 Conclusion

From this brief survey of the different syntactic phenomena arising in subjunctive clauses it becomes clear that they do not constitute a uniform class; not only cross-linguistically but also within languages. Most studies have concentrated on subjunctive argument clauses, where lexical and semantic factors play an important role. Some of the theoretical proposals discussed here would have to be adapted or simply changed in order to be able to account for other subordination domains in the subjunctive, such as relative clauses and adjunct clauses. In any event, the study of the syntax of subjunctives has led to formulating interesting questions about the interface of syntax with the lexicon and semantics.

NOTES

1 Example (c) is from Palmer (2001: 218).

2 On the interpretation of subjunctive clauses, see Farkas (1992b), Giorgi and Pianesi (1998), and Quer (1998).

3 Notice, though, that this is not always the case, as a DP subject can require a disjoint subject in the CP complement to the N, as in (i):

(i) *el seu_i desig que $viatgi_i$ Catalan
the his/her desire that travel.SUB.PRS.3G
'his/her desire to travel'

4 There is a consistent exception to this pattern: ergative predicates taking a clausal subject in the subjunctive also display subject-obviation effects with respect to the oblique argument in the matrix clause, as in (i):

(i) Li_i agrada que *$viatgi_i$ /$viatgin_k$. Catalan
to-him please.3SG that travel.SUB.3SG travel.SUB.3PL
'He likes to travel/for them to travel.'

Picallo (1985) explains this unexpected pattern by assuming that such predicates do not assign structural case to their subject, therefore they are not forced to extrapose by the Case Resistance Principle.

5 Example taken from Ruwet (1991).

6 For Icelandic, see, for instance, Thráinsson (1976, 1990), Maling (1984), and Sigurðsson (1990); for Italian, see Napoli (1979) and Giorgi (1984); for French, Pica (1985).

7 Icelandic examples from Reuland and Sigurjónsdóttir (1997).
8 This example is markedly grammatical under the irrelevant double negation reading 'I do not require that no-one arrests you'.
9 Example taken from Rivero (1989).
10 Example taken from Alexiadou and Anagnostopoulou (1999).
11 Alexiadou and Anagnostopoulou (1999) propose that the agreement in the embedded subjunctive is not the reflex of Case checking but rather EPP checking.
12 Examples adapted from Picallo (1985: 47–48).
13 For the idea that subjunctive clauses are tenseless or, rather, that tense in subjunctive clauses is anaphoric, see Luján (1980), Anderson (1982), Pica (1984), Everaert (1984), Jakubowicz (1984), and Johnson (1985), among others.
14 Cases of independent subjunctive forms in non-assertive root contexts such as (i) will not be discussed here. They often involve some element in C (an overt complementizer, V-to-C movement, etc.) indicating directive force, which seems to suggest that a covert modal is binding the tense variable of the subjunctive verb.

(i) Que marxi! Catalan
that leave.SUB.PRS.3SG
'Let him/her leave!'

15 A further elaboration of this proposal is presented in Ambar (1992) for Portuguese. She distinguishes morphological Tense, a feature of Infl, and semantic Tense, a feature of C. Unlike epistemic predicates, volitionals select a clause without semantic Tense, which would derive the characteristic properties of their complements.
16 See also Rivero (1971, 1977), Salamanca (1981), and Meireles and Raposo (1983).
17 Example taken from Raposo (1985: 103).
18 Examples from Roussou (2001).
19 C-deletion has usually been described and analyzed for Italian. Spanish, for instance, displays essentially the same phenomenon, although the distribution does not always coincide with the Italian one. One such difference is that Spanish typically allows C-deletion with a factive matrix verb:

(i) Lamento la hayan molestado. Spanish
regret.1SG her have.SUB.3SG bother.PPL
'I'm sorry they bothered her.'

For a discussion of the Spanish facts, see Suñer (1990).
20 Poletto (2001) also discusses C-deletion in adjunct disjunctive clauses, which correspond to König's (1986, 1988) alternative concessive conditionals. For the corresponding facts in Catalan and Spanish, and the semantic interpretation of such structures, see Quer (1998: chapter 5).
21 Example taken from Poletto (2001: 268).
22 Examples from Poletto (2001: 267).

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69 Syntactic Haplology

AD NEELEMAN AND
HANS VAN DE KOOT

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1 Introduction: the Repeated Morph Constraint

A number of authors have observed that languages exhibit a resistance against accidental repetition of morphemes (Perlmutter 1971; Stemberger 1981; Menn and MacWhinney 1983; Yip 1998; Plag 1998, and references cited there). This resistance is reminiscent of the Obligatory Contour Principle in phonology (Leben 1973; Goldsmith 1979, and much subsequent work), which requires adjacent phonemes to be contrastive. In this chapter we will explore which phenomena at the sentence level can be understood in terms of the avoidance of repeated morphs, an issue first addressed within a generative context by Perlmutter (1971). This will require us to establish which strings can be taken to involve accidental repetition of morphemes and which strategies are available for avoiding them.

Suppose M_1 and M_2 are identical in the relevant sense and happen to be adjacent, as in (1a). Perhaps in the majority of cases, grammars simply live with this repetition and allow M_1 and M_2 to surface unchanged. In cases where the string is ruled out, four possibilities arise. (i) If the grammar does not provide an

alternative realization for either M_1 or M_2, structures in which these morphemes surface in adjacent positions are ungrammatical (the language is characterized by (1b)). (ii) Repetition of identical morphemes can be circumvented if the grammar allows haplology: deletion of one of the offending morphemes (the language is characterized by a combination of (1b) and (1c)). (iii) A further option is to associate either morpheme with a different realization, typically based on a subset or a superset of its features (the language is characterized by a combination of (1b) and (1d)). (iv) Finally, the grammar may make available a so-called portmanteau morpheme, which spells out the features of both M_1 and M_2 (the language is characterized by a combination of (1b) and (1e)). Repair strategies always affect functional elements; repetition of lexical heads is tolerated.

(1) a. . . . M_1 M_2 . . .
b. * . . . M_1 M_2 . . .
c. . . . M_2 . . . . . . M_1 . . .
d. . . . M_1 M_2' . . . . . . M_1' M_2 . . .
e. . . . M_3 . . .

Which of these strategies is exploited varies from language to language and from case to case. We should also note that there are other conceivable strategies, such as the insertion of a dummy morpheme between M_1 and M_2. Few, if any, cases of this type are attested. An anonymous reviewer suggests that there is a tendency in Spanish to introduce an expletive negation when the second term in a comparative construction begins with *que* (see (2a), where this tendency is marked by a question mark). This might be a case in point, although insertion of expletive negation is not obligatory and can also appear without morpheme iteration (see (2b)). We will not investigate this issue any further here.

(2) a. Más vale que te vayas que ?(no) que te quedes.
more helps that you go that (not) that you remain
'It is much better that you go than that you stay.'
b. Más vale maña que (no) fuerza.
more helps skill than (not) strength
'Skill is more helpful than strength.'

From the fact that many grammars tolerate repeated morphemes we can conclude that an inviolable condition that blocks accidental repetition cannot exist. On the other hand, there seem to be clear cases in which structures are ruled out precisely because they show accidental repetition. This tension can be resolved in at least three ways. First, one could develop a conspiracy theory in which the rules of syntax and morphology are such that in specific cases accidental repetition happens to be avoided, even though the grammar does not contain any conditions ruling it out. At best, grammars that avoid accidental repetition could be favored by an extra-grammatical, psycholinguistic, repeated-morph constraint (see Menn and MacWhinney 1983 and Bonet 1995 for examples of this approach).

Second, one could assume that the grammar contains conditions that rule out fairly specific cases of accidental repetition and that trigger adjustments of the type in (1c) through (1e). These 'low-level' filters could also be seen as psycholinguistically motivated (see Radford 1977 for an approach in this spirit). Third, one could adopt an optimality-theoretic approach to grammar (see Prince and Smolensky 1993). On this view, a maximally general condition against repeated morphemes would be part of the grammar, but its effects would depend on its interaction with other constraints. In other words, if a particular language allows structures that violate the constraint, these structures would be favored by constraints ranked higher in the grammar of that language (see Grimshaw 1997a and Ackema 2001 for examples of such an approach).

In the sections that follow, we will state a number of descriptive generalizations involving the repeated-morph constraint. These will be formulated in terms of the second approach for reasons of presentational convenience. No theoretical claims should be attached to this choice.

What constitutes an accidental repetition of morphemes depends on what we mean by identity of morphemes, 'repetition', and 'accidental'. (i) Many authors assume that identity is to be understood in terms of phonological form, although it could be that similarity in form rather than strict identity triggers haplology or suppletion. We will argue that, in addition to this, a sequence of morphemes expressing identical features may do so. (ii) The question about repetition concerns the context in which haplology and suppletion are triggered. The standard assumption is that M_1 and M_2 must be adjacent, which is compatible with all cases discussed here. (iii) Accidental repetition is to be distinguished from intentional repetition. In the case of reduplication in morphology, for example, two adjacent morphemes may end up having the same form by rule, thus exemplifying intentional repetition (the reduplicative morpheme is phonologically incomplete and takes its form, partially or wholly, from its host). Haplology and suppletion, however, involve accidental repetition: the relevant morphemes happen to have the same form and happen to surface next to each other. This raises the non-trivial question why grammars should distinguish the two cases. Menn & MacWhinney suggest a partial psycholinguistic answer, but a more comprehensive solution remains elusive.

In section 2 we discuss phenomena from several languages that illustrate strategies by which repetition of phonologically identical morphemes is avoided. In section 3 we turn to cases of haplology and suppletion involving morphemes that express identical features but are different in form. We offer some conclusions in section 4.

2 Four strategies

2.1 Tolerance and avoidance

It is easy to demonstrate that repetition of identical morphemes is not ruled out across the board. For example, in felicitous contexts, prepositional phrases may

be used as 'honorary NPs'. If so, they can be the complement of a preposition that is identical to their head, as shown by the Dutch example in (3).

(3) (Context: They will probably hang the painting the right way up, but since it is abstract art, you can't be sure. If they hang it upside down, all hell will break loose.)
De meeste journalisten hopen dan ook [$_{PP}$ **op** [$_{PP}$ **op** z'n kop]].
the most journalists hope then also on on its head
'Indeed most journalists are hoping for upside down.'

Dutch also has a preposition that seems to combine freely with prepositional complements, even if these are not honorary NPs. It turns that the selected PP can be headed by the same preposition, *voor* 'for'. This is illustrated in (4a). Repetition of prepositions is not restricted to complementation. Dutch has verbs that are accompanied by a prepositional particle and if such a particle is stranded by verb movement, it can end up adjacent to the head of an extraposed PP, giving rise to examples like (4b, c).

(4) a. Dit is een goede wijn [$_{PP}$ **voor** [$_{PP}$ **voor** de televisie]].
this is a good wine for for the television
'This is a good wine for in front of the television.'
b. Ik zoek het [$_{V}$ **op** t_{V}][$_{PP}$ **op** de kaart].
I search it on on the map
'I look it up on the map.'
c. Ik lees me [$_{V}$ **in** t_{V}][$_{PP}$ **in** dit onderwerp].
I read me in in this topic
'I read up on this topic.'

However, in other cases repetition of phonologically identical morphemes leads to ungrammaticality. Thus, the Dutch demonstrative pronouns *die* and *dat* 'that' cannot be followed by a relative clause introduced by the same pronoun. It seems unlikely that this is due to syntactic or semantic factors, given that relative clauses introduced by *die* and *dat* may follow the non-homophonous demonstratives *degene* and *hetgene*, while the demonstratives *die* and *dat* allow modification by prepositional phrases with a comparable semantics. The full paradigm is given in (5) and (6). A similar point is made for German and English by Pullum and Zwicky, as cited in Menn and MacWhinney (1983).

(5) (Context: Which filmstar do you like best?)
a. die met dat rooie haar
that with that red hair
'the one with the red hair'
b. degene met dat rooie haar
the-one with that red hair
'the one with the red hair'

c. **??die** **die** dat rooie haar heeft
that that that red hair has
d. degene die dat rooie haar heeft
the-one that that red hair has
'the one with the red hair'

(6) (Context: Which house do you consider most romantic?)
a. dat met een strooien dak
that with a thatch roof
'the one with a thatch roof'
b. hetgene met een strooien dak
the-one with a thatch roof
'the one with a thatch roof'
c. **??dat** **dat** een strooien dak heeft
that that a thatch roof has
d. hetgene dat een strooien dak heeft
the-one that a thatch roof has
'the one with a thatch roof'

The hypothesis that (5c) and (6c) are ruled out because of repetition of identical morphemes is corroborated by the grammaticality of relative clauses that modify the *wh*-operators *wie* and *wat*:

(7) a. Wie die je in Zuid Afrika ontmoet hebt vond je aardig?
who that you in South Africa met has found you nice
'Who that you met in South Africa did you consider nice?'
b. Wat dat je gelezen hebt vond je mooi?
what that you read has found you beautiful
'What that you have read did you consider beautiful?'

Note that the ban on repetition of identical morphemes is conditioned by adjacency. No ungrammaticality results if the demonstrative is separated from the homophonous relative pronoun by a nominal complement.

(8) a. die filmster die dat rooie haar heeft
that filmstar that that red hair has
'that filmstar with the red hair'
b. dat huis dat een strooien dak heeft
that house that a thatch roof has
'that house with a thatch roof'

Interestingly, the filter that excludes repetition must be sensitive to syntactic environment as well as phonological form, since the demonstratives *dat* and *die* may freely follow homophonous relative operators:

(9) a. De jongen **die die** fiets gestolen heeft is minderjarig.
the boy that that bicycle stolen has is under-age
'The boy who stole that bicycle is under age.'
b. Het meisje **dat dat** boek gekocht heeft is gek.
the girl that that book bought has is mad
'The girl who bought that book is mad.'

Indeed, in a carefully constructed example involving the complementizer *dat*, the demonstrative *dat*, the relative *dat* and an autoreferential DP, it is possible to create a sequence of six repeated morphemes:

(10) Ik denk **dat dat** '**dat**' **dat dat** '**dat**' op pagina 2 volgt weggelaten
I think that that that that that that on page 2 follows omitted
kan worden.
can be
'I think that the 'that' which follows the 'that' on page 2 should be omitted.'

The situation can be summed up by the following descriptive rule (small capitals indicate syntactic elements, material between forward slashes, their phonological realization):

(11) */pronoun/ /relative operator/ if
(i) /pronoun/ and /relative operator/ are adjacent,
(ii) /pronoun/ is identical to /relative operator/, and
(iii) PRONOUN is the antecedent of RELATIVE OPERATOR

2.2 Deletion

The strategy chosen in the Dutch examples above is one of avoidance of repetition. As Menn and MacWhinney point out, an alternative strategy would be deletion. Thus, if two free adjacent morphemes normally receive the same phonological realization, one of them would fail to be spelled out. In Mandarin Chinese, for example, the perfective marker *le* and the particle *le* which marks a new situation trigger deletion when adjacent (Yip 1998 and references cited there):

(12) Bing dou hua **le** (***le**).
ice all melt Perf CHANGE-OF-STATE
'The ice melted.'

A similar rule of deletion is triggered in French by adjacency of comparative *que* and the homophonous complementizer (Radford 1977, 1979):

(13) Je préfère que tu restes, plutôt **que** (* **que**) tu t'en ailles.
I prefer that you remain rather than that you go-away
'I prefer that you stay rather than that you go away.'

A further example from French involves the deletion of superlative *le* in a position immediately following the homophonous determiner (Radford 1977, 1979). (An anonymous reviewer suggests that (14b) may not involve haplology, but rather, raising of the comparative expression *plus beau*, which lacks an article, to a prenominal position where it acquires superlative semantics. It would take us too far afield to explore this possibility here.)

(14) a. le paysage le plus beau
the landscape the most beautiful
'the most beautiful landscape'
b. **le** (* **le**) plus beau paysage
the the most beautiful landscape

The phenomenon is also found in Spanish clitic clusters. Grimshaw (1997a) points out that at least in some dialects a sequence of a reflexive and an impersonal clitic, expected to surface as *se se*, in fact surfaces as a single clitic. Although the empirical claim is somewhat controversial, it would – if correct – show that haplology extends to clitic clusters.

(15) **Se** (***se**) lava.
one oneself washes
'One washes oneself.'

We will discuss one notorious case of syntactic haplology in some more detail. The Dutch weak pronoun *er* can have four different functions. It can be an expletive; the fronted argument of a preposition; a locative meaning 'there'; and a fronted noun associated with a numeral or a quantificational modifier. We illustrate these uses of *er* below, where we adopt Odijk's (1993) marking of *er*'s functions by X, P, L, and Q, respectively. (See Bech 1952, Van Riemsdijk 1978a, Bennis 1980, 1986 and Model 1991 for additional discussion.)

(16) a. dat er_X iemand in het bos loopt
that there someone in the forest walks
'that there walks someone in the forest'
b. dat Jan er_P gisteren pas weer [$_{PP}$ aan *e*] dacht
that John there yesterday only again on thought
'that John only thought about it again yesterday'
c. dat Jan er_L al jaren woont
that John there already years lives
'that John has lived there for years'
d. dat Jan er_Q [$_{DP}$ vijf *e*] heeft
that John there five has
'that John has five of them'

Since weak pronouns are not generally in complementary distribution in Dutch, one would expect sentences with up to four occurrences of *er* to be possible.

In fact, however, in most sentences of the relevant type only a single *er* is spelled out, which somehow manages to combine multiple roles. The following examples, taken from Odijk (1993), illustrate sentences in which *er* combines two functions:

(17) a. Kwamen er_{XQ} slechts twee?
came there only two
'Did only two (persons) come?'
b. Hij heeft er_{QP} slechts twee over gelezen.
he has there only two about read
'He read only two (articles) about it.'
c. Hij kocht er_{QL} slechts twee.
he bought there only two
'He bought only two (books) there.'

There are in principle two approaches to these data, both based on the fact that weak pronouns tend to cluster in a position between the regular subject position and the VP. A syntactic approach could postulate a single position for *er* in the cluster, which could then bind several empty pronominal elements in the clause. The various functions of *er* would then be associated with these elements. The alternative, haplological, approach assumes that the cluster can contain multiple occurrences of *er*, each with a single function. However, adjacent occurrences of *er* are subject to deletion, giving rise to the appearance of shared functions in the remaining pronoun.

The first approach cannot be correct as it stands since it does not allow any multiple occurrences of *er*, whether adjacent or not. This is clearly too strong, given that quantificational *er* can co-occur with expletive, locative, and prepositional *er* (although other co-occurrences are excluded):

(18) a. Er_{XL} hebben er_{Q} [$_{DP}$ twee *e*] een jaar gewoond.
there have there two a year lived
'Two (of them) lived there for a year.'
b. Er_{X} hebben er_{Q} [$_{DP}$ twee *e*] een bon gekregen.
there have there two a ticket got
'Two (of them) received a ticket.'
c. Er_{XP} hebben er_{Q} [$_{DP}$ twee *e*] [$_{PP}$ over *e*] gepraat.
there have there two about talked
'Two (of them) talked about it.'

(19) a. dat hij er_{L} zich er_{Q} [$_{DP}$ twee *e*] heeft aangeschaft
that he there self there two has bought
'that he has bought himself two (of them) there.'
b. dat er_{X} zich er_{Q} [$_{DP}$ twee *e*] tot top-athleten ontwikkelden
that there self there two to top-athletes developed
'that two (of them) developed into top athletes'

c. dat er_P zich er_Q [$_{DP}$ twee *e*] [$_{PP}$ over *e*] ontfermden
that there self there two about took-care-of
'that two (of them) took care of it'

The second, haplological, approach is advocated in Bennis (1980, 1986). The main advantage of this proposal is that it allows multiple occurrences of *er* as long as they are non-adjacent. However, a deletion rule is by itself not sufficient to accommodate all the data. In particular, a syntactic analysis seems required to explain the ungrammaticality of any structure that combines locative and preposition *er*. This is illustrated in (20a), which tries to spell out er_L and er_P separately, and (20b), which tries to combine the two functions in a single pronoun.

(20) a. *dat Jan er_P zich er_L [$_{PP}$ aan *e*] ergerde
that John there self there on annoyed-got
b. *dat Jan er_{PL} [$_{PP}$ aan *e*] dacht
that John there on thought

As argued by Odijk (1993) on the basis of largely comparable data, a hybrid analysis of *er* is required, which combines syntactic restrictions with haplology. Here we briefly present a variant of his proposal.

Data like (18) and (19) show that the position occupied by er_Q in the pronominal cluster must be distinguished from the one occupied by er_X, er_L, and er_P. In particular, it seems to be located to the right of this more general position. This conclusion makes it necessary to adopt a rule of deletion triggered by adjacent occurrences of *er*. The point is that, whenever the two positions are filled in the absence of intervening material, only a single *er* surfaces:

(21) a. Hebben er_{XLQ} [$_{DP}$ twee *e*] een auto gekocht?
have there two a car bought
'Did two (of them) buy a car there?
b. *Hebben **er_{XL}** **er_Q** [$_{DP}$ twee *e*] een auto gekocht?
have there there two a car bought
c. Hebben er_{XQ} [$_{DP}$ twee *e*] een bon gekregen?
have there two a ticket received
'Did two (of them) receive a ticket?'
d. *Hebben **er_X** **er_Q** [$_{DP}$ twee *e*] een bon gekregen?
have there there two a ticket received
e. Hebben er_{XPQ} [$_{DP}$ twee *e*] [$_{PP}$ over *e*] gepraat?
have there two about talked
'Did two (of them) talk about it?'
f. *Hebben **er_{XP}** **er_Q** [$_{DP}$ twee *e*][$_{PP}$ over *e*] gepraat?
have there there two about talked

The co-occurrence restriction on er_L and er_P can be understood if they compete for a single position. But why does this explanation not affect the expletive

function? In other words, why can a single *er* realize er_X, as well as er_L or er_P, despite the fact that separate realization of er_X and er_L or er_P is prohibited? The ungrammaticality of (22a) and (22c) demonstrates that haplology cannot be involved in the explanation of the grammatical examples.

(22) a. *Er_X gebeuren er_L ongelukken.
there happen there accidents
b. Er_{XL} gebeuren ongelukken.
there happen accidents
'Accidents happen there.'
c. *Er_X denken er_P mensen [$_{PP}$ aan *e*].
there think there people on
d. Er_{XP} denken mensen [$_{PP}$ aan *e*].
there think people on
'People think of it.'

We suggest that the key to understanding the distribution of expletive *er* lies in an interpretive rule which states that an occurrence of *er* is assigned the expletive function if it occurs in the IP or CP domain (we remain neutral on what this function exactly entails). Thus, *er* is never inherently expletive, but acquires this property on the basis of its context. This explains why an expletive function is unavailable in (23a), where *er* can only be locative. By contrast, (23b) is ruled out because *er* must be exclusively locative (given the choice of subject), while the interpretive rule forces an additional expletive function.

(23) a. *dat zich er_X ongelukken voordoen
that self there accidents happen
b. *Er_L woont Jan.
there lives John

On this view, the lexicon contains two entries for *er*, quantificational er_Q and a referential variant that subsumes er_P and er_L. That this is a reasonable assumption is supported by the fact that er_P and er_L have a strong counterpart, *daar*, but er_Q does not:

(24) a. dat Jan er_P/$daar_P$ [$_{PP}$ over *e*] gepraat heeft
that John there/there about talked has
'that John has talked about it'
b. dat Jan er_L/$daar_L$ woont
that John there/there lives
'that John lives there'
c. dat Jan er_Q/*$daar_Q$ [$_{DP}$ vijf *e*] heeft
that John there/there five has
'that John has five (of them)'

Pure expletive *er* is merged in a position to which the interpretational rule applies. However, since this merged expletive is not related to an interpretable empty position, its semantic content must be suppressed, much like the semantics of *do* in *do*-support constructions. The data in (22) now fall into place. In general, suppression of semantic content is avoided where possible. Thus, in constructions that allow verb movement, *do*-support is ruled out. Similarly, where a variant of *er* is available that allows movement into a position to which the interpretational rule applies, merger of *er* is blocked since the movement option avoids suppression of semantics. In the resulting structure *er* fulfills both the expletive function and the function it is associated with in its base position.

There is one remaining issue. As it turns out, the expletive and quantificational functions of *er* are incompatible:

(25) a. Er_X bestaan er_Q $[_{DP}$ twee *e*].
there exist there two
'There exist two (of them).'
b. *Er_{XQ} bestaan$[_{DP}$ twee *e*].
there exist two

This restriction may be related to the fact that, cross-linguistically, expletives are derived from referential rather than quantificational elements. Apparently, quantificational semantics is incompatible with the expletive function.

In summary, the distribution of Dutch *er* can be captured by the following generalizations:

(26) a. There are two positions hosting *er*, one which licenses referential *er* (er_L and er_P) and one which licenses quantificational er_Q. The referential position c-commands the quantificational one, while both are located between the IP and VP domains.
b. The expletive function is assigned to all variants of *er* that occupy a position in the IP or CP domain, by movement or base generation.
c. */er_1/ /er_2/ if
(i) /er_1/ and /er_2/ are adjacent, and
(ii) ER_1 and ER_2 are pronouns
c'. /er_1/ /er_2/ → /er/ (triggered by (c))
d. Pure expletive *er* is derived by suppression of semantic content.
e. Quantificational semantics cannot be suppressed.
f. Movement is preferred over suppression of semantic content.

The generalizations in (26a) and (26c, c') are directly taken from Odijk (1993), while (26b), (26d), and (26e) provide an alternative to his analysis of expletive *er*, which circumvents some technical difficulties. For our present purposes, it is important to acknowledge the properties of the rule of haplology in (26c, c'). Like the earlier rule in (10), it is conditioned by adjacency and must refer, not only to phonological identity, but also to syntactic category. The latter is easily

demonstrated by the examples in (27), in which no deletion takes place despite the adjacency of phonologically identical morphemes *er*:

(27) a. dat de duik**er er** twee heeft opgedoken
that the diver there two has updived
'that the diver recovered two (of them)'
b. dat Jan lang**er er**over doet dan Marie
that John longer thereon does than Mary
'that John takes longer than Mary'

Another property shared with the earlier rule is that the deletion applies to specific lexical items only. Identical weak pronouns are generally allowed to surface in adjacent positions:

(28) dat **ze ze** gisteren gezien hebben
that they them yesterday seen have
'that they have seen them yesterday'

2.3 Suppletion

A fourth strategy in dealing with cases of accidental repetition is to map one of the morphemes to a phonological form that can normally not be used to realize it. Menn and MacWhinney (1983) list a number of cases of this type that suggest that the phenomenon is particularly common in clitic clusters. For instance, a sequence of an indirect and a direct object third person proclitic in Spanish is expected to surface as *le lo* but does in fact take the form of *se lo*. The example in (29) is taken from Bonet (1995) (see also Perlmutter 1971).

(29) A Pedro, el premio, se/***le lo** dieron ayer.
to Peter the price se/3.Dat 3.Acc gave-3.Pl yesterday
'They gave the price to Peter yesterday.'

Notice that, if these cases are to be conditioned by adjacency of identical forms, identity must be defined in terms of onset identity, a considerably looser notion than the strict identity assumed for the cases discussed so far. An alternative account, explored in the next section, could rely on *le* and *lo* sharing the phi-features third person singular.

The phenomenon is not restricted to clitic clusters, however. Radford (1977, 1979) notices that in German a sequence of comparative *als* and temporal *als* is realized as *denn als*.

(30) Goethe ist bekannter als Schriftsteller denn/***als als** Naturwissenschaftler.
Goethe is better-known as writer than /as as scientist
'Goethe is better known as a writer than as a scientist.'

In many cases the alternative realization of the affected morpheme cannot reasonably be derived from the expected phonological form. Rather, it is an independently existing word in the language with a feature make-up that is either a subset or a superset of that expressed by the expected form. Below we will discuss two examples of suppletion in a little more detail. The first involves non-realization of a feature, while the second is a case in which the phonological form that is used spells out more features than are motivated by the syntax/semantics.

Ackema (2001) observes that the Dutch coordinating complementizer *of* 'or' and the homophonous complementizer used to introduce embedded questions cannot surface adjacently. This is illustrated by the case of coordinate reduction in (31b). As shown by (31c) and (31d), the strategy employed in this case of accidental repetition is not haplology but suppletion. The second complementizer surfaces as indicative *dat* 'that'. (Example (31b) is also acceptable for some speakers.)

(31) a. Vroeg je nou of die plaats vrij is of vroeg je nou of-ie bezet is?
asked you now if that seat free is or asked you now if-it taken is
'Did you ask whether that seat is free or whether it is taken?'

b. *Vroeg je nou of die plaats vrij is **of** ~~vroeg je nou~~ **of**-ie bezet is?
asked you now if that seat free is or asked you now if-it taken is

c. Vroeg je nou of die plaats vrij is of ~~vroeg je nou~~ dat-ie bezet is?
asked you now if that seat free is or asked you now that-it taken is

d. *Vroeg je nou of die plaats vrij is of ~~vroeg je nou~~ Ø-ie bezet is?
asked you now if that seat free is or asked you now it taken is

Ackema argues that these data fall out from a ban on adjacent identical complementizers (or rather functional heads). For our present purposes we can formulate the relevant filter as in (32).

(32) */complementizer$_1$/ /complementizer$_2$/ if
(i) /complementizer$_1$/ and /complementizer$_2$/ are adjacent, and
(ii) /complementizer$_1$/ is identical to /complementizer$_2$/

In addition, the grammar of Dutch is such that violation of this principle is avoided by a rule that suppresses realization of the Q feature in the second complementizer. The result of this is that only the feature indicating subordination will be realized, yielding the phonological form *dat*:

(33) [SUB Q] → [SUB] (triggered by (32))

Several aspects of this analysis are independently motivated. First, the adjacency condition is corroborated by the fact that material stranded by coordination reduction blocks suppletion (see (34a)). Second, the relevance of the syntactic category of the adjacent morphemes can be inferred from the grammaticality of (34b), in which the second *of* functions as an honorary NP (it has auto-referential

semantics). Third, phonological identity is a precondition for suppletion: if the coordinating complementizer is focussed, suppletion cannot take place (see (34c)).

(34) a. Vroeg hij nou zachtjes of die plaats vrij is of hard of/*dat-ie
asked he now softly if that seat free is or loudly if/that-it
bezet is?
taken is
'Did he ask softly whether that seat is free or loudly whether it is taken?'
b. Ik vraag me af **of** '**of**' een voegwoord is.
I ask me Prt if if a complementizer is
'I wonder whether 'if' is a complementizer.'
c. Hij vroeg **OF** **of** die plaats vrij is **OF** **of**-ie/*dat-ie bezet is.
he asked either if that seat free is or if-it/that-it taken is
'He asked either whether that seat is free or whether it is taken.'

The data in (35) provide an interesting complication not discussed by Ackema. Although these examples have been claimed to be ungrammatical by Koster (1978d), many speakers of Dutch find them acceptable and, moreover, do not distinguish between the cases of accidental repetition in (35a, b) and the cases of non-repetition in (35c, d).

(35) a. Hij zei **dat** [$_{CP}$ **dat** Jan komt] het feest wel zal opluisteren.
he said that that John comes the party no-doubt will enhance
'He said that John's coming will certainly enhance the party.'
b. Hij vroeg **of** [$_{CP}$ of Jan komt] veel uit zal maken
he asked if whether John comes a-lot out will make
'He asked whether it will matter a great deal whether John will come or not.'
c. Jij vroeg of [$_{CP}$ dat Jan komt] een probleem is.
you asked if that John comes a problem is
'You asked whether John's coming would be a problem.'
d. Hij zei dat [$_{CP}$ of Jan komt] niet zeker is.
he said that whether John comes not sure is
'He said that it is uncertain whether John will come.'

Sentence (35a) can easily be accommodated as a case of tolerance (see section 2.1) since *dat* cannot be input to the rule in (33). Example (35b), however, is predicted to be ungrammatical. It should be realized as (36), which is ungrammatical on the intended reading.

(36) *Hij vroeg of [$_{CP}$ dat Jan komt] veel uit zal maken.
he asked if that John comes a-lot out will make
'He asked whether it will matter a great deal whether John will come or not.'

A potential solution would be to say that suppression of features may not obliterate semantic contrasts. The subject position is not selected and can therefore

either contain an indicative or interrogative CP, which are of course associated with different readings ('whether . . .' versus 'the fact that . . .'). Ackema's data involve selected interrogatives, which apparently reconciles suppression of the interrogative feature with recoverability. That selection does not do so generally raises questions about the nature of recoverability, which, however, are beyond the scope of this chapter.

Ackema derives various apparently stipulative properties of (32) and (33) from optimality-theoretic competition. In this respect, the paper builds on Grimshaw (1997a), who provides an account of suppletion in certain Italian clitic clusters. Bonet (1995) observes that a sequence of an impersonal and a reflexive clitic, expected to surface as *si si* or *si se*, is in fact realized as *ci si*, where *ci* is a form that normally functions as the first person plural pronoun:

(37) a. Lo si sveglia. Italian
him one wakes-up
'One wakes him up.'
b. Se lo compra.
self it buys
'He/she buys it for himself/herself.'
c. ***Si si** lava.
one self washes
'One washes oneself.'
d. Ci si lava.
we self washes
'One washes oneself.'

It seems, then, that Italian has a ban on adjacent identical clitics:

(38) */clitic$_1$/ /clitic$_2$/ if
(i) /clitic$_1$/ and /clitic$_2$/ are adjacent, and
(ii) /clitic$_1$/ is identical to /clitic$_2$/

The same filter could be responsible for the fact that the dative clitics *lo* and *la* become *glie* before accusative clitics beginning with *l*. Of course, this would require that identity is defined as onset identity.

As in the case of dative clitics, the strategy adopted for avoiding violation of (38) by *si si* sequences is one of suppletion. What distinguishes replacement of *si* by *ci* in Italian from replacement of *of* by *dat* in Dutch is that the suppletive form in Italian is richer in content than the form it replaces. Bonet (1995) argues that the impersonal clitic *si* is highly underspecified: it only contains the feature plural, as indicated by the fact that it triggers plural adjectival agreement (Cinque 1988). If this analysis is correct, whatever form replaces *si* will be associated with a more specific feature content. In particular, Bonet captures the situation in Italian by a rule that inserts the feature first person, prior to phonological

realization of the clitic. The resulting form is *ci*, which normally expresses first person plural:

(39) [D PL] → [D 1 PL] (triggered by (38))

Three remarks are in order. First, the first person feature in *ci* should not feed semantic interpretation. This leaves open two options: either the rule is syntactic and relies on subsequent suppression of the relevant feature at LF, or the rule applies in the PF branch of the grammar (as suggested by Bonet). Second, it remains to be explained why the suppletive form is *ci* rather than any other of the available clitics. Bonet gives a partial answer to this question, based on economy. Grimshaw (1997a) discusses the problem in detail, providing an optimality-theoretic analysis. She argues that *ci* is chosen because it is minimally marked, while at the same time realizing as much of the target semantics as possible. Third, it is an open question why the first rather than the second *si* receives a suppletive realization. Although this is expressed by Bonet's rule, it remains unexplained.

3 Repeated features

3.1 Syntactic identity

The rules we have formulated so far must operate at the PF interface: while their effects are phonological, the environment in which they are triggered is characterized in both morpho-syntactic and phonological terms. For example, Dutch does not exclude the sequence /er/ /er/ in general, but only if it corresponds to a repetition of the pronoun *er* in syntax. Thus, the sequence /duiker/ /er/ in (27) is well-formed. This state of affairs raises the question what exactly triggers haplology in this case, repetition of phonological forms or of syntactic features. In some cases phonology seems the only possible trigger (for example, the case of Dutch complementizer suppletion), but in others the situation is arguably less clear. A complicating factor is that elements often have the same form because they express the same features.

Given that the spell-out rules relate morpho-syntactic objects to their phonological form, one would expect to find cases in which deletion or suppletion is triggered by syntactic features even though the morphemes affected are not phonologically identical in isolation. Thus, even if M_1 and M_2 in (40a) are usually spelled out differently, the fact that they both express the feature F may trigger avoidance (40b), haplology (40c), suppletion (40d) or insertion of a portmanteau form (40e).

(40) a. . . . $[_{M1}$ . . . F . . .] $[_{M2}$ . . . F . . .] . . .
b. *. . . M_1 M_2 . . .
c. . . . M_2 . . . . . . M_1 . . .
d. . . . M_1 M_2′ . . . . . . M_1′ M_2 . . .
e. . . . M_3 . . .

In this section we discuss some phenomena that can be analyzed in these terms. Of course, the existence of such cases does not imply that the cases discussed so far must be reanalyzed in terms of repetition of syntactic features.

3.2 *Deletion*

A suitable phenomenon for introducing the issue is provided by the deletion of possessive markers in Romanian in the context of preceding definite determiners (see Dobrovie-Sorin 1987, Grosu 1988, Cornilescu 1995, and others). Indefinite articles in Romanian precede the noun, while definite articles follow it. This implies that definite, but not indefinite, articles will be adjacent to the particle that introduces post-nominal possessives. As it turns out, the possessive marker is deleted if it surfaces next to the definite article, as in (41b). No deletion occurs if the article and possessive marker are separated by an adjectival modifier (cf. 41c) or a demonstrative (cf. 41d).

(41) a. un prieten al băiat-ul-ui
Indef.M friend Poss.Sg.M boy-Def.M-Dat.M
'a friend of the boy'

b. prieten-**ul** (***al**) băiat-ul-ui
friend-Def.M Poss.Sg.M boy-Def.M-Dat.M
'the friend of the boy'

c. prieten-ul nebun al băiat-ul-ui
friend-Def.M crazy Poss.Sg.M boy-Def.M-Dat.M
'the crazy friend of the boy'

d. prieten-a asta a băiat-ul-ui
friend-Def.F this.F Poss.Sg.F boy-Def.M-Dat.M
'this girlfriend of the boy'

Although this phenomenon is often analyzed in purely syntactic terms, Ortmann and Popescu (2001) argue convincingly that it is in fact conditioned by adjacency rather than hierarchical structure. A particularly strong argument to this effect is provided by coordinated possessives, which, in the relevant context, require deletion of the possessive marker that introduces the leftmost conjunct but not of any other possessive markers. This is particularly hard to understand in terms of syntactic structure.

(42) a. o casă [a băiat-ul-ui şi a fet-ei]
Indef.F house Poss.Sg.F boy-Def.M-Dat.M and Poss.Sg.F girl-Dat.F
'a house of the boy and of the girl'

b. cas-**a** [(***a**) băiat-ul-ui şi a fet-ei]
house-Def.F Poss.Sg.F boy-Def.M-Dat.M and Poss.Sg.F girl-Dat.F
'the house of the boy and of the girl'

Ortmann and Popescu analyze possessive deletion in terms of phonologically conditioned haplology. Indeed, as they point out, the definite determiner and the

possessive share at least one phoneme in contexts that trigger deletion. In Romanian, as in French, possessives agree in number and gender with the nominal constituent they modify. As a result, a noun ending in a masculine singular definite determiner will take a possessive phrase starting with a particle expressing the same features, etc. The contexts that require deletion of the possessive marker are presented in (43).

(43)

	Definite determiner	Possessive
Masculine singular	*u<u>l</u>/<u>l</u>e*	*a<u>l</u>*
Feminine singular	*<u>a</u>*	*<u>a</u>*
Masculine plural	*<u>i</u>*	*a<u>i</u>*
Feminine plural	*<u>l</u>e*	*a<u>l</u>e*

The deletion of the possessive marker cannot have a purely phonological trigger, since indefinites whose stem ends in *ul* do not require deletion of a following *al* possessive. Ortmann and Popescu therefore propose a ban on any shared phonological material in adjacent functional heads.

Although the determiner and possessive forms consistently share a phoneme, they are clearly not generally phonologically identical; consequently, it is not immediately clear that we can generalize from the cases discussed in the previous section to Romanian possessive deletion. Indeed, given that the determiner and possessive marker share phi-features, it seems more plausible to attribute the deletion to a ban on accidentally repeated syntactic features:

(44) */determiner/ /possessive/ if
(i) /determiner/ and /possessive/ are adjacent, and
(ii) DETERMINER and POSSESSIVE agree in number and gender.

This ban triggers the rule below:

(45) /possessive/ → Ø (triggered by(44))

In other words, Romanian possessive deletion takes place under systematic syntactic identity but only partial phonological identity, which favors an account in terms of repeated syntactic features.

As Ortmann and Popescu's work demonstrates, there is a reasonable interpretation of the Romanian data based on accidental phonological repetition. A case in which such an approach seems much less plausible, if not downright impossible, is presented by Old French pro drop. The facts are as follows. Old French is a verb-second language and pro drop is sensitive to word order. It is possible in exactly one context, namely, in main clauses in which subject–verb inversion would occur if the subject were overt, as pointed out by Foulet (1928). Thus, it is possible in declarative main clauses in which a constituent other than the subject is fronted and in yes–no questions, but it is unattested in embedded clauses and

subject-initial declaratives. This is illustrated by the data in (46a, b), from Adams (1987). Examples (46c, d) are constructed examples of unattested patterns.

(46) a. Einsi corurent __ par mer tant que il vindrent à Cademelée.
thus ran-3.Pl by sea until they came-3.Pl to Cadmée
'In this way they ran by the sea until they came to Cadmée.'
b. Oserai __ le vous demander?
dare-1.Sg it you ask
'Dare I ask it of you?'
c. *Einsi corurent li Grieu par mer tant que __ vindrent à Cademelée.
thus ran-3.Pl the Greeks by sea until came-3.Pl to Cadmée
d. *__ corurent einsi par mer tant que il vindrent à Cademelée.
ran-3.Pl thus by sea until they came-3.Pl to Cadmée

The simplest generalization that describes these data is that a weak pronoun is omitted precisely when it is adjacent to the inflectional ending it agrees with (for obvious reasons, focused pronouns cannot be deleted). This suggests an account in terms of accidentally repeated syntactic features. The relevant filter is given in (47).

(47) */affix/ /pronoun/ if
(i) /affix/ and /pronoun/ are adjacent, and
(ii) AFFIX and PRONOUN agree.

Violation of this filter is avoided by deletion of the pronoun:

(48) /pronoun/ → Ø (triggered by (47))

This is a reformulation of the analysis offered in Ackema and Neeleman (2003), who characterize the domain of rule application somewhat differently. Crucially, the conditioning environment cannot be purely phonological, given that pronouns and inflectional endings in Old French do not show any similarity in form. Hence, if haplology is at stake here, it is best captured in terms of repeated syntactic features. (As shown by Ackema and Neeleman, the argument carries over to Arabic pro drop.)

The main earlier treatment of Old French pro drop (Adams 1987) is based on government and relies on the following assumptions; (i) the position of pro must be identified by a governing head; (ii) the content of pro must be identified by co-indexation with the proper features; (iii) the proper governor for pro is I^0 but not C^0; (iv) I^0 governs to the right; (v) I^0 can govern from its derived position in C^0 in verb-second structures; and (vi) pro cannot be fronted to satisfy the verb second constraint. Several of these conditions are unexpected, even in GB theory. More importantly, however, they amount to a rather complex way of deriving what is in essence a simple generalization, namely that pro drop relies on adjacency of an agreeing affix.

3.3 Suppletion

Having seen a possible case of deletion in order to avoid accidental repetition of syntactic features, one may expect the same avoidance mechanism to give rise to suppletion. A possible case of this is found Dutch verb-second structures. In general, agreement in Dutch is insensitive to word order, but second person singular verb forms surface as first person singular whenever verb second gives rise to inversion:

(49) a. [$_{CP}$ dat [jij dagelijks met een hondje over straat loopt]]
that you daily with a doggy in-the street walk-2.Sg
b. [$_{CP}$ Jij [$_{C'}$ loopt [t_{DP} dagelijks met een hondje over straat t_V]]].
you walk-2.Sg daily with a doggy in-the street
c. [$_{CP}$ *Dagelijks [$_{C'}$ loop**t** [**jij** t_{AdvP} met een hondje over straat t_V]]].
daily walk-2.Sg you with a doggy in-the street
d. [$_{CP}$ Dagelijks [$_{C'}$ loop [jij t_{AdvP} met een hondje over straat t_V]]].
daily walk.1.Sg you with a doggy in-the street

As in the case of Old French pro drop, the obvious generalization is that spell-out is sensitive to adjacency of the second person singular affix and the agreeing subject. Ackema and Neeleman (2003) develop an analysis roughly along these lines, based on a characterization of the Dutch verbal paradigm in terms of the features Prt, Add, and Pl, which represent participant in the speech act, addressee, and plural (see also Kerstens 1993; Harley and Ritter 1998). The paradigm may then be characterized in terms of the following spell-out rules:

(50) a. [V PRT] → /v/ (first person singular)
b. [V PRT ADD] → /v/-/t/ (second person singular)
c. [V PL] → /v/-/en/ (plural)
d. [V] → /v/-/t/ (third person singular, elsewhere form)

Given this verbal paradigm, the condition that rules out (49c) can be stated in terms of accidental repetition of the ADD feature:

(51) */affix/ /pronoun/ if
(i) /affix/ and /pronoun/ are adjacent, and
(ii) AFFIX and PRONOUN agree in ADD.

Violation of this filter is avoided by suppression of the ADD in spell-out:

(52) ADD → Ø (triggered by (51))

The resulting phonology realizes only the PRT feature and therefore has the form of the first person singular. The analysis is supported by the fact that, although there is in general no adjacency requirement on a subject and a preceding

fronted verb, the reduced form of the second person singular must immediately be followed by the subject. (See Paardekooper 1961 and Hoekstra 1996 for related discussion and observations.) We should acknowledge here that there is some variation among speakers with respect to the relevant judgments. Some speakers reject (53b), where the subject contains a DP-internal modifier, but no speakers accept (53b').

(53) a. Volgens mij gaat zelfs hij op de heetste dag
according to-me go-3.Sg even he on the hottest day
van 't jaar naar het park.
of the year to the park
'According to me even he goes to the park on the hottest day of the year.'

a'. Volgens mij gaat op de heetste dag van 't
according to-me go-3.Sg on the hottest day of the
jaar zelfs hij naar het park.
year even he to the park

b. Volgens mij ga zelfs jij op de heetste dag
according to-me go.1.Sg even you on the hottest day
van 't jaar naar het park.
of the year to the park
'According to me even he goes to the park on the hottest day of the year.'

b'. *Volgens mij ga op de heetste dag van 't
according to-me go.1.Sg on the hottest day of the
jaar zelfs jij naar het park.
year even you to the park

Indeed, if the fronted verb and the following second person singular subject are not adjacent, the preferred form of the verb ends in *t*:

(54) ?Volgens mij gaat op de heetste dag van 't jaar zelfs jij naar
according to-me go-2.Sg on the hottest day of the year even you to
het park.
the park

The example is not perfect, which Ackema and Neeleman attribute to a parsing difficulty.

Although we have presented the loss of second person marking under inversion as a possible case of suppletion, it could also be analyzed in terms of deletion, given that the suppletive first person singular form does not carry an ending. However, in realizational models of morphology deletion corresponds to non-spell-out of all features. Hence, if the syntactic agreement affix were deleted, the resulting phonological form would be the elsewhere form, which ends in *t*. This is obviously not the correct result. Be this as it may, there are comparable

phenomena in other languages that must involve suppletion rather than deletion, because there is an overt form that unambiguously spells out the features unaffected by suppression. A well-known case is the agreement alternation with preverbal and postverbal subjects in Modern Standard Arabic (Fassi Fehri 1993; Benmamoun 2000a, 2000b; Ackema and Neeleman 2003). As the data below show, plural agreement is suppressed in VSO order, but gender agreement is maintained. Only in VSO order is the subject adjacent to the verbal ending (data from Fassi Fehri):

(55) a. Daxal-at n-nisaaʔ-u makaatib-a-hunna
entered-Fem the-women-Nom office-Pl-Acc-their-Fem
'the women entered their office.'
a′. *Daxal-**na** **n-nisaaʔ-u** makaatib-a-hunna
entered-Fem-Pl the-women-Nom office-Pl-Acc-their-Fem
b. N-nisaaʔ-u daxal-na makaatib-a-hunna
the-women-nom entered-Fem-Pl office-Pl-Acc-their-Fem
b′. *N-nisaaʔ-u daxal-at makaatib-a-hunna
the-women-Nom entered-Fem office-Pl-Acc-their-Fem

Of course, both the Dutch and the Modern Standard Arabic data have received syntactic analyses (see Zwart 1997a and references mentioned there for a syntactic approach to the Dutch data, and Huybregts 1991 and Fassi Fehri 1993 for a syntactic approach to agreement weakening in Arabic). It would take us too far afield to compare these to the suggestions made here.

3.4 Portmanteau morphemes

In the case of haplology based on phonological identity, one can either say that one of the two morphemes fails to be realized phonologically (deletion) or that the remaining phonological form spells out two morphemes (coalescence). It is not easy to find empirical arguments distinguishing the two approaches and it may even be the case that different instances of phonologically motivated haplology require different analyses (see De Lacy 1999 for related discussion in morpho-phonology).

If we turn to avoidance of accidental repetition of syntactic features, however, the two strategies can be told apart. In the case of deletion, the remaining phonological form will be identical to the spell-out one of the two morphemes receives in isolation. In the case of coalescence, it may well be that the form that surfaces differs from the form of either morpheme in isolation. In other words, avoidance of accidental repetition of syntactic features may give rise to a portmanteau morpheme.

The case we will look at involves Huastec weak pronouns, as discussed by Edmonson (1987). Huastec is an absolutive–ergative language with a separate paradigm for absolutive and ergative pronominals. This language displays the following phenomenon. In intransitive structures, pronouns show up in the

absolutive (see 56a). In transitive structures, a third person singular object pronoun may be omitted, in which case a subject pronoun shows up in the ergative form (see 56b). However, when both pronouns should be overtly realized, we do not find the expected repetition of pronouns, but rather a portmanteau morpheme indexing both the ergative and absolutive arguments (see 56c, d). (TS = thematic suffix; Com = completive inflection; Inc = incompletive inflection).

(56) a. ʔIn k'alel. I.Abs go.TS-Inc
'I go.'
b. ___ ʔa hapiyal.
you(all).Erg open.TS-Inc
'You (all) open it.'
c. ***ʔIn ʔa** kʷaθaʔ.
me.Abs you(all).Erg hit.TS-Com
'You (all) hit me.'
d. Tin kʷaθaʔ.
you(all).me hit.TS-Com
'You (all) hit me.'

The analysis of the Huastec data could involve a filter ruling out adjacent weak pronouns. Violation of this filter is avoided by assigning the two morphemes a single phonological realization:

(57) */pronoun$_1$/ /pronoun$_2$/ if /pronoun$_1$/ and /pronoun$_2$/ are adjacent

It is not immediately clear from the Huastec data that what Edmonson analyzes as weak pronouns could not instead be agreement affixes, given that they tend to surface adjacent to the verb. However, that we are dealing with a syntactic portmanteau morpheme is supported by two facts. First, pronouns can be separated from the verb by certain modifiers (see (58)). Second, in sentences containing full DP arguments, the pronominals can be omitted (although doubling is also allowed).

(58) Tin leh ¢'ik'-aʔ-Ø ʔan ʔa:m t-u ʔoko:b.
it.me very bite.TS-Com the spider on-A1 arm
'The spider really bit me in my arm.'

3.5 Tolerance and avoidance

Before we summarize the main findings of this paper, let us briefly discuss the two remaining strategies of dealing with accidental repetition of syntactic features, namely tolerance and avoidance. It will be clear that tolerance is by far the most common strategy. Agreement, for example, is not normally affected by adjacency. As to avoidance, we have not found any examples of this. In cases where repetition is not tolerated, languages consistently seem to provide

an alternative realization. We have no explanation for this, but speculate that functional factors may disfavour avoidance strategies in such cases.

4 Conclusion

Strategies for avoidance of accidental repetition involving free morphemes can invariably be formulated as filters that mention both phonological and syntactic properties of the relevant structure. The minimal phonological condition is adjacency, but often partial or complete identity of form plays a role as well. The minimal syntactic condition specifies the syntactic category of the elements in question, but often shared features are mentioned as well. Given these characteristics, the conclusion is unavoidable that avoidance strategies form part of the PF interface. Moreover, this interface must provide a mapping from morpho-syntactic to morpho-phonological representations. It cannot be the case that the phonological form of syntactic terminals is jointly merged with their syntactic and semantic properties.

It is highly unpredictable in which cases avoidance strategies are employed and, where they are employed, which strategy is chosen. The fact that avoidance is language-specific, construction-specific and morpheme-specific suggests to us that it must be seen as part of the lexicon of the language. In the view of PF sketched above, it is natural to view the lexicon as a list of minimal mapping rules associating, among other things, syntactic terminals with phonological forms (see Jackendoff 1996, Halle and Marantz 1993, and many others). If so, some lexical mapping rules may be context-sensitive, giving rise to avoidance of accidental repetition in specific cases.

For most cases of haplology involving free forms, a purely syntactic analysis is unsatisfactory, primarily because it cannot express the generalizations that seem to underlie the data. It cannot but treat the relevance of adjacency as an epiphenomenon.

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Preface

Generative grammar has always set its aims high. From its inception in the 1950s, the ambition has been to go beyond observational and descriptive adequacy to reach explanatory bliss. Important work would be about 'conditions on transformations' rather than on 'some properties of *wh*-movement in English', about the 'transformational cycle' rather than on verb clusters.[1] This is what science should be like. And while earlier attempts at achieving a semblance of an explanatory theory were often clumsy and inadequate, these past forty or so years have shown that truly fundamental questions can now be asked and addressed.[2] This emphasis on theory has not, of course, altered the fact that linguistics is a thoroughly empirical science, but data and analyses are seen as what they are: tools to help us understand the structure and properties of the human language faculty. It is the fate of tools that when the product is finished they are put away. When some (as it turns out controversial) data from Italian had suggested that the notion of bounding node should be parameterized, we then forgot about the Italian data and happily proceeded with the idea of parameters.[3] Numerous other examples could be added.

More generally, the data and analyses that at some point in the history of generative grammar played an important, sometimes even a crucial, role have a tendency to fade into the background rather quickly.[4] This effect is particularly strong when the piece of theorizing they helped to establish becomes obsolete, but it is even true when the theoretical insight persists over time. As time went on, and as generative grammar (using the term in the broad sense, including all its theoretical diversity), in its explosive success, expanded to dozens of countries, hundreds of universities and colleges, and many hundreds of researchers, the muckheap of once useful but then discarded empirical material continued to grow. Old hands in the field may still be served by a good memory, helping them to dig out some of these rejects if they seem useful at some later stage, but successive new generations of young linguists simply don't have access to the wealth of data, generalizations, and analyses that might be terribly important to their research if only they knew about them.

But it is not only a problem for younger generations. Researchers who like to keep track of developments, particularly (but not only) in those subfields that are not directly related to their own research, or who work in closely related disciplines such as, for instance, psycholinguistics or sociolinguistics, find it increasingly difficult to keep track. Current handbooks are often concerned with current theorizing, but only marginally with the history of the various versions of the theory and even less with the empirical generalizations underlying those theories. As a consequence, an ever smaller percentage of the potentially useful empirical material is treated in standard textbooks, and hence the rest is not part of the knowledge that researchers and students in the field may be expected to possess.

It might be objected that the articles in which all this wisdom is stored are, after all, still around in the journals, in the books, in the libraries. But given their theoretical focus, the titles are often unrevealing as far as the empirical domain is concerned, keywords are notoriously absent or unreliable, relevant data are scattered over several articles, and, most importantly, the presentation of the data in these articles is subservient to the theoretical claims that are made and hence not presented in succinct, didactically useful ways.[5] So searching for the relevant materials, even if you know what to look for, is often hard. For young researchers, such a search task is doubly difficult because very often the descriptive generalizations are presented in a jargon and formalism that were characteristic of the theoretical framework at the time, sometimes decades ago. Who thinks to look up the term 'backward equi' when looking for data relevant to what we now call exceptional case marking (ECM)?[6]

Having a good, theoretically oriented mind is not enough. You cannot gain an understanding of the abstract properties of Universal Grammar without having any ideas about interesting empirical areas that might provide the crucial evidence (or counter-evidence) for your claims. But these flashes of empirical insight can only come if you have enough knowledge in your head to start the neurons firing away. And you can only have that knowledge if you have been taught about a certain range of phenomena in a variety of languages, or if you have had access to a repository of such materials to work through by yourself. The problem is that such courses are rarely taught, the reason being more often than not that the relevant data are not available in a form that is didactically usable.

This is the lacuna that we are hoping to fill with *The Blackwell Companion to Syntax*. In these five volumes, we offer you 77 case studies of syntactic phenomena that should, at least partly, fill the gap and constitute an important research tool for the working linguist and for teachers and students of syntax (and its interfaces). In bringing these chapters together, we were guided by a working definition of what a syntactic case study was supposed to be. The following properties were thought to be central: *a well-delimited empirical area (both as to the construction(s) involved and as to the languages in which the phenomena are found) whose analysis has, at one time or another in the history of generative grammar, played an important role in the theoretical debates at that time*. More often than not, we will find that such results are relatively robust in the sense that they will stand and

be interpretable regardless of various innovations or adaptations of the version of the theory in which they first saw the light.

The so-called 'verb-raising' construction in Continental-West Germanic languages (chapter 75) will serve as an example. Much has been published on this subject, a reasonable degree of consensus exists about the most important properties of the construction, its analyses have been frequently used to support theoretical proposals, etc. Nevertheless, the existence of this complex of facts is hardly known outside the small group of specialists in this field, the main properties cannot be presupposed as common knowledge, and no one in the field can be properly held responsible for ignoring the verb-raising construction. In a situation like that, the chapter's presentation will be oriented toward combining views and formulating them in such a way that they will be accessible to researchers from various approaches to the theory of grammar.

In addition, of course, the delimitation had to be such that the empirical subdomain in question could be treated in manageable chapters. It would have been unthinkable to include a case about relative clauses: even a thick monograph would not do such a topic justice. But the subtopic of free (headless) relative clauses (chapter 27), a topic that in the late 1970s and the 1980s generated a considerable literature, is a typical example of what we had in mind.

What about the theory? We wanted to make the empirical generalizations, the insights into the properties of constructions, the main focus of each chapter. But wherever useful and possible, of course, reference can be and is made to the theoretical issues that the phenomena in question were or even are relevant to. This introduces a certain bandwidth, and indeed some of our authors stress the empirical side more strongly while others swerve more easily into theoretical discussions. With a project this size it has been impractical to impose more uniformity than we have achieved here. It was, frankly, not always easy to convince our authors to take time away from their primary theoretical research to write the chapters we asked them to. And it was also on occasion hard to curb the attention that they tended to give to theoretical issues and their own role in those theoretical developments. More generally, wherever possible we suggested that theoretical issues be addressed in robust, sustainable ways, not in terms that would reflect the fads and the terminological peculiarities typical of a specific brief period in the short history of generative grammar.

It does not take a great deal of knowledge of the field to realize that an enterprise such as the present one is a highly open-ended affair. Even if we had achieved complete coverage at the time of appearance, new cases would soon present themselves. But complete coverage is unattainable in the first place. It is always possible to come up with other potential cases, not represented in the present work. Even now we already have a number of ideas about cases that might be added and which may at some point be added to the present collection. Nevertheless, we believe that the coverage that the present collection achieves is very considerable. So much ground is covered that already it seems doubtful that future graduate students of linguistics could be expected to work through all of this material. If a student manages part of it and has the rest at his or her disposal

as an encyclopedia of linguistic phenomena, we feel certain that his or her research will greatly benefit. As teachers we are frequently confronted by a big question mark in the faces of students or even fellow faculty members when we use terms like 'contraction', 'subdeletion', or 'freezing effect'. And when asked "Where can I read up on this?" we are often faced with our own bad memory and the virtual impossibility of pointing toward one representative text that will concisely and competently explain what kind of phenomena are hiding behind these terms. This, we feel sure, is now a problem of the past.

If, as we are convinced, this *Companion* will become an important research tool in linguistics, a pressing need will also be felt for additional case studies to be added. While it may well be possible to project further volumes in the future, or an updated or extended version of the present publication, it has been clear to us from the start that the best way to make this an incremental enterprise is to publish these cases electronically. This would allow the possibility of reviewing cases now published, adding new cases relatively easily, and allowing discussion fora, etc. When that happens, the way to expanded coverage of the field will be paved. For the moment we refer you to www.syntaxcompanion.org to keep you informed on developments in this area.

One point to make about the references: every individual chapter has a reference section; the consolidated reference list is in volume V, and in the XML CD version the links are to the consolidated list rather than to the end-of-chapter lists. So in the chapter references you may find entries with a, b, etc. after the date even if there is only entry with that author and date in that chapter, because there is more than one entry in the whole five volumes with the same author and date. For example, even if there's only one Chomsky 1995 cited in any one chapter, it will appear as Chomsky 1995a or 1995b or 1995c, because there are three Chomsky 1995 entries in the consolidated references for the whole five volumes, identified as a, b, and c.

As editors of this encyclopedia of case studies, we have had to make many choices. In doing so we were greatly helped by the project group at NIAS, the Netherlands Institute for Advanced Study in the Humanities and Social Sciences, at Wassenaar, in the dunes lining the Dutch coast, in 1996/1997. The definition of what we would consider a typical case study was intensively discussed and ultimately fixed by that group: Reineke Bok-Bennema, Norbert Corver, Denis Delfitto, Joe Emonds, Martin Haiden, Itziar Laka, Eric Reuland, Tim Stowell, Sten Vikner, and, to some extent, Ian Roberts. We were also fortunate to have good input and feedback from Hagit Borer, Jan Koster, and Edwin Williams, our special outside consultants. The original list of cases was also compiled by that group. First sample chapters were produced during that year. And we brainstormed a lot about who would be the ideal author for which chapter. Nevertheless, we accept full responsibility for all the choices that were made.

We do wish to emphasize, however, that it has never been our intention to suggest that the present collection could be interpreted as a kind of canon, in the literary sense of the word (to the extent that literary scholars are still prepared to advocate such a notion). What we say above about the open-ended character of

an enterprise such as this should underline the fact that nobody could pretend that it is at all possible to establish such a canon, even if one tried to.

The first plans for this project were made in 1993. That is when we decided to apply to NIAS to see if we could get together a team of colleagues with whom to discuss the scope, the objectives, and the realization of the present work. The application was approved. We gratefully acknowledge the generous support, financial, logistic, and otherwise, of NIAS and, in particular, Dick van de Kaa and Wouter Hugenholtz, respectively the rector and the director of the institute. The group convened in the splendid isolation of NIAS in the academic year 1996/1997. There, we were happy to be able to work together with the colleagues mentioned above. Ilke van den Ende joined us as a student trainee. We were also happy to be able to organize two workshops at NIAS during that year. A third was held in Los Angeles at USC with the help and support of Hagit Borer and Tim Stowell in 2001. We wish to thank the participants at these workshops for their contributions, and LOT (the Dutch National Graduate School of Linguistics) as well as NWO and KNAW (the Netherlands Organization for Scientific Research and the Dutch Royal Academy of Sciences respectively) for financial support for these workshops. We also wish to thank the BSGM Foundation for an additional grant to the NIAS group. Last but not least we wish to thank those who have assisted us with the administration and correspondence, with the copy-editing and the HTML-conversion and the maintenance of the website: Jenny Doetjes, Bart Hollebrandse, Rob Goedemans, and Hannah de Mulder. Without them we literally and figuratively could not have managed. Thanks are due to NWO and the Utrecht Institute of Linguistics OTS (Language in Use project) for grants that made this assistance possible.

Finally we would like to thank all those at Blackwell who, over the years, have helped us realize this project – Ada Brunstein, Philip Carpenter, Sarah Coleman, Tami Kaplan – and the copy-editing team – Fiona Sewell, Anna Oxbury, Peter Kahrel – for doing such a wonderful job.

Utrecht and Tilburg
Martin Everaert and Henk van Riemsdijk

NOTES

1 Cf. Chomsky (1973); Evers (1975b).
2 See, for example, Chomsky (2004).
3 Cf. Rizzi (1982b).
4 The reverse also holds true. Certain empirical domains have never figured prominently in theoretical debates, and remain, thus, uncharted territory from a descriptive point of view.
5 We should add that publications like *Linguistics Abstracts Online* will, in future, solve part of the problem we note.
6 Cf. Postal (1974).

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70 The Syntax of Modal Auxiliaries

SJEF BARBIERS

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1 Introduction

Modality is a semantic concept and covers, *inter alia*, notions such as possibility, necessity, probability, obligation, permission, ability, and volition. Modality can be expressed syntactically by modal verbs, imperatives, verbal inflection, modal adverbs, and modal particles. This chapter is restricted to modality expressed by modal auxiliaries such as CAN, MUST, MAY, WILL, WANT, and NEED.[1]

A great deal of research on the syntax of modal auxiliaries has concentrated on the distinction between epistemic and root interpretations. Roughly, epistemic interpretations are a class of interpretations involving a speaker-oriented or, in the case of embedded clauses, matrix-subject oriented qualification or modification of the truth of a proposition, while root interpretations involve the will, ability,

permission, or obligation to perform some action or bring about some state of affairs (cf. Lyons 1977 and Palmer 1986 for a fine-grained classification and description of modal interpretations). Sentences are often ambiguous between the two readings. In many Germanic and Romance languages the same set of modals can have both the epistemic and the root interpretations. An example is given in (1):

(1) John must be home at six o'clock.
Epistemic: '(Given what I, the speaker, know), I conclude that John will be home at six o'clock.'
Root: 'John is obliged to be home at six o'clock.'

An important question is whether this systematic semantic ambiguity entails the existence of two different syntactic structures. One of the first answers to this question (Ross 1969a) is that modals with an epistemic interpretation are one-place predicates, taking the entire proposition as their complement, whereas root modals are two-place predicates, i.e., they involve relations between the subject and the rest of the clause:

(2) Epistemic: must (John be home at six o'clock)
Root: must (John, be home at six o'clock)

I take this idea as a starting point, as a great deal of work has been invested to translate it into syntactic terms.

There are different ways to represent the alternation between monadic and dyadic modality syntactically. A first option would be to try to reduce the modal alternation to similar alternations with verbs like *break* and *smoke*. However, it will be shown in section 2 that these are alternations of a fundamentally different type.

A second way to represent the alternation in terms of argument structure is to analyze root modals as control structures and epistemic modals as subject raising structures. This is the most common generative analysis of the root–epistemic ambiguity (Hofmann 1966; Ross 1969a; Perlmutter 1970b and numerous studies since then). However, as shown in section 3, there are a number of serious problems for this analysis.

Third, the modal alternation could be the result of generating modals in different base positions, a higher, possibly functional, position for epistemic modals and a lower, possibly lexical, position for root modals. This analysis is not entirely without problems either, as sections 3.1–3.3 show.

A fourth way to analyze the modal alternation is to assume that epistemic modals, but not root modals, undergo movement at LF. This possibility is discussed in section 3.4. On this approach, the monadic nature of the modal verb in epistemic interpretations is not established until LF.

A different perspective on the possibility of generating modals in different head positions is to look at how different types of complement of modals influence modal interpretation. This perspective is chosen in section 4.

2 Argument structure of modals

2.1 Transitive–intransitive alternations

As is well known, English modals have a defective inflection paradigm and a distribution different from that of main verbs (see section 3). Therefore, the question whether the dyadic–monadic alternation is reducible to other transitive–intransitive alternations does not seem to be relevant for English. It is a relevant question, however, for languages in which modals have many properties in common with main verbs, such as Dutch and German. This section shows that in such languages the modal alternation is not reducible to transitive–intransitive alternations either.

Transitive–intransitive alternations are found cross-linguistically with main verbs like *break* and *smoke* (3a–d). A common analysis of such alternations is that each of these verbs has only one lexical entry, which corresponds to the transitive variant. The intransitive variant is derived by a lexical operation that reduces transitive predicates to intransitive predicates by removing the external argument.

(3) a. John broke the window.
b. The window broke.
c. John smoked the eel.
d. The chimney smoked.

In fact, *break* and *smoke* represent two different types of alternation: *break* is a transitive–unaccusative alternation and *smoke* a transitive–unergative alternation (cf. Abraham 2000). The two can be distinguished by using classic tests described in Burzio (1986) and Hoekstra (1984b). In Dutch, the unaccusative alternant selects the auxiliary BE in the perfect tense (4b) and its adjectival participle can modify a noun that corresponds to the surface subject of the unaccusative (4c). The unergative alternant selects the auxiliary HAVE (4e) and its participle cannot modify a noun that corresponds to the surface subject of the unergative (4f).

(4) **Transitive–unaccusative**
a. Jan breekt de ruit.
John breaks the window
b. De ruit is/ *heeft gebroken.
the window is/ has broken
c. de gebroken ruit
the broken window
Transitive–unergative
d. Jan rookt een paling.
John smokes an eel
e. De kachel heeft/ *is gerookt.[2]
the stove has/ is smoked
f. *de gerookte kachel
the smoked stove

If the root–epistemic ambiguity of modals were to involve reduction of dyadic predicates to monadic ones, then these tests would show that modals belong to the same class as *roken* 'smoke', as (5a–c) illustrate. In the perfect tense HAVE is selected and the participle cannot modify a noun corresponding to the surface subject of the intransitive alternant:

(5) **Root–epistemic**
   a. Jan mag eten.
      John may eat
      'John is allowed to eat.'
   b. Eten heeft/ *is altijd gemogen.
      eat has/ is always may-Part
      'It has always been allowed to eat'
   c. *het gemogen eten
      the allow-Part eating

However, the monadic alternant of the modal (5b) does not have an epistemic interpretation, which shows that the epistemic–root ambiguity is not an instance of the transitive–unergative alternation either. Moreover, for the epistemic interpretation to be possible, the external argument does not need to disappear, as (1) shows. We can thus conclude that the epistemic–root ambiguity can neither be reduced to the transitive–unaccusative alternation nor to the transitive–unergative alternation.

2.2 *The raising–control analysis of the epistemic–root ambiguity*

A consequence of treating root modals as dyadic predicates is that they involve a control structure, if something like the theta-criterion holds. If a root modal assigns a theta-role to the surface subject DP and if a DP must receive exactly one theta role, it cannot be the case that root modals involve raising structures. If they did, the raised subject would receive a theta-role from both the embedded predicate and the modal. Therefore, root modals can be analyzed only as dyadic predicates if they involve control structures, which implies that PRO in the complement of the modal receives the external theta-role of the embedded verb, while the matrix subject receives its theta-role from the modal directly.

(6) a. $[[_{DP}$ John] must $[_{DP}$ ~~John~~] work from nine to five]]. Raising & epistemic
   b. $[[_{DP}$ John$]_i$ must [PRO$_i$ work from nine to five]]. Control & root

The control–raising analysis rather elegantly captures the idea that root modals are dyadic predicates while epistemic modals are monadic predicates. However, many problems for this analysis have been noted in the literature. First, assuming a PRO-subject in the infinitival complement of the modal is problematic because

infinitival complements without *te* 'to' usually cannot have PRO as their subject, as the Dutch example in (7a) illustrates.[3]

(7) a. Jan voelde [zich/ *PRO wegzakken in de modder].
John felt himself/ PRO sink in the mire
'John felt that he was sinking in the mire.'
b. Jan voelde dat hij wegzonk in de modder.
'John felt that he was sinking in the mire.'
c. Jan at [$_{SC}$ zich/ *PRO ziek].
John ate himself/ PRO sick
'John ate so much that he got sick.'

The infinitival complement in (7a) requires a reflexive as its subject if it is to express the same meaning as (7b). If this infinitival complement can be analyzed as a small clause (SC), the impossibility of PRO in (7a) is an instance of the broader generalization that SC-complements cannot have a PRO subject, as (7c) illustrates (cf. Stowell 1981).

A possible way out would be to argue that modals do not take small clauses as their complements, but larger constituents, e.g., CP or TP. For the Germanic languages there does not seem to be much evidence, however, that this is the case. C-elements such as complementizers are impossible in the complement of a modal, as is embedded *wh*. If infinitival *to* is a T-element, its obligatory absence in most modal contexts shows that the complement of a modal is not a TP either. Higher adjuncts such as evidential and modal adverbs cannot be part of the complement of a modal, which also suggests that complements of modals are smaller than CP.

However, it cannot be concluded from the situation in Germanic that it is generally impossible for modals to have a CP or TP complement. As Tomić (2002) argues, Macedonian has a set of modals that take subjunctive CP-complements. Incidentally, these Macedonian constructions should not be confused with cases in which modals in Germanic seemingly take a CP-complement, as in (8a). There is reason to think that CP in this construction is not a complement but an adjunct (cf. Bennis 1986). As with adjunct clauses, CP in this construction is opaque for extraction, as the Dutch example in (8b) illustrates.

(8) a. Het kan niet [$_{CP}$ dat Nederland de Portugese ploeg
it can not that the Netherlands the Portuguese team
vanavond verslaat].
tonight beats
'It is impossible that the Dutch will beat the Portuguese team tonight.'
b. *Welke ploeg kan het dat Nederland ~~welke ploeg~~ vanavond
which team can it that the Netherlands which team tonight
verslaat?
beats

A second problem for the analysis of root modals as dyadic control predicates is provided by sentences in which the matrix subject cannot be interpreted as the person being obliged or permitted to do something (Feldman 1986; Klooster 1986; Brennan 1993; Barbiers 1995):

(9) a. This letter must be in London before five o'clock.
'It is necessary/obligatory that this letter be in London before five o'clock.'
b. Al deze kranten mogen weg.[4]
all these newspapers may away
'It is permitted to throw away all of these newspapers.'

In these sentences, the modal clearly is a monadic predicate taking the entire clause as its argument, but (9a) can and (9b) must have a root interpretation. Obviously, it is the addressee of utterances like (9a, b) that has the obligation or permission to do something, but the crucial point is that this addressee cannot be expressed syntactically here. In addition, it has often been observed that root modals (in fact, modals in general) cannot be passivized.[5] This is unexpected if they are dyadic verbs, since dyadic verbs which assign an external theta role satisfy an important condition for passivizability (Burzio 1986). However, it should be noted that modals share this inability to occur in the passive with other stative transitive verbs; it may be that the crucial factor blocking passivization here is stativity.[6]

A third problem for the control analysis of root modals involves the behavior of expletive subjects (Thráinsson and Vikner 1995; Warner 1993). In some languages, e.g., English, expletive subjects occur with raising verbs but not with control verbs (10a, b), the explanation being that expletives cannot receive a theta-role but would get one in a control structure. If root interpretations always involved control structures, expletive subjects are predicted to be incompatible with root interpretations, contrary to fact, as (10c) illustrates.[7]

(10) a. There seems to be a man in the room.
b. *There tried someone to call you.
c. There must be a solution to this problem on my table this morning.

A fourth problem emerges when we look at languages with morphological case. Wurmbrand and Bobaljik (1999) claim that in Icelandic modals with a root interpretation behave like raising predicates with respect to quirky case. When a verb requiring quirky case on its subject is embedded under a raising verb, the surface subject may appear with quirky case (11a). When such a verb is embedded under a control verb, the surface subject must appear with nominative case (11b). Regardless of the interpretation, the subject of modal clauses always occurs with quirky case when the embedded verb requires this (11c–d).[8]

(11) a. Harald/%Haraldur virðist ekki vanta peninga. Icelandic
Harold-Acc/Harold-Nom seems not lack money
'Harold seems not to lack money.'

b. Haraldur/*Harald vonast til að vanta ekki peninga.
Harold-Nom/*Harold-Acc hopes for to lack not money
'Harold hopes not to lack money.'
c. Haraldi/*Haraldur ætlar að líka vel í Stuttgart.
Harold-Dat/*Harald-Nom intends to like well in Stuttgart
'It looks like Harold will like it in Stuttgart.'
d. Umsaekjandann verður að vanta peninga.
the-applicant-Acc must to lack money
'The applicant must lack money.' (In order to apply for this grant)

A fifth problem involves modals taking a non-verbal complement. Barbiers (1995, 2002; cf. also section 4) shows that Dutch modals can take a non-verbal complement, e.g., a PP or AP complement.[9] Modals with a PP or AP complement are subject raising constructions. Yet, they can only get non-epistemic interpretations.

Finally, Wurmbrand and Bobaljik (1999) show that A-reconstruction for scope, i.e., the subject taking scope under the modal, is possible for both root and epistemic modals in German. As is well known, A-reconstruction is possible with raising verbs but not with control verbs (cf. May 1985, among many others). The crucial example is given in (12a), which shows that a root interpretation is compatible with wide scope of the modal.[10] Butler (2003) makes the same point for English (12b).

(12) a. Ein Österreicher muß das nächste Rennen gewinnen (damit Österreich die Führung im Weltcup übernimmt). German
an Austrian must win the next race (in order for Austria to have the most gold medals)
i. 'It is necessary that an Austrian (whoever it is) win the next race.'
Scope: modal > subject
ii. #'There is an Austrian and it is necessary that he win the next race.'
Scope: subject > modal
b. Some philosophers must go to those seminars.
i. 'There are some philosophers which are required to go to those seminars.'
Scope: subject > modal
ii. 'It is required that some philosophers go to those seminars (as a condition of our being given money to run them).'
Scope: modal > subject

In sum, the observations presented in this section pose serious problems for a control analysis of modals with a root interpretation, but not for a raising analysis. We have also seen that root modality comes in two types. In the first type, subject-oriented root modality, the surface subject has the permission, obligation, ability to perform some action, or achieve a certain state. In the second type, non-subject oriented modality, the event or state denoted by the embedded verb is

allowed, permitted, or made possible, but the permission, obligation, or ability is not attributed to the surface subject. Consequently, it is not possible to distinguish root and epistemic modality in terms of theta role assignment to the surface subject. Moreover, the evidence presented in the previous section suggests that modal auxiliaries are raising verbs, which do not assign a theta role to the surface subject. The question whether the two types of root interpretation can and should be distinguished syntactically is still open. If all modals are raising verbs and if in the subject-oriented interpretation the surface subject gets a theta role from the modal, subject-oriented root interpretations pose a serious problem for the theta criterion.

2.3 *Prepositional arguments of modals*

To conclude this section, I add some well-known observations on the argument structure of modals that any theory should capture. In Dutch, the source of permission or obligation can be realized as a PP introduced by the preposition *van* 'of' (13a–c). The imperative clause in (13d) shows that it is really the modal that licenses the presence of a *van* PP.

(13) a. Jan moet van zijn vader naar huis gaan.
John must of his father to home go
'His father forces John to go home.'
b. Jan mag van zijn vader naar huis gaan.
John may of his father to home go
'His father permits John to go home.'
c. Jan hoeft van mij niet naar huis te gaan.
John needs of me not to home go
'I do not force John to go home.'
d. Ga (*van mij) maar naar huis.
go (of me) just to home
'Just go home.'

Although these modals apparently have a theta-role to assign to the source argument, they are not able to license their case, witness the occurrence of *van* 'of', the same preposition that shows up to license case on arguments of nouns.

The source argument cannot be licensed by modals expressing ability or will:

(14) a. ??Jan kan van mij naar huis gaan.
John can of me to home go
'I allow John to go home.'
b. *Jan wil van mij naar huis gaan.
John wants of me to house go

The status of (14a) is not so clear. The impossibility of a *van* PP with *willen* 'want' in (14b) is presumably due to the fact that the source argument is already

expressed by the subject. Whereas the source of permission and obligation is distinct from the possessor of permission and obligation, the source and possessor of will coincide. This also suggests that the modal auxiliary *willen* is not always a raising verb, a claim which is supported by the minimal pair in (15a, b). In addition, passivization and use as a prenominal modifier is possible with *willen* (15c, d).

(15) a. Jan/*Het wil dat Piet gaat.
John/It wants that Pete goes
'John wants Pete to leave.'
b. Het/*Jan schijnt/kan dat hij gaat.
it/John seems/can that he goes
'It seems/is possible that he is leaving.'
c. Dat wordt door veel mensen gewild.
that is by many people wanted
'Many people want that.'
d. een gewild object
a wanted object

Another intriguing case of PP arguments licensed by modality is found in so-called modal passives. When a PP with *voor* 'for' is combined with a modal passive, the modal passive can have only an ability interpretation. On the other hand, when a PP with *door* 'by' occurs, only an obligation interpretation is available (see 16a, b) (cf. Bennis 1990).

(16) a. een voor Jan op te lossen probleem
a for John up to solve problem
'a problem that can be solved by John'
b. een door Jan op te lossen probleem
a by John up to solve problem
'a problem that must be solved by John'

In addition to raising questions about the relation between argument structure and modality, the modal passive construction in (16) shows that syntactic constructions may yield modal interpretations in the absence of any modal verb. This seems quite generally to be the case cross-linguistically: BE TO INFINITIVE and HAVE TO INFINITIVE combinations have a modal meaning in many languages.

3 The structural position of modals

An alternative way to shed some light on the epistemic–root distinction is to investigate the structural position of modals. It turns out, however, that their position is rather difficult to establish; a simple and universal picture seems

virtually impossible given the empirical facts. At least four types of distinction should be taken into account:

(i) the distinction between modal auxiliaries and modal main verbs;
(ii) the distinction between epistemic and root modality;
(iii) fine-grained distinctions within the class of epistemic interpretations and within the class of root interpretations;
(iv) the distinction between the position where a modal is interpreted and the position where a modal is pronounced.

The evidence currently available strongly suggests that cross-linguistic parameterization involves all four distinctions.

3.1 Different positions for modal auxiliaries and modal main verbs

The distinction between modals behaving like auxiliaries and modals behaving like main verbs has engendered a great deal of discussion. A well-known view is that modals in English are auxiliaries generated in Infl or Aux (cf. Roberts 1985) because they have a defective inflectional paradigm and behave like other auxiliaries in that they can undergo residual V2 and do not trigger DO-support in negative clauses. On this view, modals in languages like German and Dutch are main verbs projecting their own VPs, as their properties are largely (though not completely) identical to those of main verbs.

However, the distribution and properties of modals in Dutch suggest that Dutch modals can be used both as main verbs and as auxiliaries. Evidence that they can be used as main verbs was provided in the previous section. It was shown there that the volition modal *willen* 'want' behaves like a transitive verb when it selects a CP complement. Obligation and permission modals optionally select a PP argument that expresses the source of permission or obligation, but ability and volition modals do not. Non-verbal complements of modals in languages such as Dutch, German, Afrikaans, Frisian, and Norwegian provide a further piece of evidence for the claim that modals can have their own argument structure (see section 4).

The main-verb use of modals can also be distinguished from their use as auxiliaries by looking at inflection. Unlike English modals, Dutch modals have a participial form. When used as a main verb embedded under a perfective auxiliary, the modal occurs as a participle (17a). When used as an auxiliary, the modal appears as an infinitive instead of a participle (17b). This so-called Infinitivus-pro-Participio effect (IPP) is typical for auxiliaries, witness the contrasts in (17c, d) and (17e, f).

(17) a. Jan had dat best gekund/*kunnen.
John had that best could-PCP/can-INF
'John would very well have been able to do that.'

b. Jan had dat best kunnen/*gekund doen.
John had that best can-INF/could-PCP do-INF
'John would very well have been able to do that.'
c. Jan is thuis gebleven/*blijven.
John is home stayed-PCP/stay-INF
'John stayed home.'
d. Jan is blijven/*gebleven werken.
John is keep-INF/kept-PCP work-INF
'John kept on working.'
e. Jan had niet hoeven/*gehoeven te komen.
John had not need-INF/needed-PCP to come
'It was not necessary for John to come.'
f. Jan had gezegd/*zeggen te komen.
John has said-PCP/say-INF to come
'John had said that he would come.'

Facts such as (17a) are a problem for the hypothesis that modals always have a verbal complement which may be a phonologically silent or a lexically empty verb (Vanden Wyngaerd 1994; van Riemsdijk 2002), as this hypothesis predicts the IPP effect to occur in such cases as well. The absence of the IPP effect cannot be ascribed to the fact that the verbal complement is not pronounced, given cases such as (18) where the IPP effect is obligatory despite the absence of an audible verbal complement.

(18) Jan had de kamer mogen/*gemogen maar niet hoeven opruimen.
John had the room may-INF/may-PCP but not need-INF clean
'John was allowed to clean the room but he did not have to do it.'

It therefore seems to be necessary to specify in the lexicon that in languages like Dutch, modals are syntactically ambiguous between main and auxiliary verbs. This does not complicate the grammar in any way, as such specification is independently needed for other verbs. For example, the verbs *beloven* 'promise' and *dreigen* 'threaten' can be used both as main verbs (19a, c) and as epistemic auxiliaries (19b, d). Interestingly, as auxiliaries they do not just lack a participial form, they cannot occur in the perfect tense at all (19a, b).[11] In addition, in its auxiliary use *beloven* 'promise' cannot license an indirect object (19a, b). The possibility to be used as an epistemic auxiliary seems to be idiosyncratic, i.e., there does not seem to be a way to predict that *beloven* 'promise' and *dreigen* 'threaten' can be used as auxiliaries while *zeggen* 'say' en *verraden* 'betray' cannot (19e).

(19) a. Jan heeft (ons) beloofd/*beloven te komen.
John has (us) promised-PCP/promise-INF to come
'John promised (us) to come.'

b. Het belooft/*heeft beloofd/*heeft beloven (*ons) een mooie dag te worden.
it promises/has promised-PCP/has promise-INF (us) a fine day to become
'It promises (*us) to be a fine day.'
c. Jan heeft gedreigd/*dreigen op te stappen.
John has threatened-PCP/threaten-INF to leave
d. Het dreigt/*heeft gedreigd/*heeft dreigen te gaan regenen.
it threatens/has threatened-PCP/has threaten-INF to go rain
'There's a threat of rain.'
e. *Het zegt/verraadt een mooie dag te worden.
it says/betrays a beautiful day to become

To conclude this section, there are two reasons to distinguish main verb and auxiliary modals. The first is the difference between English on the one hand and languages such as Dutch and German on the other. The second is the language-internal behavior of modals in languages like Dutch. In English, the syntactic distribution and behavior of modals patterns with other auxiliaries. In Dutch, modals can both be used as main verbs and as auxiliaries. Since English, German, and Dutch modals are all ambiguous between epistemic and root interpretations, the auxiliary–main verb distinction does not correspond to this ambiguity.

Language internally, the main verb–auxiliary distinction does not correspond to the root–epistemic distinction either. In (20a), the modal is used as a main verb but it has an epistemic interpretation. In (20b), it is used as a main verb with a root interpretation.

(20) a. Dat Jan te laat gekomen is, dat kan haast niet.
that John too late come is, that can almost not
'It is almost impossible that John was too late.'
b. Jan had best naar huis gemogen.
John had best to home may-PCP
'John would have been allowed to go home.'

3.2 Different positions for epistemic and root modals

Although modals across and even within languages may differ with respect to their categorial status, it is clear that this distinction alone does not determine the structural position of modals. A complication is that languages may have two base positions for modals. Picallo (1990) claims that this is the case in Catalan. There is a higher IP position above clausal negation that corresponds to epistemic interpretations, and there is a lower VP position below clausal negation corresponding to root interpretations. Evidence that Catalan has two different base positions for modals, one for epistemic and one for root modals derives, among

other things, from the interpretation of adjacent modals and the interaction of modal interpretations with the position of perfective auxiliaries. According to Picallo, in the Catalan sentence in (21) only the first modal can have an epistemic interpretation.

(21) En Pere due poder tocar el piano. Catalan
the Pere must can play the piano
i. 'It must be the case that Pere is able/allowed to play the piano.'
ii. *'It must be the case that it is possible that Pere would play the piano.'

Although this may be true for Catalan, the restriction does not hold universally, as the Dutch sentence in (22a) (from Barbiers 1995: 194) and the Icelandic sentence in (22b) (from Thráinsson and Vikner 1995: 76) show:

(22) a. Het moet hem nog wel eens willen tegenzitten.
it must him once in a while want against-sit
'It is said that things go against him once in a while.'
b. Það mun vilja rigna meðan þið eruð þar. Icelandic
it will want rain while you are there
'It will tend to rain while you are there.'

There's a more robust generalization that seems to support the idea that epistemic modals are generated higher than root modals, namely the fact that root modals can be embedded under epistemic modals but not vice versa (but see the next section for a different interpretation of these facts). This is illustrated for Catalan in (23) (from Picallo 1990: 294). The modal *deure* 'must' can only have an epistemic interpretation and therefore causes ungrammaticality when embedded under a root modal. The generalization also holds for Dutch (Barbiers 1995: 194), Danish, and Icelandic (Thráinsson and Vikner 1995: 98).

(23) *En Joan pot duere tocar el piano. Catalan
the Joan may must play the piano

Picallo's second piece of evidence involves the interaction between modal and perfective auxiliaries. Perfective auxiliaries in Catalan can precede root modals but not epistemic modals, while both root and epistemic modals can precede perfective auxiliaries (Picallo 1990: 293). This follows if root modals are generated lower than epistemic modals. The restriction also holds for Dutch (Barbiers 1995: 197–198).[12]

(24) a. *En Pere havia degut venir. Catalan
the Pere had must come
b. En Joan ha pogut anar a Banyoles.
'Joan has been allowed to go to Banyoles.'

3.3 Different positions for necessity and possibility modals, and further distinctions

Cormack and Smith (2002) argue that necessity/obligation modals are generated in a position higher than negation and possibility/ability modals in a position lower than negation. This captures the facts in (25).[13]

(25)	a.	Alfred shouldn't eat nuts.	(deontic)
		'It is advisable for Alfred not to eat nuts.'	should > not
		*'It is not the case that it is advisable for A. to eat nuts	*not > should
	b.	Bob shouldn't be late.	(epistemic)
		'It is predictable that Bob will not be late.'	should > not
		*'It is not the case that it is predictable that Bob will be late.'	*not > should
	c.	Edwin can't climb trees.	(deontic)
		*'Edwin is able not to climb trees.'	*can > not
		'It is not the case that Edwin can climb trees.'	not > can
	d.	Jean can't have left.	(epistemic)
		*'It is possible that Jean has not left.'	*can > not
		'It is not the case that it is possible for Jean to have left.'	not > can

Cormack and Smith's analysis has two important consequences. First, since both necessity and possibility modals precede negation at the surface, it must be the case that possibility modals raise across negation at PF. Second, since possibility modals scoping under negation can have an epistemic reading whereas necessity modals scoping over negation can have a root interpretation, there cannot be a syntactic explanation for the cross-linguistic impossibility for root modals to take scope over epistemic modals. Indeed, Cormack and Smith (2002: 155) claim that *root > epistemic is a conceptual constraint. A point in favor of this claim is that modal main verbs in English cannot have root > epistemic scope either.

A culmination of distinctions between modal interpretations and corresponding syntactic positions can be found in Cinque (1999). Cinque proposes the syntactic hierarchy in (26).

(26) $\text{Mod}_{\text{Epistemic}} \ldots > \text{Mod}_{\text{Necessity}} > \text{Mod}_{\text{Possibility}} > \text{Mod}_{\text{Volition}} > \text{Mod}_{\text{Obligation}} > \text{Mod}_{\text{Ability/Permission}}$

It is clear that Cormack and Smith and Cinque agree that necessity modals are higher than possibility modals and that obligation modals are higher than ability modals. Three positions that Cinque adds involve volition modals and a distinction between epistemic and alethic modality. Evidence for the syntactic position of volition modals comes from Italian sentences such as (27a, b) (Cinque 1999: 80), where the only possible scope relations are possibility > volition and volition > ability/permission, respectively.

(27) a. Gianni potrebbe voler uscire. Italian
'John could want to go out.'
b. Gianni vorrebbe poter cantare.
'John would want to be allowed to sing.'

As for the second distinction, alethic modality semantically involves purely logical necessity or possibility, whereas epistemic modality involves speaker's deductions or opinions. Syntactically, epistemic modals are in a position higher than Tense, whereas alethic modals are lower than Tense. As evidence for the first point, Cinque provides, *inter alia*, the Una example in (28a).[14] According to Baker's (1985a) Mirror Principle, if X is a functional head generated higher in the structure than the functional head Y, X will occur in a position peripheral to Y when a complex word is derived by successive cyclic movement of the verb to the respective functional heads. Since *darib* in (28a) is to the right of the future-tense morpheme, it must originate in a higher position. Evidence that alethic modals are lower than Tense comes from the Hawick Scots sentence in (28b) (from Brown 1992). In this sentence *can* is in the scope of the future tense marker *will* and can be interpreted either in the ability or in the possibility sense.

(28) a. Er bin-kwan-de-darib. Una
she go-Fut-3Sg-PROBAB
'She might go.'
b. He will can do it. Hawick Scots

In Cinque's theory, every head in (26) provides a Spec position for a corresponding modal adverb. This predicts that different types of modal adverb observe the same hierarchy as the heads in (26). For evidence, see Cinque (1999: chapter 4).

3.4 Different positions at PF and LF

As we have seen in the preceding section, the position in which a modal is pronounced should be distinguished from the position in which it is interpreted. This can be done in various ways, depending on the set of assumptions adopted. Cormack and Smith (2002) argue that a modal is inserted in the position where it is interpreted, while the position of pronunciation may be different as a result of PF movement. A second possibility is that modals are not generated in the position where they are interpreted, but that they reach their interpretive position by LF-movement.

It is common to assume that modal auxiliaries are quantifiers. Necessity/obligation modals can be shown to involve universal quantification over possible worlds, whereas possibility/ability/permission modals are existential quantifiers over possible worlds. If modals are quantifiers, they should be able to raise at LF. McDowell (1987) argues that this is the case for epistemic modals. Epistemic modals would differ from root modals in that they raise to a clause initial position

at LF where they take scope over the entire proposition. According to McDowell, the incompatibility of epistemic modality with yes/no and *wh*-questions supports this analysis, as the epistemic operator and the *wh* or question operator compete for the same position within COMP. Whereas McDowell's claim may be correct for the incompatibility of epistemic necessity with yes/no questions (cf. 29b), epistemic possibility and yes/no questions are clearly not incompatible; see (29c, d). Moreover, Brennan (1993) shows that epistemic modals occur in *wh*-questions quite freely (see 29e, f).

(29) a. Jan moet wel een moedertaalspreker van het Fins zijn.
John must AFF a native speaker of the Finnish be
'(John speaks Finnish fluently, so) John must be a native speaker of Finnish.'
b. *Moet Jan wel een moedertaalspreker van het Fins zijn?
must John AFF a native speaker of the Finnish be
Intended meaning: 'Is it necessarily true that John is a native speaker of Finnish?'
c. Kan Jan een moedertaalspreker van het Fins zijn?
can John a native speaker of the Finnish be
'Is it possible that he is a native speaker of Finnish?'
d. Could the keys be on John's table? (Brennan 1993)
e. What may he have done?
f. Where must the murder weapon be hidden, in your view?

Butler (2003) is another attempt at capturing the scope of modals in terms of LF-raising. He argues that there are two scope positions for modals, one at the periphery of vP giving rise to root interpretations and one at the periphery of CP giving rise to epistemic interpretations. Both vP and CP are phases, hence propositional, and Butler's proposal thus captures Kratzer's (1977) insight that modals are propositional operators.

As Brennan (1993) shows, the interpretation of symmetric predicates embedded under a modal supports the claim that epistemic modals are in a higher position at LF than root modals. Brennan's example of a symmetric predicate is given in (30). The predicate is symmetric because (30a) implies (30b) and vice versa. When embedded under an epistemic modal, symmetry is retained (30c). When embedded under a root modal, symmetry is destroyed. This follows if only root modals are low enough to establish a relation between the subject and the embedded predicate.

(30) a. The governor shook hands with all the prisoners.
b. All the prisoners shook hands with the governor.
c. The governor may shake hands with all the prisoners. Epistemic
'It is possible that the governor will shake hands with all the prisoners.'
'It is possible that all the prisoners will shake hands with the governor.'
d. The governor may shake hands with all the prisoners. Root
'The governor is allowed to shake hands with all the prisoners.'
≠ 'All the prisoners are allowed to shake hands with the governor.'

The scopal interaction between modals and other quantifiers could be taken to provide further evidence for the higher position of epistemic modals at LF (von Fintel and Iatridou 2003). Whereas quantifiers show scope ambiguities with root modals (31a), they do not show such ambiguities with epistemic modals (31b, c).

(31) a. Most of our students must get outside funding –
   i. for the department budget to work out. must > most
   ii. the others have already been given university fellowships. most > must
   b. #Every student is the tallest person in the department.
   c. #Every student may be the tallest person in the department.
   i. every student x (may x be the tallest)
   ii. may (every student be the tallest)

The first interpretation of (31c) would make sense but is not available; the second interpretation does not make sense but is available. This shows that a quantified subject cannot raise over an epistemic modal whereas it can raise over a root modal. These facts would follow if the position of epistemic modals at LF is higher than the position to which the quantifier raises. However, von Fintel and Iatridou argue that this is not the right analysis, since even low possibility modals do not allow a quantifier to take wide scope. They conclude that a quantifier cannot bind its trace across an epistemic modal at LF.

4 The complement of modals

The syntactic representation of the epistemic–root distinction can also be studied from the perspective of the modal's complement. Relatively little attention has been paid in the literature to the influence of the modal's complement on modal interpretation. This section provides an overview.

4.1 Non-disambiguating complements

At first sight it might seem plausible to expect that modals with a root interpretation require verbs assigning an agent role as their complements. An agent may seem to be necessary to carry the permission, obligation, ability, or will to perform the action denoted by the embedded verb. Passive, unaccusative, stative complements and complements with a perfect might then be expected to force epistemic interpretations. In passives, the agent role is demoted, in unaccusatives there is no agent role, stative verbs denote a state of affairs, not an action that can be performed by an agent, and in perfectives the event denoted by the verb has already been completed. However, these types of complement all allow root interpretations:

(32) a. This room must be cleaned immediately. Passive
'You must clean this room immediately'
b. Je mag niet weglopen. Unaccusative
you may not away-walk
'You're not allowed to walk away.'
c. You must know the answer before five o'clock. Stative
'You're required to know the answer before five o'clock.'
d. You must have cleaned your room before five o'clock. Perfective
'You're obliged to have cleaned your room before five o'clock.'

4.2 Complements that force an epistemic interpretation

Complements denoting a state or event that cannot change (anymore) force an epistemic interpretation (Barbiers 1995, 2002). There are two types of complement for which this is the case:

(33) a. Stative complements which contain an individual-level predicate, provided that the subject has fixed reference.[15]
b. Perfect complements, but only if the completion stage of the event has taken place in the past.

An example of both cases is given in (34):

(34) a. John must be a native speaker of Finnish.
#'John has the obligation to be a native speaker of Finnish.'
b. They must have cleaned this room yesterday.
#'They must have had the obligation to clean this room yesterday.'

These two observations do not seem to have any consequences for the syntactic analysis of modal ambiguity, as disambiguation is the result of semantic properties of the complements. Nevertheless, the two types of complement in (34) are useful diagnostics to establish whether an epistemic interpretation is possible in a certain construction. An anonymous reviewer correctly points out that this test is not watertight, however. If an *if*-clause is added to sentences like (34), root interpretations are available (35).

(35) a. John must be a native speaker of Finnish if he wants to apply for the position.
b. They must have cleaned this room yesterday if they want to go to the zoo today.

4.3 Complements that force root interpretations

For an epistemic interpretation to be available, it is necessary that the complement contain an infinitival verb. This can be seen in languages in which modals

allow non-verbal complements, such as Dutch. Such constructions can have only root interpretations, as the examples in (36) show (from Barbiers 1995: 153).

(36) a. Jan mag (dan) weggaan (hij zal ooit terugkeren).
John may (then) away-go (he will once return)
i. 'John has permission to leave.
ii. 'It may be true that John is leaving (but some day he will return).'
b. Jan mag (dan) weg (hij zal ooit terugkeren).
John may (then) away (he will once return)
i. 'John has permission to leave.'
ii. *'It may be true that John is leaving (but some day he will return).'

As was noted in section 3, the claim that such constructions involve non-verbal complements is controversial. Vanden Wyngaerd (1994) proposes that they involve PF deletion of an infinitival verb. Van Riemsdijk (2002) argues that the lexicons of languages that allow 'non-verbal complements' contain empty verbs that are licensed by modals. While there is good evidence that this claim is correct for Swiss German, the impossibility of an epistemic interpretation in cases like (36b) is a strong argument against an empty verb analysis for Dutch. For more arguments, cf. Barbiers (1995, 2002).

5 Conclusion

In the past forty years, generative syntactic research on modal auxiliaries has focussed on the syntactic correlate of the semantic epistemic–root distinction. The original idea that epistemic modals are monadic predicates while root modals are dyadic has proved to be too simple, as monadic instances of root modals have been shown to exist as well. The influential analysis that takes epistemic modals to be raising predicates and root modals to be control predicates has turned out to be problematic too, given that monadic root modals behave like raising predicates on a number of tests. In current analyses, the leading idea is that epistemic modals are interpreted in a position higher in the clause than root modals. So far, it appears that there is not any conclusive evidence to decide whether this higher position is the result of base generation or LF-movement. Recent research also suggests that finer positional distinctions are necessary, such as a distinction between necessity and possibility modals, obligation and ability/permission modals, alethic and epistemic modals. Issues for future research include cross-linguistic parameterization, such as the difference between main verb and auxiliary modals, and the question why the epistemic–root ambiguity occurs only with modal auxiliaries, not with modal adverbs.[16]

NOTES

I thank Werner Abraham, Frits Beukema, Wim van der Wurff, and an anonymous reviewer for useful comments on previous versions of this chapter. All remaining errors are mine.

1 Caps indicate English modals and their equivalents in other languages.
2 I use an underlying object different from the one in (4d) to avoid complications caused by the fact that BE is also the perfect auxiliary of the passive in Dutch.
3 Note that this is true at the observational level. The theory-internal hypothesis that PRO cannot occur in governed positions is irrelevant for the problem under discussion.
4 See Barbiers (1995, 2002) for arguments that this construction does not involve ellipsis; see van Riemsdijk (2002) for the opposite view; see also sections 3.1 and 4.
5 The verb in the complement can be passivized if it has an external argument. The point at issue here is that the modal verb itself cannot be passivized.
5 The construction can also be found in Afrikaans, German, Norwegian, Yiddish, and West-Frisian.
6 An indication that modal auxiliaries are stative is the fact that they cannot occur in the progressive (i), like other stative verbs (ii), but unlike dynamic verbs (iii).

(i) *Jan is aan het kunnen schaatsen.
John is to the can-INF skating
#'John is being able to skate.'

(ii) *Jan is het antwoord aan het kennen
John is the answer to the knowing

(iii) Jan is aan het schaatsen.
John is to the skating
'John is skating.'

7 In Danish, root modals do not seem to allow non-arguments such as expletives, weather IT and idiom chunks as their subjects. Nevertheless, Thráinsson and Vikner (1995: 63–66) claim that in Danish both root and epistemic modals involve raising structures. They account for the impossiblity of non-arguments as subjects of root modals by assuming that root but not epistemic modals assign an 'additional' theta-role to the surface subject. This 'additional' theta role is subject to an 'additional' theta criterion that precludes the assignment of more than one additional role to an argument. This explains why embedded predicates that assign an additional theta role as well, such as BECOME and GET block the root interpretations. According to Thráinsson and Vikner, in Icelandic the epistemic–root distinction does straightforwardly correspond to raising and control structures. A less attractive aspect of this analysis is that it assumes different mechanisms for theta role assignment, and cross-linguistic parameterization of the availability of additional theta-role assignment.
8 Examples in (11) from Wurmbrand and Bobaljik (1999).
9 The construction can also be found in Afrikaans, German, Norwegian, Yiddish, and West-Frisian.

10 Example from Wurmbrand and Bobaljik. Pragmatic context is provided to favor the wide-scope reading of the modal.
11 I owe this observation to Gertjan Postma.
12 Barbiers (1995) follows Picallo's assumption that epistemic modals are generated in a higher position than root modals, but develops an analysis on the basis of a split-VP-hypothesis, in which what is usually taken to be little v is identified as a D-head. According to this analysis, root modals are generated below D and epistemic modals, on top of DP. The restrictions on double modals and the interaction between perfective auxiliaries and modal interpretation follow straightforwardly from this analysis. It is further shown that there are a number of parallels between modals with a nominal DP-complement and modals with a verbal DP-complement.
13 Importantly, Cormack and Smith distinguish three types of negation: echoic, polarity, and adverbial (i.e., VP) negation. The observations in (25) all involve scope relative to polarity negation.
14 Una is an Irian Jaya language; the example is from Louwerse (1988).
15 Names are DPs with fixed reference. In the unmarked case, the referent of a name is constant across time and across different possible worlds (but see section 4.4 for irrealis contexts).
16 I owe the latter question to an anonymous reviewer.

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71 The Syntax of Quantified Phrases and Quantitative Clitics

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1 Introduction

Quantifiers and other expressions of quantity can appear in a wide range of different constructions. In this case, we focus on constructions containing existential quantifiers, namely, cardinals and so-called 'vague numerals' such as *many, few,* and *some*, because they are the ones that appear with quantitative clitic pronouns (such as French *en*). Other quantifiers, such as universal *all* and *both*, and distributive *every* and *each*, are treated only when relevant to the discussion. Other quantity expressions including semi-lexical elements such as *lot* in *a lot of people*, measure nouns such as *bottle* in *a bottle of wine*, and the like also co-occur with quantitative clitic pronouns but are not treated here for reasons of space.[1]

The problems raised by constructions containing a quantifier are of different natures. We cluster them into three main issues: the headedness of the quantified phrase, the status of the partitive PP often co-occurring with it, and the analysis of clitic pronouns such as French *en*, Italian *ne*, Dutch *er*, and Czech *jich*, which can bind (part of) a quantitative phrase.

Since quantified phrases constitute a special kind of noun phrase, it is important to establish whether they are noun phrases in the technical sense (DPs in current terms) or the projection of a different category. In this respect it must be decided whether the quantifier in all or some of the constructions in (1) is a modifier of the following noun or whether it is the head of the construction:

(1) a. three/many boys
b. all/both boys
c. some boys
d. each boy

If we insert a 'determiner', such as an article, a demonstrative, or a possessive in (1), we obtain different results with different quantifiers, as shown in (2–5):

(2) a. the/these/his three boys
b. *three the/these/his boys
a′. the/these/his many boys
b′. *many the/these/his boys

(3) a. *the/*these/*his all boys
b. all the/these/his boys
a′. *the/*these/*his both boys
b′. both (*the)/these/his boys

(4) a. *the/*these/*his some boys
b. *some the/these/his boys

(5) a. *the/*these/*his each boy
b. *each these/his boys

From the results in (2–5), we could roughly divide quantifiers into three groups: (i) quantifiers that can be preceded but not followed by a determiner, such as *three* and *many* in (2); (ii) quantifiers that can or must be followed by a determiner, such as *all* and *both* in (3); and (iii) quantifiers that can never co-occur with any determiner, such as *some* in (4) and *each* in (5).

The basic question is whether it is more correct to unify the structural positions in which one and the same quantity expression can appear in (1) and (2–5) and try to derive the different word orders arising in the presence of a determiner, from different properties of each quantifier, or whether it is more correct to propose that the quantity expressions in (1) are in one and the same structural position while they occupy different positions in (2–5). This latter option would have the result that lexical items, such as *three* and *many* in (1a) and (2a, a'), would be analyzed as occurring in different structural positions, while (1b) could be unified with (3b, b').

Quantifiers can also co-occur with a 'partitive PP' introduced by *of*:

(6) a. three/many of the boys
b. all/both of the boys
c. some of the boys
d. each of the boys

In the late 1960s and 1970s, the debate was primarily concerned with the question as to whether constructions such as those in (1) and (6) are derived from one and the same structure or not. In the early 1980s, the research on the functional structure of noun phrases re-opened a number of issues in this field of inquiry.

The third question concerns the nature of the clitic pronouns found in co-occurrence with certain quantifiers in Romance (French, Italian, Catalan), Germanic (Dutch), and Slavic (Czech, Slovak, Serbian–Croatian, etc.). Here, the main problem is to establish whether the source of (7a) is (7b) or (7c), in other words, whether the 'quantitative clitic' *en* in (7a) resumes the indefinite noun *garçons* in (7b), the partitive PP *de ces garçons* in (7c), or even a different constituent.

(7) a. J' en ai vu deux.
I EN have seen two
b. J' ai vu deux garçons.
I have seen two boys
c. J' ai vu deux de ces garçons.
I have seen two of these boys

This chapter is organized as follows. In section 2 we see the different logical options that arise in relation to the internal structure of quantified phrases and how it has been addressed in the literature. Section 3 presents a development of

the proposal presented in Cardinaletti and Giusti (1992). In section 4 we turn to quantitative clitics.

2 The structure of quantified constructions

Among the many issues that arise on the structure of the noun phrases in (1–6), we first want to address some questions related to the categorial status of quantified phrases. The literature on this has often treated the questions in (8) as tightly related to each other:

(8) a. What is the head of a nominal construction containing a quantifier such as those in (1–6)?
b. What is the categorial status and the structural position of the quantifier in each of (1–6)?
c. Is there a difference in categorial status and/or structural position between
i a quantifier that is neither preceded nor followed by a determiner as in (1);
ii a quantifier preceded by a determiner as in (2a, a');
iii. a quantifier followed by a determiner as in (3b, b')?
d. Is there a syntactic relation between (1) and (6), and if so of what kind?

We show that while (8a) and (8b) are conceptually related, (8c) and (8d) are independent from the others.

In principle, question (8a) has two possible answers, namely, those in (9):

(9) a. The head of the quantified noun phrase is the noun.
b. The head of the quantified noun phrase is the quantifier.

The literature up to the late 1980s did not distinguish between lexical and functional categories. In that framework, the quantity expression is taken to be either a modifier of the noun (determiner or adjective) or something external to the noun phrase (namely, a full noun phrase itself). In sections 2.1–2.2 we review the major issues in the literature of the 1970s and 1980s.

In the last decade, the discussion on the lexical–functional distinction opens up a new way of looking at the matter, so that question (8b), concerning the categorial status of quantifiers, enters into play. In this perspective, (9b) divides into the two possibilities in (10):

(10) a. The quantifier is a functional head of the noun phrase.
b. The quantifier is an autonomous lexical head embedding the noun phrase.

In other words, it is logically possible both that the quantifier is a functional head and that it is a lexical head embedding the noun phrase as its complement. This issue is discussed in sections 2.3 and 3.

Quite independently of its head or maximal status, the question arises as to the merging point of the quantifier. In this respect three alternatives arise:

(11) a. The quantifier is merged higher than D.
b. The quantifier is merged lower than D.
c. The quantifier is merged in D.

In sections 2.3 and 3 we show that there is no simple answer to (8c) and that the word orders arising with the combination of quantifiers and determiners are epiphenomenal and must be explained by the independent interaction of general UG properties with the categorial status that each language assigns to lexical items expressing quantity. None of the choices in (9–11) entails a straightforward answer for (8c), which must be treated separately, although interacting with one of the two lines of analysis proposed above. Here the possibilities grow exponentially, and it would be puzzling to consider them in detail here. Every proposal that we consider in this chapter treats this question one way or the other. Finally, any of the choices above can interact with the three possible answers to question (8d) given in (12):

(12) a. The *of* PP in (6) has the same status as the bare noun appearing with the same quantifiers in (1).
b. Both the *of* PP in (6) and the bare noun in (1) can appear with the quantifier and are inserted at different merging points.
c. Both the *of* PP in (6) and the bare noun in (1) can appear with the quantifier and are in complementary distribution.

The question in (8d) has been the focus of the literature in the 1970s. Unfortunately, the in-depth insights that this literature had reached by the end of that decade has been neglected by the subsequent work, which often made unmotivated assumptions on this issue.

In the course of the last four decades of studies in generative grammar, almost all the possibilities mentioned in (8–12) have been explored. We present some of what we consider the most significant proposals on these issues chronologically, highlighting the empirical advantages and drawbacks of each in turn. In section 2.1 we consider proposals formulated in the Extended Standard Theory (EST). In section 2.2 we briefly observe the advance of the theory in the GB framework. In section 2.3 we present some proposals that are formulated in the more recent framework of the functional structure of noun phrases.

2.1 EST proposals

In the 1960s and 1970s, phrase-structure rules did not distinguish between adjectives and so-called 'determiners' such as demonstratives and quantifiers. All of them were considered maximal elements in Specifier positions, adjoined to N^n levels according to the linear order in which they appear in expressions.

The first proposals about the syntax of quantified noun phrases address the question whether it is possible to derive simple quantified noun phrases such as those in (1) and quantified noun phrases containing a partitive PP such as (6) from one and the same deep structure. Jackendoff (1968) motivates the generally

held hypothesis that there is a common deep structure for (1) and (6), later found as granted in Chomsky (1970: 200). Following later work by Selkirk (1977), we call this line of reasoning the Hidden Partitive Hypothesis (HPH). A decade later, this hypothesis is successfully challenged by Selkirk (1977) and clearly abandoned by Jackendoff (1977) himself in favor of the Simple Noun Phrase Hypothesis (SH). At the same time, Milner (1978b) dedicates an in-depth study to these constructions in French. The properties of French, in particular the partitive article *des*, which can occur in the absence of a quantity expression, and the quantitative clitic *en*, allow him to give motivated answers to most of the questions mentioned in (8–12). For reasons of space, we are able to reproduce only very few of Milner's arguments on these issues, and refer the interested reader to his monograph.

2.1.1 The Hidden Partitive Hypothesis (HPH)

The main aim of Jackendoff (1968) is to offer an alternative to previous proposals according to which quantified noun phrases derive from quite different deep structures. One proposal, attributed by Jackendoff to Chomsky, elaborated by Partee (1962), and given without discussion in Chomsky (1970: 200), considered *some of the* as a structured Det, thereby losing the constituency of the PP *of the men*. A second proposal, attributed by Jackendoff to Postal and elaborated by Dean (1966), derived *some of the men* from a complex NP *some men of the men* with deletion of the first instance of *men*. (We turn to a similar proposal in section 3.) A third proposal, elaborated in the framework of generative semantics by Lakoff (1965) and Carden (1967), considered the construction as derived from a relative clause whose predicate was the quantifier.

Jackendoff (1968) divides quantity expressions into three groups. Group I contains nouns expressing quantity, such as *a group*, *a herd*, and *a wagonload*; group II contains quantifiers such as *some*, *each*, *few*, *all*, *both*, and also *which*; group III includes only cardinals and so-called (vague) numerals such as *a few*, *many*, *one*, and *three*. The three groups have in common that the partitive PP co-occurring with the quantity expression must contain a mass or a plural noun phrase (13), and that it cannot be quantified itself (14):

(13) a. *a group of the man
b. *each of the garbage can
c. *three of the book

(14) a. *a group of some men
b. *some of all the men
c. *one of few of the beetles

Jackendoff further points out that the quantity expressions in groups I and III can be preceded by an article (15a, c), while those in group II cannot (15b), and notices a restriction on definite articles that can only appear once in the construction, unless the noun phrase embedded in the PP contains a relative clause (16–17):

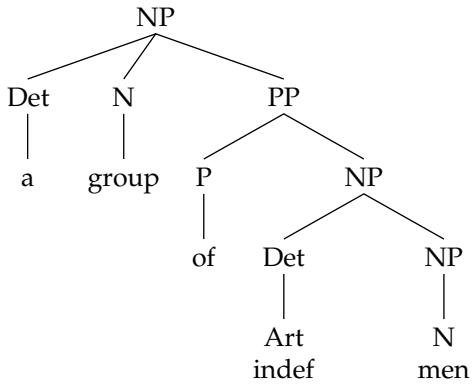
(15) a. the group(s) of men
b. *the some men
c. the three men

(16) a. the group of men
b. a group of the men
c. *the group of the men
d. the group of the men that had already left

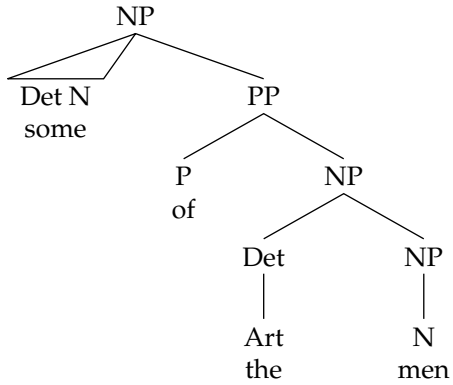
(17) a. the three men
b. three of the men
c. *the three of the men
d. the three of the men you met yesterday

The structural analysis in (18–20) captures the similarities among the three groups by assuming nominal status for all three kinds of quantity expression. The differences between group I (18) and group III (20), on the one hand, and group II (19), on the other hand, is captured by proposing that group II quantifiers are Det and N at the same time, since they do not co-occur with articles and, at the same time, entertain a grammatical relation with the following PP.

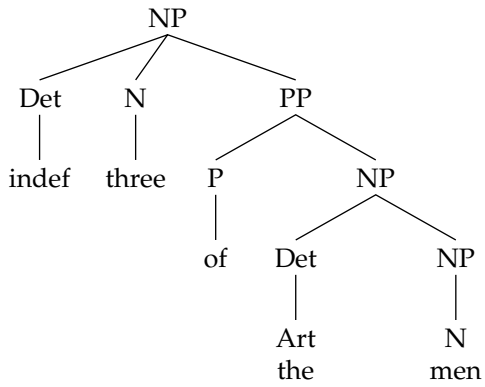
(18)



(19)



(20)



Supporting evidence for the N-status of group I quantifiers in (18) is that they are also used as common nouns. The N-status is extended to group III quantifiers in (20) without much motivation. The fact that group III quantifiers do not co-occur with adjectives (cf. **the good three of the men*) is not considered counter-evidence for their N-status since even group I nouns do not occur with adjectives in their quantifying use:

(21) a. a big group of men comes/*come every day
b. a group of men comes/come every day

In (21a) the quantity noun *group* is modified by an adjective. In this case the only possibility for it is to function as a regular N with a complement (*of men*), triggering singular agreement on the verb. If a noun like *group* is not modified by an adjective, as in (21b), it can either function as a regular noun, as in (21a), or be considered a quantity expression. In this latter case, agreement on the verb is triggered by the plural noun *men*, which in this case is the head of the construction. Finally, Jackendoff (1968: 428) proposes an *of*-deletion transformation for groups II and III in order to attribute structures (19–20) also to the cases where no overt preposition appears, as in *some men* and *three men*. This transformation does not apply to group I.

2.1.2 The Simple Noun Phrase Hypothesis (SH)

Selkirk (1977) shows that simple quantified constructions and those embedding a partitive phrase are different and that the latter cannot be transformationally derived from the former. She argues in favor of what she calls the Simple Noun Phrase Hypothesis (SH), according to which the two phrases have a different structure. The SH but not the HPH can account for a large number of facts that are reviewed in section 3. The strongest argument in favor of the SH is the different result of PP extraposition in (22):

(22) a. Two reviews have been reprinted of Helen's first symphony.
b. *Two of those reviews have been reprinted of Helen's first symphony.
c. Those reviews have been reprinted of Helen's first symphony.

The reason for the ungrammaticality of (22b) should not be directly attributed to the definiteness of the noun phrase since (22c) is perfectly acceptable, but to a violation of the cycle. The cycle appears not to be violated in (22a). This, according to Selkirk, suggests that the noun phrase in (23b), parallel to (22b), is structurally more complex than the one in (23a), parallel to (22a).

(23) a. Two reviews of Helen's first symphony have been reprinted.
b. Two of those reviews of Helen's first symphony have been reprinted.

A similar argument is given for French by Milner (1978b: 71). While extraction out of the partitive PP is ungrammatical in (24), extraction out of the constituent that follows the quantifier in (25) is possible. This implies that the XP in (25) cannot be the PP that we find in (24). Notice that this also holds of (25b) in spite of the presence of the preposition *de* (see section 3.3.3).

(24) *C'est de Zola que j'ai lu [deux [$_{PP}$ des livres [$_{PP}$ t]]].
it is of Zola that I have read two of-the books

(25) a. C'est de Zola que j'ai lu [deux [$_{XP}$ livres [$_{PP}$ t]]].
it is of Zola that I have read two books
b. C'est de Zola que j'ai lu [beaucoup [$_{XP}$ de livres [$_{PP}$ t]]].
it is of Zola that I have read many of books

The conclusion that the quantitative phrase (namely the noun (phrase) immediately following the quantifier) is different from the partitive phrase is confirmed by the fact that they cannot be coordinated, as shown in (26).

(26) a. J'ai reçu beaucoup de voisins et d' amis.
I have received many of neighbors and of friends
b. J'ai reçu beaucoup de mes voisins et de mes amis.
I have received many of my neighbors and of my friends
c. *J'ai reçu beaucoup de mes voisins et d' amis

Milner (1978b: 81ff.) suggests that the quantitative phrase is an N', while the partitive phrase is a N". This is also shown by the fact that personal pronouns, which are certainly full nominal phrases (of category N" in terms of the theory of the time), can appear only as partitive phrases and not as quantitative phrases:

(27) un de nous/vous/eux
one of us/you/them

A further argument against the HPH is discussed in Belletti (1979: 1546). The two sentences in (28) have different semantic properties:

(28) a. Ho letto cinque libri che mi avevi prestato.
b. Ho letto cinque dei libri che mi avevi prestato.
have.1Sg read five (of the) books that to-me had.2Sg lent

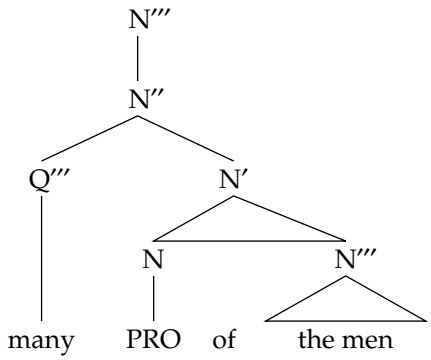
In (28a), the books that have been read are five and coincide with the books that have been lent. In (28b) the books that have been read are a subset of the books that have been lent, which are presupposed to be more than five.

2.1.3 The first element of the partitive construction

In EST terms it is straightforward to consider the quantifier as an article in the quantified construction. If the two constructions in (1) and (6) do not have a common deep structure, the status of the first part of the partitive construction remains open.

Jackendoff (1977: 110ff.) adopts the SH and introduces a PRO in the partitive construction, as shown in (29).

(29)



Milner (1978b: 83ff.) provides the following arguments to analyze the first part of the partitive construction (the quantifier *many* in *many of the men* or the constituent *many men* in *many men of those* . . .) as a full noun phrase (N″). In French it has the form of a pronoun, not of a determiner, in the pairs *quelque/quelques-uns* ('some') and *chaque/chacun* ('each'). The same is true in Italian, as shown in (30b):

(30) a. ogni/qualche ragazzo vs. *ognun/*qualcun ragazzo
each/some boy
b. *ogni/*qualche di loro vs. ognuno/qualcuno di loro
each/some of them

In certain contexts, the N″ is explicit, as in (31):

(31) [$_{N''}$ Quatre peintures] de celles qui avaient été volées ont été
four pictures of those that-Agr had been stolen have been
retrouvées.
recovered

The first element can be the pronoun *celui*, or the interrogative *lequel*, as in (32):

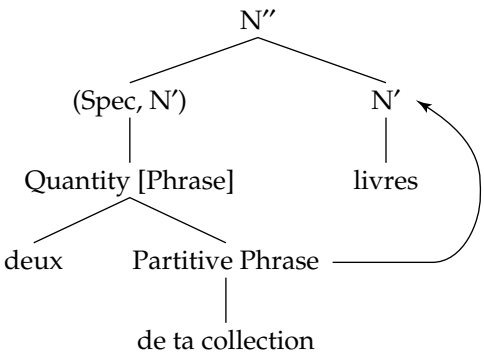
(32) a. Celui des livres de Zola que j'ai lu.
the one of-the books of Zola that I have read
b. Lequel de ces livres avez-vous lu?
which of these books have you read?

The quantitative clitic *en* can co-occur with a partitive phrase, as in (33):

(33) a. J'en ai pris un kilo de celles-ci.
b. J'en ai pris dix de celles-ci.
c. J'en ai pris beaucoup de celles-ci.
I EN have taken a kilo/ten/many of these

Structure (34), proposed by Milner (1978b: 124, ex. 3.11), captures the different nature of the quantitative and the partitive complements of a quantity expression, the fact that both are in a selectional relation to it, and the fact that they can co-occur (on this also see section 3). A right-adjunction movement adjoins the Partitive Phrase to N′ to derive the correct word order. In (34), the Partitive Phrase is realized by a collective noun phrase, but the analysis is explicitly extended to the classical quantitative and partitive noun phrases discussed in (31–33).

(34)



The crucial difference between (29) and (34) is that in the former the partitive is base-generated under N′ as a complement of N, while in the latter this position is derived by rightward movement which adjoins the complement of the quantifier under N′. In our proposal, presented in section 3, we keep the relationship between Q and the partitive PP while doing away with rightward adjunction.

2.2 GB proposals

Government-and-Binding approaches are driven by the search for general principles of UG that constrain movement of constituents and the occurrence of anaphoric elements. Phrase-structure issues are no longer crucial in this period and remain in the background. In this perspective, the syntax of quantitative and partitive constructions in French, Italian, and Dutch becomes a focus of general interest due to the fact that these languages display a quantitative clitic pronoun that clearly is a subpart of the phrase. As a consequence, these languages show how the extraction of the partitive clitic is constrained by the general principles of Government and Binding giving rise to crucial asymmetries (cf. Belletti and Rizzi 1981; Burzio 1986). The core cases are given in (35–37), from Belletti and Rizzi (1981):

(35) a. Tre settimane passano rapidamente.
three weeks elapse rapidly
b. *Tre ne passano rapidamente.
three NE elapse rapidly
c. Tre [*e*] passano rapidamente.
three elapse rapidly

(36) a. Gianni trascorrerà tre settimane a Milano.
Gianni will spend three weeks in Milan
b. Gianni ne trascorrerà tre a Milano.
Gianni NE will spend three in Milan
c. *Gianni trascorrerà tre [*e*] a Milano.
Gianni will spend three in Milan

(37) a. Gianni è rimasto tre settimane a Milano.
Gianni remained three weeks in Milan
b. *Gianni ne è rimasto tre a Milano.
Gianni NE remained three in Milan
c. *Gianni è rimasto tre [*e*] a Milano.
Gianni remained three in Milan

The examples in (35) shows that extraction of *ne* is impossible from a preverbal subject; an empty category is found instead. In (36) *ne* is obligatory if it binds an empty category in object position. The selected direct object in (36) contrasts with the adverbial phrase in (37).

The [e] ~*ne* alternation given in (35–37) is captured by Belletti and Rizzi (1981) by means of general requirements of proper binding (cf. the Proper Binding Condition proposed by Fiengo 1974). In the case of subjects, *ne* does not c-command its trace, hence the ungrammaticality of (35b). In the case of objects, *ne* c-commands its trace, hence the grammaticality of (36b). In the case of adjuncts, *ne* extraction causes a subjacency violation, hence the ungrammaticality of (37b). As for the distribution of the null category inside the quantified noun phrase,

Belletti and Rizzi take it to be PRO (as originally proposed in Kayne 1979: Appendix): PRO is allowed in subject position (35c), but forbidden in object and in adjunct position, where it is governed by the verb, (36c) and (37c).[2]

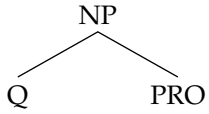
This analysis is supported by data from Czech, where the genitive clitic *jich* can be extracted from both subjects and objects (Toman 1986: 131).

(38) a. Tehdy jich nêpolik podepsalo ten dopis. Czech
then of-them some have signed that letter
b. Tehdy jich Petr nalezl pêt.
then of-them Petr found five

Czech is a language with second-position clitic pronouns. According to current analyses, the clitic position is higher than the subject position. This means that a clitic pronoun c-commands its trace even when it is extracted out of a subject.

The internal structure assumed by Belletti and Rizzi (1981) for quantified phrases is (39). However, nothing of their proposal hinges on it. The categorial status of PRO in (39) is not explicitly stated. It is clear from the discussion that it is an N′ (see section 4.1 for further discussion). According to Rizzi (1979), the phonosyntactic processes that rule the occurrence of the competing forms *un/uno* in (40) can be derived from the presence of an empty category immediately following *uno*:

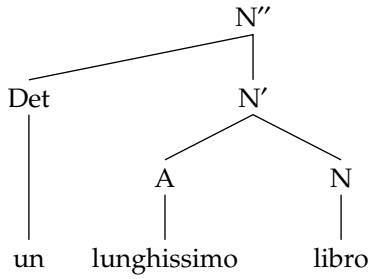
(39)



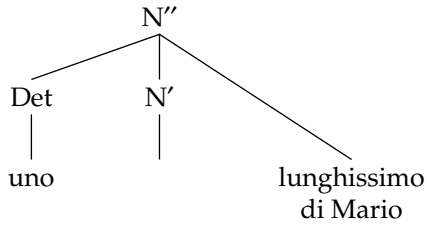
(40) a. un(*o) lunghissimo libro
b. un(*o) libro lunghissimo
a book very-long
c. un*(o) lunghissimo
'a very long one'

Rizzi proposes a different level of attachment for prenominal and postnominal adjectives: The former are attached to N′, and trigger truncation (41a), while the latter are attached to N″ and cannot trigger truncation (41b). The same structure applies for the possessive phrase *di Mario* ('of Mario') in (41b):

(41) a.



b.



Rizzi does not address the issue of the position of a partitive phrase in this construction. However, we may suppose that, since it triggers the same effect as a possessive phrase (cf. *uno/*un di quei ragazzi* 'one of those boys'), it is attached to N″ and not to N′, contrary to Jackendoff's (1977) structure (29) and Milner's (1978b) structure (34). We will turn to the categorial status of the empty category bound by *ne* in section 4.

2.3 *The functional structure of quantified noun phrases*

At the end of the 1980s, the study of the internal structure of noun phrases became a focus of research based on a wider set of languages, including Hungarian (Szabolcsi 1987), Hebrew (Ritter 1988), and Romanian (Grosu 1988). The major topic of this research is the investigation of functional heads inside the noun phrase, which is parallel in many crucial respects to the structure of the sentence. A related trend of research follows Cinque (1994, already circulating in 1990), in taking adnominal adjectives to fill functional specifiers in the noun phrase structure. Both issues are central to the internal structure of quantitative and partitive phrases, since in the approaches reviewed earlier, the distinction between determiners and adjectives was not clear, and quantifiers were considered as part of this large class of prenominal modifiers.

Due to the theoretical and chronological gap between EST and post-GB proposals, most of this literature is negligent of the results arrived at in the 1960s and 1970s on the structure of quantitative and partitive phrases, and many questions are reconsidered without building on the knowledge arrived at in the EST studies.

2.3.1 *The DP Hypothesis*

Abney (1987: 271) places quantifiers in D, i.e., in a head position. In order to derive their co-occurrence with possessors in Hungarian (42) (see also Szabolcsi 1987) and their (almost) complementary distribution with possessors in English (43), Abney proposes the constraint in (44), which applies to English, but not to Hungarian:

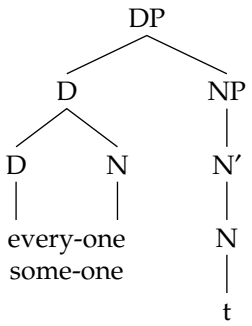
(42) a. Peter minden kalapja
b. Peter ezen/azon kalapja
c. Peter valamennyi kalapja
d. Peter mindket kalapja
e. Peter semelyik kalapja

(43) a. John's every wish
b. *John's this/that wish
c. *John's each wish
d. *John's both wishes
e. *John's neither wish

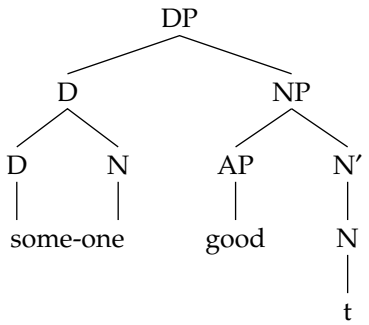
(44) Agr in D does not co-occur with lexical determiners.

One further piece of evidence in favor of the common position of D and Q in one and the same head is the possibility of N-to-D movement which adjoins a noun such as *one* to a Q such as *every* or *some* in (45a) (Abney's 1987: 286, ex. 309b), and the relative position of the AP in (45b) (Abney's 1987: 287, ex. 312), which would otherwise be mysterious in English (cf. *some good guy*, where the adjective precedes the noun). Structure (45) is intended to account for *everything* and *something* as well, and to parallel data in other languages.

(45) a.



b.



However, the analysis in (45) cannot account for parallel Italian data. According to Cinque (1994), in Italian a common noun such as *cosa* in (46a) often moves across an adjective to an intermediate functional head. This movement leaves the adjective unaffected. Incorporation of the noun *cosa* into the quantifier *qualche* as in (46b), however, not only changes the gender features on the whole construction, but also triggers what appears to be an overt marking of partitive Case on the adjective, namely the preposition *di* (also see section 3.4).

(46) a. una cosa buona
a thing good.Fem
'a good thing'
b. qualcosa di buono
something of good.Masc
'something good'

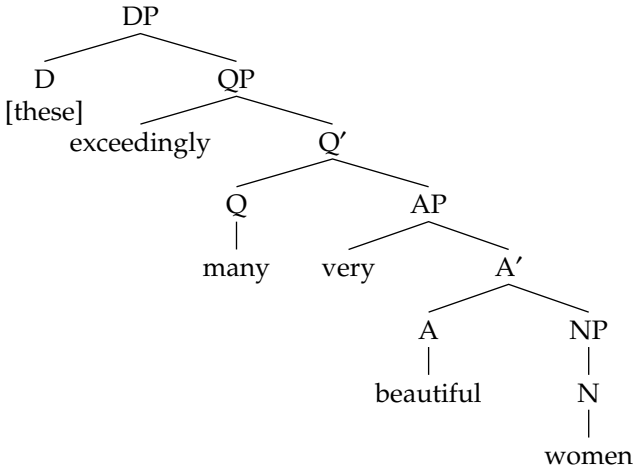
Furthermore, only predicative adjectives can appear in this construction, as shown by the ungrammaticality of (47a). This is not expected in an analysis like (45):

(47) a. *qualcosa di mero/principale / *Questa cosa è mera/principale.
something of mere/main this thing is mere/main
b. qualcosa di buono / Questa cosa è buona.
something of good this thing is good

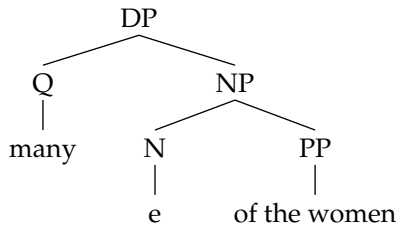
The Italian examples and their English glosses suggest that pronominal quantifiers occurring with predicative adjectives, like *someone* and *something* in English, cannot be analyzed as the simple result of N-to-D movement. We delay a more principled analysis to section 3.4, in which we take into account the apparent different behavior of *qualcuno* ('somebody') pointed out to us by R. Zamparelli (p.c.).

Later in the same chapter, Abney (1987: 339ff.) takes different kinds of quantifier into account and proposes that they are adjectives of a special kind and therefore occupy a (head) position lower than D and a position higher than descriptive adjectives in structure (48) (Abney's 1987: 287, ex. 312). The position of *many* in (48) is also assumed for cardinals and other quantifiers and supported by a parallelism between comparative adjectives and quantifiers which also co-occur with a partitive PP. Abney (1987: 344) takes this PP to be the complement of an empty N that can only be the complement of Q in structures like (49) or of comparative A in structures like (50) (Abney's 1987: 344, ex. 413).

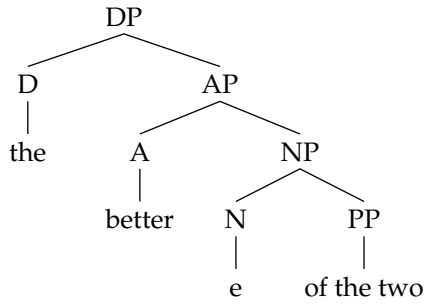
(48)



(49)



(50)



The parallelism between comparative and superlative structures on the one hand and partitive structures on the other is not new in the literature (also cf. Bresnan 1973b and Milner 1978: 121). However, Milner (1978b) already noticed that the partitive phrase is the complement of the degree word and not of the adjective. Furthermore, it does not form a constituent with the NP:

(51) a. *Books of those you lent me, I've read only the best.
b. *Books of those you lent me, I've read only some.

A second problem that can be found with (50) is quite reminiscent of Jackendoff's (1977) structure in (29). The assumption is that the partitive PP can be selected only by an empty N. This assumption is at the same time quite implausible (empty elements should not, in principle, have selectional features) and incorrect, as shown in (52). The partitive phrase can co-occur with lexical nouns as in (52a, b), and cannot occur when the quantifier is preceded by a determiner (irrespectively of the (c)overt status of the preceding N), as in (52c, d):

(52) a. the best books of those you lent me
b. many books of those you lent me
c. *the many books of those you lent me
d. *the many of the books you lent me

Undoubtedly, the analysis in (48) would have the advantage of unifying noun phrases such as *many children* parallel to (1a) with noun phrases such as *the many children* parallel to (2a, a'). But the apparent advantage is marred by the fact that it raises more problems than it solves. We see in section 2.3.3 that there is

cross-linguistic evidence to propose that *many children* and *the many children* are structures of different sorts.

2.3.2 The QP Hypothesis

Although not interested in the internal structure of quantified noun phrases, Sportiche (1988) is the first work in the generative literature to propose that a quantifier is external to the noun phrase. Sportiche claims that the universal quantifier is adjoined to NP. This proposal, interacting with the hypothesis that the subject is generated VP-internally (Koopman and Sportiche 1985, later published as 1991b), allows him to provide a derivational analysis of floating quantifiers, as shown in (53):

(53) a. $[_{IP}\ [_{NP}$ Les enfants] ont $[_{VP}\ [_{NP}$ tous $[_{NP}$ t]] vu ce film]].
b. $[_{IP}\ [_{NP}$ The children] have $[_{VP}\ [_{NP}$ all $[_{NP}$ t]] seen this film]].

In (53) the discontinuous word order of the quantified noun phrase is derived by movement of the NP subject from the VP internal position to [Spec, IP], leaving the quantifier in its D-structure position.

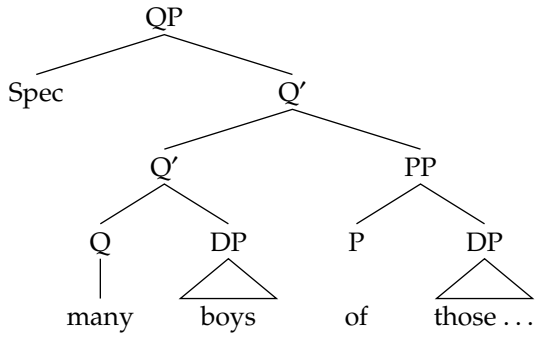
In the spirit of the DP hypothesis, Giusti (1990) and Cardinaletti and Giusti (1992) propose that the quantifier is a head, higher than DP. This allows them to analyze quantitative *ne* in Italian as binding a full DP (see section 4.3.2), parallel to other instances of clitics, such as accusative *lo* ('him'), *la* ('her'), *li* ('them-masc'), *le* ('them-fem'), which co-occur with universal quantifiers:

(54) a. Ne_i ho visti $[_{QP}$ molti $[_{DP}\ t_i]]$.
NE have.1Sg seen many
b. Li_i ho visti $[_{QP}$ tutti $[_{DP}\ t_i]]$.
them have.1Sg seen all

Example (54) also reinforces Sportiche's (1988) idea that floating is the side-effect of independent movement, interacting with the QP structure. It also shows that with respect to clitic extraction, universal and existential quantifiers behave alike.

For existential quantifiers, Cardinaletti and Giusti (1992) propose the structure in (55), where the Q is conceived of as a diadic element with two internal arguments: the indefinite DP (which we call quantitative DP) and the partitive PP.

(55)



This analysis is motivated by the fact that the selectional properties of Q determine both the features on the (quantitative) DP and the occurrence of the partitive PP. For example, universal quantifiers such as *tutti* ('all') and *entrambi* ('both') select a definite DP as in *tutti i ragazzi* ('all the boys'), and do not select a partitive PP as in **tutti dei ragazzi* (all of the boys).[3] Existential quantifiers such as *molti* ('many') and *alcuni* ('some') and distributive quantifiers such as *ogni* ('every') and *ciascun*(*o*) ('each') can select both a quantitative DP and a partitive PP, as in *molti ragazzi di quelli che conosco* ('many boys of those I know') and *ogni ragazzo di quelli che conosco* ('every boy of those I know'). This is analyzed in detail in section 3.

In this trend of research, Shlonsky (1991) for Hebrew and Giusti (1991a) for Italian independently propose that quantifiers are heads, higher than DP, and that the DP embedded under Q' can move out of the QP. Although the argument is based on universal quantifiers, which do not usually appear with quantitative and partitive phrases, we present it in some detail since it is extended to quantifiers that co-occur with quantitative and partitive phrases later in this chapter. Shlonsky (1991) motivates his proposal on the basis of a marking of agreement that appears on the head Q in Hebrew when the DP is moved, leaving Q in situ, cf. (56):

(56) a. $[_{QP}$ kol $[_{DP}$ ha-yeladim]] yašnu.
all the children slept

b. $[_{DP}$ ha-yeladim]$_i$ yašnu $[_{QP}$ t'$_i$ $[_{Q'}$ kulam $[_{DP}$ t$_i$]].
the children slept all

Notice that [Spec, QP] not only serves as an escape hatch, but can also be the final landing site for DP, obtaining a post nominal position for Q: see (57).

(57) a. $[_{QP}$ kol $[_{DP}$ ha-yeladim]] ʔohavim le-saxek.
all the children love to-play

b. $[_{QP}$ $[_{DP}$ ha-yeladim]$_i$ $[_{Q'}$ kulam $[_{DP}$ t$_i$]]] ʔohavim le-saxek.
the children all love to-play

Following a suggestion by Sportiche (p.c.), Giusti (1991a) extends Shlonsky's analysis of DP-to-[Spec, QP] movement in Hebrew to personal pronouns in various languages, such as French (58), English (59), and optionally Italian (60).

(58) a. *$[_{QP}$ tous $[_{DP}$ eux]]
b. $[_{QP}$ $[_{DP}$ eux] $[_{Q'}$ tous $[_{DP}$ t]]

(59) a. *$[_{QP}$ all $[_{DP}$ them]]
b. $[_{QP}$ $[_{DP}$ them] $[_{Q'}$ all $[_{DP}$ t]]

(60) a. $[_{QP}$ tutti $[_{DP}$ loro]]
b. $[_{QP}$ $[_{DP}$ loro] $[_{Q'}$ tutti $[_{DP}$ t]]

Giusti (1994) further shows that the same phenomenon is present in different languages and with other kinds of quantifiers. For example, in Hebrew it is also found with existential quantifiers, as in (61):

(61) a. [$_{QP}$ meat [$_{DP}$ yeladim]]/[$_{QP}$ meat [$_{DP}$ yeladot]] ʔohavim le-saxek.
few boys/ few girls love to-play
b. [$_{QP}$ [$_{DP}$ yeladim] [$_{Q'}$ meatim [$_{DP}$ t]]/[$_{QP}$ [$_{DP}$ yeladot [$_{Q'}$ meatot [$_{DP}$ t]]
boys few-Masc.Pl/ girls few-Fem.Pl
ʔohavim le-saxek.
love to-play

In Romanian, DP-movement to [Spec, QP] is found with both universal and existential quantifiers, provided that the DP is not heavily modified, as shown in (62):

(62) a. am văzut pe [$_{QP}$ [$_{DP}$ copii-i] [$_{Q'}$ toţi [$_{DP}$ t]]].
[I] have seen Acc children-the all
b. am văzut [$_{QP}$ [$_{DP}$ copii] [$_{Q'}$ mulţi [$_{DP}$ t]]].
[I] have seen children many

The hypothesis that Q is a head, embedding a DP (in contrast with determiners and adjectives, which are internal to DP) and projecting a Specifier position, can account in a principled way for the data in (56–62), which would otherwise appear quite idiosyncratic.

A final piece of evidence in favor of the structure in (55) is that in some marginal cases like (63) *many* occurs on the left of a determiner, parallel to *all* in (64), and differently from *many* in (2a').

(63) a. many a good student[4]
b. many another man

(64) a. all the good students
b. all the other men

The structure in (55) can also give a unified analysis to simple quantified noun phrases such as *many children* and structures like (63–64), with the additional, quite costless assumption of a null indefinite determiner in the D position in the complement of an existential Q, as in (65a). Structure (65b) shows absence of number agreement between the quantifier and the DP, which displays a singular indefinite article.[5] In (65c), the complement of a universal quantifier displays a definite determiner:

(65) a. $[_{QP}\ [_{Q}$ many$]\ [_{DP}\ [_{D}\ \emptyset]\ \ [\ldots[_{NP}$ men$]]]]$
b. $[_{QP}\ [_{Q}$ many$]\ [_{DP}\ [_{D}$ a$]\ \ \ [\ldots[_{NP}$ man$]]]]$
c. $[_{QP}\ [_{Q}$ all$]\ \ \ \ [_{DP}\ [_{D}$ the$]\ [\ldots[_{NP}$ men$]]]]$

Universal quantifiers can also co-occur with a null determiner in English (66a), but not in many other languages, e.g., Italian (66b):

(66) a. $[_{QP}\ [_{Q}$ all$]\ \ \ [_{DP}\ [_{D}\ \emptyset]\ [\ldots[_{NP}$ men$]]]]\ \ \ $ are mortal
b. $[_{QP}\ [_{Q}$ tutti$]\ [_{DP}\ [_{D}$ gli$]\ [\ldots[_{NP}$ uomini$]]]]$ sono mortali

The null determiner in English (66a) is the null determiner found in generic noun phrases independently of the presence of the quantifier (cf. Matthewson 2001). This null determiner is not found in Italian (see Longobardi 1994 and Chierchia 1998 for analyses of this fact).

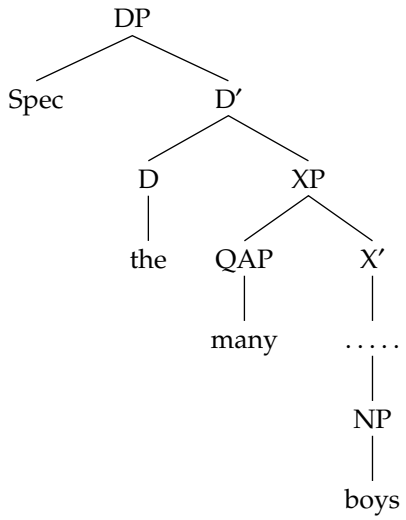
To summarize the results of this section, the QP-hypothesis claims that Q is a head external to the DP and that Q projects a full QP level. This hypothesis accounts for the facts in (67) which builds a diagnostics for the Q status:

(67) **A diagnostics for quantifiers:**
Q can precede definite as well as indefinite articles.
Q can co-occur with pronouns.
Q allows leftward movement of the DP to an immediately adjacent position which builds a constituent with Q and can straightfowardly be analyzed as [Spec, QP].
Different classes of Q correlate with the (in)definiteness of the embedded DP. This phenomenon will be accounted for in terms of selectional properties of Qs in section 3.
Q can occur in discontinuous position in a number of languages, contrary to other nominal modifiers and determiners.

2.3.3 The AP Hypothesis

The QP hypothesis does not deal with the case of quantifiers that can be preceded by a determiner as in (2a') *the many boys*. It requires an additional hypothesis that analyzes some quantity expressions as merged in adjectival position inside the DP, as in (68) (cf. Giusti 1991a, 1993). We will call this the AP-hypothesis. The AP-hypothesis, combined with the QP-hypothesis in (55), predicts that not all quantifiers can be quantity adjectives and vice versa. For example *all*, *some*, and *both* are not adjectives and cannot occur after a determiner. This explains the ungrammaticality of (3a), (4a), and (5a).

(68)



It is often assumed in the literature that the quantifiers that can occur after a determiner are weak quantifiers (in the sense of Milsark 1977). But this is not completely true. *S'm*, the weak counterpart of *some*, cannot appear after a determiner in (69a), or as a predicative adjective in (69b):[6]

(69) a. The many/three/several/*some/*s'm students that I know are all lazy.
b. ?The students that I know are many/three/several/*some/*s'm.

If we consider the distribution of quantity adjectives from a cross-linguistic perspective, it appears accidental that quantity adjectives in English are a subset of weak quantifiers. In German (70b) and Dutch (70c), for example, the counterparts of the English strong quantifier *most* in (70a) are only adjectival in nature:

(70) a. Most children are nice.
b. Die meisten Kinder sind nett. German
c. De meeste kinderen zijn aardig. Dutch

Meisten in (70b) and *meeste* in (70c) clearly display the adjectival inflectional morphology and must be preceded by a (definite) determiner. This is also found with German universal quantity adjective *ganzen* ('all') in (71a) and can be the case of *beiden* ('both') in (71b) and *vielen* ('many') in (71c):

(71) a. Die ganzen Kinder sind da.
the all children are here
b. Die beiden Kinder sind da.
the both children are here
c. Diese vielen Kinder sind da.
these many children are here

Ganz(*en*) is not a Q, it can have adjectival or adverbial status (meaning 'entirely', 'completely'). *Beide*(*n*) and *viele*(*n*) are ambiguous between Q and A status and can be found in different constructions. When *beide* and *viele* are Qs, they have the inflectional morphology of a determiner.[7] This idiosyncrasy in the possibility for a lexical item expressing quantity to be a quantifier, a quantity adjective, or both, is expected under the hypothesis that these elements can have different categorial status, independent of the meaning of a given element. In each language a given element is assigned either status or both. What is striking is that the syntactic behavior directly depends on the categorial status of the element, not on its semantic value.

The combination of the QP and the AP hypotheses also predicts the co-occurrence of two quantifiers in one and the same noun phrase, as in (72). It is, however, sufficiently restricted as to predict the ungrammaticality of some logically possible combinations as in (73).[8]

(72) a. tutti questi duecentoquaranta compiti da correggere
b. all these two hundred and forty tests to check
c. tutti questi molti(ssimi)/pochi(ssimi) compiti da correggere
d. all these (very) many/few tests to check
e. entrambi questi due ragazzi
f. both these two boys
g. some twenty tests to check
h. no two tests

(73) a. *twenty some children
b. *two no tests
c. tutti questi (*alcuni) compiti da correggere
d. all these (*some) tests to check

Notice that the reason for the ungrammaticality of (73) is not necessarily the semantic incompatibility of the two quantifiers. It is rather the fact that in English, *some* and *no* are not quantity adjectives and cannot appear inside a DP in adjectival position. The same is true for Italian *alcuni*. Notice also that the appearance of a quantity adjective inside the partitive PP in (74) does not give rise to a violation of the partitive constraint, contrary to what is found with quantifiers in (75) (cf. (14) above, n. 21, and Casadio 1995: n. 3):

(74) a. molti di questi duecentoquaranta compiti da correggere
b. many of these two hundred and forty tests to check
c. tre delle poche mele che ho
d. three of the few apples that I have

(75) a. *molti di duecentoquaranta compiti da correggere
b. *many of two hundred and forty tests to check
c. *tre di poche mele (che ho)
d. *three of few apples (that I have)

At the end of the previous sections we listed a number of phenomena arising with quantifiers. We will now observe that they do not arise with quantity adjectives.

When quantifiers are in object position in Italian, they allow for the extraction of a clitic pronoun from the DP, as shown in (54). This possibility does not arise with other modifiers of the noun, since modifiers are internal to the DP and cannot be left in place by DP extraction. Quantity adjectives give the same result as other adjective in (76a–b).

(76) a. *Ne/*Li ho comprati (gli) interessanti [t].
NE/them have.1Sg bought (the) interesting [t]
b. *Ne/*Li ho comprati i tre [t].
NE/them have.1Sg bought the three [t]
c. Ne ho letto i tre racconti [$_{PP}$ t].
CL have.1Sg read-Masc.Sg the three short stories

Notice that *ne*-extraction is allowed over a definite article in (76c) where *ne* binds a constituent (a genitive PP). A further argument on this line is provided by the discussion on the Serbo-Croatian data in (84–85).

Quantifiers can embed an empty DP in subject position and in the complement of a PP, as in (77) (for the interpretation of the empty noun phrase, see section 3.3.4):

(77) a. Tre/ alcuni/ tutti/ entrambi sono arrivati ieri.
b. Three/ some/ all/ both are arrived yesterday.
c. Ieri ho parlato con tre/alcuni/tutti/entrambi.
d. Yesterday I spoke to three/some/all/both.

This is not found with other modifiers of the noun phrase:

(78) a. *Simpatici sono arrivati ieri.
b. *Nice arrived yesterday.
c. *Ieri ho parlato con simpatici.
d. *Yesterday I spoke to nice.

The contrasts in (72–76) and (77–78) show that all types of quantifier show comparable behavior in occurring with a clitic pronoun and/or an empty noun phrase. Their behavior is crucially different from adjectives, as shown by (76) and (78).

Existential quantity adjectives (numerals and vague numerals) do not select a partitive PP (see section 3.1), as shown by the contrast in (79a, b), contrary to existential quantifiers, as in (79c). This is not predicted if the cardinal is one and the same element in all the cases in (79).

(79) a. *questi tre dei partecipanti
these three of-the participants

b. questi tre partecipanti
c. tre dei partecipanti

Romanian provides us with an interesting minimal pair. Dual universal quantity can be expressed either by a quantifier: *amîndoi*, or by a quantity adjective: *ambii*.[9] The syntactic hehavior of these two elements is particularly significative. *Amîndoi* is parallel to *toţi* ('all') in embedding a full definite DP, while *ambii* is in all respects a prenominal adjective.[10] In (80) we observe that the enclitic article is on the noun (80a) or on the prenominal adjective (80b), but never on the quantifier (80c). This shows that the quantifiers *amîndoi* and *toţi* are not part of the functional projection of the noun phrase: they immediately embed a DP.

(80) a. Au venit amîndoi / toţi băieţii frumoşi. Romanian
have arrived both / all boys-the nice
b. Au venit amîndoi / toţi frumoşii băieţi.
have arrived both / all nice-the boys
c. *Au venit amîndoii / toţii băieţi (frumoşi).
have arrived both-the / all-the boys nice

Quite the opposite holds of the quantifier *ambii*, which is always inflected for the enclitic article (81b, c). Other prenominal adjectives such as *biet* ('poor') must also bear the definite article in definite descriptions. Parallel to *biet*, *ambii* precedes other prenominal modifiers, as in (81b).

(81) a. *Au venit ambi/bieţi băieţii (frumoşi). Romanian
have arrived both/poor boys-the nice
b. Au venit ambii/bieţii (frumoşi) băieţi
c. Au venit ambii/bieţii băieţi (frumoşi)
have arrived both-the/poor-the boys nice

If floating and clitic-extraction are the result of DP movement, as claimed by Sportiche (1988) and Giusti (1990), among others, it is predicted that only *amîndoi/toţi*, but not *ambii*, occur in floating constructions. The same holds for clitic extraction, given that the clitic starts in a DP position. The two predictions are borne out, as can be seen in (82):

(82) a. Băieţii frumoşi au venit amîndoi/toţi/*ambi(i). Romanian
children-the nice have arrived both /all /both
b. I-am văzut pe amîndoi/toţi/*ambi(i).
[I] them have seen Acc both /all /both

As seen in (62) above, Romanian allows a postnominal position of the quantifier, parallel to Hebrew (57) and (61). If this is due to movement of the DP to [Spec, QP], we expect that only *amîndoi/toţi*, but not *ambii* can occur in postnominal

position, as shown in (83). Example (83b) shows that *ambii* behaves like the prenominal adjective *bieţi* in that it is not able to co-occur with a pronoun:

(83) a. noi amîndoi / toţi
we both / all
b. *noi ambi(i) / bieţi(i)
we both-(the) / poor-(the)

Slavic languages provide a different set of phenomena that distinguish quantifiers and quantity adjectives, as discussed in Giusti and Leko (1996, 2001) for Serbian–Croatian. Since pronouns can be inflected for genitive in these languages, they can occur as the complement of existential quantifiers. This is not the case with quantity adjectives, which agree with the noun and do not assign Case to it (see section 3.3.1).

In (84a) *mnogo* ('many') appears with a genititve DP, *studenata*, or a strong pronoun, *njih*. In (84b) the pronoun is clitic and must be extracted out of the QP. The presence of the pronoun is obligatory in (84):

(84) a. Vidio sam mnogo studenata / njih. Serbian–Croatian
saw.1Sg Cl.Aux many students.Gen.Pl / them.Gen.Pl
b. Vidio sam ih mnogo.
saw.1Sg Cl.Aux them.Cl.Gen.Pl many
'I saw a lot of them.'

Neither possibility is available with a quantity adjective which agrees with the following noun for accusative Case (assigned by the verb) and other phi-features in (85a). In (85b) it is shown that a quantity adjective cannot occur with a pronoun, irrespective of its strong or clitic nature. It can only occur in an elliptical construction:

(85) a. Vidio sam mnoge studente / Serbian–Croatian
[I] saw Cl.Aux many.Acc.Pl students.Acc.Pl /
*njih.
them.Gen.Pl
b. Vidio sam (*ih) mnoge (*njih).
[I] saw Cl.Aux them.Cl.Acc.Pl many.Acc.Pl

A comparable argument can be build for German. In (86) we make a parallelism between quantifiers such as *alle* and *beide*, which can occur with a pronoun, and the adjective *ganze*, which cannot:

(86) a. wir alle (we all) German
b. wir beide (we both)
c. *wir ganze(n) (we both)

Notice that the obligatory presence of a definite determiner preceding a quantity adjective is found only in languages that display the definite article. In a Slavic language such as Bosnian–Croatian–Serbian, which does not display a definite article, quantity adjectives may appear with no definite article. They therefore provide a good case to dispense with a possible criticism to our test of clitic extraction in (72–76), showing that it is not the presence of the determiner that blocks clitic extraction but the fact that the clitic binds the whole DP, which excludes a quantifier but includes a quantity adjective.

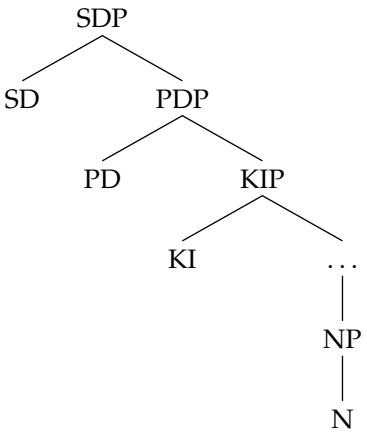
To summarize, we have proposed that only some quantifiers can occur in adjectival position. We call them quantity adjectives. The possibility to be merged in such a position is due to their categorial status which must be listed in the lexicon. This claim is supported by their syntactic hehavior. In (87) we find a set of phenomena which can build a diagnostics for quantity adjectives, which can be now contrasted with the diagnostics for quantifiers given in (67).

(87) **A diagnostics for quantity adjectives:**
Quantity adjectives are preceded by a determiner (in languages that have a definite article).
Quantity adjectives cannot occur with a pronoun.
Quantity adjectives do not allow extraction of the part of the DP that does not contain it.
Quantity adjectives cannot appear in discontinuous position (in languages in which adjectives cannot do so).
Quantity adjectives do not select a partitive PP.

2.3.4 A recent attempt at unification

Given the discussion so far, the unification of *many* in *many boys* (see (1a)) and *the many boys* (see (2a')) cannot be considered as the null hypothesis and needs argumentation. Such an argumentation is given by Zamparelli (1995), who endorses a general proposal about the structure of noun phrases designed to capture, by means of the X-bar theoretic schema in (88), the different interpretive properties of several types of determiners as classified in the semantic tradition of Milsark (1977) and Barwise and Cooper (1981). The structure in (88) provides different positions for different kinds of determiner. SD (strong determiner) is the position where strong quantifiers, such as *both*, *most*, *every,* and *each*, and determiners, such as demonstratives and the definite article, are inserted. PD (predicative determiner) is the position where the indefinite article *a* and weak quantifiers such as cardinals and vague numerals are inserted. KI (Kind) is the projection that denotes the kind in the semantic interpretation.

(88)



Although in (88) both strong and weak quantifiers are inserted in head positions, Zamparelli's proposal is to be considered in the line of research that treats quantifiers as a special type of adjective. He follows the semantic tradition of Milsark's (1977), according to which strong quantifiers are determiners while weak quantifiers are modifiers, and the syntactic hypothesis of Abney (1987) and Bernstein (1993b) that (at least some) prenominal adjectives are merged into functional heads of the extended projection of the noun.

The immediate appeal of (88) is that it derives the well-known semantic properties of quantifiers in the syntax. The ambiguity between the strong and weak reading of existential quantifiers (cardinals and vague numerals) is accounted for by assuming that some quantifiers can be inserted either in PD (in which case they are weak) or in SD (in which case they are strong). Other quantifiers can only be inserted in SD and cannot be lowered to PD.[11]

Another advantage of (88) is that it establishes a correlation between each layer and a different type of clitic element in Italian: SDP is the clitic displaying Agr features such as the accusative *lo*, *la*, *li*, *le*; PDP is the uninflected clitic *lo* which resumes a predicate; while KIP corresponds to the quantitative clitic *ne* (thereby predicting that *ne* can be extracted only from weak quantifiers; see also section 3.3.1).

Zamparelli assumes that the complete structure in (88) is always projected when the noun phrase is in argument position. We restrict our review of Zamparelli's hypothesis to such a case. In (89) we observe a noun phrase in object position. In (89a) we see the structure of a weak noun phrase, in (89b) that of a bare plural, and in (89c) the structure of a strong noun phrase.

(89) a. I am looking for $[_{SDP}$ SD $[_{PDP}$ two $[_{NP}$ . . . nice people]]].
b. I am looking for $[_{SDP}$ SD $[_{PDP}$ $PD_{[plural/mass]}$ $[_{NP}$ . . . nice people]]].
c. I am looking for $[_{SDP}$ every $[_{PDP}$ $PD_{[sing]}$ $[_{NP}$ . . . nice man]]].

In (89a) the weak interpretation is obtained by not moving the quantifier to SD. SD is empty and is licensed by the verb. In (89b) the same holds for SD, but PD

is also empty and needs to be licensed. This is obtained, stipulatively, by assuming that the empty SD requires a [plural/mass] feature in PD, and it is licensed by virtue of this requirement. In (89c) we see the case of a strong quantifier that occupies the SD position and licenses the empty PD, to which it assigns a [sing] feature.

This proposal predicts the co-occurrence of an element in SD and an element in PD. An example of such a case is the by now notorious case of (2a′), which is attributed the structure in (90a). However, Zamparelli's proposal cannot account for the unacceptability of (90b), which should have the same structure:

(90) a. $[_{SDP}\ [_{SD}$ these$]\ \ [_{PDP}$ many $[_{NP} \ldots$ men$]]]$
b. *$[_{SDP}\ [_{SD}$ every$]\ [_{PDP}$ a $\ \ [_{NP}$ man$]]]$

In order to overcome this problem, Zamparelli (1995: 118) proposes the principle of redundancy in (91).

(91) Two functional words F_i, F_j within the same DP give an impossible representation if the meaning of F_i entails the meaning of F_j or vice-versa.

Principle (91) rules out the insertion of two quantifiers with the same function. In (90b) *every* would be redundant with the weak quantifier *a*. However, (91) is contradicted by the Ladin construction 'one a N' discussed in Benincà and Haiman (1992) and reported in (92), where the two elements apparently have the same interpretation and nevertheless do not exclude each other:

(92) a. Da øna na skwadra (esoŋ pasa a trɛj). Badiot
from one a team ([we] passed to three)
'From a team we grew to three.'
b. (L'ɛrt kuntsɛtuala), una na rama dl ɛrt visiva. Gardena
(the art conceptual), one a branch of-the art visual
'conceptual art, one branch of visual art.'

Notice that the data in (92) are in many respects parallel to the case of English *many a good student* presented in (63). And they can be straightforwardly captured by the analysis in (55) and (65) given above. Furthermore, (89a) claims that weak quantifiers in PD co-occur with an empty determiner in SD. This appears to be consistent with what we know about English, but cannot be maintained for Italian. In English (93), both the quantifier *many* and the descriptive adjective *good* can introduce the DP. In Italian (94), the quantifier *molti* but not the adjective *bravi* can introduce a DP in subject position:

(93) a. Many students have passed the exam.
b. Good students have passed the exam.

(94) a. Molti studenti hanno superato l'esame.
b. *Bravi studenti hanno superato l'esame.

The contrast between (93) and (94) shows that at least in Italian it is impossible to claim that *molti* is an adjective preceded by a null determiner, given that null determiners are banned in the IP-subject position. The analysis proposed in sections 2.3.2–2.3.3 does not have this problem and can unify the analysis for Italian and English by considering *many* in (93a) and *molti* in (94a) as quantifiers which embed a quantitative (indefinite) DP.

Finally, in contrast with our proposals in (55) and (68) above, Zamparelli's structure (88) cannot derive the case in which a quantifier precedes a strong (definite) determiner that is in turn followed by a weak quantifier, as in (95) and parallel structures cross-linguistically.

(95) a. all these very many children
b. both these two children

To accommodate for this, Zamparelli proposes that *tutti*, and supposedly also *both* and *half*, are external to the noun phrase structure and adjoined as a constituent to SDP, parallel to what is proposed by Sportiche (1988). But this fails to capture the parallelisms among quantifiers noticed earlier in (65), while other determiners behave differently, as in the unacceptable (76a, b).

3 A refinement of the QP Hypothesis

In section 2.3.2 we observed that the QP hypothesis represented in (55) is flexible enough to account for a range of different selectional properties found with different classes of quantifiers. We now focus on the different properties of different classes of quantifiers and refine the structure proposed in (55), making it compatible with current assumptions on phrase structure.

The assumption of the lexical–functional distinction, implicit in the literature since Grimshaw (1991), leads us to attribute lexical status to an element with selectional properties. We therefore take Q in (55) to be a lexical category that selects a full extended projection, namely, the noun phrase marked as DP. This was already proposed in Giusti (1993). Being a lexical head, Q first projects its argument structure, then projects its own functional structure, which is much more reduced than that of a full noun phrase.

In this section we support the claim that existential Qs are diadic elements that select two complements: a quantitative DP to which they assign partitive Case, and a partitive PP. Distributive Qs select the same two complements and, contrary to existential Qs, they also select a distributive Operator (OP). Universal quantifiers only select a DP and do not assign Case to it.

In section 3.1, the partitive PP, introduced by *di* in Italian, is contrasted with an adjunct partitive PP that can also be introduced by *di* in certain cases but is normally introduced by *tra/fra* ('among'). In section 3.2, the quantitative DP is shown to be the source of quantitative *ne*. Since quantitative *ne* is obligatory in some cases, we conclude that its source position is the internal argument of Q,

which is always projected in the structure. In section 3.3, we see the structure of the three classes of quantifiers and how it can derive many of the phenomena discussed above. In section 3.4, we discuss 'intransitive' quantifiers such as *qualcuno* ('someone') and *qualcosa* ('something').

We assume a version of the Uniformity of Theta Assignment Hypothesis of Baker (1988a: 46) according to which, when a lexical item is shown to select an argument, the null hypothesis (and in fact the only available one) is that this argument is always projected in the structure.[12] The line of hypothesis followed here is that if there are reasons to believe that a quantifier selects a constituent, this constituent is always projected in the structure, even if non-overt. This allows us to explain a number of apparently unrelated facts.

3.1 The partitive PP and other partitive phrases

As we have seen in section 2.1.2, the literature in the late 1970s established that the quantitative noun phrase and the partitive prepositional phrase are different constituents. The evidence was based on the following observations. The two constituents behave differently with respect to the movement of the noun phrase of various kinds (22), (24), and (25), cannot be coordinated (26), and have different semantics (28). Furthermore, the presence of the partitive PP is bound to the presence of a quantifier, as shown in (34).

For Italian, Cardinaletti and Giusti (1992) show that the two phrases embedded under Q are not mutually exclusive, but can co-occur when the DP is realized by a noun (phrase) (96a) and by the clitic pronoun *ne* (96b) (see (31) and (33) for French):

(96) a. Ho letto molti libri di quelli che mi avevi consigliato.
have.1Sg read many books of those that to-me had.2Sg recommended
b. Ne ho letti molti [$_{DP}$ *t*] di quelli che mi avevi consigliato.
NE have.1Sg read many of those that to-me had.2Sg recommended

The null hypothesis concerning the quantitative DP is that it also occurs when the noun is non-overt, as in (97). Following Cardinaletti and Giusti (1992), we propose that (97) contains a null DP. In this way, the only difference between (97) and (96b) would be the different licensing procedure of the empty category.

(97) Molti [$_{DP}$ e] di quelli che mi avevi consigliato erano interessanti.
many of those that to-me had.2Sg recommended were interesting

The null hypothesis concerning the partitive PP is that it occupies one and the same position in (96), where it co-occurs with other nominal material (*libri/ne*), and in (97), where it does not. The partitive PP is selected by the quantifier and is not a complement of the noun phrase (contra Jackendoff's 1977 structure (29) above, and Abney's 1987 structure (50)), as has been argued in the discussion on (51–52). Italian left-dislocation constructions provide clear cases supporting this

claim. Cinque (1991) shows that a PP such as *in medicina* in (98a) is a complement of N, since it cannot be used predicatively (98b). In (98c, d) it is shown that this PP must be dislocated together with the noun:

(98) a. Conosco due studenti in medicina.
[I] know two students in medicine
b. *Questi due studenti sono in medicina.
these two students are in medicine
c. Di studenti in medicina, ne conosco due.
of students in medicine, NE know.1Sg two
d. *Di studenti ne conosco due in medicina.
of students NE know.1Sg two in medicine

The partitive PP behaves in the opposite way, suggesting that it is not a complement of N:

(99) a. Ho visto due studenti di quelli del tuo corso.
have.1Sg seen two students of those of-the your class
b. Di studenti, ne ho visti due di quelli del tuo corso.
of students NE have.1Sg seen two of those of-the your class
c. *Di studenti di quelli del tuo corso ne ho visti due.

We also exclude that the partitive PP is (optionally) adjoined to the noun phrase. At least in Italian, the partitive PP cannot appear with noun phrases of any type. As shown in (100), it cannot occur with definite and universally quantified DPs:[13]

(100) a. *I libri di quelli che mi avevi consigliato.
b. *Tutti i libri di quelli che mi avevi consigliato.
all the books of those that [you] to-me had recommended

An optional, adjunct, partitive exists and is introduced by the preposition *tra/fra* ('among'), as shown in (101). It is compatible with all kinds of DPs, including quantified constructions:

(101) a. Ho letto solo questi libri di linguistica tra/fra quelli
have.1Sg read only these books of linguistics among those
che mi avevi consigliato.
that [you] to-me had recommended
b. Tutti i libri di linguistica tra/fra quelli che mi avevi
all the books of linguistics among those that [you] to-me had
consigliato mi sono piaciuti.
recommended to-me pleased
c. Ho letto molti libri di linguistica
have.1Sg read many books of linguistics
tra/fra quelli che mi avevi consigliato.
among those that [you] to-me had recommended

The adjunct partitive, introduced by *tra/fra* or even *di*, can appear in sentence-initial position. Also in this case, it is compatible with all kinds of DPs.

(102) a. Tra/fra i libri di linguistica, ho letto
among the books of linguistics, [I] have read
quelli che mi avevi consigliato.
those that [you] to-me had recommended
b. Di (quei) libri, ho letto solo questi.
of (those) books have.1Sg read only these

The adjunct partitive PP can co-occur with the selected partitive PP, showing that it is a different kind of constituent (103). Crucially, the adjunct partitive can only be introduced by *tra/fra* and not by *di* if it is adjacent to the noun phrase (104):

(103) a. Fra i libri di storia in programma, ne ho letti
among the books of history in the syllabus, NE have.1Sg read
[molti di quelli che avevi consigliato].
many of those that [you] had recommended
b. Dei libri di storia in programma, ne ho letti
of the books of history in the syllabus, NE have.1Sg read
[molti di quelli che avevi consigliato].
many of those that [you] had recommended

(104) a. Ho letto molti libri di storia di quelli che mi avevi
have.1Sg read many books of history of those that to-me had.2Sg
consigliato tra quelli in programma
recommended, among those in the syllabus.
b. *Ho letto molti libri di storia di quelli che mi avevi consigliato di quelli in programma.

As noticed by Milner (1978b) for French and by Cardinaletti and Giusti (1992) for Italian, the selected partitive PP and the quantitative DP must contain the same lexical noun. In fact, while (105a) is marginal due to the redundancy of the information conveyed, (105b) is ruled out, even if it is not redundant at all, and clearly contrasts with the synonymous (106), where the adjunct partitive PP occurs:

(105) a. Ho letto molti libri dei libri della biblioteca.
have.1Sg read many books of the books in the library
b. *Ho letto molti romanzi dei libri della biblioteca.
have.1Sg read many novels of the books in the library

(106) a. Ho letto molti romanzi tra i libri della biblioteca.
have.1Sg read many novels among the books of-the library
b. Dei/tra i libri della biblioteca, ho letto molti romanzi.
of/among the books of-the library, have.1Sg read many novels.

We call this property the non-distinctness requirement and discuss it in section 3.3.4.

Up to now, we have established that the partitive PP is selected by the quantifier, it is different both from an adjunct partitive PP that can occur with any kind of noun phrase and in left-dislocation structure, and from the quantitative DP, which is also an argument of the quantifier.

The partitive PP refers to the set out of which the quantifier picks its restriction, which is a subset of it (see Cresti 2003: 83). For universal quantifiers the set and the subset coincide, and this is why no partitive PP is selected by universal *tutti* in (100b), by universal *entrambi* in (107a), and by the coordinated Q *tutti e due* (lit., 'all and two') in (107b), which can only take a definite DP (108).

(107) a. *Entrambi dei ragazzi sono arrivati.
both of the boys have arrived
b. *Tutti e due dei ragazzi sono arrivati.
all and two of the boys have arrived

(108) a. Entrambi i ragazzi sono arrivati.
both the boys have arrived
b. Tutti e due i ragazzi sono arrivati.
all and two the boys have arrived

As is clear from the gloss of (107), English does not have this phenomenon. There are two ways of interpreting the contrast between Italian and English. One is to attribute different (unpredictable) argument structures to quantifiers across languages; the other, to propose that an *of* phrase in English is ambiguous between the selected partitive PP and the adjunct partitive PP (often introduced by *tra/fra* but also introduced by *di* in Italian left-dislocation constructions, cf. (102b) and (103b)). We believe that the second way is more in the spirit of the generative enterprise. We therefore propose that the PP in *all of the boys* and *both of the boys* is an adjunct.

3.2 The quantitative DP

The quantitative DP realizes the restriction of the existential quantifier. We now show that it is always projected and, if empty, it is subject to licensing conditions.

In the discussion of (35–37) we observed that extraction of *ne* can take place from internal argument positions, while it is impossible from other positions. The syntax of *ne*, therefore, provides an excellent test to distinguish between internal and external argument positions. In (35–37), it was also shown that where *ne* is not allowed, an empty category is found. However, the interpretation of that empty category is bound to some requirements discussed in Cardinaletti and Giusti (1992) and reviewed here.

In preverbal subject position, the empty category can refer to any kind of noun:

(109) a. Tre/molte settimane passano rapidamente.
three/many weeks elapse rapidly
b. Tre/molte [e] passano rapidamente.
three/many elapse rapidly

(110) a. Tre/molti ragazzi hanno telefonato ieri.
three/many boys have telephoned yesterday
b. Tre/molti [e] hanno telefonato ieri.
three/many have telephoned yesterday

Rephrasing Belletti and Rizzi's proposal (see section 2.2), Cardinaletti and Giusti (1992) analyze the occurrence of the empty category in terms of the licensing conditions of Rizzi (1986a): an empty category must be formally licensed (i.e., governed by a proper head) and identified (i.e., its feature content must be recovered). The empty category embedded in a quantified noun phrase, *pro*, is always formally licensed by the quantifier. As for the identification requirement, the quantifier does not carry all the features necessary for a referential interpretation of *pro*, since it displays number and gender but crucially not person features. The empty category can be identified either by the quantitative clitic when c-commanded by it, as in (36b), or by the quantifier if it is co-indexed with an element that provides it with person features. We take this element to be AgrS for quantified noun phrases in subject position, (109b–110b).

In (109–110), we observe that in preverbal subject position cardinals and quantifiers give similar results. If we contrast (109–110) with (111), however, we observe that an empty category in the postverbal subject position is only allowed with quantifiers that display overt agreement for number and gender features, namely existential quantifiers such as *molti*, *uno*, and *una*, but not cardinals such as *tre*.[14]

(111) a. Ieri hanno telefonato tre / molti ragazzi.
yesterday have telephoned three / many boys
b. Ieri hanno telefonato *?tre/molt*i* [e].
c. Ieri ha telefonato un*o* / un*a* [e].
yesterday has telephoned one-Masc.Sg / one-Fem.Sg

Since in postverbal subject position the quantifier would not be enriched with phi-features, the empty category gets an arbitrary interpretation, limited to human beings (cf. Rizzi 1986a; Cinque 1988: n. 36). This explains the contrast in (112). Similarly, (113b) can only mean that some human beings make the nests and the sentence is marked as infelicitous.[15] In (113c) we see that the prenominal subject position is acceptable, as expected, given (109b) above:

(112) a. Hanno telefonato molti [e].
have telephoned many [people]
b. *Hanno abbaiato molti [e].
have barked many [dogs]

(113) a. (Questo tipo di nido), lo fanno molti uccelli migratori.
(this kind of nest), it make many migrating birds
b. #(Questo tipo di nido), lo fanno molti [e].
c. Molti [e] fanno questo tipo di nido.
many do this type of nest

The same restriction holds for quantifiers in object position:

(114) a. Ieri ho incontrato molti [e] per la strada.
yesterday have.1Sg met many [people] on my way
b. *Ieri ho letto molti [e] in biblioteca.
yesterday have.1Sg read many [things] in the library

Another argument in favor of the assumption that the internal argument of Q is always present is the observation that Q not always agrees for number (115a, b) and/or person (115c) with the following PP:

(115) a. Una [e] delle ragazze pensa che ...
one.Fem.Sg of-the girls thinks that
b. Uno [e] di noi pensa che ...
one.Masc.Sg of us thinks that
c. Molti [e] di noi pensano che ...
many of us think that

Number and person are syntactic features that are structurally realized as functional heads external to the lexical NP (Ritter 1991). While the lexical NP must be non-distinct in the DP and the PP arguments of Q (cf. sections 3.1 and 3.3.4), the functional structure associated to them can be different. Notice that the features of the whole quantified noun phrase in (115) are those of the quantitative DP (third person features). The verb never agrees with the partitive PP, as shown in the ungrammatical cases in (116):

(116) a. *Una [e] delle ragazze pensano che ...
one.Fem.Sg of-the girls think.3Pl
b. *Uno [e] di noi pensiamo che ...
one.Masc.Sg of us think.1Pl that
c. *Molti [e] di noi pensiamo che ...
many of us think.1Pl that

The internal argument of a distributive quantifier is always third person singular:

(117) a. Ciascuna ragazza pensa / *pensano che ...
each.Fem.Sg girl thinks / think.3Pl that
b. Ciascuna [e] delle ragazze pensa / *pensano che ...
each.Fem.Sg of-the girls thinks / think.3Pl that

c. Ciascuna [e] di noi pensa / *pensiamo che ...
each.Fem.Sg of us thinks / think.1Pl that

In (117a), the internal argument of the quantifier is overt, its features are third person singular, agreeing with the features on the quantifier. In (117b, c), the internal argument of the quantifier is covert and the partitive PP is realized. Since *ciascuno* can only take countable nouns, and *ragazze* is such a noun, the partitive PP is necessarily plural. The predicate agrees with the quantifier (and the covert DP), which is singular.

The argument of a universal quantifier such as *tutti* can have first and second person features, as in *tutti noi/voi*. As expected, an empty pronoun in the complement of a universal quantifier can also have these features, as in (118).

(118) a. Tutti/Tutte [e] pensiamo che ...
all.Masc/all.Fem think.1Pl that ...
b. Entrambi/Entrambe [e] pensiamo che ...
both.Masc/both.Fem think.1Pl that ...

The first and second person features are licensed by agreement with the verb. Person agreement also takes place in postverbal subject position. Sentence (119b) is felicitous, contrasting with (113b) above. (120) is felicitous in a context in which birds can speak in first person (plural):

(119) a. (Questo tipo di nido), lo fanno tutti gli uccelli migratori.
(this kind of nest) it make all the migrating birds
b. (Questo tipo di nido), lo fanno tutti.
(this kind of nest), it make.3Pl all
c. Tutti fanno questo tipo di nido.
all make.3Pl this kind of nest

(120) (Questo tipo di nido), lo facciamo tutti.
(this kind of nest) it make.1Pl all
We all make this kind of nest

Notice that (119b) and (120) can also be analyzed as a floating construction, with the quantifier *tutti* being left in place by movement of its complement *pro* to IP-subject position.

In other syntactic positions where neither agreement with the predicate nor floating takes place, such as the object position, universal quantifiers, on a par with existential quantifiers, can co-occur only with an arbitrary *pro* with third person [human] features, as in (121a). Sentences (121b) and (121c) are infelicitous due to the fact that a [+human] interpretation of the empty category is incompatible with the verbs *vendere* and *riflettere*.

(121) a. Ho visto tutti [e] per la strada.
have.1Sg seen all on the street
b. #Ho venduto tutti [e].
have.1Sg sold all
c. #Ho riflettuto su tutti [e].
have.1Sg thought about all

In conclusion, interpretive considerations lead us to assume that the internal argument of the quantifier is the DP, not the PP.

The different interpretations that arise in the presence and absence of *ne* in (35–37) and (109–114) can be captured only if a different empty category is assumed. The trace of *ne* can resume any kind of noun phrase. The preverbal subject position allows the licensing of a null subject in Italian that can resume any kind of noun phrase. In other positions, Italian only allows the human reference of arbitrary *pro*. In section 4 we give other reasons to suppose that quantitative *ne* is never the clitic counterpart of the partitive PP *di loro*.

3.3 A bare phrase structure for QP

Up to now we have established that all quantifiers select a quantitative DP that realizes their restriction, and that some quantifiers also select a partitive PP that realizes the set out of which such a restriction is picked.

As for existential quantifiers, this was already represented in structure (55). However, (55) is incompatible with recent approaches to phrase structure, such as the bare phrase structure hypothesis of Chomsky (1995c) and the anti-symmetry hypothesis of Kayne (1994). In this line of research, (55) can be rephrased as follows. Starting with the QP structure in (122a), the head Q and the DP are raised to a projection above QP which we call AgrQP (122b). In [Spec, AgrQP], the DP checks Case and phi-features. The head Q is further raised to F, as shown in (122c):

(122) a. $[_{QP}$ PP $[_{Q'}$ Q DP]]
b. $[_{AgrQP}$ DP Q $[_{QP}$ PP $[_{Q'}$ ~~Q~~ ~~DP~~]]]
c. $[_{FP}$ $[_{F'}$ Q $[_{AgrQP}$ DP ~~Q~~ $[_{QP}$ PP $[_{Q'}$ ~~Q~~ ~~DP~~]]]]]

The same structure and derivation hold for distributive quantifiers such as *ogni/ognuno* and *ciascun/ciascuno* ('each'). In addition to the DP and the PP, distributive quantifiers select a distributive operator (OP), which we take to be directly merged in [Spec, FP] for the sake of simplicity:[16]

(123) a. $[_{QP}$ PP $[_{Q'}$ Q DP]]
b. $[_{AgrQP}$ DP Q $[_{QP}$ PP $[_{Q'}$ ~~Q~~ ~~DP~~]]]
c. $[_{FP}$ OP $[_{F'}$ Q $[_{AgrQP}$ DP ~~Q~~ $[_{QP}$ PP $[_{Q'}$ ~~Q~~ ~~DP~~]]]]]

In the discussion of (100) we observed that universal quantifiers do not select a partitive PP. The initial structure is (124a). To capture the fact that with these

quantifiers the restriction coincides with the set, we propose that the DP moves to [Spec, QP], which is the locus of the projection of the set, as in (124b). The quantifier also moves to AgrQP for checking reasons. In (124c), the DP moves to [Spec, AgrQP] in order to check phi-features, and the head Q is further raised to F.

(124) a. $[_{QP}\ \ [_{Q'}$ Q DP]]
b. $[_{AgrQP}$ Q $[_{QP}$ DP $[_{Q'}$ ~~Q~~ ~~DP~~]]]
c. $[_{FP}\ [_{F'}$ Q $[_{AgrQP}$ DP ~~Q~~ $[_{QP}$ ~~DP~~ $[_{Q'}$ ~~Q~~ ~~DP~~]]]]]

We now consider in detail the checking properties of these parallel structures and some of their consequences.

3.3.1 Partitive case

In configurations (122b) and (123b), the DP complement of existential and distributive quantifiers checks partitive case in [Spec, AgrQP]. Two observations support this proposal: the genitive morphology on the clitic that binds the quantitative DP (Italian *ne*, French *en*) and the preposition *di*/*de*, generally realizing genitive case, which occurs with the quantitative DP in certain cases (see section 3.3.3). Consider an existential quantifier in (125).

(125) Di ragazzi, ne ho visti molti.
of boys, NE have.1Sg seen many

Partitive *ne* does not surface with distributive quantifiers. In this case, however, we maintain the assignment of partitive case by the quantifier and relate the ungrammaticality of (126) to the presence of the distributive OP(erator) in [Spec, FP], which blocks extraction of the quantitative DP:

(126) a. *Ne ho visti/o ogni/ognuno/ciascuno.
NE have.1Sg seen each
b. *Di ragazzi (ne) ho visto ognuno/ciascuno.
of boys NE have.1Sg seen each

Partitive case does not surface with universal quantifiers either. These quantifiers never co-occur with the clitic pronoun *ne*, neither does their DP complement ever appear with the preposition *di*, as shown in (127).[17]

(127) a. *Ne ho visti tutti.
NE have.1Sg seen all
b. *Di ragazzi (ne) ho visto/i tutti.
of boys NE have.1Sg seen all

We interpret the inability to assign partitive as the result of the semantics of universal quantifiers that do not have the function to relate a subset to a set. As

a matter of fact, the subset expressed by the restriction and the set out of which the restriction is picked coincide for universal quantifiers.

Since the quantifier is traditionally considered as a modifier of the noun phrase, the proposal that it assigns Case is not straightforward and deserves some further discussion.[18] In our proposal, the quantifier is assumed to be a lexical head with its own selectional features. From this point of view, nothing prevents it from assigning Case to its complement DP.

It has often been noticed in the literature that in some languages it is possible to find a correlation between definiteness/specificity and Case. Belletti (1988), for example, claims that transitive and unaccusative verbs can assign partitive case to their internal argument position, provided that the internal argument is indefinite. Enç (1991) argues that in Turkish, specificity is marked on noun phrases in object position with accusative case, while non-specific noun phrases in object position have no case marking at all. Kornfilt (1996) argues that in Turkish some instances of ablative case can be analyzed as the realization of (abstract) partitive case. Furthermore, Kiparsky (1998) also shows that (in)definiteness of the arguments and aspect of the predicate are strictly related and the assignment of a particular case marking is often only one side of the strategy, the other side being the surfacing of an aspect marker on the predicate.

Our proposal that the apparent genitive case morphology that we find on the quantitative DP in different constructions realizes partitive case is consistent with this line of research. We do not enter the discussion here whether partitive is a structural or an inherent Case (see Belletti 1988). However, in our proposal partitive case is assigned structurally by quantifiers of the existential and distributive class, and not by other quantifiers. We keep to the observation that (abstract) partitive case is universally found across languages and realized in various ways according to the morphological systems of noun phrases and even verb phrases in different languages.

3.3.2 Agreement

Case checking and phi-feature checking often go together, as is the case for subject DPs. While checking partitive case, the quantitative DP agrees with the quantifier, which is endowed with number and gender features. This results in the three patterns in (128):

(128) **Agreement patterns arising with quantifiers:**
- a. plural agreement in the case of [+count] nouns in the complement of cardinals and vague numerals (*three books*, *many books*, *some books*);
- b. singular agreement in the case of [+count] nouns in the complement of the cardinal *one* (*one book*), the vague numeral *some* (*some book*), and distributive quantifiers (*each book*);
- c. singular agreement with all [–count] nouns (*some wine*).

As a matter of fact, agreement between the quantifier and its internal argument is not overt in all contexts. In the Hebrew examples in (56a) and (57a) the quantifier

is invariable when it precedes its complement. But when the complement is moved out, it agrees with it, as in (56b) and (57b).

A different situation is provided by the Turkish examples in (129), where the quantitative DP has no number features.[19]

(129) a. Iki kız-ı tanıyordum.
two girl-Acc knew.1Sg
b. Iki kız tanıyordum.
two girl knew.1Sg
'I knew two girls.'

Enç (1991) shows that in Turkish, the quantifier can take a specific DP in accusative (129a) or a non-specific DP marked with no case morphology (129b). In neither case the number of the quantifier percolates onto the DP. The reference of the DP is plural nonetheless, as shown in the left-dislocated structure (130):

(130) Kız lar dan iki sin i tanıyordum.
girl Pl Abl two Agr Acc knew.1Sg

Notice that in (130) the quantifier displays case and agreement morphology since its internal argument is non-overt, parallel to Hebrew (56b) and (57b) above.

3.3.3 Partitive case realized by di/de

In French, the preposition *de* surfaces with a certain class of quantifiers including *beaucoup*, *peu*, and *combien*, which are invariable:

(131) a. J'ai vu beaucoup *(de) filles.
I have seen many of girls
b. J'ai vu plusieurs (*de) filles.
I have seen many (*of) girls

We suggest that quantifiers like *beaucoup*, having no inflectional morphology, cannot enter an agreement relation with the quantitative DP. The partitive case checked by the DP in [Spec, AgrP] must be realized by the preposition *de* (for a different analysis, see Battye 1987).

In the examples at (63) we saw an instance of non-agreeing quantifiers in English, which looks like an exception to condition (128a). The lack of agreement in these cases is reminiscent of the cases of *beaucoup* in (131). These quite exceptional English cases can be analyzed in a way similar to French *beaucoup*. Although in Italian we do not have invariable quantifiers like *beaucoup*, we observe a comparable situation in (132). The preposition *di*, which optionally occurs with the predicative adjectives stranded by *ne* cliticization, as in (132a) (cf. section 4.2), becomes obligatory with a non-overt quantifier, as in (132b):

(132) a. Ne conosco due (di) simpatici.
NE know.1Sg two (of) nice
a. Ne conosco Ø *(di) simpatici.
NE know.1Sg [some] (of) nice

The presence of the overt quantifier makes the case visible in (132a), where *di* is optional. The non-overt quantifier, on the contrary, cannot make the partitive case visible in (132b), where *di* is required.

An empty quantifier can also be assumed in the case of the so-called partitive determiner in Italian and French (see Casadio 1995 and Chierchia 1997a):

(133) a. Ho letto Ø dei libri.
b. J'ai lu Ø des livres.
I have read of-the books
'I read some books.'

The fact that the quantifier is empty makes it necessary for partitive case to be spelled out as *di/de*. *Di/de* take the agreeing form *dei/des* in order to spell-out all phi-features. This is not necessary in other contexts, where the presence of the clitic *ne* guarantees that phi-features are spelled out, as testified by agreement on the past participle (cf. *Di/*dei ragazzi*, *ne ho visti* 'of/*of-the boys NE have.1Sg seen').

Another case in which the preposition *di/de* is required in Italian and French is when the quantitative DP is left- or right-dislocated.[20]

(134) a. Di ragazzi, ne ho visti molti.
b. Ne ho visti molti, di ragazzi.
of boys, NE have.1Sg seen many

(135) a. De filles, j'en ai vu plusieures.
b. J'en ai vu plusieures, de filles.
of girls, NE have.1Sg seen many

In (134) and (135) the quantifier is present but the relation to the left-dislocated DP is not local. This is the reasons for the obligatory insertion of *di/de*. As above, the preposition makes partitive Case visible.

3.3.4 The lexical non-distinctness requirement on DP and PP

In the discussion at (105) we observed that the lexical N in the quantitative DP is non-distinct from the lexical N in the partitive PP. We took this to be the result of the fact that the DP realizes the restriction (variable) of the quantifier and the PP realizes the set (range) out of which this restriction is picked. The lexical items that realize the restriction and the set must be lexically identical for reasons that are not logically necessary since the same requirement does not hold for adjunct partitive PPs (cf. (106)).

(136) a. Ho letto molti *libri* dei *libri* che mi avevi
b. *Ho letto molti *romanzi* dei *libri* che mi avevi
have.1Sg read many books/*novels of-the books that to-me had.2Sg
consigliato.
consigliato.
recommended

The fact that this property appears quite generally across languages leads us to assume that the lexical non-distinctness requirement is a UG principle. According to this requirement, the variable and the range must be non-distinct in their lexical content, which we take to be structurally realized at the NP-level. The variable and the range can differ in their functional structure, where phi-features (basically number), Case, and referential features are projected. As for number features, this has been shown in (115) and (116). As for Case features, we have claimed that the quantitative DP checks Case according to the properties of the quantifier. The partitive PP is selected by the quantifier, but it receives an oblique case assigned by the preposition. As for the referential properties, the variable does not refer, by definition, while the set, which is generally definite,[21] can be D-linked or non-D-linked in the sense of Pesetsky (1987a).

The non-distinctness requirement is a particular kind of co-indexing, which certainly plays a role in the licensing of silent elements in DPs and PPs.[22] We now consider some possible cases of empty categories in quantified noun phrases. When the DP is null and the PP is overt, the NP inside DP is interpreted as non-distinct from the overt NP inside the PP (*libro*); the number is recovered by agreement with the quantifier (plural in (137a), singular in (137b)); (partitive) case is independently assigned by the quantifier:[23]

(137) a. molti [e] dei libri/ di quei libri
many of-the books/ of those books
b. uno [e] dei libri/ di quei libri
one of those books/ of those books

When the DP is overt and the PP is null, the NP inside the PP is interpreted as non-distinct from the NP inside the DP. The number is plural for count nouns or singular for mass nouns, due to the partitive constraint or any version of it (see n. 21). The referential properties of the PP must be either recovered from the context (*many books* can mean 'many books among those that are relevant in the context'), or left undetermined (*many books* can mean 'many books in general'). In the former case, we take the empty partitive PP to be D-linked. In the latter case, we take the empty partitive PP to be non-D-linked.

When both the DP and the PP are null, neither NP is realized and the lexical features must be recovered from the context. As a consequence, the interpretation is different depending on the position occupied by the quantified noun phrase, as also observed in section 3.2. When the QP occupies the subject position, it agrees with the predicate. IP-agreement in Italian allows a null pronoun *pro*. The partitive PP also contains a *pro* with the same features; it can be D-linked or not.

(138) a. Molti [e] [e] sono troppo costosi.
many are too expensive
b. Molte [e] [e] non sanno che . . .
many-Fem.Pl don't know that . . .

In (138a) we see the case of *molti* inflected for masculine plural features. A masculine plural referent must be available from the context. Take, for example, *libri* ('books'). In (138b) a feminine plural referent must be available from the context, e.g., *ragazze* ('girls').

When the QP occupies the object position, as in (139), as well as the postverbal subject position seen in (111–113), the interpretation is limited to human beings. This is due to the fact that in these positions the features of the NP cannot be recovered in Italian and the only possible feature to be attributed to *pro* is the arbitrary human feature (see section 3.2).

(139) a. Ieri ho incontrato molti [e] [e] per la strada.
yesterday have.1Sg met many [people] on the street
b. *Ieri ho letto molti [e] [e] in biblioteca.
yesterday have.1Sg read many [things] in the library

The arbitrary feature is incompatible with D-linking, and the PP can be interpreted only as non-D-linked.

Let us now consider the cases in which only the NP inside the PP is null, but the functional features of either complement are realized. When the DP is overt, the phrase embedded in the partitive PP usually has an empty NP. It can contain a demonstrative and can be modified by a relative clause; in all cases the NP is non-distinct from the NP in the restriction, (140a). If it contains a lexical NP, the result is a redundant construction (140b) (cf. (105)).

(140) a. molti libri di quelli [e] che mi hai consigliato
many books of those that to-me have.2Sg recommended
b. #molti libri dei libri che mi hai consigliato
many books of-the books that [you] to-me have.2Sg recommended

When the DP is realized by *ne*, the partitive PP always contains a pronoun: a demonstrative pronoun, such as *quelli* in (141a) and *questi* in (141b), a focused personal pronoun such as *loro* in (141c), or a relative pronoun such as *cui* in (141d) (also see French (33b, c)).[24]

(141) a. Ne ho letti molti di quelli (che mi hai consigliato).
NE have.1Sg read many of those (that to-me have.2Sg recommended)
b. Ne ho letti molti di questi qui.
NE have.1Sg read many of these here
c. Ne ho visti molti di LORO, non di voi.
NE have.1Sg seen many of them, not of you

d. Quei libri di linguistica, di cui Mario ne ha letti molti,
those books of linguistics, of which Mario NE has read many,
erano piuttosto interessanti.
were very interesting

The focus on the personal pronoun in (141c) guarantees that the PP *di LORO* is not right-dislocated. Right dislocation of the partitive PP is always possible. In that case the PP inside the QP structure is simply empty and interpreted with the features of the right-dislocated overt PP.[25]

When the DP is realized by *ne*, the PP cannot contain a lexical NP. The lexical NP in (142) is excluded by principle C of Binding Theory, since it is co-indexed with and c-commanded by *ne*:

(142) a. *Ne ho letti molti dei libri (che mi hai consigliato).
b. *Ne ho letti molti di quei libri (che mi hai consigliato).
NE have.1Sg read many of-the/of those books (that to-me have.2Sg advised)

In conclusion, the different realization and interpretations of the quantified phrases in (137–142) derive straightforwardly from the assumption that the two arguments of the quantifier are always projected and from the assumption of the non-distinctness requirement, which allows the interpretation of empty elements through a partial co-indexing.

3.3.5 Extraction out of QP

One of the crucial reasons for assuming that Q is a head external to the DP is the fact that these two elements can occur discontinuously, and that the DP appears to move out of a specifier of the Q projection. We observed some cases across languages in (56–62). The configuration in (122) provides such a Specifier position in [Spec, FP], as shown in (122d). The DP can further move out of the FP, as in (122e):

(122) d. $[_{FP}$ DP $[_{F'}$ Q $[_{AgrQP}$ ~~DP~~ [~~Q~~ $[_{QP}$ (PP) $[_{Q'}$ ~~Q~~ ~~DP~~]]]]]]
e. DP . . . $[_{FP}$ ~~DP~~ $[_{F'}$ Q $[_{AgrQP}$ ~~DP~~ [~~Q~~ $[_{QP}$ (PP) $[_{Q'}$ ~~Q~~ ~~DP~~]]]]]]

The trigger of overt DP-movement to and through [Spec, FP] is different across languages. It can be movement to the subject position in search of Case. This can take place only out of universal quantifiers, which do not assign Case to their complement DP. The complement of existential and distributive quantifiers cannot move to a nominative-case-assignment position, since it checks partitive case QP-internally (see section 3.3.1). This explains the contrasts in (143):[26]

(143) a. The boys have all eaten a sandwich.
b. I ragazzi hanno tutti mangiato un panino.
c. *Boys have many eaten a sandwich.

d. *Ragazzi hanno molti mangiato un panino.
e. *Boy has each eaten a sandwich.
f. *Ragazzo ha ciascuno mangiato un panino.

The ungrammaticality of (143d) cannot be reduced to the Italian property of not allowing indefinite subjects in preverbal subject position, since the same pattern is found in English (143c).

We take [Spec, FP] to be the intermediate position for movement out of the quantified phrase. Like the derivation of all other clitic pronouns, *ne*-cliticization can be decomposed into two steps: XP movement followed by X^0-movement (Sportiche 1990; Cardinaletti and Starke 1999: section 6.3). *Ne* is first moved as an XP (DP) to the specifier of AgrQP. In so doing, *ne*, which does not have intrinsic phi-features, receives the phi-features of the quantifier (see Belletti and Rizzi 1996b: 18) (for the agreement between Q and the quantitative DP, see sections 3.2 and 3.3.2 above).[27] *Ne* further moves through [Spec, FP] and through the specifier of the past participle, which triggers agreement on the past participle (see (176a)) (see Kayne 1989a).

Clitic extraction is possible only out of universal quantifiers, which do not assign Case but agree with their complement for phi-features, and existential quantifiers, which assign partitive case to their complement and agree for phi-features. The complement of the distributive quantifier cannot be extracted because of the blocking effect of the distributive operator in [Spec, FP] (see section 3.3.1).

(144) a. Li ho mangiati tutti.
them have.1Sg eaten all
b. Ne ho mangiati molti
NE have.1Sg eaten many
c. *Lo/*Ne ho mangiato ciascuno
it/NE have.1Sg eaten each

In conclusion, [Spec, FP] is a sort of A'-position that functions as an escape hatch for extractions out of quantified noun phrases and hosts material relevant for interpretive procedures which are supposed to take place at LF.[28]

3.4 'Intransitive' quantifiers

Quantified noun phrases can be 'pronominal' in two ways. Quantifiers can embed a covert DP, provided that it is licensed somehow (see section 3.3.4). A second type of 'pronominal' quantifier is that which never appears with a DP, such as *something*, *somebody* in English. In section 2.3.1 we argued against an analysis of the morphemes *-thing* and *-body* as Ns that incorporate to D in the syntax. In our framework, an analysis in terms of N to Q is to be excluded for the same reasons. In the spirit of what we have proposed so far, we consider these quantifiers as 'intransitive', i.e., as not projecting any argument at all, on a

par with (personal) pronouns. The only way these quantifiers can be modified is through predication. This analysis captures the following facts.

In English, the adjectives that modify intransitive quantifiers appear postnominally (145a, b) and can only be those that can appear in predicative position (cf. the contrast between (145a, b) and (145c, d)). Furthermore, intransitive quantifiers combine with *else*, which cannot occur as a prenominal adjective and cannot combine with *other*, which appears prenominally. See the paradigm in (146).

(145) a. I met somebody nice.
b. I bought something good.
c. *I met somebody principal/main.
d. *I must do something principal/main.

(146) a. I saw somebody/something else.
b. *I saw somebody/something other.
c. I saw some other boy/book.
d. *I saw some else boy/book.

Similar arguments can be built for Italian. The adjectives that appear with intransitive Qs can only be those that appear in predicative position (see (147a, b) and (147c); cf. also (47)). Furthermore, they are preceded by *di*, as are predicative adjectives 'floated' from quantified noun phrases with a bare Q (cf. section 3.3.3, example (132)).

(147) a. Ho incontrato qualcuno di importante.
have.1Sg met someone of important
b. Ho mangiato qualcosa di buono.
have.1Sg eaten something of good
c. *Ho visto qualcuno/qualcosa di principale.
have.1Sg seen someone/something of principal

Notice that the occurrence of *di* is obligatory with *qualcosa* (compare (147b) with **Ho mangiato qualcosa buono*), but it is optional with *qualcuno* (compare (147a) with *Ho incontrato qualcuno importante*). (We thank Roberto Zamparelli for pointing this out to us.) This is because intransitive *qualcuno* (but not *qualcosa*) is homophonous with the allomorph *qualcuno* of the quantifier *qualche*, which is found when the argument of the quantifier *qualche* is realized by the clitic pronoun *ne* or by a null DP:

(148) a. Ho letto qualche libro.
have.1Sg read some book
b. Ne ho letto qualcuno [*t*] (di quelli).
NE have.1Sg read some (of those)
c. Ho letto qualcuno [e] di quei libri.
have.1Sg read some of those books

The two instances of *qualcuno* should be kept separate. Intransitive *qualcuno* can only have [+human] referents (on a par with English *somebody* and *someone*), while the allomorph *qualcuno* of *qualche* is also compatible with [–human] referents, such as *book* in (148b, c).

The ambiguous status of *qualcuno* can explain the distribution of *di* in front of predicative adjectives. When *di* on the adjective is present, as in (147a), we have an instance of the intransitive quantifier *qualcuno*; when *di* on the adjective is absent, we have an instance of the quantifier *qualche* with an empty DP, as in (148c). The two structures are provided in (149):

(149) a. Ho incontrato qualcuno di importante.
have.1Sg met someone of important
b. Ho incontrato qualcuno [e] importante.
have.1Sg met someone important

3.5 Conclusions

In this section we have offered a proposal that can capture the various syntactic phenomena that arise with quantified constructions across languages by refining Cardinaletti and Giusti's (1992) and Giusti's (1991a) original proposals on the structure of quantified noun phrases.

We have proposed that a quantifier Q is a lexical head that projects a QP inside which its arguments are merged. Q further projects an intermediate functional projection (AgrP) where the internal argument agrees with Q and checks partitive Case (if Q has such a property). Finally, Q projects a second functional projection (FP) whose Spec is the locus of the interpretation of the entire quantified construction as well as an escape hatch for movement out of the quantified noun phrase.

4 The syntax of quantitative clitics

In this section we focus on quantitative clitics. As we have done with the structure of quantified phrases earlier, we start with a presentation of various proposals that have been made in the course of the last thirty years.[29] First, we discuss whether *ne* is a non-maximal (N′) or a maximal category. The conclusion will be that *ne* is a maximal projection. Three competing analyses of this maximal projection are considered: NP, PP, and DP. We show that the latter analysis is to be preferred over the others.

4.1 Quantitative clitics as N′

Ruwet (1972: 49–50) and Milner (1978b: 49) are the first authors who differentiate quantitative *en* from prepositional *en*. Quantitative *en* cannot be extracted out of a QP occurring in subject position, while this is possible for genitive *en*.

(150) a. Deux/beaucoup de cheminées sont penchées.
two/many of chimneys are leaning
b. *Deux/*beaucoup en sont penchées.
two/many EN are leaning

(151) a. La cheminée de l'usine est penchée.
the chimney of the factory is leaning
b. La cheminée en est penchée.

Quantitative *en* can apparently resume both a definite and an indefinite noun phrase, while genitive *en* can only pronominalize a definite noun phrase (Milner 1978b: 49–50).

(152) a. Les/des livres de Zola, j'en ai lu deux.
the/some books by Zola I EN have read two
b. Ce/*un livre de Zola, j'en ai lu la fin avec plaisir.
this/a book by Zola I EN have read the end with pleasure

On the basis of the differences between quantitative and genitive *en*, Milner (1978b) suggests that the former is an N', while the latter is a maximal projection (N").

Assuming a Simple Noun Phrase Hypothesis as in Selkirk (1977), Belletti and Rizzi (1981) treat Italian *ne* as an N' as well (cf. section 2.2). *Ne* pronominalizes the head noun and its complements, while the quantifier remains in place.

(153) a. Maria conosce tre racconti del nonno.
Maria knows three stories of grandpa
b. Maria ne conosce tre.
Maria NE knows three

A second argument for the N'-status of *ne* is discussed by Rizzi (1979) and has already been mentioned in (40). Assuming a structure like (41) where prenominal APs are under N' and postnominal APs are under N", Rizzi shows that prenominal adjectives cannot be stranded by *ne* cliticization, as shown by the contrast in (154).

(154) a. Ho letto un lunghissimo libro.
b. Ho letto un libro lunghissimo.
have.1Sg read a very-long book
c. *Ne ho letto un lunghissimo.
d. Ne ho letto uno lunghissimo.

In (154c) the adjective must be prenominal, on a par with (154a), since in both cases the quantifier has the reduced form *un*. In (154d) the adjective must be

analyzed as postnominal, since the quantifier displays the full form *uno*, which also appears when the quantifier is bare, as in *Ne ho letto uno* '[I] NE have read one'. According to Rizzi, the contrast between (154c) and (154d) can be explained by assuming that *ne* is an N' and that those elements that are external to N' can be left in place by *ne*-cliticization.

Rizzi's observations are confirmed by the behavior of other kinds of adjective. While in the case of a full NP, the AP can be either prenominal or postnominal, when *ne*-cliticization applies only postnominal adjectives can appear. This is most apparent in the case of adjectives such as *mero* in (155) and *certo* in (156). *Mero* can appear only prenominally and is ungrammatical when *ne*-cliticization applies. *Certo* has a different interpretation according to the position it occupies; in the *ne*-construction, it only has the postnominal interpretation.

(155) a. Si è fatta una mera illusione.
had.3SgFem a mere illusion
b. *Si è fatta una illusione mera.
c. *Se ne è fatta una mera.

(156) a. Hanno dato una certa notizia
have.3Pl given a certain (=particular) piece of news
b. Hanno dato una notizia certa
have.3Pl given a piece of news certain (=sure)
c. Ne hanno data una certa
NE have.3Pl given one certain (=sure)

Despite the reasons seen so far, the N'-analysis of *ne* is not without problems. At the theoretical level, *ne* would represent the only instance of X'-movement. At the empirical level, this analysis encounters problems when different classes of modifiers and arguments of the noun are taken into account.

As noticed by Cinque (1991: 122), postnominal adjectives like *principale* cannot be stranded by *ne*-cliticization. The ungrammaticality of (157c) is unexpected in the analysis in (41) above, unless we assume that *principale*, contrary to other postnominal adjectives, is generated under N'.

(157) a. Gianni ha due ragioni principali per non accettare quel posto.
Gianni has two reasons main to not accept that position
b. *Gianni ha due principali ragioni per non accettare quel posto.
c. *Di ragioni, Gianni ne ha due principali per non accettare quel posto.
of reasons Gianni NE has two main to not accept that position

Another problem for the N'-analysis of *ne* is represented by the arguments of the noun that can be left in situ under *ne*-cliticization. In addition to (153b) and (158), where *ne* stands for both the head noun and its complement, the sentences in (159) are also possible.

(158) a. Di ritratti di mio nonno, ne possiedo due.
b. Di ritratti di Picasso, ne possiedo due.
c. Di ritratti di quel collezionista, ne possiedo due.
of pictures of my grandpa/Picasso/that collectionist NE have.1Sg two

(159) a. Di ritratti, ne possiedo due di mio nonno.
b. Di ritratti, ne possiedo due di Picasso.
c. Di ritratti, ne possiedo due di quel collezionista.
of pictures NE have.1Sg two [e] of my grandpa/Picasso/that collectionist

As shown by Giorgi and Longobardi (1991), the arguments of the noun occupy different structural positions inside the NP depending on their theta-role.

(160) $[_{NP}$ Spec $[_{N'''}[_{N''}[_{N'}$ N^0 internal argument] agent] possessor]]

The apparent possibility of leaving any argument of the noun stranded could lead us to the assumption that *ne* can resume any projection of N, from N^0 to N'''. It is theoretically undesirable that a lexical item stands for different projectional levels. More seriously, the fact that *ne* can stand for the head noun mars the argument built on the non-occurrence of prenominal adjectives with *ne*, seen above in (154), (155), and (156).

4.2 Quantitative clitics as maximal projections

Both problems can be solved by assuming that the quantitative clitic pronoun *ne*, like other clitic pronouns, binds a maximal projection. This proposal is a natural consequence of the hypothesis that quantified nominals are QPs that embed a maximal projection.

The cases in which *ne* seems to bind an intermediate projection of N must be analyzed otherwise. Cinque (1991) and Cardinaletti and Giusti (1992) suggest that the material left in place by *ne*-cliticization is a modifier of the noun phrase, occurring in a postnominal predicative position. Among adjectives, only those that can occur in predicative position can appear in *ne*-constructions (cf. (155) and (156)).

(161) a. *Questa illusione è mera.
this illusion is mere
b. *Ritengo questa illusione mera.
consider.1Sg this illusion mere

(162) a. Questa notizia è certa.
this piece of news is certain (=sure)
b. Ritengo questa notizia certa.
consider.1Sg this piece of news certain (=sure)

This solves the paradox built by the data with the adjective *principale*; it cannot occur with *ne*, as shown in (157c), nor can it appear in predicative constructions:

(163) a. *Le due ragioni di Gianni per non accettare quel posto sono principali.
the two reasons of Gianni not to accept that position are principal
b. *Ritengo questo argomento principale.
consider.1Sg this topic principal

The same proposal should be made for the apparent arguments of the noun in (159) above. They must be considered modifiers of the noun, occurring in the postnominal predicative position. The prediction that they also enter predicative constructions is borne out.

(164) a. Quel ritratto è di mio nonno.
b. Quel ritratto è di Picasso.
c. Quel ritratto è di quel collezionista.
that portrait is of my grandpa/Picasso/that collectionist

The complements that cannot occur as predicates are also ungrammatical with *ne*, as noted by Cinque (1991: 121–122).

(165) a. *Quello studioso è del Petrarca.
that scholar is of Petrarca
b. *Quell'esperto è in microprocessori.
that expert is in microprocessors
c. *Quel ladro era di galline.
that thief was of chickens

(166) a. *Di studiosi, ne stimano anche uno del Petrarca.
of scholars NE estimate.3Pl also one of-the Petrarca
b. *Di esperti, ne hanno assunto uno in microprocessori.
of experts NE have.3Pl hired one in microprocessors
c. *Di ladri, ne hanno preso uno di galline.
of thieves NE have.3Pl caught one of chickens

Cardinaletti and Giusti (1992) also show that a complement clause such as *di risolvere il problema* in (167a) cannot appear as a predicate (167b) and cannot be left stranded by *ne* cliticization (see (167c) vs. (167d)):[30]

(167) a. Ci sono due modi di risolvere il problema.
there are two ways to solve the problem
b. *Questo modo è di risolvere il problema.
this way is to solve the problem

c. *Di modi, ce ne sono due di risolvere il problema.
d. Di modi di risolvere il problema, ce ne sono due.
of ways to solve the problem there NE are two

In conclusion, quantitative clitics bind a maximal projection, not an N'. In what follows we discuss the categorial status of this maximal projection.

4.3 *On the nature of the maximal projection bound by quantitative clitics*

4.3.1 Quantitative clitics as PPs

Contrary to Ruwet (1972) and Milner (1978b) (see section 4.1), Kayne (1975) takes French quantitative *en* to be a prepositional clitic. The argument for this proposal is the fact that *en*, contrary to the nominal object clitics *le/la/les* and parallel to prepositional clitics, is invariable, as shown in (168), and does not trigger past-participle agreement, as shown in (169).[31]

(168) a. Elle le/la/les voit.
she him/her/them sees
b. Il en parle tout le temps, de sa maison/de son travail/de ses problèmes.
he EN speaks all the time of his house/of his work/of his problems
c. Paul a deux sœurs/frères; j'en ai trois.
Paul has two sisters/brothers; I EN have three

(169) a. On l' a mise sur la table (la fourchette).
one it has put-Fem.Sg on the table the fork
one EN has put on the table some forks
b. Il en a parlé(*e) tout le temps, de sa maison.
he EN has spoken (*Fem.Sg) all the time of his house
c. *On en a mises sur la table (des fourchettes).
one EN has put-Fem.Pl on the table some forks
d. On en a mis sur la table (des fourchettes).

Assuming that quantified noun phrases have the underlying form *deux de soeurs*, Kayne (1975) suggests that quantitative *en* pronominalizes the complement *de soeurs*, or more precisely, its pronominal counterpart *de elles*.[32]

Belletti (1979: section 5.3) assumes a similar analysis for Italian *ne*. *Ne* stands for the partitive phrase introduced by *di*. The proposal that *ne* is a prepositional clitic has the advantage of unifying quantitative *ne* with the non-quantitative instances of *ne*, which stand for PPs introduced by *di* (170) or *da* (171). These PPs can be complements to verbs, nouns, and prepositions.

(170) a. Ne ho parlato. (ne = del progetto)
NE have.1Sg spoken (NE = of-the project)
b. Ne ho comprato un ritratto. (ne = della regina)
NE have.1Sg bought a picture (NE = of-the queen)
c. Ne sono rimasto senza. (ne = sigarette)
NE am left without (NE = cigarettes)

(171) a. Ne uscì un uomo. (ne = dalla casa)
NE came out a man (NE = from-the house)
b. Amava Maria e ne era riamato. (ne = da Maria)
loved.3SgMasc Maria and NE was loved back (NE = by Maria)
c. Ne sono finalmente fuori. (ne = da questo incubo)
NE am finally out (NE = of this nightmare)

As in French, Italian quantitative *ne* differs from accusative clitics (172a) and patterns with prepositional *ne* (172b) in that it is invariable. Example (172c) shows that *ne* is not specified for gender; (173) further shows that *ne* is invariable for number: it is compatible with both a singular and a plural left-dislocated noun phrase.[33]

(172) a. Paolo lo/la/li/le detesta.
Paolo him/her/them.Fem/them.Masc hates
b. Ne parla sempre,
NE speaks.3SgMasc
della sua casa/del suo lavoro/dei suoi problemi/delle sue amiche.
of his house/of his work/of his problems/of his girlfriends always
c. Paolo ha due sorelle/fratelli; io ne ho tre.
Paolo has two sisters/brothers I NE have three

(173) a. Di libro, ne ho letto uno.
of book NE have.1Sg read one
b. Di libri, ne ho letto uno.
of books NE have.1Sg read one

If *ne* is a PP that stands for *de elles/di loro*, it pronominalizes the partitive PP complement of Q. But we have argued that *en/ne* binds the quantitative DP and is not the clitic counterpart of the strong pronoun *de elles/di loro* which only realizes the partitive PP. In what follows, we discuss more evidence to show that a PP analysis of quantitative clitics is inadequate.

4.3.2 Quantitative clitics as DPs

Quantitative *en/ne* can co-occur with the PP complement of Q (see (33) and (96b)). This is unexpected if *ne* is a partitive PP:

(174) a. J'en ai lu beaucoup *t* de ceux que tu m'as recommandés.
I EN have read many of those that you to-me have advised
b. Ne ho letti molti *t* di quelli che mi hai consigliato.
NE have.1Sg read many of those that to-me have.2Sg recommended

Second, quantitative *ne* behaves like DPs but unlike PPs in left-dislocation structures. It obligatorily resumes a left-dislocated phrase, as happens with DPs but not with PPs, which are only optionally resumed by a clitic.

(175) a. Di ragazzi francesi, *(ne) ho conosciuti molti.
of boys French, NE have.1Sg met many
b. I ragazzi francesi, *(li) ho conosciuti.
the boys French, them have.1Sg met
c. Di questo libro, (ne) hanno parlato molto bene.
of this book, NE have.3Sg spoken very well
d. Con Maria, (ci) ho parlato ieri.
with Maria, CI have.1Sg spoken yesterday

Third, quantitative *ne* triggers agreement on the past participle, on a par with object clitics and differently from prepositional clitics, including non-quantitative *ne* (in this respect, Italian quantitative *ne* differs from French *en*, see section 4.3.1).

(176) a. Ne ho conosciut*o/i/e
NE have.1Sg met-Masc.Sg/-Masc.Pl./-Fem.Pl
molti/e.
manyMasc.Pl/many-Fem.Pl
b. Li ho conosciut*o/i.
them-Masc.Pl have.1Sg met-Masc.Sg/-Masc.Pl
c. Ne hanno parlato/*a/*i/*e
NE have.3Pl spoken-Masc.Sg/-Fem.Sg/-Masc.Pl/-Fem.Pl.
molto bene.
very well
d. Ci ho parlato/*a/*i/*e
with him/her/them have.1Sg spoken-Masc.Sg/-Fem.Sg/-Masc.Pl/-Fem.Pl
ieri.
yesterday

If accusative object clitics are DPs, the parallel behavior of (175a) and (175b) on the one hand and (176a) and (176b) on the other can be captured by suggesting that *ne* is a DP (Cardinaletti and Giusti 1992). In conclusion, *ne* is the clitic form of the quantitative DP. It is a syncretic form which stands for any number and gender, like the dative DP clitic *gli* in colloquial Italian, which stands for any gender and number (*Gli ho parlato ieri* [I] to him/to her/to them have spoken yesterday). This conclusion can be extended to French *en*. In this view, the contrasts in (168) and (172) are not arguments against a DP analysis of quantitative clitics.

The fact that French *en* does not trigger past-participle agreement (see (169)) can then no longer be considered as an argument for its PP status. It can be explained along the lines suggested by Belletti and Rizzi (1996b: 18). The difference between Italian and French with respect to past-participle agreement with quantitative clitics is the result of a parametric choice: Italian *ne* can contain phi-features, while French *en* cannot. While moving through [Spec, QP] (see n. 27), Italian *ne* can receive the phi-features of the quantifier, and the successive movement through the specifier of the past-participle projection triggers agreement on the past participle. The derivation of French *en* is the same, the only difference being that *en* cannot inherit the features of the quantifier while moving through [Spec, QP].

4.3.3 Quantitative clitics as NPs

There are, however, two respects in which *ne* differs from accusative and dative object clitics, namely, binding properties and co-occurrence with relative clauses. These properties have led Belletti (1993a: 115, n. 34) and Cinque (1991: n. 7) to analyze *ne* as an NP, not a DP. We show below that these asymmetries are only apparent, and that *ne* can be safely analyzed as DP on a par with the other (accusative and dative) object clitics.

Quoting Cresti (1993), Belletti observes that quantitative *ne* obeys principle C of Binding Theory, disallowing binding from a c-commanding DP (cf. Cresti 2003: 87).

(177) *[Gianni e Mario]$_i$ mi hanno chiesto di riceverne$_i$ almeno uno
Gianni and Mario to-me have.3Pl asked to meet.NE at least one
prima delle undici.
before eleven

In this respect, quantitative *ne* differs from DP clitics (accusative and dative), which obey principle B of the Binding Theory, (178), and behaves like non-quantitative instances of *ne*, which are PPs and are excluded in c-command contexts; compare the contrast between (179a) and (179b).[34]

(178) a. Gianni$_i$ sostiene che Maria lo$_i$ conosce.
Gianni claims that Maria him knows
b. Gianni$_i$ sostiene che Maria gli$_i$ parlerà.
Gianni claims that Maria to-him will-talk

(179) a. *Gianni$_i$ sostiene che Maria ne$_i$ parla spesso.
Gianni claims that Maria NE talks often
b. Maria deve essere innamorata di Gianni$_i$ perché ne$_i$ parla sempre.
Maria must be in love with Gianni because NE talks always

Notice, however, that quantitative *ne* is also ungrammatical in a context where it is not c-commanded by its antecedent. In this respect, (180) differs from (179b).

(180) *Maria deve essere innamorata di [Gianni e Mario]$_i$ perché vuole riceverne$_i$ almeno uno prima delle undici.
Maria must be in love with Gianni and Mario because [she] wants to meet.NE at least one before eleven

The ungrammaticality of (180) cannot be due to a violation of Binding Theory, but only to the fact that *ne* cannot pronominalize a definite DP. The same explanation holds for (177). Definite DPs can only be pronominalized by the strong form *di loro*, as shown by (181), the grammatical counterparts of (177) and (180):

(181) a. [Gianni e Mario]$_i$ mi hanno chiesto di ricevere almeno uno di loro$_i$.
Gianni and Mario asked me to meet at least one of them
b. Maria deve essere innamorata di Gianni e Mario$_i$ perché vuole ricevere almeno uno di loro$_i$ prima delle undici.
Maria must be in love with Gianni and Mario because [she] wants to meet at least one of them before eleven

If so, binding-theoretic data cannot be used to argue against the DP analysis of *ne*.[35] Incidentally, note that these data support the proposal made above that *ne* is not the pronominal counterpart of the partitive PP.

Cinque (1991: n. 7) proposes the same as Belletti on the basis of the fact that *ne* can co-occur with a relative clause, while accusative and dative object clitics cannot.

(182) a. Di libri, ne ho letti due di cui non ricordo ora il titolo.
of books NE have.1Sg read two of which [I] not remember now the title
b. *I libri di Gianni, li ho letti di cui non ricordo
the books of Gianni them have.1Sg read of which not remember.1Sg
ora il titolo.
now the title

Assuming that relative clauses are adjoined to DPs, Cinque explains the ungrammaticality of (182b) by proposing that accusative and dative object clitics are DPs, and that in the case of adjunctions, the biggest DP is pronominalized. The grammaticality of (182a) follows if quantitative *ne* is an NP (this assumption is independently necessary in Cinque's analysis since he takes quantified noun phrases to be DPs, not QPs).

There is a major objection to this reasoning. *Ne* can also pronominalize a noun phrase that contains a relative clause:

(183) Di libri di cui non ricordo ora il titolo, ne ho letti due.
of books of which not remember.1Sg now the title, NE have.1Sg read two

The proposal that *ne* is an NP cannot account for (183); in this case it is presumably a DP. We would thus end up with two different analyses of quantitative

ne: NP in (182a) and DP in (183). This has the disadvantage of attributing different categories to one and the same lexical item, as noticed in section 4.1 for the co-occurrence of *ne* with (apparent) arguments of the noun. Furthermore, in an anti-symmetric view of relative clauses, *ne* in (183) should correspond to the whole relative CP embedded under the quantifier, making the categorial status of *ne* even more problematic. Leaving open the question of the correct analysis of relative clauses, we conclude that these data cannot be used as counter-arguments to the hypothesis that quantitative *ne* is a DP.

4.4 Quantitative **er** *in Dutch*

In Dutch, quantitative *er* (184a) is homophonous to prepositional (184b), locative (184c), and expletive (184d) *er* (examples from Bennis 1986: section 3.2).

(184) a. Ik heb **er** twee gekocht.
I have ER two bought
b. Ik heb met hem [**er** over] gesproken.
I have with him there about talked
c. Jan woont **er** nog maar kort.
Jan lives there only briefly
d. **Er** kocht niemand een boek
there bought nobody a book

As for French *en* and Italian *ne*, the question arises as to whether quantitative *er* is to be analyzed as having the same categorial status as the other instances of *er*.[36] Van Riemsdijk (1978a: 197) observes that quantitative *er* differs from the prepositional *er* found in PPs such as (185) (from Van Riemsdijk 1978a: 87) in that it can never occur inside its own projection and does not have a [+WH] counterpart; see (186).

(185) a. vlak er na
right there after
b. Waar heb je op gerekend?
where have you on counted?
'What did you count on?'

(186) a. *de verwoesting van er [drie *e*]
the destruction of ER three
'the destruction of three of them'
b. *Waar heb je [drie *e*]?
where have you three?
'Of what do you have three?'

Bennis (1986: 177) further points out that quantitative *er* differs from both prepositional and locative *er* in that it is not related to a paradigm of R-pronouns;

see (187). Quantitative *er* cannot be replaced by other R-pronouns such as *hier* and *daar*.

(187) a. *Ik heb **hier** gisteren [twee *e*] gekocht.
I have here yesterday two bought
b. *Ik heb **daar** haar [veel *e*] gegeven.
I have there to-her many given

Furthermore, quantitative *er*, as opposed to prepositional, locative, and expletive *er*, cannot occur in sentence-initial position (Bennis 1986: 177).

(188) a. *Er zijn [twee *e*] verschenen.
ER are two appeared
b. *Er hebben enkele mensen haar [twee *e*] gegeven.
ER have some people to-her two given

These properties suggest that quantitative *er* is different from the other instances of *er*, which are presumably pro-PPs.[37]

Blom (1977) analyzes quantitative *er* as an N′. This proposal is also adopted by Bennis (1977) and Van Riemsdijk (1978a). Quantitative *er* does not occur with the head noun (189a), nor with prenominal adjectives (189b). It does, however, occur with relative clauses and postnominal adjectives, see (190).

(189) a. Ik heb (*er) drie boeken gekocht.
I have ER three books bought
b. Ik heb (*er) nog drie gele.
I have ER still three yellow
'I still have three yellow ones.'

(190) a. Ik heb er drie die vol zitten met luizen.
I have ER three that full sit with lice
'I have three that are full of lice.'
b. Ik kocht er een/'n groot.
I bought ER one big

On a par with the material left stranded by *ne*-cliticization in Italian, relative clauses and postnominal adjectives, as in (190), can be analyzed as predicative modifiers of the noun. As pointed out in Cinque (1991: 123), the postnominal adjective in (190b) has the same non-agreeing form that is found with predicative adjectives, (191a), not the agreeing form found with prenominal adjectives, as in (191b) (cf. **Ik kocht er een/'n grote* and (189b)).

(191) a. De tafel is groot.
the table is big
b. Een/'n grote tafel
a big table

In line with the proposal made for French *en* and Italian *ne*, we take Dutch existential quantifiers to combine with a quantitative DP and a partitive PP. *Er* pronominalizes the DP complement of the quantifier.

As in Italian, Dutch *er* can co-occur with a partitive PP, as in (192a). However, the partitive PP cannot contain an overt noun, in which case only an empty category can occur. Compare (192b, c) with Italian (142).[38]

(192) a. Ik heb er twee gekocht, van degene die je me aangeraden had.
I have ER two bought of those that you to-me advised had
b. Ik heb (*er) [twee *e* van deze boeken] gekocht.
I have ER two of these books bought
c. [Twee *e* van die boeken] heb ik (*er) gisteren gekocht.
two of those books have I ER yesterday bought

The PP introduced by *van* can also be analyzed as an adjunct partitive PP (on a par with the PP introduced by *tra* or *di* in Italian, see (101), (102), (103)). It can be separated by the quantified noun phrase and appear in the Middlefield or in sentence-initial position, as in (193) (Bennis 1986: 199; 251, n. 8). In this case, *er* is obligatory, differently from (192b, c), which contains a true partitive PP:

(193) a. Ik heb van die boeken *(er) gisteren [twee *e*] gekocht.
I have of those books ER yesterday two bought
b. Van deze boeken heb ik *(er) [twee *e*] gekocht.
of these books have I ER two bought

The adjunct partitive PP can also follow the quantified noun phrase. This is shown by the following sentence, where *er* can bind both the quantitative DP and the R-position inside the PP with *van* (Bennis 1986: 199).

(194) Ik heb er gisteren [twee *e*] [t van] gekocht.
I have ER yesterday two of bought

Sentence (194) displays the phenomenon of haplology, i.e., the peculiar property that one surface realization of *er* can bind more than one syntactic position. Quantitative *er* can be combined with expletive, prepositional, and locative *er*; see (195). It can also bind the empty category of two quantified noun phrases, one in subject position and one in object position; see (196) (Bennis 1986: section 3.2.5).

(195) a. **Expletive + quantitative**
dat er niemand [twee *e*] gekocht heeft
that ER nobody two bought has
b. **Quantitative + prepositional**
dat Jan er [twee *e*] [t over] gelezen heeft
that Jan ER two about read has

c. **Quantitative + locative**
Jan zou drie weken van zijn vakantie in Italië doorbrengen.
Jan would three weeks of his holidays in Italy spend,
maar uiteindelijk heeft hij er maar [twee *e*] *t* doorgebracht.
but eventually has he ER only two spent

d. **Expletive + quantitative + prepositional**
dat er niemand [drie *e*] [t over] geschreven heeft
that ER nobody three about written has

e. **Expletive + quantitative + locative**
dat er nog maar [twee *e*] *t* woonden
that ER yet only two lived

(196) dat er [twee *e*] [één *e*] gekocht hebben
that ER two one bought have

Although, as far as we know, it was never pointed out before, haplology is also marginally found in Italian, as shown by the following sentence: *ne* stands for both the quantitative clitic extracted from the postverbal subject, and the pleonastic clitic pronoun that obligatorily occurs with the idiomatic reflexive usage of the motion verb, namely *andarsene* ('go away').

(197) Se ne sono andati via [molti *t*].
Refl NE are gone away many
'Many of them went away.'

5 Conclusion

In this chapter we have analyzed quantified noun phrases and quantitative clitic pronouns. Our conclusions can be summarized as follows.

(i) Expressions of quantity can be realized by different lexical categories, only one of which we label Q. We have also found quantity adjectives, which behave as a separate class of modifiers of the noun. It is likely that other categories can also express quantity (e.g., Ns, although this has not been investigated here).

(ii) Qs are external to the DP contained in the quantified expression. Qs are heads that project their own maximal projection, QP.

(iii) Different classes of Qs have been identified which combine with different phrases. Existential Qs combine with a quantitative DP, which checks partitive case, and a partitive PP. Distributive Qs combine with a quantitative DP, which checks partitive case, a partitive PP, and a distributive operator (OP). Universal Qs combine with a definite DP.

(iv) These properties can be conceived of as selectional properties of quantifers. If Qs have selectional properties, they can been analyzed as lexical heads.

(v) The partitive PP selected by existential and distributive Qs must be distinguished from 'adjunct' partitive PPs, which can co-occur with any type of noun phrase, and from 'qualitative' PPs, which are NP adjuncts and can also co-occur with any type of noun phrase (see n.13).
(vi) Quantitative clitics bind a maximal, not an intermediate, projection. This projection is the quantitative DP.

NOTES

This chapter has been conceived as a work for four hands from beginning to end. However, for every legal requirement Giuliana Giusti is responsible for sections 1–3.1 and Anna Cardinaletti is responsible for sections 3.2–4. We are indebted to Roberto Zamparelli for comments and constructive criticism on a preliminary version of the chapter.

1 On the grammar of partitive constructions of this type, see Kayne (1994), Corver (1998), Den Dikken (1998a), Vos (1999), and the references quoted there.
2 Postverbal subjects of unaccusative verbs behave like objects, as expected.

(i) a. Sono passate tre settimane.
are elapsed three weeks
b. Ne sono passate tre.
c. *Sono passate tre [*e*].

With postverbal subjects of transitive and intransitive verbs, neither *ne* nor PRO is possible, the former because it is governed by the verb, the latter because of a violation of subjacency.

(ii) a. Hanno parlato tre ragazze.
have spoken three girls
b. *Ne hanno parlato tre.
c. *Hanno parlato tre [*e*].

In PPs, *ne* is ungrammatical, and the null category is very marginal:

(iii) a. Mi sono concentrato su alcuni problemi.
[I] concentrated on some problems
b. *(Di questi problemi,) me ne sono concentrato su alcuni.
(of these problems) [I] NE concentrated on some
c. ?(Di questi problemi,) mi sono concentrato su alcuni [*e*].
(of these problems) [I] concentrated on some [*e*]

Example (iiib) represents a violation of subjacency; PRO in (iiic) is marginally accepted due to the non-governing nature of the preposition. We refer to Belletti and Rizzi (1981) for details.
3 This generalization is only apparently contradicted by the English gloss. See section 3.1 for discussion.

4 Example (63) shows that number agreement between the quantifier and the DP can be suspended, depending on the selectional properties of the quantifier (cf. section 3.3.2 for the agreement properties of quantifiers and their complement). Cf. Quirk et al. (1985: 759) where it is noticed that in this case the predicate is singular, as in *many a member has protested against the proposal*. When the NP is a coordinate structure, both singular and plural agreement give marginal results (1985: 959) ?*many a boy and girl is/are left homeless*.

5 The structure in (65b) can also capture the Ladin data brought about in (92).

6 The data in (69) can be reproduced in many European languages, for example in Italian. Notice that (ib) is perfectly acceptable, while its counterpart (69b) is marginal for some English speakers:

(i) a. I molti/tre/parecchi/*gli alcuni studenti che conosco sono tutti pigri.
b. Gli studenti che conosco sono molti/tre/parecchi/*alcuni.

7 They do not display the *-n* ending, as shown here for *beide*:

(i) a. Beide Kinder sind da.
b. Both children are here.

The lack of a determiner following the quantifier *beide* in (ia) is explained by Giusti (1993: 103) as follows. The determiner incorporates into the quantifier and thereby triggers the determiner-like morphology on the quantifier. The covert presence of the determiner in (ia) is supported by the fact that when the DP is extracted out of the quantifier, as in (iia), the determiner must be overt:

(ii) a. $[_{DP}$ Die Kinder] sind $[_{QP}[_{DP}$ t'] $[_{Q}$ beide $[_{DP}$ t]] da.
b. $[_{DP}$ The children] are $[_{QP}[_{DP}$ t'] $[_{Q}$ both $[_{DP}$ t]] here.

It is reasonable to extend the same analysis to English (ib) and (iib).

8 Also see the discussion of (95).

9 Cf. Giusti (1991b, 1993, 1995) for a detailed discussion.

10 In considering the following Romanian examples, one must keep in mind that the enclitic article in Romanian appears on the leftmost lexical head in the DP; see Grosu (1988) and Giusti (1993), among others.

11 Zamparelli is not clear whether the weak–strong distinction is obtained through different merging points, through movement from PD to SD, or whether the two options are both possible and, in this case, what would make either choice operative in different cases.

12 Take, as an example, a diadic verb such as *scrivere* ('write') in (i). Even when the internal argument is not projected, it is understood as an undetermined object. The same is true for the goal argument of a diadic verb such as *regalare* ('give a present') in (ii).

(i) a. Ho scritto una lettera a Maria.
b. Ho scritto a Maria.
have.1Sg written (a letter) to Maria

(ii) a. Ho regalato un libro a Maria.
have.1Sg presented a book to Maria
'I presented Maria with a book.'
b. Ho regalato un libro.
'I gave a book as a present.'

13 R. Zamparelli (p.c.) points out that definite and universally quantified DPs can sometimes co-occur with a PP introduced by *di*, as in (i), on a par with quantified DPs, as shown in (ii):

(i) Mi piacciono (tutti) i libri [di quelli che si leggono velocemente].
to me please all the books of those that can be read quickly
'I like the books that can be read quickly.'

(ii) Ho comprato dieci libri [di quelli che si leggono velocemente].
have.1Sg bought ten books of those that can be read quickly

The PP introduced by *di* in (i) and (ii) differs, however, from the PP introduced by the same preposition in (100a). In (i), the *di*-PP does not get a partitive, but a 'qualitative' interpretation. Example (i) can be paraphrased as *Mi piacciono (tutti) i libri del tipo che si legge velocemente*, 'I like (all) the books of the type that can be read quickly'. This PP can be analyzed as a modifier of the noun *libri*, unrelated to the QP.

There are other empirical reasons to believe this. The 'qualitative' PP is compatible with any type of DP. Furthermore, the 'qualitative' PP cannot be left-dislocated on its own, but only together with the DP:

(iii) a. *[Di quelli che si leggono velocemente] ne ho comprati dieci.
of those that can be read quickly NE have.1Sg bought ten
b. Libri di quelli che si leggono velocemente ne ho comprati dieci.
books of those that can be read quickly NE have.1Sg bought ten

In this respect, it crucially differs from the adjunct partitive PP in (102).

This 'qualitative' PP, which contains a kind-denoting plural, is also found in the English expression *many of them* in contexts like (iv) (from Cresti 2003: 83), and differs from the partitive PP in the homophonous *many of them* in contexts like (v).

(iv) Late homework assignments are impossible to grade, and there are many of them.

(v) I bought a hundred books, and I have read many of them.

Cresti (2003: n. 11) points out another possible reading of English *many of them* where *of them* has the same interpretation as Italian quantitative *ne*:

(vi) John has few friends, but Mary has many of them.

We take the last instance of *of them* as the pronominal version of the quantitative DP, in which the preposition *of* realizes partitive case (see section 3.3.1). This appears not to be possible in Italian, which only realizes Partitive case with the preposition *di* when the quantifier is not overt or in a non-local relation with its complement (see section 3.3.3).

14 The sentence in (i) with *ne* is also ungrammatical. *Ne* cannot be extracted from a postverbal subject (see section 2.2):

(i) *Ieri *ne* hanno telefonato tre/ molti/ uno/ una.
yesterday NE have telephoned three/ many/ one-Masc.Sg one-Fem.Sg.

15 But, of course, (113b) can be felicitous in a context in which human beings make nests, for example, in order to attract migrating birds into their gardens.

16 The distributive operator OP could be merged as the third argument of the Q in a 'QP-shell' lower in the structure and later merged to [Spec, FP] to get scope over the rest of the quantified phrase.

17 Universal quantifiers must be assumed to be transparent and to transmit the case assigned to their projection.

18 This proposal has been previously made by Pesetsky (1982).

19 Examples (129) and (130) are both taken from Enç (1991: 6).

20 The cases in which the preposition *di* is absent, as in (i), must be analyzed as Hanging Topic constructions, where the hanging topic, which occurs in first position on the left-edge of the sentence, is marked nominative by default (Cinque 1990c):

(i) Ragazzi, ne ho visti molti.
boys, NE have.1Sg seen many

In cases in which the peripheral DP cannot be analyzed as a Hanging Topic, *di* is obligatory. This is the case in (134b) since there is no Hanging Topic on the right-edge of the sentence, and in (ii), where the quantitative DP is embedded and therefore can only be analyzed as left-dislocated.

(ii) a. Gianni, *(di) libri, ne ha letti pochi.
Gianni, of books, NE has.3Sg read few
b. Il fatto che *(di) libri, ne abbia letti pochi, . . .
the fact that of books, NE has.3Sg read few
c. Mi dispiace che *(di) libri ne abbia letti pochi.
[I] regret that of books, NE has.3Sg read few

21 The definiteness requirement of the PP is known in the literature as the 'Partitive constraint' (see Ladusaw 1982; Wilkinson 1991a; Hoeksema 1996; Barker 1998; de Hoop 1997, among others, for discussion). In our framework, this semantic property can be encoded in the argument structure of (existential and distributive) quantifiers.

22 This co-indexing should be kept distinct from Binding, since Binding applies to full DPs and rules their referential interpretation.

23 The phrase embedded in the partitive PP can contain a lexical NP, preceded by a determiner or a demonstrative, as in (137), or can contain a pronoun (a pronominal demonstrative or a personal pronoun), as in (i):

(i) a. molti [e] di quelli
b. molti [e] di loro
many of those/them

In this case, the content of the lexical NP is recovered from the context.

24 Our analysis of (141d) differs from Belletti's (1979: 1559), according to which *di cui* is left-dislocated and resumed by *ne*.

25 In Italian, it is always possible to left- or right-dislocate a PP, with no resumptive pronoun, cf. Cinque (1990c: chapter 2) for the distribution of resumptive clitics in left-dislocation constructions.

26 The following sentences, where *each* and *ciascuno* combine with a definite plural DP in subject position, should not be analyzed as 'floating' structures, but as containing a small clause whose subject is controlled by the definite plural DP and quantified by the quantifier (cf. Sportiche 1988: 440).

(i) a. The boys have each eaten a sandwich.
b. I ragazzi hanno ciascuno mangiato un panino.

27 Belletti and Rizzi (1996b) assume that agreement takes place in the specifier of QP. Given the more elaborated structure proposed in (122) above, it is natural to assume that agreement takes place in [Spec, AgrQP].

28 Parallel to Campbell's (1996b) proposal to analyze [Spec, DP] as the locus relevant for interpretation, we propose here that the [Spec, FP] projected by Q is where the semantics of the quantified noun phrases is processed at LF.

29 For previous analyses of French *en*, see, among others, Kayne (1975), Haïk (1982), and Pollock (1986).

30 Sentence (167c) can be marginally acceptable for those speakers who can reinterpret the infinitival introduced by *di* as a purpose clause usually introduced by *per*, as shown in (ia). This possibility also arises with the overt noun in (167a), as shown in (ib):

(i) a. Di modi, ce ne sono due per/?di risolvere il problema.
of ways there NE are two to solve the problem
b. Ci sono due modi, per/?di risolvere il problema.
there are two ways to solve the problem

The occurrence of the prepositional complementizer *per* guarantees that the infinitival clause is not a complement of the noun *modo*, since in Italian this preposition introduces a purpose (infinitival) clause.

31 *En* triggers past participle agreement in some French varieties (Grevisse 1986: section 910).

32 In a framework that allows deletion operations, Kayne assumes that the preposition *de* is deleted in order to get the grammatical *deux sœurs*.

33 Milner (1978b: 138) notes for French that left- and right-dislocation behave differently in this respect. Agreement in number is required in right-dislocation. His data can be reproduced in Italian.

(i) a. De cheval/chevaux, j'en ai un.
of horse/horses, I NE have one
a′. Di cavallo/cavalli, ne ho uno.
of horse/horses, NE have.1Sg one
b. De ?cheval/chevaux, j'en ai deux.
of horse/horses, I NE have two
b′. Di *cavallo/cavalli, ne ho due.
of horse/horses, NE have.1Sg two

(ii) a. J'en ai un, de cheval/*chevaux.
I NE have one, of horse/horses
a′. Ne ho uno, di cavallo/*cavalli.
NE have.1Sg one, of horse/horses

b. J'en ai deux, de *cheval/chevaux.
I NE have two, of horse/horses

b'. Ne ho due, di *cavallo/cavalli.
NE have.1Sg two, of horse/horses

34 For similar binding facts of French *en*, see Ruwet (1990) and Lamiroy (1991a, b).

35 As observed by Lamiroy (1991a: 411, n. 6) and (1991b: 43), French *en* does not show any anti-reflexive effect.

(i) Cet/un homme$_i$ en$_i$ vaut un autre.
this/a man EN is worth another
'This/a man is worth any other man.'

She concludes that *en* does not enter coreference relationships and is exempted from the Binding Theory.

36 Bennis (1986: 251, n. 10) notes that "all proposals concerning quantitative *er* explicitely or implicitely consider quantitative *er* to be homonymous with the weak form of the R-paradigm which we find with prepositional and locative *er*." However, "historically, quantitative *er* developed from a different source, a genitive form of the third person singular, *iro*."

37 The fact that quantitative *er* cannot occur in specifier positions (PP-internally, (186a), and in sentence-initial position, (188)) might suggest that it differs from the other instances of *er*, not only in categorial status but in another respect as well. Since specifier positions are excluded to clitic pronouns (Cardinaletti and Starke 1999), quantitative *er* can be taken to be a clitic pronoun, while the other instances of *er* can be weak pronouns.

38 In contrast with Italian, Dutch allows for an empty category to co-occur with a prenominal agreeing adjective, in which case *er* is ungrammatical. See (189b) and (i):

(i) Ik heb (*er) [een rode *e*] gekocht.
I have ER a red bought

Examples (189b) and (i) are possible because Dutch is similar to other Germanic languages in allowing an empty NP inside the quantified noun phrase even if it is not resumed by a quantitative clitic. Compare (i) with the parallel German example in (ii).

(ii) Ich habe ein rotes [e] gekauft.
I have a red [one] bought

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1 Introduction

The foundational issues for a correct account of temporal talk in natural language appear uncontentious: we exploit an ontology countenancing temporal entities (time points, time intervals, and/or events) to serve as the referents of such phrases as *at three*, *when John arrived*, etc., and of the variables appearing in temporal quantification: *often*, *always*, *seldom*, etc. Those entities are organized in a natural sequence by the earlier-than/later-than relation, which also turns out to be useful to account for our intuitions about the meaning of tenses – e.g., 'past' contributes that the relevant event/time is before the speech/utterance time – and of such phrases as *John left after his sister entered*. The resulting temporal structures seem so natural and intuitive that linguists almost never question them. All we have to do is to use it to discover how temporal reference is managed by language.

However, another view about time in language (and time in general) has exercised scholars for years, originating from concerns expressed by philosophers. According to its proponents, we can, and actually must, dispense with temporal entities, hence with temporal reference. Our temporal talk cannot be analyzed on the model of objectual talk by positing temporal entities ordered by the earlier-than/later-than relation, which, e.g., *Thursday* or *May* can draw their reference from, or which tenses relate. The correct approach, it is maintained, requires taking the very idea of tensed thoughts/propositions seriously, meaning that the latter are intrinsically tensed and that tense cannot be explained away by means of precedence.

Though not popular among linguists, such a view has been recently revived and sharpened by Ludlow (1999), who proposes a view that strikingly differs not only from 'strictly' referential approaches, but from those based on so-called *temporal logics* too.

Preference for one over the other account has profound effects on linguistic theory. In the one case, we expect to avail ourselves of the machinery made available to semantics and syntax by the referential view, which includes objectual quantification, referential anaphora, and the referential view of indexicality. If the other path is followed, many of those tools are useless, and something new must be devised. The differences are not limited to semantics, but involve syntax. If we execute the non-referential approach by means of temporal operators for tenses, then *de re/de dicto* distinctions become crucial. Those, in turn, are usually taken to rely on syntactic operations, which interact with many other such devices, so that evidence in favor or against can be gathered and assessed on syntactic grounds. Similarly, we will see that the two views exploit different syntactic structures for temporal locating phrases such as *next May* or *the Sunday you left*.

The purpose of this chapter is to stimulate a critical attitude toward issues of temporal reference in linguistic theory, discuss the two alternative views, and start some comparative work. In a way, it is about time to do so. Ludlow's attempt at making the non-referential, tensed view play a role in the linguistic arena makes it possible to lay down, compare, and discuss the prospects of actual proposals. At the same time, the present work cannot aim at exhausting the comparative work. The difference between the two approaches in terms of available analyses and effort spent by scholars is too big to permit fair comparative assessments. We will be content if a picture emerges which highlights relative weaknesses and strengths of the two views, and if topics to be inserted in the research agenda can be found.

We will proceed as follows. In section 2 we provide a cursory review of the basic tenets of the tense-logical approaches. These have the interesting property of exemplifying many of the problems non-referential views have to address, despite the fact that they still rely on ontology of time points, intervals, and the likes. The shortcomings of tense-logical theories have been taken to provide support for fully referential views, which will be the topic of section 3, where phenomena such as the syntax of tenses, sequence of tense, and temporal locating

phrases will be discussed. Special emphasis will be placed on the Reichenbachian and on the neo-Reichenbachian view. In section 4 we turn to the non-referential, tensed view, by presenting Ludlow's proposal in some details. To facilitate comparisons, we will focus on the same set of phenomena discussed in section 3, investigating how they can be dealt with in a tensed framework.

2 Tenses as sentential operators

Tense logical approaches to time in natural language (cf. Prior 1967; Montague 1974) consider tenses as sentential operators, which apply to basic (untensed) sentences to yield other, tensed sentences. Semantically, they shift the evaluation time of a sentence to the past or to the future. In the cases we are going to consider, the evaluation time always coincides with the time of the utterance, symbolized by *u*.

Consider the following examples:

(1) a. John saw Mary.
b. P[see(John, Mary)]

(2) a. John will see Mary.
b. F[see(John, Mary)]

The logical form for (1a) is (1b), where P is the operator for past. Analogously, in the case of a future tense verb (*will see*), the operator is F. A possible model for this logic is a triple M = (T, <, V) where T is a set of moments of time, < is the binary relation earlier than on T, and V is the interpretation function which assigns a truth-value $V_t(\phi)$ to each propositional formula ϕ and to a moment of time $t \in T$. The relevant truth-conditions for the operators P and F are given in (3a) and (3b), respectively:

(3) a. $V_{M,t}(P\phi)$ = true iff there is t', t'<t and $V_{M,t'}(\phi)$ = true.
b. $V_{M,t}(F\phi)$ = true iff there is t', t<t' and $V_{M,t'}(\phi)$ = true.

That is, $P\phi$ is true at the evaluation time t with respect to a model M iff there is a time t' which is past with respect to t, and ϕ is true at t' with respect to M. Analogously, $F\phi$ is true at the evaluation time t, with respect to a model M iff there is time t' which is in the future with respect to t, and ϕ is true at t' with respect to M. Applying (3) to (1) and (2), we obtain (4):

(4) a. $V_{M,t}$ (P('John see Mary')) = true iff there is t', t'<t and $V_{M,t'}$ ('John see Mary') = true.
b. $V_{M,t}$ (F('John see Mary')) = true iff there is t', t<t' and $V_{M,t'}$ ('John see Mary') = true.

That is, *John saw Mary* is true at a time t iff there is a time t′ which precedes the time of the utterance and the untensed proposition 'John see Mary' is true at t′. On the other hand, *John will see Mary* is true when uttered at a time t iff there is a future time t′ such that p='John see Mary' is true at t′. As can be seen from (3), both F and P have an existential flavor, in that their truth-conditions require the existence of a time at which the proposition they apply to is true. Classical Priorean tense logic also includes the corresponding universal operators G and H, where Gϕ can be paraphrased as 'in the future it will always be the case that ϕ', and Hϕ as 'in the past it has always been the case that ϕ'.

Importantly, tense operators can be combined to yield more complex configurations. Such a possibility has been exploited to capture the meaning of compound tenses such as the English pluperfect, which could be seen as the composition of two past operators, PP, and of the future perfect, represented as PF.

The tense operator approach has been criticized from both an empirical and a theoretical point of view. We will consider some of these criticisms, namely those discussed by Enç (1986), and others arising from observations originally made by Kamp (1968).

If tenses are operators, we expect them to exhibit scope properties analogous to those of other operators and quantified expressions, such as DPs. Consider (5) (cf. Enç 1986: ex. 3):

(5) All rich men were poor children.

The meaning of (5) can be paraphrased as in (6):

(6) All rich men (past and present ones) were at a previous time poor children.

The logical forms for (5) are given in (7):

(7) a. $\forall x$ (rich-man(x) $\wedge$ P(poor-child(x)))
b. P($\forall x$ (rich-man(x) $\wedge$ poor-child(x)))

The verb *were* instantiates a past operator *P*. Furthermore, in (5) the universally quantified DP *all rich men* appears. Given that operators manifest scope properties, we expect the temporal operator *P* to interact with the quantified DP, each possibly taking scope on the other. Consider the case where the universal quantifier has wider scope, thus yielding (7a). The corresponding proposition is true iff for every *presently* rich man x there is a past time at which x is a poor child. This is not the meaning of (5), according to our intuitions, because it takes into account only presently rich men. If we let the tense operator take scope over the universal operator, (7b) is obtained, a proposition which is true iff there is a past time t such that every man who is rich at t is also a poor child at the same past time. Again, we are far from the meaning of (5) as expressed by (6). Thus, both scope possibilities fail to capture (5), and it seems that a standard account of the scope interactions of a tense operator with quantified expressions does not suffice

to obtain the correct result (for more recent work about the temporal properties of noun phrases, see Musan 1995).

It also has been observed that tense operators introduced by verbal morphology are not sufficient to account for some interpretive facts. Consider, for example, the following sentence (Enç 1986: ex. 13):

(8) Every fugitive is now in jail.

The operator approach assigns (8) the following meaning:

(9) Every x who is now a fugitive is presently in jail.

Example (8), however, is an assertion about past fugitives who are presently in jail. The correct truth-conditions are exemplified by (10):

(10) $\forall x$ ((P(fugitive(x))) $\wedge$ in-jail(x))

To obtain (10), it must be assumed that the past tense operator P is instantiated by the subject DP. Notice in fact that the verbal tense is present and therefore cannot be the verb which instantiates the operator. Moreover, the scope of the operator should not include the predicate and should be restricted to the subject. Generally, however, tense operators are introduced by tense morphemes related to the verbs and have the predicate in their scope. In (8) and similar cases, there is no such past tense morpheme – that is, there is no morphosyntactic evidence of its presence and there is no obvious way to constrain the scope of this operator to the DP. In principle, in fact, an operator associated with the DP could take scope over the whole sentence. In this case we would obtain (11):

(11) $\forall x$ (P(fugitive(x) $\wedge$ in-jail(x)))

Example (11) is true iff everyone who was a fugitive at a past time was in jail at the same time. Again, such a reading is not the correct one. Therefore the hypothesis according to which DPs introduce tense operators does not make the correct predictions, because the scope properties of such operators are anomalous and should be constrained by means of ad hoc conditions. Consider also that if it were correct to hypothesize the presence of an operator taking scope over the DP, we should also investigate the scope relations between two DPs, each bearing its own temporal interpretation (and, consequently, its own tense operator). In particular, when a DP is c-commanded by another one, we would expect the temporal interpretation of the former to depend on the temporal interpretation of the latter. Consider the example in (12) (modeled on Enç 1986: ex. 8):

(12) Every student will have met a president.

A possible reading of (12), which is the one relevant to our discussion, is the following: let us hypothesize a scenario where every present student either met,

or is meeting, or will meet at a future time the president in charge at that moment. Sentence (12) is true at the utterance time if there is a later time at which *every student met a president* is true. In this scenario, the DP *every student* is evaluated at the present time, whereas *a president* can be evaluated at a past, present, or future time. That is, the times relevant for the two DPs must be kept separate, so that the temporal interpretation of the DP *a president* does not depend on the interpretation of the DP *every student*, even if *a president* is in the scope of the latter. As a consequence, the expectation that tense operators introduced by DPs exhibit the scope properties of ordinary quantified expressions is not met.

To summarize, tense operators introduced by DP do not take scope over the main predicate, as shown by (10), and they do not interact with each other, as shown by our discussion of (12). If we still want to maintain the hypothesis that a DP can be associated with a tense operator, we should constrain such a tense operator to take only very local scope, because it seems to have only the DP itself in its scope. As we said in the preceding discussion, this move is possible, but requires a rather ad hoc hypothesis.

Another argument against the use of tense operators comes from the analysis of the interactions between tenses in complex sentences. Consider (13), due to Kamp (1968):

(13) a. A child was born who would be king.
b. A child was born who will be king.

(14) $P(\exists x\ (child(x) \wedge born(x) \wedge F(king(x))))$

The sentences in (13a) and (13b) differ only in the use of two different future forms in the relative clause; namely, the auxiliary *would* vs. *will*. The logical form in (14) represents the meaning of (13a). The future tense operator, introduced by the verb of the relative clause, is in the scope of the tense operator of the main verb. Formula (14) is then true iff there is a past time t at which a child was born and there is a time future with respect to t when it is true that the child is king. Thus, (14) correctly captures the meaning of (13a). On the other hand, it is not so easy to account for the meaning of (13b), the version in which the simple future, *will*, appears in the relative clause. Formula (14) does not work, for (13b) requires the time at which the child is said to be king to be in the future with respect to the utterance now, something which is not made available by (14). There is an alternative option; namely, that the future operator takes scope over the matrix clause past operator, yielding (15):

(15) $FP(\exists x\ (child(x) \wedge born(x) \wedge king(x)))$

Formula (15), however, is not a correct representation of (13b) either, since it requires a future time t and a time t', $t' < t$, such that born(x) and king(x) are both true at t'. What is needed for (13b) is the possibility for the two tenses to be independently evaluated with respect to the utterance time. Tense logic, however, cannot represent the two operators as being independent from each other.

The examples in (13) raise a problem very similar to those discussed by Enç. One major inadequacy of the tense operator approach seems to be that the interactions among the temporal properties of the constituents of a sentence are not the ones expected for tense operators. In other words, an operator-based representation is insufficient to account for the temporal interpretation of the sentences considered above.

Another problem with the tense logical approach is the possibility of compounding the basic operators F and P to yield more complex ones. On the one hand, languages like English have tenses that seem to be naturally analyzable by means of such a property. For instance, the pluperfect and the future perfect could correspond to PP and FP, respectively. On the other hand, there are compound tenses that resist a similar treatment. For example, the present perfect cannot be straightforwardly distinguished from the simple past by virtue of operator compositions.

Another problem is that nothing prevents an unlimited composition of tense operators. Any sequence is a priori possible – e.g., FPF, PPP, FPFP, etc. – even if none of them corresponds to an observable tense in any language. The composition of operators could be constrained by means of ad hoc conditions, for instance, by explicitly disallowing combinations of more than two operators. This move, however, weakens the explanatory adequacy of the temporal logic approach.

Finally, tense logical approaches have notorious problems with the treatment of temporal anaphora. Consider (16) and (17):

(16) John left the room. He was furious.

(17) John said that Mary was pregnant.

In (16) the second sentence is understood as holding at the same time as the first. Example (17), on the other hand, can either mean that Mary's pregnancy holds at the time of John's utterance, or that the pregnancy is at an earlier time. Thus, both in (16) and (17) there seems to be a dependency of the time of the second clause (*he was furious* and *Mary was pregnant*) on the time of another clause.

The operator approach cannot easily account for the facts in (16) and (17). Anaphoric phenomena, in fact, seem to require the availability of entities, such as times and events (but also ordinary individuals referring to spatial objects), which can be introduced in the discourse context, stored, and accessed for later reference. No natural notion of context is possible with tense logic, unless major changes are proposed, undermining the spirit of these logical systems (for a discussion, see Kamp and Reyle 1993). Furthermore, although tense logic does make use of temporal entities, it does so at the level of the metalanguage, in the truth-conditions for operators. Hence, there are no terms referring to temporal entities in the object language (cf. the logical forms given above). This way of encoding the temporal dimension was motivated by considerations about verbal tenses, since their intrinsic relational meaning can be captured by means of truth-conditions such as those in (3), repeated here for simplicity:

(18) a. $V_{M,t}(P\phi)$ = true iff there is t', t'<t and $V_{M,t'}(\phi)$ = true.
b. $V_{M,t}(F\phi)$ = true iff there is t', t<t' and $V_{M,t'}(\phi)$ = true.

Verbal tense, however, is not the only manifestation of time in natural languages, and there are cases in which direct reference to temporal entities seems to be needed. Apparently, this is the case of temporal anaphora, as seen, and presumably also of temporal adverbials such as *at four*, *yesterday*, and so on. There are, therefore, many cases where direct reference to times appears to be necessary.

3 Temporal entities

In the previous section we have shown that (i) the temporal properties of sentences cannot be easily accounted for by means of the scopal dependencies among temporal operators; (ii) the compositional character of temporal operators does not provide an upper limit to the number of temporal operators which can be combined to yield tenses, failing therefore to explain the limited variety of tenses found in natural languages; and (iii) tense logic does not provide an account of temporal anaphora and of certain expressions that seem to require the availability of terms referring to times. All these considerations seem to favor a referential approach – that is, an approach that allows temporal reference directly in the object language, thus permitting an analysis of tenses, and temporal adverbials as referring (or involving reference) to temporal entities. Before turning to more details about the referential approach, let me emphasize that the basic opposition between the temporal logic approach and the so-called referential one is linguistic, not ontological-metaphysical. That is, both admit the reality of times (points, intervals, or whatever) with their usual properties (precedence). The difference is in the logical language: in one case, terms referring to those entities are exploited; in the other, reference to times is relegated to the metalanguage. As we will see, there is a more radical option, which expunges times from all levels of the logical language, prohibiting reference thereto tout court.

Before we continue, let us point out that we will often cast our consideration in a truth-theoretic semantic framework, inspired by the work of Higginbotham (1991) and Larson and Segal (1995). For obvious reason, there is no space here to discuss the approach in any detail, and the interested reader is referred to the publications cited. For our purposes, it suffices to say that the theory uses a ternary relation Val, between an entity, x, a linguistic object, Σ, and an assignment sequence, Val(x, Σ, σ), signaling that x is a value for Σ under assignment σ, and that this will be the basic building block for our semantic work.

We start by considering how tenses can be accounted for in a referential approach. The simpler possibility is to have them introduce relations between temporal entities; e.g., the past tense states that the time of the event precedes the time of the speech. Or, alternatively, that the event talked about in the clause precedes the speech/utterance event. Syntactically, tense morphemes are of category T, project a constituent TP, and take VP complements. Hypothesizing that both the latter are predicates of events, we could write the following axioms for T:

(19) a. Val(e, Past, σ) iff e<u
b. Val(e, Pres, σ) iff e ° u
c. Val(e, Fut, σ) iff e>u

They say that, for a given assignment sequence σ, the value of a tense morpheme is event e iff such an event precedes the utterance (past tense), overlaps the utterance (present tense), or follows the utterance (future tense). The event is provided by the VP, and the combination of the tense with that phrase is ruled by the following axiom:

(20) Val(e, $[_{TP}$ T VP], σ) iff Val(e, VP, σ) and Val(e, T, σ)

This axiom says that event e is a value of $[_{TP}$ T $[_{VP}$ ran]] iff e is the value of the VP and of the node T. The axiom for the relevant tense, (19b), eventually constraints the event to precede the utterance.

It has been observed that this simple picture is not easy to extend to compound tenses. To this end, it might be worth considering the work done in the Reichenbachian tradition, starting from Reichenbach (1947). In this perspective, the correct temporal interpretation of tenses requires three temporal entities, not just two, adding the so-called reference time/event, r, to the already-seen event (time) and utterance (time). With this, tenses are devices ordering the three temporal entities. For example, the meaning of the present tense could be represented as u°r°e, stating that the event (time) overlaps the reference time/event, and the latter overlaps the utterance.

The Reichenbachian model has been adopted and revised by several linguists (among others, Comrie 1976a, 1985b; Vikner 1985b; Hornstein 1990; Scorretti 1991; Declerck 1986; Giorgi and Pianesi 1997). As already suggested by Reichenbach and then further discussed by Comrie (1985b) and Hornstein (1990), for both empirical and theoretical reasons it has been proposed that the relation among the three points be split into two distinct relations, one between r and u, and the other between e and r. The result is a system in which a direct relationship between e and u is never realized, but is always mediated by r. The possible relations are the following:

(21)

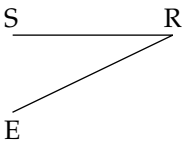
Type 1 relation		**Type 2 relation**	
u>r	future	e>r	perfect
r>u	past	r>e	prospective
u°r	present	e°r	neutral

As a consequence, the various tenses are the result of the composition of a relation of type 1, with a relation of type 2. For instance, according to this picture, the representation of the present tense is the result of the combination of u°r with e°r, to yield u°r°e. The representation of the present perfect is the result of the combination of u°r with e>r, to yield e>r°u. From the point of view of the final representation, this proposal exhibits an important empirical difference

with respect to the original Reichenbach one. The point, often discussed in the literature (see Comrie 1985b and Hornstein 1990), concerns the future perfect. Such a tense results from the combination of u>r and e>r. Comrie points out that in English (and in Italian as well), a sentence such as (22) is ambiguous in three ways:

(22) John will have finished his manuscript by tomorrow.

The exact temporal relation between the finishing of the manuscript and the utterance is unknown. It could be that when the sentence is uttered, John has already finished the manuscript; or that he is finishing it exactly at that moment; or that he will finish after the utterance and before *tomorrow*. This ambiguity is nicely captured by the following combination of type 1 and type 2 relations:

(23) 

As pointed out by Comrie and then by Hornstein, the revised Reichenbachian framework presents several other advantages over the original one. According to the latter, in fact, we would in principle expect the existence of languages where for each possible position of e, there is a morphologically different realization. In other words, Reichenbach predicts the existence of languages in which the meanings corresponding to u>e>r, u°e>r, e>u>r are expressed by means of different morphological tenses. Comrie points out that this does not seem to be the case.

Also, we have a way to account naturally and elegantly for the limited number of morphologized tenses, a problem that plagued the tense operator approach of the previous section. The system is based on three primitive objects plus binary relations. As such, the possibilities of combining the various forms are very limited. Finally, as pointed out by Hornstein (1990), such a system can be easily acquired, satisfying therefore an important requirement for any theory of tense. The inventory of resulting tenses is the following (the list is basically Hornstein's (1990: 117) with the addition of the distant future):

(24)

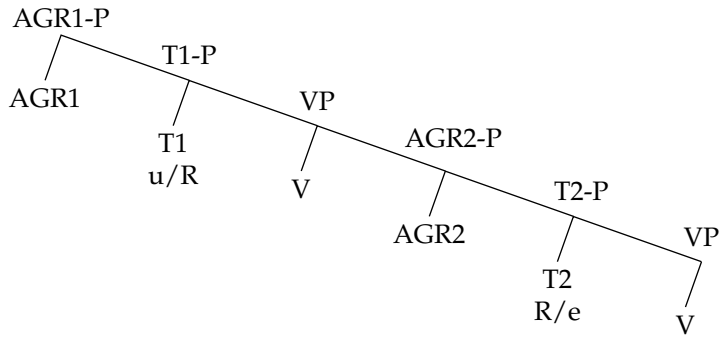
Present:	u°r ∧ e°r = u°r°e
Past:	r>u ∧ e°r = e°r>u
Future:	u>r ∧ e°r = u>r°e
Present perfect:	u°r ∧ e>r = e>r°u
Future perfect:	u>r ∧ e>r
Past perfect:	u>r ∧ e>r = e>r>u
Future in past:	r>u ∧ r>e
Proximate future:	u°r ∧ r>e = u°r>e
Distant future:	u>r ∧ r>e = u>r>e

3.1 The syntax of tense

Given the revised Reichenbachian framework reviewed in the previous section, the possibility arises that the two types of relations between temporal entities correspond to two Tense head, T1 and T2, realizing type 1 and type 2 relations, respectively. Such a distinction can be motivated by showing that the morphemes realizing T1 and T2 have different contents, in terms of features and different morphosyntactic behaviors, and that this predicts the legitimate combination of these two categories, hence of available tenses.

This possibility has been pursued in Giorgi and Pianesi (1997), where it is proposed that tenses are doubly represented in clausal structure because of the existence of two projections, T1 and T2, with T1 higher than T2. For example, a compound tense such as the Italian or English past perfect (e.g., *had eaten*) or future perfect (*will have eaten*) would correspond to (at least) the following structure:

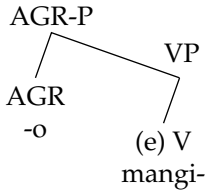
(25)



Here, T1 introduces the relation between the utterance and the reference point, whereas T2 takes care of relating the latter to the event. The lower VP is projected by the verb, whereas the higher one is projected by the auxiliary. AGR1 represents the set of phi-features, e.g., person and number, that are shared with the subject, i.e., (Spec, AGR1"). AGR2 can be specified for gender and number features, as in Italian. Giorgi and Pianesi hypothesize that there are no Ø tense heads, and that the representation for an Italian present tense form is the following:

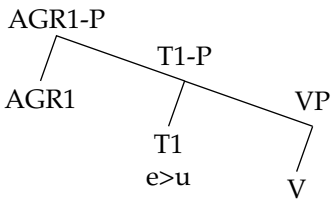
(26) a. Mangio.
eat-1sg
I eat.

b.



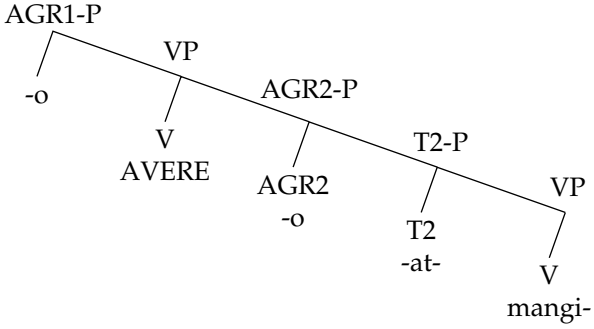
No T1 or T2 node is projected, and the meaning usually associated with the present tense results from a default process directly relating the event (introduced by the verb) and the utterance, yielding u°e. The idea is that, tenses being a semi-lexical category, they are present in syntax only if morphological evidence is available. In other cases, only T1 is projected, as in the Italian simple past:

(27) a. Mangiai.
ate-1sg
I ate.

b. 

Here T1 directly relates the event (introduced by the verb) to the utterance, yielding e>u. Finally, the present perfect is as in (28). T2 is projected, and connects the event to the reference time/event, giving e>r. T1, on the other hand, is absent, since the auxiliary is in the present tense. As before, this triggers a default interpretation according to which the reference event overlaps the utterance. This way we obtain the expected result: e>r°u.

(28) a. Ho mangiato.
have-1sg eaten
I have eaten.

b. 

As can be seen, Giorgi and Pianesi assign a bi-clausal structure to complex tenses, and treat the contribution of T1 and T2 in essentially the same manner. A past tense, be it expressed by T1 or T2, places the (entity corresponding to the) variable instantiated by the complement of the tense node before another entity (the reference time/utterance event). The lower clause is responsible for relating the event (time) and the reference time/event. The upper clause handles the latter variable, relating it to the utterance. This can be captured as follows:

(29) a. Val(<x, y>, T2, σ) iff rel(x, y) where rel is >, <, or ° depending on whether T2 is past, future, or present.
b. Val(y, [$_{T2P}$ T2 VP], σ) iff Val(<x, y>, T2, σ) and Val(x, VP, σ).
c. Val(y, [$_{VP}$ Aux T2P], σ) iff Val(y, T2P, σ).
d. Val(z, T1, σ) iff rel(z, u), where rel is >, <, or ° depending on whether T1 is past, future, or present.
e. Val(z, [$_{T1P}$ T1 VP], σ) iff Val(z, T1, σ) and Val(z, VP, σ).

We have avoided using the variables e and r in (29) to stress the strong symmetry between the two tenses. Thus, when T2 is realized by a past tense morpheme, (29a) and (29b) jointly ensure that the value of T2P be an entity (the reference event) that is before the entity introduced by the VP (the event). Moreover, if T1 is a future morpheme, then the value of T1P is the entity realized by the VP, the latter turning out to be the same as the value of the embedded T2P. As before, the indexical nature of T1 tenses is handled directly by axiom (29d).

Those axioms provide a simple treatment of the second variable (the reference time/event). A more detailed account should accommodate the fact that it can draw its reference from the contexts, or be bound by a quantificational expression, as in:

(30) Ogni volta che l'ho incontrato, Mario aveva parlato con il capoufficio.
every time that I him have met, Mario had spoken with the boss
'Every time I met him, Mario had spoken with his boss.'

The variable corresponding to r can be both a temporal entity – a time point or interval – and an eventuality, according to the framework adopted. The second possibility enables us to introduce considerations about consequent states, a là Parsons (1990). The first alternative can be used to accommodate within this theory insights relying on the notion of an extended now, as in Dowty (1979). Finally, notice that in this approach the three Reichenbachian points lose any privileged status and become a side effect of the interplay between the syntactic and the semantic properties of tense morphemes, and the structures they enter into.

Other authors have elaborated on the idea of bi- (and even multi-) clausal structure for tenses. Thus Julien (2001) proposes that simple sentences involve both a TP-past and a TP-future, the former taking the second as its complement, and the latter the VP. Both T-past and T-future can have ± values:

(31) [$_{TP\text{-}past}$ T-past$_{[\pm\ past]}$ [$_{TP\text{-}future}$ T-future$_{[\pm future]}$ [VP]]]

When T-past has [+past] and T-future has [–future] the result is a simple past. Vice versa, if T-past is [–past] and T-future is [+future], we have a simple future. The present tense results from a configuration where both features have the value –, and, as in Giorgi and Pianesi, the relevant interpretation is the result of a default process. Finally, Julien admits the possibility that both features have a + value, exemplifying this possibility with the English future in the past *would*.

This structure is extended to complex tenses by duplicating the structure below the auxiliary in (31). Other proposals in this direction can be found in Cinque (1999). For a partially different view, see Stowell (1996).

3.2 Sequence of tense

Up to now, our discussion of the referential theory has been limited to tenses in matrix clauses. In complement clauses, especially when predicates of propositional attitude are involved, tenses behave in peculiar ways, giving rise in languages such as English to so-called Sequence of Tense (SOT) phenomena. Thus, an utterance of (32) can be understood as reporting either a present tense utterance of John's – e.g., *Mary is ill* – or a past tense utterance – e.g., *Mary was ill*:

(32) John said/believed that Mary was ill.

Within the approach under discussion here, the backward-shifted reading can be captured by assigning (32) the following truth-conditions:

(33) $\exists e(\text{saying}(e) \wedge \text{Agent}(e, \text{John}) \wedge \text{Theme}(e, \psi) \wedge e<u)$

Here, ψ is the ILF for the subordinate clause with the following truth-conditions:

(34) $\exists e'$ (ill(e) $\wedge$ Theme(e', Mary) $\wedge$ e'<e)

Once the two are put together we have:

(35) $\exists e(\text{saying}(e) \wedge \text{Agent}(e, \text{John}) \wedge \text{Theme}(e, []\exists e' (\text{ill}(e) \wedge \text{Theme}(e', \text{Mary}) \wedge e'<e)[]) \wedge e<u)$

What is important here is that the truth-conditions for the subordinate clause explicitly mention the episode of saying, letting the tense relate it to the embedded eventuality (the illness); see Higginbotham (1995) for more on this topic. This establishes a parallel between the role the matrix eventuality – the subject's attitude episode – plays in the subordinate clause and the role played by the utterance in the matrix. In both cases, the tokening of an expression by an agent is used as a temporal coordinate from which the tense's contribution is computed. This parallel can be further pursued, as in Giorgi and Pianesi (2001a, 2001b), to account for the lack of mere indexical readings of tenses in subordinate clauses. Thus, (36) cannot be used to mean that John said something concerning the very time (36) is uttered – that is, the speech time – nor can (32) be used to report a dictum concerning events which are located in the past only with respect to the utterer – e.g., yielding a report which is future-oriented with respect to John:

(36) Last week John said that Mary is pregnant.

It seems, therefore, that whenever there is a tokening of a linguistic expression (as in matrix clauses), or a report about such a tokening (as in subordinate contexts), the temporal coordinates of the tokener must be explicitly given and connected to the event the expression is about. In other words, the ILF representing the object of a propositional attitude must explicitly represent the attitude episode itself, and use it to locate the talked-about event:

(37) **Conditions on propositional attitudes:**
   a. A clause is the object of an attitude by a subject iff the ILF of that clause contains the subject temporal egocentric coordinate.
   b. The primary role of tense is to locate the event with respect to such a coordinate.
   c. The temporal coordinate of the subject is the attitude's episode itself.

Principle (37) correctly predicts that tenses in subordinate contexts cannot be mere indexicals, for that would amount to linking the event to the utterance, hence to the speaker's coordinate, violating (37). Moreover, it dissolves the notion of *temporal anchoring* (cf. Enc 1987) into the more general requirement that the contents of propositional attitude explicitly represent the attitude episode itself. Finally, it suggests that the assignment sequences that are used to compute the interpreted logical forms of clauses subordinated to verbs of propositional attitude had better be relativized to subjects. By this we mean that in the backward-shifted reading, the *was* of (32) is evaluated as if it were the subject's (John's) *was*, hence relating the state of illness to his coordinate – i.e., the saying/thought – rather than to the speaker's – i.e., the utterance. We do not discuss here how this idea can be implemented, for which we refer the reader to Giorgi and Pianesi (2001b). Suffice it to say that the availability of subject-oriented assignment sequences provides for the desired truth-conditions (33) and (35).

Turning to the simultaneous reading of (32), it can be given the following truth-conditions:

(38) $\exists e(\text{saying}(e) \wedge \text{Agent}(e, \text{John}) \wedge \text{Theme}(e, []\exists e' (\text{ill}(e) \wedge \text{Theme}(e', \text{Mary}) \wedge e' \circ e)[]) \wedge e < u)$

They are consistent with the discussion above and with (37): the ILF of the subordinate clause explicitly represents the subject's temporal coordinate, and the tense relates this to the event. As before, this is obtained by computing the ILF of the subordinate clause by means of a subject-oriented assignment. With respect to the other reading, however, the well-known problem arises of how to accommodate the fact that an embedded past tense of (32) behaves as if it were a present tense. Roughly speaking, the explanations provided by the literature are of two different kinds. According to one view, the embedded past tense is only 'apparent' in (32); one might argue, in fact, that it is present during part of the derivation, but then disappears at LF, because of some deletion process obtaining in past-under-past contexts. Another view maintains that the past tense

morpheme was not present during the derivation, and got inserted only as a by-product of spell-out. Both views share the idea that the LF representation for a (32) can have a Ø tense morpheme (or no tense morpheme at all), which interpretively yields – e.g., through some default mechanism – simultaneity. This approach was quite popular some times ago. More recently, it has been exploited by Ogihara (1995), though it has lost some of its appeal because it requires postulating mechanisms (deletion and/or insertion) that are not so readily available any more.

Another tradition has it that the past tense is morphologically present, but can be interpretively transparent, either because the embedded past tense enters some kind of agreement process with the matrix one, or because it acts as a scope marker for the matrix tense, or some similar mechanism. A recent proposal in this direction is that advanced by Abusch (1997). She hypothesizes that superordinate tenses can place constraints on subordinate ones, and that, vice versa, subordinate tenses inherit restrictions from superordinate ones. Thus she speaks of a local relation together with transmitted ones. In the case of a past-under-past sentence, the constraint is that at least one of these relations taken together (the local and transmitted ones) is temporal precedence. More precisely, she assumes that:

(39) a. Tenses come with a relational variable relating their index to the local evaluation time.
b. Verbs such as *believe* transmit the relation associated with their tenses to their clausal complements, through a feature-passing mechanism. Hence embedded tenses have access to all the relations associated with higher tenses.
c. The semantic of tense is a constraint on the set of all available relations. For the past, the constraint is that at least one of them be precedence.

Given this, the simultaneous reading of (32) follows: (i) the constraint on the subordinate past tense is satisfied by the inherited precedence relation, and (ii) this makes it possible to understand the embedded event as simultaneous to the saying.

Another possibility is that pursued by Stowell (1996), who draws a parallel between tenses in subordinate contexts and polarity items. In his view, the past tense is a past-polarity item, meaning that if in the scope of another past tense it behaves as *anybody* in the scope of negation; both do not contribute anything to the interpretation, so that it becomes possible to understand the illness in (32) as simultaneous to the saying. It should be noticed that the actual implementation of both proposals is somewhat underspecified. Abusch's theory of transmitted relation relies on a feature-passing mechanism that is not easy to accommodate within current generative grammar frameworks. Stowell's view, on the other hand, suffers the same shortcomings as any treatment of polarity – namely, what is the underlying syntactic mechanism? In this sense both are somewhat stipulative, as is Schlenker's (2003a) recent proposal of agreement between semantic indices.

3.3 The double access reading

Together with some syntactic facts discussed in Giorgi and Pianesi (2000), principle (37) provides an account of double access sentences (DAR) – e.g., (36). As first observed by Smith (1978), such a sentence has the peculiarity that the pregnancy state referred to in the subordinate clause is simultaneous both to the saying and to the utterance. This doesn't mean that by using (36) a speaker commits herself to the truth of the complement – that is, to the existence of a pregnancy of Mary's holding at the speaker's time. Nor is there any commitment to the truth of the complement clause at Mary's, the subject's, time. Indeed, the speaker can continue her speech by uttering:

(40) Actually, he was wrong. Mary has just been overeating for the last three months.

Scholars such as Abusch (1997) and Ogihara (1995) have argued in favor of a *de re* analysis of tenses in these cases, hypothesizing that the embedded present tense gets scoped out in (36), and that both the tense and its trace contribute to the interpretation. Scoping out is obligatory in present-under-past contexts, because the constraint on local and inherited relation for the present tense is that none of them be temporal precedence (Abusch 1997), or because the present tense is an anti-past polarity item (Stowell 1996).

Once scoped out, the behavior of the present tense is analyzed within a framework built upon Lewis's (1979) suggestions, as further elaborated by Cresswell and Von Stechow (1982). In this view, for a subject X to have a *de re* belief about an object Y is for X to ascribe Y a certain property Z. Property ascription, in turn, relies on subject X being suitably connected with object X by means of an appropriate acquaintance relation which makes the object (epistemically) available to the subject. Omitting details (which can be found in the works cited), the analysis of a DAR sentence such as (36) requires that:

(41) a. the present tense be scoped out of the embedded clause;
b. the embedded clause be interpreted as a property of times;
c. a suitable acquaintance relation be found relating the *de re* (scoped-out) interpreted time/state to the attitude's subject.

In Abusch's account, the first point follows from the already-mentioned theory of transmitted relations in intensional contexts: the constraint on the local and the transmitted relations of a present tense, in fact, is that none of them be temporal precedence. Thus, in a present-under-past sentence the tense must be scoped out. Finally, Abusch argues that a suitable acquaintance relation for (36) is one picking out the maximal interval at which Mary has a big belly (the hypothesis is that the speaker is interested in explaining Mary's symptoms), and one which, for independent reasons, picks up an interval that in the actual world overlaps with both the saying and the utterance time.

As should be clear, the offered account of the DAR relies on hypotheses involving both the syntax and the semantics. Concerning the former, it is necessary that the *de re* tense be scoped out of the embedded clause at LF, hence that a position be made available for it to land in. At the same time, the trigger for such a movement, though spelled out in terms of the constraints on local and transmitted relations, is essentially syntactic: temporal relations are cumulated down the syntactic trees through a mechanism of feature passing, which is typically syntactic (this obviously holds in general of Abusch's proposal, hence also of the discussed account of the simultaneous reading of (32)). It is not clear whether and how the syntactic theory can bear the burden of these two requirements. Invisible movement have recently come under the scrutiny of syntacticians who seem more wary than in the past about these matters. Concerning the feature-passing mechanism, it is not something that current theories of generative grammar seem so able, or even willing, to accommodate. So the basic problem of how temporal dependencies should be handled remains open.

On the semantic side, the *de re* account has a number of empirical and conceptual shortcomings. Given the constraint on the acquaintance relation, it can explain why an utterance of (36) is odd if Mary's symptoms do not persist at speech time. However, it has difficulties in explaining why the same utterance is odd if the symptoms persist but the situation has changed in relevant respects. Suppose, for instance, that Mary was indeed pregnant when John said what he did, that she delivered just a few days before the report, and that, as often happen in these cases, she still has a big belly. If this is the situation, the DAR report is odd, and the oddness seems to have to do more with the speaker's knowledge/beliefs – that is, with her propositional attitudes – than with John's. Interestingly, the converse also holds. If Mary was not pregnant at the saying time (John was wrong), is now pregnant, and has a big belly all the time (for whatever reasons), then again (36) is odd. As before, what matters is that if the speaker knows that the situation has changed, she isn't in a position to use a DAR sentence. These facts are not easily captured by the *de re* accounts just reviewed.

Finally, on the conceptual side, *de re* accounts of DAR sentences place a heavy epistemological burden on the speaker's shoulders: she must have quite detailed intuitions about the subject's original situation (mental state, one could say). On the other hand, it seems that one can use a DAR sentence without any information about what moved John into saying what he did (the big belly?). Short of saying that the speaker can postulate non-specific acquaintance relations, it is not clear how the vast majority of uses of DAR sentences can be accounted for. But non-specific acquaintance relations don't seem to be what Lewis had in mind when he introduced acquaintance relations; he seemed to mean that they should be of a very specific type.

A different approach to DAR sentences, trying to address those concerns, was proposed by Giorgi and Pianesi (2001b). They explicitly attempt to link the temporal interpretation with syntactic facts, while at the same time capitalizing on the idea that by using a DAR sentence the speaker expresses an attitude of hers. On the syntactic side, the basic observations concern the fact that in Italian, DAR

contexts typically have the indicative mood, and reject complementizer deletion (see Giorgi and Pianesi 2000, 2001a):

(42) Gianni ha detto *(che) tu eri arrabbiato.
Gianni has said (that) you were(IND) angry
'Gianni said that you were angry.'

(43) Gianni credeva/temeva (che) tu fossi arrabbiato.
Gianni believed(IMPF)/feared(IMPF) that you were(SUBJ) angry
'Gianni believed that you were angry.'

(44) Gianni ha detto che Maria è incinta.
Gianni has said that Maria is pregnant
'Gianni said that Maria is pregnant.'

(45) *Gianni temeva che Maria sia/è incinta.
Gianni feared(IMPF) that Maria is(SUBJ)/is(IND) pregnant
'Gianni feared that Maria is(SUBJ)/is(IND) pregnant.'

On the other hand, contexts that allow complementizer deletion, such as those induced by verbs like *credere* (believe) or *temere* (fear), do not allow the DAR. Thus, some connection seems to be at stake between CD and DAR. Giorgi and Pianesi's explanation is cast in a split-C framework: two distinct complementizers can be singled out in embedded clauses; namely, a lower one, called MOOD, which is related to the presence of an embedded subjunctive verb, and a higher one, C. MOOD is just the lexicalization of the mood features, which can also be realized syncretically (Giorgi and Pianesi 1997) in Infl. When the syncretic option is exerted, MOOD is absent, thence the appearance of complementizer deletion. On the other hand, C's features cannot be realized syncretically, hence C cannot be omitted. The relationship between the ban on CD and the possibility of the DAR, therefore, points to an important role to be played by C: the DAR obtains only if C is projected (irrespective of the specific tense chosen). To explain this relationship, Giorgi and Pianesi hypothesize that the complementizer C is endowed with temporal features (τ-features) entering a relation with those of the embedded T, by either movement or matching. As a result, when the ILF for the embedded clause of (36) is computed and the interpretive contribution of tenses is spelled out, the same eventive variable is present in C and in T:

(46) a. $[\ldots[_{V}$ said $[_{CP}[\tau\text{-C}\ [_{XP}\ldots\tau\text{-T}\ldots]]]]]$
b. $[\ldots[_{C,\ <e,\ x0>}\ldots[_{T,\ <e,\ x0>}\ \ldots]]]$

The C node is invariably associated with speaker orientation, so that the temporal features in C yield the 'normal' indexical value. Moreover, (37) is strengthened into a bi-conditional, to the effect that whenever a representation contains the temporal coordinate of an agent then it must express the content of an attitude by that agent.

Concerning (46a), three ILFs must be considered. The first is built from C's complement, XP in (46a); it is interpreted under a subject-oriented assignment, and reports the content of the subject's original dictum. The result is that the in-situ copy of the present tense provides for a pregnancy that overlaps with the subject's temporal coordinate. Then we have the node C itself, where the τ-features are interpreted by means of the speaker-oriented assignment. The result is that the pregnancy state overlaps with the speaker's temporal coordinates as well. Finally, we have the ILF associated with the whole dominating CP, where the former two ILFs are put together in such a way that they are required to have coordinated value: whenever the one (the ILF for XP) is true, the other (that for C) is true as well, and vice versa. This coordination of truth-values is meant to account for the observation made above about the content of the speaker's attitude: the speaker maintains that if Mary was pregnant at the subject's time then the same pregnancy obtains at her time, and vice versa.

The following features of this approach should be noticed: it generalizes the idea, already discussed in section 3.2, that the content of attitude ascriptions, as expressed by ILFs, depends on the subject's coordinate (context/mental state) since it incorporates her temporal coordinates, and explicitly extends it to the speaker, by seeing C as the locus where speaker orientation comes to play a role. This approach shares with *de re* theories the idea that the tense is moved. However, it identifies the place where movement is directed to, namely, C, and motivates such a movement with the triggering τ-features in C.

3.4 Temporal adverbials

If temporal entities (times) are part of the ontology underlying natural language, and reference to them proceeds the way it does with ordinary objects, we should be able to individuate the same range of referential phenomena observed with the latter. In particular, it should be possible to single out terms exhibiting direct reference to temporal entities, behaving as the counterparts of, say, a proper name such as *John*, or of a deictic/indexical term such as *here* or *that man*. It should also be possible to show that their semantic and syntactic properties are similar to those of 'ordinary' proper names or indexical/deictic terms.

Obvious candidates for direct reference in the temporal realm are the names of days and months used in isolation – e.g., *Thursday*, *Sunday*, and *May*. They can appear as expressions fixing the time of the event:

(47) a. I met him (on) Thursday.
b. John will arrive in May.

They can also play the role of subjects/direct objects:

(48) a. John spent Thursday at the seaside.
b. May was a beautiful month.

In all these cases, the reference of these expressions is indexical, crucially involving the use of the speaker's temporal coordinate. Thus, *Thursday* in (47a) or (48a) refers to the last such day before the utterance time; *May* in (47b) refers to the next such month after the utterance time, and in (48b) to the last one. In this sense, they constitute canonical examples of direct reference. Interestingly, they enter into syntactic configurations that have important similarities to that of proper names, as explored by Longobardi (1994). More precisely, Longobardi observed that in Italian, nominal arguments must be introduced by a category D:

(49) a. La madre di Maria è partita.
the mother of Maria is left
'The mother of Maria has left.'
b. *Madre di Maria è partita.
mother of Maria is left
'Mother of Maria has left.'
c. È venuto Camaresi vecchio.
is come Camaresi old
Old Camaresi came. (Longobardi's ex. (29c))
d. *È venuto vecchio Camaresi.
is come old Camaresi
Old Camaresi came. (Longobardi's ex. (29b))
e. Bevo sempre vino.
drink-1sg always wine
'I always drink wine.' (Longobardi's ex. (12a))

This position can be occupied by an overt determiner (cf. (49a)), by the raised nominal head, as in (49c), or by an empty determiner, as in (49e), where a mass noun appears. Longobardi explains this pattern, and, in particular, the fact that proper nouns occupy the D^0 position in syntax, by assuming that the functional category D has a feature [± *ref*] that must be checked by a corresponding feature on the noun. The feature *ref* is strong in Romance and weak in Germanic, and this explains the contrast between (49c) and (49d) on the one hand and (49a) and (49b) on the other:

(50) a. Old John came.
b. *John old came.

Moreover, *ref* is connected to the referential properties of the whole DP. A proper name such as *John* has *ref*, because it refers directly to the relevant person. Given that *ref* is strong in Romance, Italian proper names must overtly rise to D^0 from their base position (cf. (49c)), preventing adjectives from preceding proper nouns (cf. (49d)). On the other hand, the weak *ref* of Germanic allows English proper nouns to rise covertly, thus permitting the pronominal adjective of (50a). Finally, common nouns, such as *madre* (mother) in (49a) and (49b), are not object referring, and as such cannot be endowed with the *ref* feature. As a consequence, the overt article is needed.

Longobardi (1994) and Giorgi and Pianesi (1997) observe that names of days and names of months exhibit a similar behavior:

(51) a. Ho passato (il) giovedì scorso al mare.
have-1sg spent (the) Thursday last at the seaside
'I spent last Thursday at the seaside.'
b. Ho passato *(lo) scorso giovedì al mare.
have-1sg spent *(the) last Thursday at the seaside
'I spent last Thursday at the seaside.'

(52) a. (Il) Giovedì scorso è passato velocemente.
(the) Thursday last is passed quickly
'Last Thursday passed quickly.'
b. *(Lo) scorso giovedì è passato velocemente.
(the) last Thursday is passed quickly
'Last Thursday passed quickly.'

(53) Ho passato giovedì al mare.
have-1sg spent Thursday at the seaside
'I have spent Thursday at the seaside.'

(54) a. Mario ha passato domenica sola al mare.
Mario has spent Sunday only-fem at the seaside
'Mario spent only Sunday at the seaside.'
b. *Mario ha passato sola domenica al mare.
Mario has spent only-fem Sunday at the seaside
'Mario spent only Sunday at the seaside.'

These examples reproduce the pattern in (49) and can be taken as evidence that the noun *giovedì* (Thursday) can overtly raise to D^0, as proper names do in Longobardi's theory, and for similar reasons. Thus, in (49c) and (51a), with the postnominal adjective, the definite article may be dropped, showing that the noun has risen in the D^0 position. When the adjective is prenominal, however, the article must be present, as in (49d) and (51b). Finally, (54a) and (54b) reproduce the same pattern with a non-temporal adjective, *solo* (only).

This behavior isn't reproduced with an adjective such as *precedente* (previous/before), as the contrast between (51–52) and (55) exemplifies:

(55) a. Ho passato *(il) giovedì prima/precedente al mare.
have-1sg spent *(the) Thursday before at the seaside
'I spent the Thursday before at the seaside.'
b. *(Il) Giovedì prima/precedente era passato velocemente.
(the) Thursday before had passed quickly
'The Thursday before had passed quickly.'

Concerning proper nouns, Longobardi notes that the adjectives that tolerate the raising of the nominal head are those which can have a restrictive interpretation, in both prenominal and postnominal position:

(56) a. ?Mario alto è venuto a trovarmi.
Mario tall is come to visit-me
'Tall Mario came to visit me.'
b. Il Mario alto è venuto a trovarmi.
the Mario tall is come to visit-me
'The tall Mario came to visit me.'

With a restrictive interpretation of the adjective *alto* (tall), (56a) is marginal, whereas an appositive reading is completely unavailable. The sentence improves with an article, as in (56b). If this reasoning is on the right track, one may extend it to the sentences in (55), observing that they contain restrictive phrases that are obligatorily postnominal.

Proper nouns yield better results with postnominal restrictive adjectives, such as *bello* (handsome), than with postnominal (restrictive) adverbials, such as *prima* (before):

(57) Ci sono due Mari: uno bello e l' altro brutto. ?Mario
there are two Marios: one handsome and the other ugly. Mario
bello è venuto a trovarmi.
handsome is come to visit-me
'There are two Marios: one is handsome and the other is ugly. The handsome Mario came to visit me.'

(58) C' erano due Mari in fila: uno prima di me ed un altro
there were two Marios in row: one before me and another
dopo di me.
after me
'There were two Marios in the queue: one was before me and the other after me.'
a. Il Mario prima di me è venuto a trovarmi.
the Mario before me is come to visit-me
'The Mario before me came to visit me.'
b. *Mario prima di me è venuto a trovarmi.
Mario before me is come to visit-me
'Mario before me came to visit me.'

The quasi-acceptability of (57) contrasts with the strong unacceptability of (58b).

This evidence seems to stress the role of modifiers in endowing the nominal head with object referring capabilities. E.g., adjectives such as *scorso* (last) in (51–52), being indexical, provide the nominal head with directly referential capabilities – that is, they provide [+ *ref*] – so that it can raise overtly to the D^0 position

in Italian. An adjective such as *precedente* (previous/before) does not have this possibility, so that the nominal head cannot raise to D^0.

This discussion shows that direct reference (in the form of indexical reference) can be found in the temporal realm. Importantly, the expressions realizing it participate in the same syntactic pattern as those observed for objectual reference.

When the relevant expressions are used to temporally locate the event, the same pattern presented in (51–54) is reproduced:

(59) a. Ho incontrato Mario (il) giovedì scorso.
have-1sg met Mario (the) Thursday last
'I met Mario last Thursday.'
b. Ho incontrato Mario *(lo) scorso giovedì.
have-1sg met Mario the last Thursday
'I met Mario last Thursday.'
c. Ho incontrato Mario giovedì.
have-1sg met Mario Thursday
'I met Mario on Thursday.'

(60) a. (Il) giovedì scorso ho telefonato a Mario.
(the) Thursday last have-1sg telephoned to Mario
'The Thursday last I telephoned to Mario.'
b. *(Lo) scorso giovedì ho telefonato a Mario.
(the) last Thursday have-1sg telephoned to Mario
'The last Thursday I telephoned Mario.'
c. Giovedì ho telefonato a Mario.
Thursday have-1sg telephoned to Mario
'Thursday I telephoned to Mario.'

(61) a. ?Mario è venuto a trovarmi domenica sola.
Mario is come to visit-me Sunday only-sg, fem
'Mario came to visit me only on Sunday.'
b. *Mario è venuto a trovarmi sola domenica.
Mario is come to visit-me only-sg, fem Sunday.
'Mario came to visit me only on Sunday.'

The article can be dropped in (59a) and (59c), where the adjective is in the prenominal position, showing that the nominal head has raised in (59a) and (59c). The article cannot be omitted in (59b), as the order *adjective-noun* shows, since the nominal head has not risen. Furthermore, these observations can be reproduced when the adverbial is in sentence-initial position (cf. (59a) and (59c)). Finally, (61) shows that, as in (54), the relevant behavior can be obtained not only with temporal adjectives such as *scorso* (last) but also with others, such as *solo* (only).

The data in (59) to (61) confirm the conclusion drawn above, and constitute evidence in favor of the hypothesis that temporal adverbs have argument status. In particular, (59b), (60b), and (61b) show that these phrases require a filled D^0, a behavior which is typical of arguments. Hence, temporal expressions fixing the time of the event seem to be the lowest arguments in the VP shell (cf. Larson 1988b). To support this conclusion, note that the constraints seen above do not arise in non-argument position – that is, in predicative contexts:

(62) a. Sono discorsi da scorsa domenica.
are-3pl talks from last Sunday
'These talks are typical of last Sunday.'
b. Sono discorsi da domenica scorsa.
are-3pl talks from Sunday last
'These talks are typical of last Sunday.'
c. Ho dichiarato questo giorno (la) sola domenica dell'anno
have-1sg declared this day (the) only Sunday of the
in cui si possa mangiare carne.
year in which can eat-3sg meat
'I have declared this day as the only Sunday of the year in which it is possible to eat meat.'

In argument position, the lack of the determiner is due to the overt raising of the nominal head to D^0. Therefore, adjectives such as *scorso* (last) and *solo* (only) cannot appear in prenominal position (cf. (59b) and (61b)). On the other hand, predicative positions do not require DPs, and bare NPs are allowed. Hence, prenominal adjectives are possible without a determiner:

(63) Mario si è mascherato da vecchio spartano.
Mario himself is dressed-up as old Spartan
'Mario dressed himself up as an old Spartan.'

Temporal adverbials manifest the same pattern in predicative contexts:

(64) Il giorno dell' esame era (il) venerdì prima.
the day before the examination was (the) Friday before
'The day before the examination was (the) Friday before.'

Example (64), where *venerdì prima* 'Friday before' is an NP, contrasts with (55).

In conclusion, it can be shown in a non-trivial way not only that direct reference is available in the temporal realm, as expected if temporal reference is available to natural language, but also that the syntax of direct reference for temporal phrases is, in relevant respects, similar to that of direct reference to ordinary objects. Finally, these conclusions hold both for temporal expressions in subject and object positions, and for those fixing the time of the event, showing that the latter deserve to be treated as arguments rather than as modifiers.

4 A non-referential approach

After this cursory review of the merits of the referential approach – namely, the idea that the interpretive properties of tenses and temporal expression are best explained by having variables in the object language that refer to temporal entities – it might seem strange to consider theories claiming that temporal entities and temporal reference should be banned from the basic ontology and from semantics. Yet this has been an influential view, especially in philosophy, and it has recently found more than episodic links with linguistics, thanks to Ludlow (1999). The importance of this enterprise to linguistics is that it tries to show that the very basic question of whether reference to time is to be admitted or not among the tools of the theory is still an open issue, and that it must be solved both by taking seriously metaphysical concerns, and by comparing alternative theories on an empirical basis.

In this section we will present the basic tenets of Ludlow's theory, trying first to provide reasons for the move, and to discuss the theory's machinery and some of its applications to selected phenomena, often the same as those addressed in our review of referential approaches. Given that Ludlow is our sole source, we will try to be as faithful as possible to his exposition. Occasionally, however, we will integrate the analyses, paying attention to keeping to Ludlow's original intuitions.

4.1 A-series vs. B-series

Metaphysical concerns are crucial for anyone thinking that the goal of semantic theory is to investigate the 'tacit' knowledge that permits people to draw appropriate language–world connections. Such a theory is, for instance, an absolute truth theory of semantic knowledge of the kind we have been often resorting to in this chapter – namely, an axiomatic theory comprising axioms giving the referents of terminal symbols, and rules for producing the semantic value of non-terminal nodes starting from the former values. For the theory to make interesting claims, it must rely on some understanding of what is out there in the world, hence it cannot escape some amount of metaphysical commitment. By the same token, Ludlow argues that linguistic inquiry can in turn contribute to further investigation on metaphysical issues.

As far as time is concerned, two metaphysical positions have stimulated the ingenuity of scholars. According to the first (Russell, Reichenbach, Einstein, etc.), time is a sequence of unchanging tenseless events, whereby "future events, past events, and present events are all equally real" (Ludlow 1999: 1). This view is known as the *B-series* theory of time (McTaggart 1908), or the untensed conception (Mellor 1981), and is the one underlying referential approaches to time in language. It is opposed by the *A-series* or *tensed* doctrine, which retorts that "it is fundamental to the notion of time that events, or perhaps propositions, have genuine temporal status" (Ludlow 1999: 2). As a consequence, the metaphysical

status of past and future events might be different, corresponding to different properties.

The B-series conception maintains that the basic relations are the familiar ones which can be construed from the notion of *precedence*, and allow us to talk about an event/time as being *earlier-than*, *later-than*, or *simultaneous-with*, another event/time. These notions suffice to analyze and explain away change, which is taken not to be metaphysically real, but to have only a psychological status. In other words, change is apparent: events/times are given, and all we can say is that some of them precede and/or are simultaneous with some others. We do have the 'feeling' of change, but, as observed, this is not metaphysically real and has no direct counterpart in the underlying ontology; in this sense, the B-series is objective.

The alternative account replies that change *is* metaphysically real: a past event is ontologically different from a future event, and this requires that the relation of precedence be abandoned in favor of the basic notions of *past*, *present*, and *future* (thus avoiding constructing the latter from the former). The consequence is that time entities with their usual ordering are not part of the underlying ontology, and the whole repertory of referential semantics, with its resources (direct reference, quantification, the traditional views about indexicality) cannot be used to account for temporal talk. For the same reasons, the A-series view is not friendly to traditional tense logics. As observed in section 3, though the latter eschew explicit talk about temporal entities from the object language, they have it in the metalanguage. The A-series conception opposes this move too; there are no time points (or intervals) in the ontology, so they cannot be manipulated at any level of the logical language.

The two opposing fields have both metaphysical and semantic facts to duel about. We won't insist on the former, for which we refer the reader to Ludlow (1999) and to Bonomi (2002). Concerning the latter, a case in point is constituted by temporal indexicals. Ludlow considers the situation of a person (himself, apparently) who thinks:

(65) My fifth anniversary is March 12.

Upon discovering that the very day of that thought *is* March 12, he shouts:

(66) My fifth anniversary is today!

These two tokens exemplify one of the classic problems of indexicals. If we take a referential view of times, and hypothesize that the meaning of an utterance is a tenseless (impersonal) proposition, then the two utterances above may end up having the same meaning – namely, the proposition that Ludlow's anniversary is March 12. But clearly, there's a difference between the kind of knowledge communicated by (65) and that pertaining to (66). Even if we admit that the two utterances have the same content/meaning – e.g., that a particular event (Ludlow's anniversary) occurs at a particular time – we need to account for the cognitive difference. The latter seems to consist of the fact that by uttering (66),

the speaker acknowledges that March 12 (the day of his anniversary) is the same day as that of his utterance. The particular mood he is in is caused by this very fact, not by the (much less urgent) piece of information that his anniversary occurs at such-and-such a time. A possible move suggested in the literature (Perry 1969, 1977; Kaplan 1990; etc.) consists in capturing the difference by means of the notion of the character/role of an (indexical) expression. Characters are entities which connect meanings to contexts of speech/thoughts in such a way that, given a context, the character of an indexical expression provides its meaning. In the case at hand, *March 12* and *today* are indexical expressions (the former is taken to refer to the next such day), and have different characters. The meanings (the time individuals) they provide are what enter the truth-conditions of the two utterances. Larson and Segal (1995) suggest executing this in the following way:

(67) a. Val(x, March 12, σ) iff σ(March 12) = x
b. Val(x, today, σ) iff σ(today) = u = x

These axioms yield the following truth-conditions:

(68) a. If u is an utterance of 'My fifth anniversary is March 12', s is the utterer of u, and t is the time of u, then u is true iff s's anniversary is at March 12.
b. If u is an utterance of 'My fifth anniversary is today', s is the utterer of u, and t is the time of u, then u is true iff s's anniversary is at t.

It should be noted that, in a sense, characters remain outside semantics; actually, they play a role in determining truth-conditions, but they do so only by delivering meanings, used to compute truth-conditions. This state of affairs has the consequence that even the differences between (65) and (66) remain beyond the reach of semantics. Indeed, the time of utterance happens to be March 12 for both sentences, hence the truth-conditions in (68) end up being the same. So, while the notion of character has some role in accounting for the different status of (65) as compared to (66), this remains outside the semantic realm.

For those who are dissatisfied with this outcome, believing that the difference between (65) and (66) should be reflected in the semantics/truth-conditions, the possibility is open of resorting to *token-reflexive* truth-conditions à la Reichenbach (1947), which incorporate the reference to the very utterance (thought) token in the truth-conditions. In this case, the truth-conditions for (65) and (66) are as follows:

(69) a. If u is an utterance of 'My fifth anniversary is March 12', s is the utterer of u, and t is the time of u, then this utterance is true iff s's anniversary is at t.
b. If u is an utterance of 'My fifth anniversary is today', s is the utterer of u, and t is the time of u, then this utterance is true iff s's anniversary is at t-the day of this very utterance.

Now, the right-hand sides of the truth-conditions differ, for the second explicitly mentions the utterance token when spelling out the referent of the indexical, whereas the other doesn't. So it seems that we have both captured the different cognitive significance of our two utterances, and managed to keep the distinction within semantics.

Successful as it may appear, however, the token-reflexive strategy has its own problems. In the first place, it is not clear how the required reference to the utterance can be introduced in the semantic machinery, a seemingly technical problem that we won't discuss here. Second, a case can be construed that causes the collapse (in Ludlow's view) of the token-reflexive strategy. The point to be made draws on observations made by Castañeda (1967) about token-reflexivity applied to the first person. In the case of temporality, it turns on the truth-conditions of utterances of (70a), which are as in (70b) according to the token-reflexive strategy:

(70) a. There is no (spoken) language.
b. If u is an utterance of 'There is no spoken language', s is the utterer of u, and t is the time of u, then this utterance is true iff there is no spoken language at t-the time of this very utterance.

The problem is that though utterances of (70a) are false, they are contingently so (it might have been the case that nobody uttered anything); (70b), however, is necessarily false, because of the presence of the reference to the utterance token in the truth-conditions. If we drop such a reference, however, we give up the prospect of bringing context/character within the semantics. Ludlow's conclusion is that the tension between a satisfactory account of temporal indexicality and the analysis of sentences that are about linguistic tokens, such as (70a), originates from the very resources of the B-series – namely, times and reference thereto. So attempts at getting rid of the B-series seem justified.

Are there any reasons, on the other hand, to prefer the B-series to the A-series? Of course there are, and we have already presented some of them when we discussed the shortcomings of temporal logics: complex tenses and anaphora are the best-known and most discussed problems, not only for temporal logics, but for any genuine A-series accounts. Given that the latter do not even admit temporal entities in the ontology, how can temporal anaphora be dealt with? And how can complex tenses be accounted for?

The only effective reply is to try and develop an explicit A-theory semantics. In this respect, we saw that the tensed approach takes change as real and as having a privileged status. How can such a primacy be captured? What does it mean that all we need are the notions of past, present, and future? Moreover, change must be accounted for in a non-circular way; it wouldn't help to resort to the metaphor of passing/flowing time, because such a passage or flow already takes place in time. The only solution seems to be that being past, present, or future be seen as properties that propositions (or proposition-like objects) have or fail to have, and that change is simply the fact that a certain proposition *was*

future, *is* present, and *will be* past. This, according to Ludlow, was Prior's (1967) position, often confused with the idea that there was *a time* at which a certain proposition was future, there is *a time* at which it is present, and there will be *a time* at which it will be past. The latter is what lies behind the attempts at capturing Prior's intuitions in tense logics, but those statements obviously fail to do justice to the untensed view of the A-series, for they admit temporal entities, and admit reference to them, even if only at the metalanguage level. Taking Prior's idea seriously amounts, therefore, to requiring that *Past* be "an indexical predicate that holds of a proposition-like object, effectively displaying the indexical sense of a past-tense morpheme" (Ludlow 1999: 97).

Consider the following axioms:

(71) a. Val(true, [$_{XP}$ T YP], σ) iff for some x Val(x, T, σ) and x = $_{\sigma}$[]YP[].
b. Val(x, Tpast, σ) iff x was true.
c. Val(x, Tpres, σ) iff x is true.
d. Val(x, Tfut, σ) iff x will be true.

The first axiom assigns the value *true* to the clausal structure [$_{XP}$ T YP] iff the ILF of YP (a proposition-like object) is the value associated with the tense node. As with tense logical approaches, this treatment relies on the idea that there is an appropriate representation in which the tense morpheme takes clausal scope. The contribution of the tense morpheme, in turn, is ruled by (71b–d), which implement the idea that tenses behave as indexical predicates of proposition-like objects. Once, e.g., (71a) and (71b) are put together, we can derive the following theorem for an utterance of *John left*:

(72) Val(true, [$_{XP}$ Tpast [$_{IP}$ John leave]], σ) iff $_{\sigma}$[]IP[] was true.

That is, that utterance is true iff the ILF of the IP phrase was true. To take another (well-known) example, consider utterances of the sentence *My root canal is over* used to express relief after a dreadful session at the dentist (similar examples are discussed by Prior 1967, Higginbotham 1995, and others). The present theory assigns it the truth-conditions in (73a), whereas the Larson-and-Segal-style B-series theory would yield (73b):

(73) a. Val(true, [$_{XP}$ Tpast [∃e(e is the event of my root canal)]], σ) iff $_{\sigma}$[][∃e(e is the event of my root canal)][] was true.
b. If u is an utterance at t, by s of [$_{XP}$ Tpast [∃e(e is the event of my root canal)]], then Val(true, u, σ) iff ∃e(e is the event of my root canal and e<t).

As argued by many, (73b) does not explain why one can express relief by uttering that sentence: what is there to be relieved about in the fact that an event precedes a certain time (or another event)? Arguably, (73a) fares better: the sense of relief stems from the fact that a given proposition (the ILF in (73a)) is past for the speaker.

Following the same path, it is possible to define axioms for other indexicals, such as *yesterday* or *tomorrow*, by treating them in the same disquotational manner as *past*, *present*, and *future* in (71):

(74) a. Val(true, [$_{XP}$ Adv YP], σ) iff there is an x such that Val(x, ADV, σ) and x = $_{\sigma}$[]YP[].
b. Val(x, yesterday/tomorrow, σ) iff x was true yesterday/will be true tomorrow.

4.2 Complex tenses

An important development of the theory concerns complex tenses. The account has similarities with the revised Reichenbachian analysis of Giorgi and Pianesi (1997) and others discussed in section 3.1, since it takes complex tenses to involve multi-clausal constructions. Giorgi and Pianesi exploit two tense categories (T1, which is responsible for the relationship between the event time and the reference time, and T2, which attends to the relationship between the reference time and speech time), and hypothesize that the clause hosting T2 is a complement of that where T1 lies, both being always explicit. Ludlow, on the other hand, provides LF representations for complex tenses based on matrix-adjunct structures, where the adjunct is a *when*-, *before*-, or *after*-clause that might remain implicit. Again, the axioms for the connectives rely on a disquotational treatment:

(75) a. Val(true, [$_{S}$ S1 when S2], σ) iff Val(true, S1, σ) when Val(true, S2, σ).
b. Val(true, [$_{S}$ S1 before S2], σ) iff Val(true, S1, σ) before Val(true, S2, σ).
c. Val(true, [$_{S}$ S1 after S2], σ) iff Val(true, S1, σ) after Val(true, S2, σ).

After this, it is hypothesized that all natural languages have (implicit) *when*-clauses, whose structure is the same as that of explicit ones, and whose tense is in concord with that of the main clause.

With this in place, the syntactic structure for a pluperfect such as (75a) is as in (75b), where the past tense prefixed to the *before*-clause results from the requirement that the tenses of the main and adjunct clauses match:

(76) a. had left
b. Tpast[S] before Tpast[. . .]

Attempting a Reichenbachian analogy, the matrix clause of (76b) expresses the relationship between the event time and the speech time; the adjunct relates the reference time to the speech time, and the connectives *when*, *before*, and *after* take care of linking the event and the reference times. This differs in important respects from the neo-Reichenbachian analyses: the latter, in fact, link the reference time both to the event time and to the speech time, sometimes encoding such a dependency, as in Giorgi and Pianesi (1997) in the morphosyntax of tenses.

The schematic LF in (76b) and the axioms given above yield the truth-conditions in (77b) for the sentence in (77a):

(77) a. John had left.
b. Val(true, 'John had left', σ) iff $_{\sigma}$[]∃e(leaving(e) ∧ Agent(e, John))[] was true before $_{\sigma}$[][. . .][] was true.

To repeat, tenses introduce indexical predicates that are treated disquotationally: what a past tense contributes is that the ILF corresponding to the de-tensed clause was true. There is no mention of times, as we would have in temporal logics (the proposition was true at a past time = the (de-tensed) proposition is true at a past time). Complex tenses require implicit *when-*, *before-*, or *after-*clauses, with temporal connectives also treated disquotationally.

Ludlow argues that thanks to this machinery, the theory avoids one of the commonest charges against temporal logics – namely, the unconstrained nature of the account of complex tenses (see section 2). Contrary to the case of temporal logics, the problem does not arise here, since complex tenses correspond not to the nesting operators, but to implicit clauses introduced by appropriate temporal connectives. Operator composition is not required, hence unwanted combinations are expected not to arise. As Ludlow (1999: 124) puts it: "The system merely recapitulates the structure made available by the system of explicit temporal conjunctions, and inherits the constraints on that system."

At this juncture, one might object that the possibility of predicting non-existing tenses might not be completely ruled out, since temporal clauses can be nested:

(78) John left when you started to address Mary after she provoked Henry.

To the extent that the syntax of implicit *when*-clauses parallels that of explicit ones, nesting temporal clauses cannot be dismissed; hence the danger of over-generating complex tenses isn't completely avoided.

As observed, the implicit temporal clauses can play the role of the Reichenbachian reference time. The latter, in turn, is a device for picking up contextually relevant times. Thus, for an utterance of *John had (already) left* to be felicitous, a contextually relevant time seems necessary, which plays the role of the reference time, as in the following discourse:

(79) Mary entered. John had (already) left.

This is a case of temporal anaphora, and in general the reference time has anaphoric properties.

As we know, A-series theories ban temporal reference: there are no singular propositions about times, but only general ones, in the sense that none depends upon a particular temporal entity. So Ludlow accounts for the anaphoric properties of Reichenbach's reference time by deploying an E-type theory of temporal anaphora. Accordingly, (possibly implicit) temporal anaphors stand proxy for

when-clauses, which provide the required descriptive content (for the notion of E-type anaphora, see Evans 1977). Thus, in the discourse above, the second sentence would have the LF:

(80) [[Tpast [John leave]] before TPast [. . .]]

The content provided by the *before*-clause, in the case at hand, is something like *Mary entered*. Hence, the resulting truth-conditions are:

(81) Val(true, [[Tpast [John leave]] before Tpast[. . .]], σ) iff Val(true, [Tpast [John leave]], σ) before Val(true, Tpast[. . .], σ).

Eventually, the second sentence of our small discourse is uttered truthfully iff *it was true that John left and this was before it was true that Mary entered*. Such a strategy, it is suggested, can be generalized to all cases of temporal anaphora. If workable, it would prove that A-series approaches can handle temporal anaphora, thus replying to an important objection made by its opponents.

4.3 Temporal adverbs

We saw that locating adverbs like *July 13, 1999* seem to provide a clear example of (rigid) reference to temporal entities. In the theory presently under discussion, they can be analyzed as being (elements of) implicit *when*-clauses:

(82) a. John left (on) July 13, 1999.
b. [Tpast [John leave] when Tpast [. . . July 13, 1999 . . .]]

The content of the (partially) implicit *when*-clause can be taken to be the result of some process of temporal measurement – e.g., 'when the calendar said July 13, 1999'. Notice the (implicit) tense prefixed to the adjunct clause in (82b). This follows from Ludlow's hypothesis that implicit *when*-clauses behave syntactically as explicit ones, so that their tenses are somehow coordinated with that of the main clause. In our case, the tense of the matrix is past, so that the adjunct clause has the same tense. In a different context it could be a future or present tense:

(83) a. John will leave (on) July 13, 2005.
b. [Tfut [John leave] when Tfut [. . . July 13, 2005 . . .]]

In this case, the truth-conditions are that 'John will leave when the calendar says *July 13, 2005*.'

This treatment can be extended to temporal expressions that exhibit contextual variability, such as *July 13*, or *Thursday*. In many cases they behave as indexicals, requiring additional information of linguistic provenance to define their interpretive contribution. Thus, according to whether the main tense is past or future, *Thursday* may mean either the last such day before the utterance, or the next one.

In other words, they do not seem to be intrinsically tensed, but import the relevant information from other phrases. Hence, they are different from, and not amenable to the same treatment as, *yesterday* and *tomorrow*. In the present framework, one could attempt the following strategy. Let us consider *next Thursday*, and hypothesize that *next* is an indexical predicate true of proposition-like objects:

(84) Val(x, next, σ) iff x next true.

The axiom for *next* is similar to that of a tense, treating it disquotationally. We can pursue the parallelism further, and suggest that, within an implicit *when*-clause, *next* can play the role of a tense; more precisely, of a future tense. Thence, it will be available when the matrix tense is a future, and it will be ruled out in the presence of a past tense. From what we already know, we can now derive:

(85) Val(true, [. . . next Thursday], σ) iff $_{\sigma}$[][. . . Thursday . . .][] next true.

That is, *next Thursday* is true iff *the clock says Thursday* will (next) be true. For a sentence such as *John will leave next Thursday* we have:

(86) Val(true, [John will leave next Thursday], σ) iff Val(true, [John will leave], σ) when Val(true, [next Thursday], σ).

With this, utterances of *John will leave next Thursday* are true iff *John leave* will be true when *next Thursday* will be true, i.e., when *the clock says Thursday* will (next) be true.

The case of bare temporal expressions, as in *John will leave (on) Thursday*, now follows. We need only recall that the tense (or the category playing the role of tense in the relevant phrase) must agree with that of the matrix. Because of this, the future-like *next* will be selected, giving:

(87) Val(true, [John will leave Thursday], σ) iff Val(true, [John will leave], σ) when Val (true, [*next* Thursday], σ).

We have written 'next' in italics to indicate that in this case it is not explicit, but stems from the general requirement ruling tense compatibility between matrix clauses and *when*-clauses.

As can be seen, the sketched analyses do not exploit times: there is no resort to entities such as the day *July 13* or the hour *five o'clock*. What you have are measure systems that provide tags related to particular events: striking five vs. saying July 13. And the very event of measuring, of course, is tensed; thus, it occurred, occurs, or will occur.

Admittedly, the discussion is very cursory, but it reflects the status of the theory as developed by Ludlow (1999). It should also be observed that it is not clear how explicit talk about time entities and about what in a B-series approach

appear as ordinal/metrical/topological properties can be accounted for. Thus, what should be done with *the third Thursday*, or with *in two hours*, *for two months*, etc? (This also relates to a conceptual problem we overlooked with the proposed treatment for *next*, for the idea of something being 'next true' seems to incorporate an ordinal notion of truth.)

Another important issue involves adverbs (and other devices) that have been argued by B-series theorists to be quantified over times/events:

(88) a. I always meet Mary.
b. $\forall t\ (\exists e'\ (\text{meet}(e') \wedge \text{Agent}(e', \text{I}) \wedge \text{Theme}(e', \text{Mary}) \wedge \text{at}(e', e))$.

(89) a. I often meet Mary.
b. $\text{Many}\ t(\exists e(\text{meet}(e) \wedge \text{Agent}(e', \text{I}) \wedge \text{Theme}(e', \text{Mary}) \wedge \text{at}(t, e))$.

The strategy suggested by Ludlow involves substitutional (rather than objectual) quantification over *when*-clauses. More precisely, times are reintroduced as second-order entities built out of *when*-clauses, in such a way that for a given sentence S and a given context of utterance c, a 'derived' time, is the set of clauses S' that are true when S is true. For instance, if S is 'John sang' and we know that at that time Mary danced, his brother slept, etc., then the contextually determined 'time' of S is t={'Mary danced', 'his brother slept', . . . }. With this, the truth-conditions for (88a) and (89a) are:

(90) a. For every time t, there is an S in t such that 'I meet Mary when "S" ' is true.
b. For many a time t, there is an S in t such that 'I meet Mary when "S" ' is true.

This seems to solve the problem of temporal quantification in an A-series framework: what you quantify over in sentences such as (89a) are not times/events, but descriptions of events. These are context-dependent, as they should be, and as they are acknowledged by any objectual quantification account (in that case, the issue is how to restrict quantifications to contextually relevant times/events/situations).

One possible problem concerns the extension of this strategy to sentences such as (91):

(91) When I got to London I always met Mary.

Are they to be accounted for along the lines of (92)?

(92) For every S=[I got to London], 'I met Mary when "S" ' is true.

If so, the role of quantification actually is in danger of being emptied. For there is only one sentence – namely, *I got to London* – in question, so that you evaluate

the right-hand side of (92) only once, obtaining the sentence *I met Mary when I got to London*. This, in turn, is true iff *it was true that I met Mary when it was true that I got to London*. Eventually, we have semel-factive truth-conditions. The speaker of (91), however, intends the *when*-clause to describe many events of going to London, but then it seems that we cannot use the same sentence for picking them up. In the end, if (92) is not the right way to address sentences such as (91), what should we do with it?

Beside this observation, some questions come naturally to mind. For instance, could one try to mimic the B-series on a contextual basis (e.g., by reintroducing a *later-than* relation on derived times, building on the connective *before*), thus recovering part of its expressiveness, and address, e.g., the problems we saw above with temporal locating phrases? And if derived time entities are needed because of quantification and/or because we can talk about their ordinal/metrical/topological properties, then doesn't this implicitly speak in favor of B-series approaches?

4.4 Sequence of tense

Let us briefly turn to sequence of tense in an A-series framework:

(93) a. John said that Mary was ill.
b. [John said that [Mary was ill when [. . .]]]

The implicit *when*-clause could be taken to E-type-refer to the time of the matrix event – that is, it could be something like *[when [John did the saying]]* – or, as Ludlow suggests, it can be an E-type anaphora to some other contextually relevant clause, e.g., 'when John went home'. The first option could then be used to account for the simultaneous reading of (90), whereas the latter might provide for the shifted reading. Such a suggestion incorporates the independent view of tenses (Dowty 1982b; Abusch 1997), according to which tenses in matrix clauses behave the same way as in matrices. However, it is inadequate, for the reasons discussed in section 3.2: not all past sentences will do, but only those that are not future with respect to the subject (John). So, to adopt a referential jargon, (93a) cannot be a true report of a speech of John's where he says 'Mary will be ill in two days.'

When dealing with B-series theories, it was argued that these and other cases point to the necessity of representing the subject's (= the attitude's agent) coordinate in the ILF of the subordinate clause. In essence, it was said that temporal indexicality, at least as far as tenses are concerned, must be relativized to subjects. The proposal was implemented by distinguishing assignment sequences for the speaker from those for the subject, and have the latter used for the ILF of the complement clause of propositional attitude predicates.

In the present framework, and with the present implementation of the A-series view, one might wonder whether this process of relativizing indexicals to subjects' contexts is still available. Tenses, in fact, are treated disquotationally, and their indexicality is not articulated anywhere, but directly used. Thus, in the

axiom below, it is the metalanguage *was* on the right-hand side that bears the burden of indexicality, being naturally interpreted as the user's (speaker's):

(94) Val(x, Past, σ) iff x was true.

On the other hand, in the cases we are interested in – say, the shifted reading of (93a) – we would like to say that both the *was* of the embedded clause and the tense of the implicit *when*-clause (or, if you prefer, the relevant perspective) are John's (the subject's). In the case of the simultaneous reading (and pending an explanation of SOT), the embedded tense expresses a present tense from John's perspective, etc. Given that, as observed, the indexicality of tenses is not articulated anywhere, it seems that the only possibility of the A-series approach capturing those intuitions consists in changing the way evaluation is accomplished. For instance, we could propose that the LFs of the embedded clauses of attitude reports are (or can be) evaluated by using a simulation strategy. In order to compute the correct ILF (or whatever it is that represents the content of the reported attitude), people project themselves onto, and adopt, the subject's egocentric perspective. Thus, when interpreting an utterance of (93a), the speaker/hearer continues to use axiom (94), however she does so, as if she were the subject, thus turning the tense into that of the (simulated) subject. This line of thought can be extended to DAR sentences (see section 3.3). If we agree that movement of the embedded tense to the higher C creates two copies of the temporal features, then we can retain the idea that the first, in-situ copy is evaluated in a simulative mode (as if it were the subject's), and that the other copy is evaluated in the ordinary mode (as being the speaker's). (Perhaps Ludlow could subscribe to the simulation strategy applied to tenses in subordinate context. He explicitly mentions it as a possibility for indexicals in general, 1999: 64.)

4.5 Taking stock of the A-series approach

Our survey of the A-series, tensed theory has been very cursory, both for reasons of space, and because the reference work (Ludlow 1999) is itself often cursory. Both in Ludlow's case and in ours, the goal was to show that the approach deserves to be pursued, that it can be motivated on both linguistic and non-linguistic grounds, and that, in the end, it can be compared to competing approaches by resorting to the usual notions and tools of descriptive and explanatory adequacy. Some critical observations, beyond those already provided during the discussion, can be made, though.

An important point concerns the burden Ludlow's program places on syntax. This is a heavy one and requires more investigation before the empirical and theoretical consequences of the theory can be properly assessed. For instance, the extensive use of implicit *when-/before-/after*-clauses requires that their status be better investigated and clarified. As it turns out from our survey, these clauses can be completely implicit, as in the case of complex tenses, or part of their content may be visible, as with locating temporal adverbial. As to partially

explicit *when*-clauses, one could think about adapting and extending the analysis Den Dikken et al. (1996) have proposed for intensional verbs such as *seek*, which they suggest also take (partially) implicit complement clauses. Borrowing ideas developed in that work, one might hypothesize that partially implicit *when*-clauses for temporal adverbials have a null verb with an underspecified semantic, so that the resulting structure would be (95), with the subject also being implicit:

(95) [Subj [$_{VP}$ V [three o'clock]]]

One could then go on by suggesting that Subj be spelled out as some measure system (the calendar, the clock, etc.), and that the implicit verb be given the following lexical axiom:

(96) Val(<x, y, e>, VERB, σ) iff e is an event of time measurement, x is the measuring tool/system, and y is the measure.

Again, this is just a possible way to proceed, and more work is needed to establish this on firmer grounds. Also, the status of temporal phrases as PPs or DPs should be considered. Perhaps expressions consisting of DPs could be integrated into the present view along the lines suggested above, as arguments of implicit verbs of implicit clauses. The move is not so straightforward for PPs, for the same (implicit) verb should select either them or DPs.

More serious difficulties are raised by temporal phrases in subject or direct object position:

(97) a. I spent Thursday/the last month/the period between May and July at the seaside.
b. May was a beautiful month.

Should those expressions be treated as part of implicit *when*-clauses, availing oneself of paraphrases such as (98a) for (97a) and (98b) for (97b)?

(98) a. I was at the seaside when [. . . Thursday . . .].
b. It was a beautiful month when [. . . May . . .].

Though perhaps workable for (97a), the strategy seems more difficult with (97b). For what would *beautiful* be predicated of? Should we resort to months, hence times, as second-order/derived entities? And given that the latter are sets of propositions, does it make any sense to say that *beautiful* is predicated of (sets of) them? The problem is even more acute in light of an example discussed by Bonomi (2002):

(99) Last Monday will be described by the newspapers as 'Black Monday'.

It seems impossible, here, to resort to the *when*-clause strategy, for what paraphrase based on it could do the work? And, even if this were possible, attention

should be paid to ensuring that whatever at LF corresponds to *last Monday* be not in the scope of the future tense – a problem which, as might be noted, is reminiscent of similar difficulties temporal logic approaches had in dealing with the scope interactions between the tense operator and those of noun phrases (see section 2).

In the end, even if the *when*-clause strategy can be made to work properly for locating temporal phrases, it is hard to see what the treatment of the same expressions could be like when they appear as subjects or objects. From the point of view of linguistic theory, referential approaches have an obvious advantage over non-referential ones here: whereas the former can treat temporal phrases uniformly, irrespective of whether they serve to locate the event or function as subjects/objects, the tensed approach might end up needing to maintain an asymmetry between the two.

Turning to fully implicit clauses, they are crucial for E-type temporal anaphora. The choice here is between truly implicit (non-visible, but syntactically active) clauses, or null pronouns that, in virtue of the E-type analysis, yield clausal-like contributions to the truth-conditions. Ludlow explicitly considers the first alternative, speaking of LF representations at which implicit clauses are available. An important point, in this respect, is how those LF representations are built from available material in the case of complex tenses:

(100) a. Pluperfect: had left Tpast[S] before Tpast[. . .].
b. Future perfect: will have left Tfut[S] before Tfut [. . .].
c. Future: in future Tfut[S] after Tfut[. . .].

According to the examples given, the main clauses contain the verb, and are prefixed by a tense that seems to be the one originally appearing on the auxiliary. So in *John had left*, the verb appears in the main clause, and the latter is prefixed by the past tense of the auxiliary: *[$_S$ Past [$_S$ John aux leave] . . .]*. This configuration can be obtained by letting the tense (covertly) take wide scope, and the auxiliary be interpretively inert. The participle marking on the verb, in turn, seems to play a role in determining the type of connective to be used: *before* in the case of the pluperfect tense and of the future perfect tense. Maybe this is due to some kind of agreement between some feature of the main verb (a tense feature, an aspectual one?) and the connective.

That this reconstruction of how LFs for complex tenses are derived is on the right track seems to be confirmed by the explicit attempt Ludlow makes (1999: 126) at analyzing connectives such as *before* and *after* as the combination of a past or future tense morpheme and the connective *when*. The tense morpheme thus introduced takes narrow scope, so that the LFs in (100) can be replaced by the following ones:

(101) a. Pluperfect: had left Tpast [Tpast [S] when [. . .]].
b. Future perfect: will have left Tfut [Tpast [S] when [. . .]].
c. Future: in future Tfut[Tfut [S] when [. . .]].

With this, the truth-conditions for *John left* become *it was true that (it was true that John leave) when . . .* , with the dots indicating the implicit *when*-clause. Note that (101) provides for a more straightforward derivation from the surface string than (100), and one which is more in line with current hypotheses about the syntax of tenses – e.g., Giorgi and Pianesi (1997): the tense on the auxiliary (T1) takes wide scope over the whole sentence, whereas that contributed by the past participle (T2) takes scope only over the main clause. Hence, it seems advisable to drop (100) and directly consider (101) as candidate for the LF representation of complex tenses.

The second strategy suggested for complex tenses has the advantage of providing an acceptable treatment of the present perfect tense. This is missing from Ludlow's inventory; if we try to fill this gap by applying the first procedure sketched above, we obtain for *John has left* the following LF, which is clearly wrong (contradictory, it seems):

(102) Tpres [$_S$ John leave] before Tpres [. . .].

If the second strategy is used (the one exploiting *when*-clauses with T2 taking narrow scope over the main clause), then we have:

(103) Tpres [Tpast [John leave] when [. . .]].

This representation does not yield contradiction, and has truth-conditions to the effect that *John has left* is true iff *it is true that (it was true that John leave) when . . .* , where the dots, as usual, stand for the implicit *when*-clause. Given that the tense having scope over the latter is the outermost present, we can conclude that *John has left* is true iff *it was true that John leave when I speak*.

This reconstruction of the present perfect is quite faithful to Reichenbach's (1947) intuition, which distinguished the present perfect from the simple past because with the former the reference time is/overlaps with the speech time, whereas in the latter the reference time is/overlaps with the event time. In the current A-series theory, the simple past features a *when*-clause in the scope of a past tense:

(104) Tpast[$_S$ . . .] when Tpast [$_S$ . . .]

whereas the present perfect has a present tense *when*-clause (cf. (103)). The presence of the latter is crucial for the A-series account of the present perfect, much as the idea that the reference time is/overlaps with the speech time was for Reichenbach: without it, (103) would reduce to the simple fact that *it was true that John leave*, thus becoming very similar to (104). It should also be recalled that the first attempts at capturing the semantics of the present perfect within a tense logical approach failed because it was analyzed as the combination Pres Past[$_S$ . . .], which reduces to Past[$_S$ . . .], this being the same representation postulated for the simple past. What those theories lacked was the acknowledgment (and means)

of the role of contextual factors in tense interpretation, something stressed by Reichenbach and his followers through the use of reference time. Ludlow's tensed theory avoids this problem thanks to the device of *when*-clauses and E-type anaphora.

5 Conclusion

To conclude, it seems that the non-referential, tensed approach (as worked out by Ludlow) fares well with tenses (in both main and subordinate clauses), and that their treatment as indexical predicates and the disquotational semantics given can be very promising both theoretically and empirically.

On the other hand, the theory, as it stands now, still has technical and conceptual problems with temporal phrases and temporal quantification. For the former, problems arise both on the syntactic side (the structure of partially implicit *when*-clauses) and on the semantic one (how should those phrases be analyzed when playing the role of subjects and/or objects?). With respect to temporal quantification, the idea of adopting a substitutional view is an intriguing one, sometimes considered by linguists too (for more on the topic, see Lewis 1985, and Ludlow 1985). However, it seems that more work is necessary before non-referential theories of temporal phrases and temporal quantification can fully compete with those made available by referential approaches.

We close this chapter by briefly returning to the linguistic/semantical reasons the A-theorist has for dropping temporal reference. In section 4.1 it was argued that B-theories don't have the resources to account both for temporal indexicals and for sentences referring to linguistic tokens. One might wonder, in this connection, why that line of argumentation is not extended to indexicality in general, thence rejecting the referential view for objectual talk too. Problems similar to those discussed in section 4.1 for time indexicals are, in fact, found with all of the so-called essential indexicals; witness the fact that Castañeda's (1967) original observations were about the first person pronoun. Nonetheless, Ludlow, our A-theorist, does not seem willing to reject objectual reference along with temporal. Possibly this is due to the fact that he also has philosophical reasons (which we haven't discussed) for distrusting the referential view as applied to temporal talk, so that the linguistic/semantical and the philosophical/metaphysical reasons reinforce each other. Thus, linguists who might not be convinced by the above line of argumentation about temporal indexicals, because, e.g., they are willing to maintain that part of the account of indexicals be outside semantics, should nevertheless face the philosophical arguments. However, the linguistic/semantical reasons might gain in importance if it could be argued that the proper treatment of indexicality is actually as suggested in section 4.1, but there is an asymmetry between temporal and objectual talk, which motivates maintaining a referential apparatus for the latter while discarding it for the former.

Perhaps such an argument can be based on the idea that indexicality seems a much more wide-spread and fundamental phenomenon in the temporal domain

than in the objectual one. Besides tenses and such terms as *yesterday*, *tomorrow*, etc., even *three o'clock* or *February 15* are indexical (or, more generally, context dependent). The only expressions that do not seem to fall within such a generalization are those providing full specification, e.g., *April 25, 2002*. These too interact with tenses, though, so that there seem to be enough reasons for maintaining that indexicality/context dependence is the rule for temporal talk. If so, the linguistic/semantical argument that Ludlow deploys could be extended toward the general conclusion that indexicality always requires a non-referential, disquotational analysis (which can be complemented with a simulationist approach to propositional attitudes: see section 4.4). Those devices (almost) exhaust the requirements of temporal talk, whereas the ubiquity of non-indexical (non-context-dependent) objectual talk motivates also a referential apparatus for the latter.

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73 Topicalization in Asian Languages

LIEJIONG XU

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1 Introduction: topic prominence

Topicalization in a broad sense refers to the formation of any syntactic construction containing a topic, whether it is derived by movement or base-generated. By Asian languages we mean those topic-prominent languages spoken in Asia. Not all the Asian languages are topic-prominent. Indonesian and Tagalog, for instance, are not, but some Asian languages that have a large population of speakers, notably Chinese and Japanese, are typically topic-prominent. According to Gundel's (1988) generalization from an investigation of 30 languages spoken in Asia and other continents of the world, all of them have syntactic topic constructions. Topics in all these languages share a great number of syntactic, semantic, and pragmatic properties. The topic occurs to the left of a full comment sentence. It is definite or generic and is characterized by shared familiarity to both the speaker and the hearer. The comment is a clause that follows the topic and says something about it. The relation between the topic and the comment is commonly characterized as 'aboutness' in the literature. Aboutness may be strict or loose across languages. The following subsections present properties characteristic of topic-prominent languages as against other languages and, particularly, properties that have played a role in linguistic theorizing.

1.1 Variety of topic structures

The term 'topic prominence' dates back to Li and Thompson (1976), in which a new typology is proposed to classify languages as (i) subject-prominent, (ii) topic-prominent, (iii) subject-prominent and topic-prominent, and (iv) neither subject-prominent nor topic-prominent. Topic-prominent languages use a greater variety of topic structures than other languages. The following illustrations are Korean, cited from Sohn (1994: 192–195):

(1) Ku totwuk-un nay-ka cap-ass-ta.
the thief-TOP I-SUBJ catch-PAST-DEC[1]
'This thief, I caught.'

(2) I sacin-un, nay-ka caknyen-ey i sacin-ul ccik-ess-eyo.
this photo-TOP I-SUBJ last-year-at this photo-OBJ take-PAST-POL
'This photo, I look it last year.'

(3) Hankwuk-to inkwu-ka manh-ta.
Korean-also population-SUBJ much-DEC
'As for Korea also, the population is large.'

Korean is an SOV language. In (1), presumably the object has moved to the sentence-initial position, an operation called topicalization (in the narrow sense) in the literature. In (2), the initial NP is coreferential with another NP in the remaining part of the sentence. This is known as dislocation. Gundel's samples show that languages that are not topic-prominent also make use of topicalization and dislocation. What is coreferential with the topic may be an empty node, or a pronoun, or a full noun phrase. In topic-prominent languages, the coreferential constituent may be the partial or full repetition of the topic itself, as in the case of (2). Example (3) is typical of topic-prominent languages. It differs remarkably from the previous two sentences in that the initial NP is semantically related to the following part of the sentence but not coreferential with any empty node, pronoun, or full noun phrase in it. In other words, no constituent in the comment is more closely related to the topic than any other constituent. The comment as a whole is about the topic. Here are more examples from more languages, cited from Li and Thompson (1976: 462):

(4) Neichang huo xingkui xiaofang-dui lai de kuai. Chinese
that fire fortunately fire-brigade come quick
'That fire (topic), fortunately, the fire brigade came quickly.'

(5) Gakkoo-wa buku-ga isogasi-kat-ta. Japanese
school-TOP I-SUBJ busy-PAST-DEC
'School (topic), I was busy.'

(6) Siban-in hakkjo-ga manso. Korean
now-TOP school-SUBJ many
'The present time (topic), there are many schools.'

Such sentences are known in the literature as 'Chinese-style' topic structures, a term which originated in Chafe (1976), in contrast to 'English-style' topic structures.

Among the Chinese-style topic structures is a special construction, the so-called double subject construction or double nominative construction.[2] It is semantically characterized by a possessive relation, or a whole–part relation, or an inclusive relation between the first and the second NP. The following sentences are cited from Li and Thompson (1976: 468).

(7) Ho ō na-qhô yì ve yò. Lahu
elephant TOP nose long PRT DEC
'Elephants (topic), noses are long.'

(8) Neike shu yezi da. Chinese
that tree leaves big
'That tree (topic), leaves are big.'

(9) Sakana-wa tai-ga oisii. Japanese
fish-TOP red snapper-SUBJ tasty
'Fish (topic), red snapper is tasty.'

(10) Pihengki-nin 747-ka khi-ta. Korean
Airplane-TOP 747-SUBJ big-DEC
'Airplanes (topic), the 747 is big.'

The elephant is the possessor and the nose is the possessed in (7). The leaves are part of the whole tree in (8). Red snapper is a hyponym and fish is its superordinate term in (9). 747 is a subset of airplanes in (10).

1.2 Topic marking

Topic-prominent languages tend to mark topics just as subject-prominent languages tend to mark subjects. Particularly, OV languages like Japanese and Korean use special postpositions to mark a wide variety of expressions used as topics. The following examples are Korean, cited from Gundel (1988: 217):

(11) John-nin i salam-lil manna-ass-ta.
John-TOP this man-OBJ meet-PAST-DEC
'John (topic), met this man.'

(12) I salam-nin John-ka manna-ass-ta.
this man-TOP John-SUBJ meet-PAST-DEC
'This man, John met.'

(13) Suyeng-nin Waikiki-ka coh-ta.
swimming-TOP Waikiki-SUBJ good-DEC
'(As for) swimming, Waikiki is good.'

(14) Ecey-nin John-ka naksicil-lil ka-ass-ta.
yesterday-TOP John-SUBJ fishing-OBJ go-PAST-DEC
'Yesterday, John went fishing.'

(15) San-ey-nin namu-ka manh-ta.
mountain-at-TOP tree-SUBJ many-DEC
'At the mountain, there are many trees.'

(16) San-ey ka-1 ttay-ey-nin moca-lil ssi-la.
mountain-to go time-at-TOP hat-OBJ wear-IMP
'When you go to the mountain, wear a hat.'

What is marked as a topic can be a subject, an object, a nominalized VP, a temporal expression, a locative expression, a clause, etc. With a topic marker in place,

whether the sentence-initial expression is a topic or not is uncontroversial in Japanese and Korean.[3] In Chinese, topic marking is optional and in most of the Chinese dialects particles that are used to mark topics can also be used for other purposes, for instance, as sentence-final markers. This is one of the reasons why there are more controversies in the literature related to the structure and interpretation of Chinese topic constructions and also an important reason why more Chinese examples will be used in the remaining sections.

2 Topic structures containing a gap bound to the topic

This section addresses topic structures that contain a gap interpreted as co-referential with the topic. It considers the syntactic and semantic conditions on the relation between the topic and the gap.

2.1 Movement

A question naturally arises: do such topic structures involve movement? Opinions differ among Chinese linguists. Some are in favor of the transformational hypothesis (TH) and others are in favor of the base generation hypothesis (BGH).

The following Chinese and English sentences are structurally so parallel that it seems reasonable to assume that a Chinese topic structure containing a gap involves movement just as its English counterpart does, whether it is straightforward movement of an overt expression from the comment into the topic node, or more sophisticated movement of an abstract element along the lines of Chomsky's (1977b) analysis of *wh*-movement:

(17) a. Naben shu, ta na-le. Chinese
that book he take-ASP
'That book, he took.'
b. Ta na-le neiben shu.

(18) a. That book, he took. English
b. He took that book.

However, there is an underlying difference. While the English sentence in (19) is not grammatical, its Chinese counterpart in (20) is:

(19) *He took.

(20) Ta na-le.

Most of the Chinese verbs that are transitive in meaning can occur without an object.[4] The small number of transitive verbs that require an object cannot appear

without an object even in topic structures. Yuan (1996) emphasizes the impossibility of object drop in topicalization. Below are some Chinese illustrations:

(21) a. Xin Zhengce hui fanrong jinrong shichang.
new policy will boom money market
'The new policy will cause the money market to boom.'
b. *Jinrong shichang, xin zhengce hui fanrong.
money market new policy will boom
'The money market, the new policy will cause to boom.'

(22) a. Tade hua wennuan-le womende xin.
his words warmed our hearts
'His words warmed our hearts.'
b. *Womende xin, tade hua wennuan-le.
our hearts, his words warmed
'Our hearts, his words warmed.'

Even though it is logically possible that the topicalized expression undergoes movement and that the remaining part of the sentence must be grammatical by itself in some languages,[5] the arguments in support of the movement analysis for English sentences like (18a) on the basis of the requirement on subcategorization do not apply to Chinese sentences. The crucial test of the movement hypothesis is, of course, to see whether a topic can be related to a gap in islands such as complex noun phrases and sentential subjects.

2.2 Island effects

Following Chomsky (1977b), those in favor of the TH assume that the topic is base-generated in its surface position and that topicalization involves the movement of an abstract element from an argument position to a position immediately adjacent to the topic. The evidence presented in support of this hypothesis is that such abstract movement is subject to island constraints. Examples such as (23) have been provided in the literature to show that it observes Subjacency and attempts made to explain away apparent counter-examples such as (24):

(23) *Neige ren$_i$, [$_{IP}$[$_{NP}$[$_{IP}$ t$_i$ kanjian t$_j$] de xuesheng$_j$] lai-le]. Chinese
that man see MOD student come-ASP
'The student who saw that man came.'

(24) ??Neiben shu$_i$ [$_{IP}$[$_{NP}$[$_{IP}$ Lisi mei kan t$_i$]] zhen qiguai. Chinese
that book not read real strange
'That Lisi didn't read that book is really strange.'

(23) illustrates the effects of the Complex Noun Phrases Constraint. Movement out of the relative clause[6] is blocked because it crosses the boundaries of NP and

IP. (24) is acceptable,[7] even though the topic seems to have been moved out of the sentential subject. It has been suggested that (24) be assigned the structure in (25), where topicalization occurs within the inner clause and therefore does not violate the Subjacency Condition:

(25) $[_{IP}[_{NP}$[Neiben shu$_i$ $[_{IP}$ Lisi mei kan t$_i$]]] zhen qiguai].

Those in favor of the BGH argue against the transformational approach on the basis of the following counter-evidence:

(26) $[_{CP}$ Zheben shu$_i$ $[_{IP}$ $[_{NP}[_{IP}$ e$_j$ du guo e$_i$ de] ren$_j$] bu duo]]. Chinese
this book read ASP MOD people not many
'This book, there are not many people who read (it).'

(27) $[_{CP}$ Zhexie shi $[_{IP}$ wo juede $[_{IP}$ $[_{IP}$ ta shou e] bu heshi]]]. Chinese
these things I think he says not proper
'These things, I think it is not proper for him to say.'

Like (23), (26) contains a relative clause; nevertheless, the topic can be coreferential with the empty site represented by e across the boundaries of NP and IP. The difference in acceptability between (23) and (26) will be dealt with in section 2.5. Like (24), (27) contains a sentential subject. To rule out the possibility of assigning a structural description similar to (25) as has been proposed for (24), one can embed the sentence one clause further. It turns out that the topic in the leftmost position of the matrix clause can still be associated with a position inside the sentential subject embedded one or even more clauses down.

In (28) the topic is also coreferential with an empty site within the sentential subject:

(28) Zhege wenti [wo xiang [ni zheyang huida e] hen deti]. Chinese
this question I think you this-way reply very appropriate
'This question, I think it is very appropriate for you to answer in this way.'

If movement is always subject to the Subjacency Condition, then the evidence compels one to conclude that topicalization in Chinese does not involve movement.[8]

We now leave Chinese and turn to Japanese for the rest of this subsection. It was observed as early as Kuno (1973b) that the topic can be related to an empty site in islands:

(29) Sono syoonen$_i$-wa $[_{IP}$ $[_{NP}$ e$_i$ e$_j$ kawaigatte ita] inu$_j$]-ga sinde simatta.
that boy-TOP fond-of was dog-SUBJ dying ended up
'Speaking of that boy, the dog that he was fond of died.'

(30) Sono sinsi$_i$-wa [$_{NP}$ [$_{IP}$ e_1 e_j kite iru] yoohuku$_j$]-ga yogorete iru.
that gentleman-TOP wearing is suit-SUBJ dirty is
'Speaking of that gentleman, the suit that he is wearing is dirty.'

Later, Hasegawa (1981) points out that the following sentences are somewhat less acceptable, possibly due to their violation of Subjacency:

(31) ??Ano- hon-wa John-ga [$_{NP}$ [$_{IP}$ *e* kaita] hito]-ni aitagatte iru rasii.
that book-TOP John-SUBJ wrote person-to want-to-meet seem
'Speaking of that book, it seems that John wants to meet the person who wrote it.'

(32) ?Russell-wa John-ga [$_{NP}$ [$_{IP}$ *e* atta koto-ga aru] hito]-o mituketa rasii.
Russell-TOP John-SUBJ met fact-SUBJ have person-OBJ found seem
'Speaking of Russell, it seems that John found a person who had actually met him.'

Comparing (31) and (32) with their scrambling counterparts (33) and (34), Saito (1987) believes that the marginality of the former is due to a constraint weaker than Subjacency:

(33) ?*Ano hon-o John-ga [$_{NP}$ [$_{IP}$ *t* kaita] hito]-ni aitagatte iru rasii.
that book-OBJ John-SUBJ wrote person-to want-to-meet seem
'It seems that John wants to meet the person who wrote that book.'

(34) ?*Russell-ni John-ga [$_{NP}$ [$_{IP}$ *e* atta koto-ga aru] hito]-o mituketa rasii.
Russell-to John-SUBJ met fact-SUBJ have person-OBJ found seem
'It seems that John found a person who had actually met Russell.'

But Saito observes that topicalization of a prepositional phrase in (35d) is more difficult than topicalization of an object in (35b) or a locative noun phrase in (35c):

(35) a. John-ga [$_{NP}$ [$_{IP}$ Pekin-ni itta koto-ga aru] hito]-o mituketa rasii.
John-SUBJ Beijing-to went fact-SUBJ have person-OBJ found seem
'It seems that John found a person who has been to Beijing.'
b. ??Pekin-wa John-ga [$_{NP}$ [$_{IP}$ *e* itta koto-ga aru] hito]-o mituketa rasii Pekin-TOP.
c. ?*Pekin-ni John-ga [$_{NP}$ [$_{IP}$ *t* itta koto-ga aru] hito]-o mituketa rasii Pekin-to.
d. *Pekin-ni-wa John-ga [$_{NP}$ [$_{IP}$ *e* itta koto-ga aru] hito]-o mituketa rasii Pekin-to-TOP.

The former may be regarded as a case of island violation. But Saito notes that even the topic in situ is marginally acceptable in these sentences and so judgment is too subtle to be fully reliable. Later, Haig (1996) argues that the reason why

(35c) and (35d) are not acceptable is that there is no logical relationship between the topicalized noun phrase and the comment clause. It is more difficult to interpret a comment as being about 'to Beijing' than about 'Beijing' alone.

On the whole, there seem to be fewer proponents of the movement approach to topicalization among Japanese linguists than among their Chinese colleagues.

2.3 Generalized Control Rule

We now return to Chinese. To maintain that topicalization obeys Subjacency, Huang (1984) proposes a solution to problems that arise from the grammaticality of sentences such as (36), structurally similar to (26):

(36) Zhangsan, [[e xihuan e de] ren] hen duo. Chinese
Zhangsan like MOD people very many
'Zhangsan, people who he likes are many.'
'Zhangsan, people who like him are many.'

His solution makes use of Chomsky's (1982: 35) view on the functional determination of empty categories (EC). Whether an EC is derived by movement or base-generated, its interpretation is determined by its role in derivations and representations. An EC is a variable if it is in an A-position and is locally A'-bound. An EC that is not a variable is a pronominal if it is free or locally A-bound by an antecedent with an independent theta-role. The two ECs in (36) can be categorized in this light. Huang further proposes a rule of interpretation for empty pronominals, which he calls the Generalized Control Rule: co-index an empty pronominal with the closest nominal element.[9] With it he derives the two readings of (36) as follows.

In the first reading, the empty subject starts out as a pronominal. It is co-indexed with the closest nominal element, i.e., *Zhangsan*. Then it converts itself into a variable. The empty object is co-indexed with the head of the relative clause *ren*.

In the second reading, it is assumed that the empty object is moved to a topic position within the relative clause, a local movement that does not violate Subjacency. Then it can be co-indexed with the closest nominal element *Zhangsan* in accordance with the Generalized Control Rule, giving rise to the following structure:

(37) Zhangsan, [[e_i e_j xihuan t_i de] ren_j] hen duo.

The same analysis applies to (26) and can thus account for its grammaticality and interpretation despite its apparent violation of Subjacency.

2.4 Resumptive pronoun

The solution described in the preceding section works for cases where the relative clause is contained in the subject but not for those where it is contained in the object. (38) is an illustration of the latter:

(38) Neiben shu_i, [wo renshi hen duo [[e_j kan-bu-dong e_i de] ren_j]]. Chinese
that book I know very many cannot-understand MOD person
'That book, I know many people who can't read [it].'

In this sentence the object rather than the subject is relativized. The topic is associated with an empty category in a complex noun phrase that functions as the object. Suppose the empty object moves into the topic position of the relative clause: the Generalized Control Rule would predict that it should derive its content from the subject of the root clause *wo*, i.e., its closest nominal element. Since the topic is more remote than the subject, it should not be able to bind the empty object.

Another solution has been proposed by arguing that the empty object bound to the topic is actually a phonetically unrealized resumptive pronoun. In most cases Chinese pronouns take animate NPs but not inanimate NPs as antecedents. The contrast is clear in (39a, b):

(39) a. Neige jiahuo$_i$, [wo renshi hen duo [e_j bu xihuan ta_i de ren_j]].
that fellow I know very many not like him MOD person
'That fellow, I know many people who don't like him.'
b. *Neiben shu_i, [wo renshi hen duo [e_j kan-bu-dong ta_i de ren_j]].
that book I know very many cannot-understand it MOD person
'That book, I know many people who can't read it.'

So there is no alternative but to make the resumptive pronoun in (39b) empty, resulting in (38). In other words, (38) is a case of dislocation except that the resumptive pronoun has to be null for an independent reason. Once a resumptive pronoun is present, island conditions are simply not relevant. Similarly, violation of the Sentential Subject Constraint in (27), repeated below as (40), may also be more apparent than real for the same reason. *Zhexie shi*, too, is an inanimate NP and thus cannot but bind an empty resumptive pronoun.

(40) [$_{CP}$ Zhexie shi [$_{IP}$ wo juede [$_{IP}$ [$_{IP}$ ta shou e] bu heshi]]]. Chinese
these things I think he says not proper
'These things, I think it is not proper for him to say.'

The resumptive pronoun hypothesis has a difficulty: even an animate NP used as the topic can bind into an island. Though no such examples were documented in the earlier literature, they are not at all difficult to construct for Chinese:

(41) a. Zhege wanpi de $haizi_i$ [wo zhao-bu-dao [e_j yuanyi shouyang ta_i de ren_j]].
this naughty MOD child I can't-find willing adopt him MOD person
'This naughty child, I can't find a person who is willing to adopt him.'
b. Zhege wanpi de $haizi_i$ [wo zhao-bu-dao [e_j yuanyi shouyang e_i de ren_j]].

(42) a. Zhewei houxuanren$_i$ [women zai ge di jian-dao-le wushu
this candidate we PREP every place see-ASP numerous
[e$_j$ yonghu ta$_i$ de ren$_j$]].
support him MOD person
'This candidate, we saw numerous people who supported him everywhere.'

b. Zhewei houxuanren$_i$ [women zai ge di jian-dao-le wushu [e$_j$ yonghu e$_i$ de ren$_j$]].

These sentences are structurally identical to (38) except that the topics are animate NPs. Both the (a)-forms and the (b)-forms are grammatical. Since animate NPs can be the antecedents of overt pronouns in Chinese, there is no compelling reason for the resumptive pronouns to take a zero form. Therefore the empty objects in (41b) and (42b) must be either empty pronominals or variables. If they are identified as pronominals, they undermine the assumption made in Huang (1984) that objects can never be pro. If, on the other hand, they are variables bound to the topics, Subjacency is violated.[10]

2.5 Syntactic and semantic conditions

Researchers are still looking for more convincing evidence of island effects. Meanwhile topic structures in topic-prominent languages are found to be subject to other syntactic and semantic conditions. Among them is the well-known aboutness condition, which requires that the topicalized NP must be characterized by the rest of the sentence. See Takami and Kamio (1994), among others.

Xu and Langendoen (1985) postulate the following condition on topic structures in Chinese: the comment itself must be well-formed. This condition is not imposed on topicalization in English. On the contrary, to make the comment clause grammatical, the fronted topic must be recovered at its source position.[11] Since then this postulation has been reviewed by a number of researchers. It has been found to be a necessary but not a sufficient condition. Various additional conditions have been discovered.

Huang (1992) observes that the ungrammaticality of the (b)-sentences below is not predicted by the above generalization:

(43) a. Ta toutoude jiao ni shagua. Chinese
he stealthily call you fool
'He secretly calls you fool.'

b. *Shagua, ta toutou de jiao ni.

(44) a. Wo quan ta manpao. Chinese
I advise him jog
'I advised him to jog.'

b. *Manpao, wo quan ta.

The comment clauses in (43b) and (44b) are well-formed or can be made well-formed with minor revision. Huang points out that problem arises if the restriction on topicalization is formulated only in terms of syntactic categories. The ungrammaticality of (43b) and (44b) can be successfully treated by functionally based theories, but not by structurally based theories. Adopting the theory of Functional Uncertainty proposed by Kaplan and Zaenen (1989) in the framework of Lexical Functional Grammar, he postulates the constraint as follows: GFs (i.e., grammatical functions) of XCOMP (i.e., open complements of any categories) cannot be topicalized.

The functional theory is claimed to be able to account for the contrast in grammaticality shown in (45) as well:

(45) a. Ni yijing biye le, wo zhidao. Chinese
you already graduate ASP I know
'That you have already graduated, I know.'
b. *Ni yijing biye le, wo yiwei.
you already graduate ASP I think

The difference cannot be expressed in terms of syntactic categorization, since in both cases what is topicalized is S', i.e., CP. LFG labels the embedded clause in (45a) as OBJ2 (i.e., second object) and the one in (45b) as COMP (i.e., sentential argument representing a propositional role) respectively. The latter is excluded from a legal topic construction.

Yuan (1996) lists a wide range of constructions that resist topicalization, including those discussed in Huang (1992). Although he does not propose a theory to account for the facts, he also shows that the grammaticality of the comment clause is subject to various other conditions.

Jiang (1991a, 1991b) calls attention to another constraint on topicalization, which is shown in the embedded clause following certain verbs:

(46) a. Zhangsan xiangxin [Lisi qu kan le Wangwu]. Chinese
Zhangsan believe Lisi go see ASP Wangwu
'Zhangsan believes that Lisi has gone to see Wangwu.'
b. Zhangsan xiangxin [Wangwu, Lisi qu kan le].
Zhangsan believe that Wangwu, Lisi has gone to see

(47) a. Zhangsan xihuan [Lisi qu kan Wangwu]. Chinese
Zhangsan like Lisi go see Wangwu
'Zhangsan likes Lisi to go to see Wangwu.'
b. *Zhangsan xihuan [Wangwu, Lisi qu kan].

Topicalization can take place in embedded clauses following verbs like *xiangxin*, but not in those following verbs like *xihuan*. Jiang distinguishes the two types of complement clause by labeling them saturated clause (SAS) and unsaturated clause (NSS) respectively. SAS expands into XP S (i.e., topic and comment) while NSS expands into NP VP (i.e., subject and predicate).

Embedded topicalization in Japanese is studied in Maki et al. (1999). They show that it is found in the complement clauses of bridge verbs but not in the complement clauses of factive verbs:

(48) a. John-wa [kono hon-wa Mary-ga yonda to] Japanese
John-TOP this book-TOP Mary-SUBJ read COMP
sinziteiru.
believe
'John believes that this book, Mary read.'
b. John-wa [kono hon-*wa Mary-ga yonda no]-o kookaisiteiru.
John-TOP this book-TOP Mary-SUBJ read COMP-ACC regret
'John regrets that this book, Mary read.'

They posit that Japanese embedded topicalization involves IP adjunction and LF movement to the embedded COMP. The complement clause following a bridge verb is L-marked and that following a factive verb is not. Adjunction to a non-L-marked head is prohibited.

Not all constraints on the relation between the topic and what it binds are syntactic. For instance, what is responsible for the contrast in acceptability between (49a) and (49b) (given above as (26))?

(49) a. ??Zheben shu_i [$_S$ [$_{NP}$ [$_S$ e_j du guo e_i de] ren_j] lai le. Chinese
this book read ASP MOD man come ASP
*'This book, I think the man who read came.'
b. Zheben shu_i [$_S$ [$_{NP}$ [$_S$ e_j du guo e_i de] ren_j] bu duo].
this book read ASP MOD people not many
'There are not many people who read this book.'

Some researchers attribute the difference in acceptability to the contrast between specificity and non-specificity of the relativized NPs. The NP *du guo de ren* is understood as non-specific in (49b), but specific in (49a). The sentence in (49a) is less acceptable because of a semantic principle like the 'name constraint' of Guéron (1980), which prohibits a name (i.e., a complete referring expression) from containing a variable.[12]

In (50a, b) a lexical pronoun, rather than an empty category, is anaphorically related to the topic. But similarly, the result is acceptable if the NP containing the pronoun is non-specific, but less acceptable if it is specific:[13]

(50) a. Zhege qiangdao wo xiang neng zhuazhu ta de ren shi Chinese
this robber I think can catch he MOD man be
ge yingxiong.
a hero
'This robber, I think anyone who can catch him is a hero.'
b. ??Zhege qiangdao wo xiang zhuazhu ta de ren lai le.
this robber I think catch he MOD man come ASP
'This robber, I think the man who caught him came.'

3 Topic structures containing no element bound to the topic

This section addresses topic structures that do not contain a gap or an overt element interpreted as coreferential with the topic. As mentioned in section 1.1, they are known as 'Chinese-style' topic structures, involving neither topicalization (in the narrow sense) nor dislocation. We begin with Japanese and Korean and then move on to Chinese.

3.1 Base generation or movement?

3.1.1 Japanese

It is almost universally agreed by Japanese linguists that topics like those in (9) (repeated here as (51a)) and (51b), which do not bind an empty site, are generated in situ, following Kuno (1973b, 1973c):

(51) a. Sakana-wa tai-ga oisii.
fish-TOP red snapper-SUBJ tasty
'Speaking of fish, red snapper is tasty.'
b. Hana-wa sakura-ga ii.
flower-TOP cherry blossoms-SUBJ good
'Speaking of flowers, cherry blossoms are the best.'

However, Kuroda (1986, 1992) proposes an alternative analysis. He was the first to apply the tranformational-generative approach to the analysis of Japanese topicalization, in Kuroda (1965). Kuroda (1986, 1992) claims that the following (a)-sentences (cited from Kuno 1973c) are derived from the (b)-sentences and the latter from the (c)-sentences, even though some (b)- or (c)-sentences sound less natural:

(52) a. Sakana-wa tai-ga yoi.
fish-TOP red snapper-SUBJ good
'As for fish, the red snapper is good.'
b. ??Sakana-ga tai-ga yoi.
fish-SUBJ red snapper-SUBJ good
c. ??Sakana-no tai-ga yoi.
fish-POSS red snapper-SUBJ good

(53) a. Buturigaku-wa syuusyoku-ga taihen da.
physics-TOP employment-SUBJ hard DEC
'As for physics, employment is hard.'
b. Buturigaku-ga syuusyoku-ga taihen da.
physics-SUBJ employment-SUBJ hard DEC
c. ??Buturigaku de syuusyoku-ga taihen da.
physics with employment-SUBJ hard DEC

Kuroda observes that many *wa*-phrases alternate with *ga*-phrases, and argues that those that do not are not genuine topics but vocatives, etc., and therefore should be excluded from consideration. In contrast, *wa*-phrases that bind empty sites do not alternate with *ga*-phrases. So his hypothesis is that all topic phrases are generated in an argument or adjunct position within IP. They may move to an A'-position dominated by CP. Movement takes place prior to Linear Case Marking. Thus phrases within IP are assigned *ga* and those outside IP are assigned *wa* (Kuroda 1992: 286–287).

3.1.2 Korean

Choe (1995) argues that in Korean, even topics that apparently do not bind any element in the comment are derived by an operation called Topic Movement. There are several different types of Topic Movement. In some topic structures the topic has a whole–part relation with another NP in the comment. Earlier, Choe (1986) assumes that such a construction, as exemplified in (54a), is the result of Possessor Raising. Its surface structure is (54b):

(54) a. Khokkili-nun [kho-ka] kil-ta.
elephant-TOP nose-SUBJ long-DEC
'In speaking of elephants, noses are long.'
b. Khokkili-nun$_i$ [t$_i$ kho-ka] kil-ta.

In some other topic structures, the topic is also semantically related to another NP in the comment, but it is not a part–whole relation. The topic in (55a) is an example. Choe assumes that (55a) is derived from (55b) by a movement process which preposes the *nun*-phrase to the sentence-initial position:[14]

(55) a. Hyangki-nun cangmi-ka choeko-ta.
fragrance-TOP rose-SUBJ best-DEC
'In speaking of the fragrance (of flowers), roses are best.'
b. Cangmi-ka hyangki-nun choeko-ta.

3.1.3 Chinese

In the early days of transformational grammar, it was proposed in Thompson (1973) that (56a) is derived from (56b), not usable as a surface form:

(56) a. Shuiguo, wo xihuan pingguo.
fruit I like apples
'As for fruit, I like apples.'
b. *Wo xihuan pingguo shuiguo.

Since then linguists seem to have come to agree that the topic in (56a) is base-generated, and that so is the topic in the so-called double subject construction or double nominative construction in (57):

(57) Shuiguo, pingguo zui haochi.
fruit apple most tasty
'As for fruit, the apple is most tasty.'

Shyu (1995) proposes distinguishing two kinds of topics, assuming that a topic that does not bind a gap is base-generated in an IP-adjunction site, while a topic that does is moved to the Spec position of another maximal projection called TopP. She renames the former 'major subject', leaving the term 'topic' for the latter exclusively. A major subject can be raised to Spec TopP later.

3.2 Topic or not topic?

Linguists who do not believe that topic structures in Chinese, Japanese, and Korean are radically different from those in English and other European languages have two strategies to reduce or eliminate the diversity. One is to argue that any topic is derived by movement and thus always binds a gap. The other is to argue that the sentence-initial expression that does not bind a gap is, in fact, not a topic but something else; for instance, the subject of the sentence. Since a topic is unequivocally case-marked in Japanese and Korean as distinctive from a subject, the former strategy is more reasonable. Chinese does not require the use of overt markers to mark topics, so the latter strategy is plausible. There have always been Chinese grammarians who prefer to take the sentence-initial expression to be a possessive NP with a zero possessive marker, or as an adverbial with a zero form of preposition, or as a subject followed by a clausal predicate. A solution widely accepted by traditional grammarians (e.g., Chao 1968; Lü 1986) is calling the first NP 'main subject' or 'major subject' and the second one 'minor subject'. While the minor subject takes a VP as its predicate, the major subject takes a clause as its predicate, thus doing away with the troublesome term 'topic' completely.[15]

Shi (2000), based on Shi (1992), is a recent representative of the traditional reductionist view, this time in formalist terminology. His claim is summarized as follows:

(58) A topic is invariably related to a syntactic position in the comment and a comment is invariably an open sentence containing a gap or a resumptive pronoun coreferential with the topic. (Shi 2000: 388)

In this view every topic must be syntactically licensed. It cannot be merely semantically related to the comment as a whole, a relation known in the literature as aboutness. This is a strong claim. If it is true, then there is no significant structural difference between topic-prominent languages and other languages, though the former statistically use topic structures more often than the latter. To maintain (58), Shi adopts a piecemeal solution. He lists six types of 'dangling topics' and argues that in each case either there is a hidden gap or a resumptive pronoun in the comment from which the sentence-initial element originated, or

it is not a genuine topic. There are other types of Chinese-style topic structures as well, including the well-known double nominative construction represented by (8) and (57), and those that have no particular names, such as the topic structure in (56). To fulfill his objective, Shi must eliminate each and every one of them as well. This is an arduous task.

To refute (58) is an equally arduous task. Pan and Hu (2001, 2002) take a semantic approach, providing counter-evidence to Shi's (2000) treatment of all the six types of topic structures. In their analysis, a topic may be semantically licensed or syntactically licensed. What follows the topic may semantically be interpreted as an open predicate without a syntactic gap or resumptive pronoun. Sections 3.2.1 and 3.2.2 present their debate on two representatives of the six types listed in Shi (2000). For further discussion on the other types, see the appendix to this chapter (section 5).

3.2.1 Topic or subject?

Shi (2000) provides the two sentences in (59) and (60) to illustrate a special case of the double nominative construction:

(59) Tamen, wo kan ni, ni kan wo. Chinese
they I look you you look me
'They look at each other.'

(60) Tamen, da yu chi xiao yu. Chinese
they big fish eat small fish
'They act according to the rule of the jungle.'

The sentence-initial pronoun *tamen* represents a set, and the NPs that follow, *wo*, *ni* or *da yu*, *xiao yu*, are members of the set. These two sentences differ from other Chinese-style topic structures in that, as Shi points out, the clauses that follow the pronouns are idioms, in which the lexical items are not freely changeable and their order is fixed. He argues that the pronouns are, in fact, subjects[16] that take idioms as their predicates. This analysis is supported by the fact that the adverb *zhuanmen* (specially), which always follows the subject but never precedes it, appears between the pronoun and the idiom:

(61) Tamen, zhuanmen da yu chi xiao yu. Chinese
they specially big fish eat small fish
'They are doing nothing but acting according to the rule of the jungle.'

Pan and Hu challenge Shi in three respects: the definition of idiom, the assignment of a thematic role, and the adverbial placement test.

Shi's argument is based on two implicit assumptions: (i) an idiom can be the predicate of a sentence, even though it is in the form of a clause, complete with a subject of its own; (ii) a clause that is not an idiom cannot be a predicate. So the distinction between an idiom and an ordinary clause is important. Pan and Hu call readers' attention to sentences like (62):

(62) Tamen, zuotian xiawu Xiao Zhang mei lai, Xiao Li Chinese
they yesterday afternoon Xiao Zhang not come Xiao Li
ye mei lai.
also not come
'Yesterday afternoon, of the two people, Xiao Zhang didn't come and Xiao Li didn't come, either.'

This sentence is structurally similar to Shi's examples in (59) and (60). It begins with a plural pronoun followed by one or more clauses. The pronoun represents a set and the subject of the clause represents its members. What follows the pronoun in (62) is obviously not an idiom, because it contains randomly selected proper names and an adverbial referring to specific time. If any complete clause, whether or not an idiom, can be analyzed as the predicate of the sentence, then it just repeats the solution proposed by traditional Chinese grammarians involving major subjects and minor subjects. If only an idiomatized clause can be the predicate, one would like to know why one should give idioms special consideration and how to analyze non-idiom clauses like the one in (62).

Even if one is ready to take any clause as a predicate, there is a problem in assigning a thematic role to the sentence-initial pronoun. If it is a topic, according to Shi (2000: 405), it "always depends on an element inside the comment for its thematic role." If it is a subject, it should have an independent thematic role. Pan and Hu wonder how the pronouns in (59–62) can get a thematic role. The predicate in the form of a clause is syntactically saturated and therefore does not have an extra thematic role for the sentence-initial pronoun.

The adverbial placement test is also problematic and unreliable. Pan and Hu provide an example in which the adverb *zhuanmen* appears after an uncontroversial topic.[17]

Pan and Hu (2001, 2002) formally formulate their semantic licensing condition for such topic-comment structures as follows:

(63) $\lambda P \lambda Z \subseteq$ things $\lambda x \lambda y$ [$x \in Z$ & $y \in Z$ & $P(x, y)$]

After applying (63) to the first clause in (59), they get C = λZ [ni'$\in Z$ & wo'$\in Z$ & kan' (ni', wo')]. Since C is an open predicate, it can take the topic *tamen* as its argument, and thus the topic in question is licensed by the open semantic predicate C. (There is a process of conjunction between the two clauses in (58). Actually, the topic is combined with the conjoined clauses, which have the semantic representation λZ [ni'$\in Z$ & wo'$\in Z$ & kan'(ni', wo') & kan'(wo', ni')].

3.2.2 With or without a gap?

Another type of Shi's 'dangling topic' is represented by (64), a classic example that first appeared in Chao (1968) and was later cited repeatedly in the literature (e.g., in slightly different form, as (4) above):[18]

(64) Nachang huo, xingkui xiaofangdui lai-de kuai. Chinese
that fire fortunately fire-brigade came fast
'That fire, fortunately the fire brigade came quickly.'

Shi admits that *nachang huo* may be taken as a topic but argues that it is so because it is related to an empty position in a sentence which is understood by the speaker and the hearer.[19] What he means is that there should be a phonologically unrealized subsequent sentence which contains a gap anaphoric to the topic. Shi (2000: 393) puts forward the following sentence as subsequent to (64), containing an empty subject marked by e:

(65) Buran e jiu hui shao-si bu shao ren. Chinese
otherwise really will burn-die not-few people
'Otherwise (it) would have killed many people.'

Earlier, Shi (1992: 109) characterized sentences such as (64) as 'incomplete'. The addition of a subsequent sentence makes it a complete discourse and provides an empty subject position. Yuan (1996) independently proposes exactly the same solution.

Although addition of a subsequent sentence may make the discourse complete or more complete, whatever 'complete' means, there is no guarantee that it always contains a gap. For instance, the subsequent sentence can be (66) instead of (65):

(66) Buran women dou hui sidiao. Chinese
otherwise we all will die
'Otherwise we would all have died.'

Addition of (66) to (64) achieves equal completeness, yet there is no empty position in (66) to license the topic. Aware of this problem, Shi argues further that in such a case one can interpret the topic as a sentential adverbial and then add another adverbial such as *naci* 'that time' to (66) to be anaphoric to the topic. Adding it to (66) produces (67a). It is generally possible to insert a temporal adverbial freely. Even if the temporal adverbial does not occur overtly, an empty one will serve the purpose as well. So one can take (66) as containing an empty resumptive proform anaphoric to the topic, as in (67b):

(67) a. Nachang huo$_i$, xingkui xiaofangdui lai-de kuai. Buran naci$_i$ Chinese
women dou hui shao-si.
b. Nachang huo$_i$, xingkui xiaofangdui lai-de kuai. Buran e$_i$
women dou hui shao-si.

Pan and Hu (2001, 2002) object that by so doing Shi allows the topic in (64) to be licensed by a null element in a null clause. This is such an extremely powerful

means that it makes his hypothesis in (58) unfalsifiable. It has hardly any explanatory power.

3.2.3 Related but not coreferential?

Shi's six types of topic structures, each supposedly containing a 'dangling topic', do not form an exhaustive list of Chinese-style topic structures. There is at least one more type of topic structure that merits more attention. It is also among the most frequently cited illustrations of Chinese-style topic structures. One example of this type, cited from Chen (1996), appears in Shi (2000: 401) in a paragraph in which he considers the possibility of relativizing topics. But he does not make it clear whether the sentence-initial NP in (68) is also a subject:

(68) Shuiguo wo zui xihuan chi xiangjiao. Chinese
fruit I most like eat banana
'(Among) all fruits, I like to eat bananas the most.'

This sentence represents a commonly used topic structure, where the topic is the superordinate term while there is another NP in the comment which is semantically its hyponym.[20] But unlike in the double subject construction, the two semantically related NPs are not adjacent to each other. (68) differs from the double nominative construction and also from any of the topic structures involving 'dangling topics'. Obviously, *shuiguo* cannot be taken as a modifier or specifier of *wo*. It is related to *xiangjiao*, of course. But the relation is not coreferential. It does not inherit a thematic role from it. Thus it is not compatible with Shi's definition of topic in (58).

To summarize, on the one hand, the so-called Chinese-style topic structures do share some syntactic and semantic properties. On the other hand, they appear in such a variety of constructions that it is hard to reduce each and every one of them to an English-style topic structure or to a structure without a topic.

4 Post-subject topic

The canonical word order of Chinese is SVO, as exemplified in (69a). Alongside the topic structure in (69b), in which the object is situated at the front, we also find (69c), where it occurs between the subject and the verb:

(69) a. Ta du le zheben shu. Chinese
he read ASP this book
'He read this book.'
b. Zheben shu ta du le.
c. Ta zheben shu du le.

The preposed NP *zheben shu* in (69c) is known variably as preposed object, shifted object, or post-subject topic, and also as preverbal topic, subtopic, secondary

topic, inverted topic, etc., in the literature. Some researchers argue that it is not a topic, but a focus. The two controversial issues with regard to this construction are: (i) how is (69c) syntactically derived, and (ii) what is the nature of the preposed object – a topic or a focus?

4.1 Derivation

4.1.1 Double topicalization

Presumably, the sentence in (70c) may be derived by topicalizing both the subject and the object in (70a) in the following manner. The object in (70a) moves to the clause-initial position first, producing (70b), and then the subject moves across the preposed object, producing (70c):

(70) a. Ta du le zheben shu. Chinese
b. Zheben shu_i, ta du le e_i.
c. Ta_i zheben shu_i e_j du le e_i.

This mechanism is called Double Topic Hypothesis by Ernst and Wang (1995) and Shyu (1995).[21]

4.1.2 VP adjunction

Ernst and Wang (1995) present evidence against the Double Topicalization Hypothesis in favor of the VP-Adjunction Hypothesis. The latter allows the object to move and adjoin to any segment of the VP. It can account for the following data:

(71) a. *Yijing Guorong ye ziji feng-hao yifu le. Chinese
already Guorong also self sew clothes ASP
'Guorong already can sew clothes himself.'
b. Guorong yijing yifu ye ziji feng-hao le.
Guorong already clothes also self sew ASP

The adverb *yijing* must occur in the VP. Hence the contrast between (71a) and (71b) in grammaticality. If both the object and the subject undergo movement to the front, they should both precede the adverb. The VP-Adjunction Hypothesis, on the other hand, makes the correct prediction, as it allows the object to adjoin freely to a position under the adverb, giving (71b).

4.1.3 Substitution movement

Qu (1994), Shyu (1995), and some other researchers maintain that the preposed object undergoes overt A-movement. A-movement is subject to the locality condition. This hypothesis can account for the fact that object preposing, unlike topicalization, never crosses sentence boundaries. The object of the embedded clause can move to the front of the matrix clause, but it cannot be located between the matrix subject and the verb:

(72) a. Zheben shu, laoshi zhidao [xuesheng du guo e]. Chinese
this book teacher know student read ASP
'This book, the teacher knows the students have read.'
b. *Laoshi zheben shu zhidao [xuesheng du guo e].
teacher this book know student read ASP

Those who advocate A-movement agree that it is motivated by feature checking but disagree as to which feature or features to check and where. Following Pollock (1989) and Chomsky and Lasnik (1993), Qu (1994) assumes that the object raises to Spec of AgrOP for case and feature (presumably phi-features) checking. It is a substitution movement. Treating the preposed object as a focused NP on a par with those bearing an overt focus marker, Shyu (1995) assumes that it raises to Spec of FP (Focus Projection) to check the focus feature. Similarly, Gasde (1998) hypothesizes the existence of a Focus Phrase within IP, which he calls Focus2 Phrase to distinguish it from the Focus1 Phrase higher up. An object with the feature [+contrastive] can move into the Spec of Focus2P and stay there. Alternatively it can use this position as a medial landing site on the way to the Spec of Focus1P. Zhang (2000) also holds that movement is triggered by focus, though the focus marker is phonetically unrealized. The focus marker, overt or covert, triggers a strong feature and results in object shift to the checking domain. Accusative Case feature is checked along with it.

4.1.4 Base generation

There is another construction containing an NP between the subject and the verb, illustrated by (73b), alongside the typical topic structure in (73a). The latter is extensively discussed in Tsao (1990), but not considered by proponents of the movement hypothesis:

(73) a. Shuiguo ta zui xihuan pingguo. Chinese
fruit he most like apple
'Speaking of fruit, he likes apple most.'
b. Ta shuiguo zui xihuan pingguo.
he fruit most like apple

The two sentences are equally well-formed and one is the exact paraphrase of the other. The only difference is that the NP semantically related to the one in object position is situated clause-initially in (73a), but between the subject and the verb in (73b). They are both 'Chinese-styled', as it were. Once the existence of (73b) is recognized, previous controversies over movement and base generation in topic structures are revived. Since there can be no possible original site for *shuiguo* in (73b), one is compelled to admit that at least some post-subject NPs are base-generated. It has no Accusative Case feature to check because Accusative Case is assigned to another NP, *pingguo*, in the postverbal object position. It has no focus feature to check, either, since *shuiguo* in (73b), just like *shuiguo* in (73a), is not contrastive. So even if one insists that it originates in a postverbal position somewhere, there is nothing that triggers its movement.

4.2 Focus or topic?

In this section we focus our attention on the construction containing a gap bound to an NP between the subject and the verb. Compare:

(74) a. Ta shi putaojiu bu he. Chinese
he FOC wine not drink
b. Putaojiu ta bu he.
c. Ta putaojiu bu he.

When *putaojiu* in all three of these sentences is contrastive, researchers all agree that it is an overtly marked focus in (74a) and a topic in (74b). What is controversial is whether the one in (74c) is a focus or a topic.

4.2.1 Notion of focus

Ernst and Wang (1995), Shyu (1995), Gasde (1998), and Zhang (2000) call the NP between the subject and the verb 'focus' in view of the fact that it is contrastive and is structurally distinctive from the sentence-initial topic. Typologically, some languages designate a syntactic position for focus. A well-known representative is Hungarian. It has a designated preverbal focus position in addition to a topic position. Such languages are called discourse-configurational language in the terminology of Kiss (1995a).[22] The configuration proposed by Shyu (1995), Gasde (1998), and Zhang (2000) for Chinese sentences like (74c) is quite similar to that of Hungarian focus structures exemplified in Kiss (1998). Shyu and Zhang assume that the preverbal NP is a focus with a zero focus marker, and argue that it has the same semantic properties an overtly marked focus possesses.

But the terms 'topic' and 'focus' are notoriously confusing. Researchers who prefer to call the NP between the subject and the verb 'topic' are aware that what Shyu, Gasde, and Zhang call 'focus' is conceptually different from 'identificational focus'[23] as defined in Kiss (1995a), or 'kontrast' in Vallduví and Vilkuna (1998), or 'operational focus' in Roberts (1998).[24] Identificational focus is characterized by exhaustive identification of a set of entities given in the context or situation. Identifying some entity or entities means excluding others. In English and Hungarian, identificational focus has the feature complex of [+exhaustive], [+contrastive]. Kiss uses two tests, designed by Szabolcsi (1981b) and Donka Farkas (p.c. to Kiss) respectively, to determine which expressions in English and Hungarian are exhaustively identificational. The same tests can be used to distinguish Chinese expressions that express exhaustive identification and those that do not. The results can show whether the Chinese NP between the subject and the verb is an identificational focus.

4.2.2 Diagnostic tests for identificational focus

Szabolcsi's test involves a pair of sentences. The first one contains a focus consisting of two coordinate NPs. The second sentence differs from the first in that one of the NPs has been dropped. If the first sentence does not logically entail the second one, then the focus is exhaustively identificational. As shown by Kiss,

the results of the test confirm exhaustive identification of focus in English cleft constructions and their Hungarian counterparts, and disconfirm exhaustive identification in English and Hungarian topic constructions. Xu (2001) adopts the test to distinguish Chinese sentences containing overtly focus-marked NPs, sentence-initial topic NPs, and postverbal NPs:

(75) a. Ta shi putaojiu he pijiu bu he. Chinese
he FOC wine and beer not drink
'It is wine and beer that he doesn't drink.'
b. Ta shi putaojiu bu he.
'It is wine that he doesn't drink.'

(76) a. Putaojiu he pijiu, ta bu he. Chinese
wine and beer he not drink
'Wine and beer, he does not drink.'
b. Putaojiu, ta bu he.
'Wine, he does not drink.'

(77) a. Ta putaojiu he pijiu bu he. Chinese
he wine and beer not drink
b. Ta putaojiu bu he.

The sentence in (75a) does not logically entail the one in (75b). This shows that a focus-marked expression expresses exhaustive identification. It has the feature complex of [+contrastive], [+exhaustive]. But the sentences in (76b) and (77b) are logical consequences of those in (76a) and (77a) respectively. So, unlike the focus-marked NP in (75), the sentence-initial topic NP in (76) and the NP between the subject and the verb in (77) do not express exhaustive identification. They both have the feature complex of [+contrastive], [−exhaustive].[25]

Donka Farkas's test involves a dialogue, in which the second speaker intends to negate the statement made by the first speaker. If what the first speaker says expresses exhaustive identification, negation sounds natural:

(78) a. A: Ta shi Putaojiu bu he. Chinese
he FOC wine not drink
'It is wine that he doesn't drink.'
b. B: Bu, ta pijiu ye bu he.
no he beer also not drink
'No, he doesn't drink beer, either.'

(79) a. A: Putaojiu, ta bu he. Chinese
wine he not drink
'Wine, he does not drink.'
b. B: #Bu, pijiu, ta ye bu he.[26]
no beer he also not drink

(80) a. A: Ta putaojiu, bu he. Chinese
he wine not drink
b. B: #Bu, ta pijiu ye bu he.
no he beer also not drink

The negation of (78a) by (78b) is natural. With the focus marker *shi*, speaker A uses (78a) to identiify wine as the only thing that the person doesn't drink. If he doesn't drink beer, either, then it is justified for speaker B to use *bu* to negate the exhaustivity expressed by the focus maker. On the other hand, (79b) and (80b) are not natural negations of (79a) and (80a). Neither (79a) nor (80a) implies that wine is the only thing the person doesn't drink. The propositions expressed in (79b) and (80b) are mere extensions of or additions to the previous statements made by speaker A. The negative particle *bu* is out of place.

The two tests produce the same results. Both of them show that an NP between the subject and the verb is conceptually similar to a sentence-initial topic, but different from a focus-marked expression. The NP *putaojiu* is evidently an identificational focus in (74a) but not in (74b), and (74c). In recognition of this difference, some researchers call the one in (74a) 'focus' and the one in (74b) or (74c) 'topic'. One is a major topic and the other is a subtopic or secondary topic. Other researchers prefer to call the one in (74c) 'focus', as a mnemonic to distinguish it syntactically from the sentence-initial 'topic', without regard to their common feature characterization.

5 Appendix

Shi (2000) reopens an important issue and makes a very strong claim about the structure and interpretation of topic constructions in Chinese. If justified, it may be applicable to languages like Japanese and Korean as well, and may deny some characteristic properties of topic-prominent languages. This article has already given rise to controversy among Chinese linguists. The most important response is from Pan and Hu (2001, 2002), but at the time of writing this was not available in published form. This appendix presents the two opposing views in more details for readers interested in the issue, on top of the illustrative discussion in section 3.2.

As has been mentioned, Shi adopts a piecemeal solution. He lists six types of 'dangling topics' and argues that in each case either there is a hidden gap or a resumptive pronoun in the comment from which the sentence-initial element originated, or it is not a genuine topic.

5.1 Function of wh*-words*

Shi calls attention to structures in which the clause following the sentence-initial element begins with a *wh*-word. He points out that *shei* in (81) is an indefinite

pronoun, interpreted as a quantifier corresponding to *anyone* in English, not an interrogative pronoun corresponding to *which person*.[27] The quantifier *shei* can be deleted without affecting the interpretation of the sentence, giving (81b):

(81) a. Tamen shei dou bu lai. Chinese
they who all not come
'They (topic), none of them is coming.'
b. Tamen dou bu lai
they all not come
'None of them is coming.'

Since the pronoun in (81b) is obviously the subject, so is the one in (81a). Shi provides further evidence in support of this analysis. Modal verbs must follow the subject and the modal verb *keyi* 'may' does follow *tamen* in (82):

(82) Tamen keyi shei dou bu lai. Chinese
they may who all not come
'None of them may come.'

Pan and Hu (2001, 2002) contrast (81a) with (83a), an interrogative sentence in which the *wh*-word must be interpreted as *which person*, not as *anyone*. Deleting *shei* in (83a) would convert the *wh*-question into a yes/no question, as in (83b):

(83) a. Tamen, shei hui lai? Chinese
they who will come
'Which of them will come?'
b. Tamen hui lai?
they will come
'Will they come?'

If the sentence-initial pronoun in (83a) is also the subject, does the *wh*-clause *shei hui lai* function as the predicate just as the idioms in (59) and (60) do?[28] Then why should interrogative clauses and idiomatized clauses be grouped together as exceptional, as against other clauses?

Pan and Hu also question the validity of using the distribution of *keyi* to locate the subject. They provide a grammatical sentence in which *zhe wan fan* is an uncontroversial subject and *keyi* precedes the subject:[29]

(84) Zhe wan fan keyi liangge ren chi. Chinese
this bowl rice may two people eat
'This bowl of rice may serve two people.'

Since the position of *keyi* is variable, it cannot be used as a valid test to locate the subject.

5.2 Preposition drop

Another type of topic structure discussed in Shi (2000) is exemplified by (85):

(85) Zhejian shi, ni bu neng guang mafan yige ren. Chinese
this matter you not can only bother one person
'As for this matter, you cannot just bother one person.'

Shi argues that (85) is derived from (86) by an operation of preposition drop, as some Chinese prepositions can be deleted without changing the meaning of a sentence:

(86) Wei zhejian shi, ni bu neng guang mafan yige ren. Chinese
for this matter you not can only bother one person
'For this matter, you cannot just bother one person.'

A prepositional phrase used as an adverbial can occur in other positions of the sentence as well; for instance, within the VP. So the sentence-initial NP in (85), even if taken as a topic, may be analyzed as syntactically related to an unoccupied position in the comment marked by e in (87):

(87) Zhejian shi_i, ni bu neng e_i guang mafan yi-ge ren.

Pan and Hu challenge Shi's hypothesis of preposition drop by providing the following example containing the same preposition, *wei*:

(88) a. Wei zhejian shi, zuotian Zhangsan dajia-le. Chinese
for this matter yesterday Zhangsan fight-ASP
'Zhangsan fought a fight for this matter yesterday.'
b. *Zhejian shi zuotian Zhangsan dajia-le.
this matter yesterday Zhangsan fight ASP

According to their intuitions, the preposition in (88a) cannot be deleted. On the other hand, many sentence-initial NPs cannot take *wei* or any other preposition. The fact that some of them can is idiosyncratic rather than systematic.

5.3 NP predicate

Shi (2000: 395) defines another type of "dangling topic" as consisting of "two sets of NPs but no verb to head the predicate":

(89) Na zhong douzi yi jin sanshi kuai qian. Chinese
that kind bean one catty thirty dollar money
'That kind of beans (topic), one catty is thirty dollars.'

He argues that *na zhong douzi* in this construction should be analyzed as a subject rather than a topic on two accounts. First, the NP preceding the non-verbal predicate can be indefinite, as exemplified by (90a). Second, it can be preceded by the emphatic marker *shi*, as exemplified in (90b). In contrast, the topic in a genuine topic structure, like those in (91a) and (91b), cannot be indefinite and resists focus-marking:

(90) a. Yizhi qinwa sitiao tui. Chinese
one frog four leg
'A frog (has) four legs.'
b. Shi na zhong douzi yi jin sanshi kuai qian.
be that kind bean one catty thirty dollar money
'It is that kind of beans that is worth thirty dollars a catty.'

(91) a. *Yi zhong douzi, wo mai-le. Chinese
a kind bean I bought-ASP
b. *Shi na zhong douzi wo mai-le.
be that kind bean I buy-ASP

It is true that a topic is generally definite. But Pan and Hu wonder why Shi does not simply use sentences structured like (89) to test the definiteness of the topic. If the demonstrative *na* in (89) is replaced by a numeral *yi*, the sentence becomes ungrammatical. The difference between (89) and (92) in acceptability straightforwardly confirms the topichood of the sentence-initial NP in (89):

(92) *Yi zhong douzi yi jin sanshi kuai qian. Chinese
one kind bean one catty thirty dollar money
'A kind of beans (topic), one catty is thirty dollars.'

Furthermore, they show that a topic does not necessarily exclude the emphatic marker *shi* even in a sentence containing a gap bound to it. (93) is a typical topic structure that passes Shi's definition in (58):

(93) Shi na zhong douzi wo mei mai. Chinese
be that kind bean I but buy
'It is that kind of beans that I didn't buy.'

A topic cannot convey new information and therefore cannot be an informational focus. But *shi* marks contrastive focus rather than informational focus. In fact, it may mark contrastive topic as well.[30] The distribution of *shi* cannot be used to distinguish a topic from a subject. Pan and Hu show that evidence is yet to be found to support Shi's claim that the sentence-initial NP in the fifth type of topic structure is not a topic.

5.4 AP predicate

Still another type of topic structure with a 'dangling topic' discussed in Shi (2000) is represented by (94), cited from Chen (1996), where two NPs are followed by a clause containing an adjective phrase but no verb:

(94) Wujia Niuyue zui gui. Chinese
price New York most expensive
'Speaking of the price of things, New York is most expensive.'

Shi argues that the first NP should be analyzed as a subject rather than a topic and that the second NP is a locative adverbial rather than a subject on both semantic and syntactic grounds. Semantically, what is expensive is the price not the city. Syntactically, *wujia* passes a diagnostic test on subjecthood: a subject precedes adverbials like *yiding* (certainly) and *jingchang* (often):

(95) a. Wujia yiding Niuyue zui gui. Chinese
price certainly New York most expensive
'The price of things is certainly the highest in New York.'
b. *Yiding wujia niuyue zui gui.

Pan and Hu present (96), in which *wujia* and *Niuyue* have switched positions:

(96) Niuyue yiding wujia zui gui. Chinese
New York certainly price most expensive
'The price of things is certainly the highest in New York.'

This example is intended to place Shi in a dilemma. His adverbial placement test selects *Niuyue*, the NP preceding *yiding*, as the subject. But semantic predication precludes it. Since what is most expensive can only be the price but not the city, the subject should be *wujia*. Hence an obvious contradiction exists between his syntax and his semantics. In Pan and Hu's analysis of (94), *wujia* is the topic, and the subject of the comment clause is a headless NP.[31]

Pan and Hu (2001, 2002) derive the topic structure in (94) from the following formula:

(97) $\lambda P \lambda Q \lambda Z \subseteq$ things λx [$x \in Z$ & P(x) & Q(x)], where P(x) = x is Niuyue de Wujia, Q(x) = x is zuigui, Z = wujia.

5.5 Double nominative construction

Shi's six types of topic structures with a 'dangling topic' do not include the double nominative construction, commonly regarded in the literature as one of the representatives of Chinese-style topic structures. Shi discusses double nominative sentences like (98) in a later section:

(98) Li Taitai nuer piaoliang. Chinese
Li Mrs. daughter beautiful
'Mrs. Li's daughter is beautiful.'

The analysis of the Chinese double nominative construction has been controversial since Teng (1974a). An easily available solution is to take the first NP as the modifier of the second one. Schlobinski and Schütze-Coburn (1992), for instance, still analyze the two NPs as a complex NP structure functioning as a subject, thus concluding that Chinese, like German and English, does not possess a double-subject or double-topic construction.[32] What prevents Chinese grammarians from accepting this kind of solution is their awareness of the fact that adverbs, modal words, etc., may be inserted between the two NPs.

Tsao (1990) observes that the so-called double nominative construction is not homogeneous. In some cases, for instance in (99) below, the second NP has become part of a frozen compound, or at least a semi-compound, and therefore not fully productive:

(99) Wang Taitai tou teng. Chinese
Wang Mrs. head ache
'Mrs. Wang is having a headache.'

On the basis of Tsao's dichotomy, Shi (2000: 405) assigns the following structural descriptions to (98) and (99) respectively:

(100) a. $[_{NP}\ [_{SPEC}$ Li Taitai$]\ [_{N}$ nuer$]]\ [_{PRED}$ piaoliang$]$.
b. $[_{NP}$ Wang Taitai$]\ [_{PRED}$ tou teng$]$.

In (100a) *Li Taitai* is a possessive NP taking specifier position, and *nuer* takes head position. Together they function as the subject of the sentence. In (100b) *Wang Taitai* is the subject, and its predicate is the entire idiom *tou teng*, which is a clause by itself.[33] Neither (100a) nor (100b) is a topic structure in his view. To prove the structural description he assigns to *Li Taitai nuer* is correct, he shows that adverbs like *feichang* cannot intrude into the NP:

(101) *Li Taitai feichang nuer piaoliang. Chinese
Li Mrs. extremely daughter beautiful
'Mrs. Li's daughter is extremely beautiful.'

In Tsao's (1990: 141) analysis, *Li Taitai* is the topic and *nuer* is the subject in (100a). He takes *Wang Taitai* as both the topic and the subject in (100b). Tsao (1990: 125) reveals the complexity and unreliability of adverbial tests, as "adverbs are far from a homogeneous class." The reason why (101) is ungrammatical is not that *Li Taitai* and *nuer* cannot be separated, but that *feichang* and *piaoliang* cannot be separated. The adverb *feichang* modifies the adjective *piaoliang* and must be adjacent to it. Other expressions can appear between *Li Taitai* and *nuer*:

(102) Li Taitai jushuo nuer hen piaoliang. Chinese
Li Mrs. reportedly daughter very beautiful
'Reportedly Mrs. Li's daughter is beautiful.'
(Lit. *'Mrs. Li reportedly daughter is beautiful.')

The occurrence of *jushuo* is expected if *Li Taitai* is analyzed as the topic rather than the specifier, and *nuer* as the subject rather than the head noun. Compare (102) with (103), a less controversial topic structure. In (103), *jushuo* can also occur between the topic and the subject:

(103) Zhetiao xianglian, jushuo Wang Taitai bu xihuan. Chinese
this necklace reportedly Wang Mrs. not like
'Reportedly, this necklace, Mrs. Wang doesn't like.'

More convincing evidence is needed to maintain the claim of the reductionist view stated in (58).

NOTES

1 Glosses used in this chapter are: ASP = aspectual marker, DEC = declarative sentence marker, FOC = focus marker, IMP = imperative sentence marker, MOD = modifier marker, PAST = past tense marker, OBJ = object (objective case) marker, POL = polite speech marker, PREP = preposition, PRT = particle, SUBJ = subject (nominative case) marker, TOP = topic marker.

2 It does not literally contain two nouns in nominative case in Chinese; cf. double nominatives in Japanese, where two nouns are overtly marked as nominative, dealt with in chapter 20.

3 However, there is a great deal of confusion in the literature about usage of the topic marker (*wa* in Japanese and *nun* in Korean) and the subject marker (*ga* in Japanese and *ka* in Korean). See Choe (1986) for a summary.

4 One may take *na* as either transitive or intransitive, but it is intransitive in (20). Alternatively, one may assume that such a verb is transitive but may take a null object. Whichever analysis one adopts, it makes no difference to the facts presented in this section. According to the statistics reported in Hu and Fan (1995), only 3 percent of Chinese verbs are required to take an object.

5 An example is split topicalization in German, discussed in Van Riemsdijk (1989a).

6 A relative clause precedes the head and contains no *wh*-words in Chinese. A modifier marker is used between the relative clause and its head noun phrase.

7 Many, perhaps most, native speakers accept the sentence with little or no difficulty. They do not assign two question marks to it.

8 Huang (1982a, 1998), Li (1990), and Shi (2000) are in favor of the movement analysis, whereas Xu and Langendoen (1985), Xu (1986), Cheng (1997), and Huang (1992) are against it. Of the above examples, (23–25) are cited from Huang (1982a: 457, 1998: 326), (26–27) from Xu and Langendoen (1985), and (28) from Huang (1992), with S and S′ replaced by IP and CP.

9 The rule is proposed to account for the asymmetry between the subject and the object in topic binding in the following sentences:

(i) Zhangsan [e chang ge de] shenyin hen haoting.
Zhangsan sing song MOD voice very pleasant
'Zhangsan, the voice (with which) he sings songs is very pleasant.'

(ii) *Zhanghai wo xihuan [e chang ge de] shenyin.
Zhangsan I like sing song MOD voice
'Zhangsan, I like the voice (with which) he sings songs.'

(i) is grammatical because the empty category indicated as e in the relative clause in brackets can be co-indexed with the closest NP, i.e., the topic. (ii) is ungrammatical because the topic is not the NP closest to the empty category, which is situated in a relative clause whose head *shenyin* is the object. Hasegawa (1984) and Yoshimura (1986) find the subject–object asymmetry in accessibility to topicalization in Japanese as well.

10 Of the examples in this subsection, (38) is cited from Huang and Li (1996) and (41) from Xu and Liu (1998: 47). For the analysis of (38) and (27) (= (40)) involving resumptive pronouns, see Shi (1992, 2000).

11 See previous discussion on the difference in transitivity between Chinese and English in section 2.1.

12 (23) is as unacceptable as (49a) for the same reason, i.e., due to a specific NP containing a variable.

13 The examples in (50a, b) are cited from Xu and Langendoen (1985). Huang (1992) shares their view, provides similar examples, and supports the semantic account for the contrast therein.

14 Choe notes the semantic difference between the alternative forms. Whereas *hyangkinun* can have either a thematic reading or a contrastive reading in (55a), it has only a contrastive focus reading in (55b).

15 Chao (1968) uses the term 'subject' but defines it as topic.

16 Here we are confronted with another difficult issue in Chinese grammar. Without markers corresponding to *wa* and *ga* in Japanese, the distinction between topic and subject is never obvious. In some researchers' view what is called subject by Shi is topic anyway. See LaPolla (1993).

17 When it is used as an adverb, *zhuanmen* has more than one sense. It is used in the sense of 'specially' in (i):

(i) Shang ci wo shunbian lai kan ni; zhe ci wo zhuanmen lai kan ni.
last time I conveniently come see you this time I specially come see you
'Last time I came to see you in passing; this time I came specially to see you.'

But the same word can also be used as an adverb of frequency, somewhat similar in meaning to *always*, *usually, frequently,* etc. When it is inserted in (59) and (60), as in (ii) here, it makes sense only when it is interpreted as an adverb of frequency:

(ii) Tamen, zhuanmen wo kan ni, ni kan wo.
they always I look you you look me
'They always look at each other.' Not: 'They specially look at each other.'

Like many other adverbs of frequency, it is a focus-sensitive operator capable of floating for the purpose of marking the scope of focus. Focus is phonologically marked by intonation contour in English but often syntactically realized in Chinese by means of operator float. Compare the following pair:

(iii) a. Xiao Zhang zhuanmen qing Xiao Li zai waimian chifan, cong bu zai jiali chi.
Xiao Zhang always invite Xiao Li at outside dine ever not at home dine
'Xiao Zhang always invites Xiao Li to dine out and never dine at home.'

b. Zhuanmen Xiao Zhang qing Xiao Li; Xiao Li cong bu qing Xiao Zhang.
always Xiao Zhang invite Xiao Li Xiao Li ever not invite Xiao Zhang
'It's always Xiao Zhang that invites Xiao Li; Xiao Li never invites Xiao Zhang.'

The adverb *zhuanmen* can precede the subject if the latter is intended to be focused or to be within the scope of focus, as in (iiib) above. So the word order in (61) merely shows that the sentence-initial pronoun is not within the focus; it is not proof that it is the subject.

18 This sentence is discussed in Li and Thompson (1976, 1981), Huang (1982a), Xu and Langendoen (1985), LaPolla (1990), Jiang (1991a), Ning (1993), Shyu (1995), Chen (1996), etc.

19 He further argues that the word *xingkui* 'fortunately' is crucial. Without it the sentence would be ungrammatical. But the result of a survey conducted in Beijing shows that only one of the 73 native speakers of Chinese found it hard to accept the sentence without *xingkui*.

20 Another example of this type is (56a) in section 3.1.3.

21 They refer to Xu and Langendoen (1985), Lee (1986), Tang (1990), and Lin (1992). However, not all those who that allow multi-topic structures explicitly or even implicitly advocate double topicalization. Some of them take one or both topics as base-generated.

22 Chinese is probably a Type A discourse-configurational language, as it represents categorical proposition and thetic proposition in different forms, thus meeting Kiss's definition of topic-prominent languages. It uses SVO order for categorical propositions but not for thetic propositions. Compare the following:

(i) Zhetiao gou zai ken gutou.
this dog PROG chew bone
'This dog is chewing a bone.'

(ii) Wu li you yitiao gou.
room in have a dog
'There is a dog in the room.'

If, like Hungarian, Chinese has a position for focus, it is a Type B discourse-configurational language as well.

23 The NP position between the subject and the verb in Chinese is clearly not a position for information focus, as it is typically for definite or generic NPs rather than indefinite NPs, for expressions carrying old information rather than new information.

24 All of the three papers distinguish two notions of focus, but give them different names: 'information focus' and 'identificational focus' in Kiss (1998), 'rheme' and 'kontrast' in Vallduví and Vilkuna (1998), and 'informational focus' and 'operational focus' in Roberts (1998).

25 It is mentioned in Kiss (1998) that in some languages identificational focus may have the features complex of [+contrastive], [–exhaustive]. If Chinese is such a language, there is still no way to distinguish the sentence-initial NP from the NP between the subject and the verb conceptually.

26 The hash sign indicates unnatural use of the negative particle *bu*.

27 The Chinese counterpart of English *wh*-words can be either an interrogative pronoun or an indefinite pronoun. So (i) is ambiguous between an interrogative reading and a declarative reading:

(i) Ta kanjian-le shei.
he saw whom/someone
'Who did he see?' Or 'He saw someone.'

28 It is mentioned above that Shi seems reluctant to make a more general claim that any clause can be a predicate.

29 In fact, *keyi* is also a focus-sensitive operator, capable of floating around. Compare (ia, b) and note the difference in focus:

(i) a. Ta keyi qu, ye keyi bu qu.
he may go also may not go
'He may go and may not go.'
b. Keyi ta qu, ye keyi ni qu.
may he go also may ni go
'He may go and you may go.'

The two sentences are equally grammatical, but (ib) has no corresponding structure in English, since English modal verbs like *may* cannot float. It is misleading to gloss *keyi* as *may*. Syntactic categorization of modal words is controversial among Chinese grammarians. Some of them classify *keyi* and *bixu* as modal verbs, corresponding to *may* and *must*, whereas others classify them as adverbs, corresponding to *possibly* and *necessarily*.

30 There is a great deal of terminological confusion regarding contrastive topic and contrastive focus. See Molnár (1998). Lee (2003) tries to differentiate contrastive topic and contrastive focus in Korean, Chinese, and other languages.

31 This type of topic structure is common in Chinese. (i–iii) are all grammatical:

(i) Cao Yu de juben zui hao.
Cao Yu 's plays most good
'Cao Yu's plays are the best.'

(ii) Juben, Cao Yu de zui hao.

(iii) Juben, Cao Yu zui hao.

In (ii) and (iii) the head noun is topicalized, leaving the possessive NP behind in the subject position. The sentence in (94) has the same structure as the one in (iii).

32 Other researchers do not accept this proposal, but believe that a topic that is more like an adverbial should be regarded as a modifier that forms a modifier–modified sequence with the comment.

33 This is similar to his analysis of (59) and (60) in section 3.2.1.

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74 Unexpected Wide-Scope Phenomena

E. G. RUYS

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1 Introduction

It has long been known that quantificational expressions in natural language do not all have the same scope properties. While the scope of some expressions is closely related to their observable, 'surface' position in syntactic structure, other expressions display a remarkable degree of freedom with respect to the relative scope that may obtain between them and other expressions in the structure. Compare (1) and (2):

(1) a. Some girl watched every movie.
    b. Some girl will be happy if every movie is shown.

(2) a. Every girl watched some movie.
b. Every girl will be happy if some movie is shown.

(1a) is ambiguous: it can be read as involving a girl who has seen all the movies, but is also judged true when each movie was seen by a different girl; the latter reading may be described by saying that *every movie* takes wide scope relative to *some girl*. (1b), on the other hand, does not allow wide scope for *every movie* relative to *some girl*; its truth requires that there be (at least) one indefatigable girl who will be happy if all the movies are shown. Thus, while the scope of *every movie* is not exactly fixed at its observable position – witness the ambiguity of (1a) – neither is it completely free. When *every movie* is embedded in an *if*-clause, as in (1b), it cannot take scope over another expression that is not so embedded. See chapters 16, 53, and 64. The restriction observed in (1b) does not, however, apply to all NPs, as we find in (2), where the positions of the two NP types are reversed. The indefinite NP *some movie* can escape the scope of *every girl* not only in (2a), but also in (2b), regardless of the *if*-clause. Thus, (2b) can be understood as stating that there is a particular movie, such that every girl will be happy if it is shown.

This chapter focuses on the scope properties of NPs such as *some movie* in (2b), which, following tradition, we will refer to as being *specific* on the intended reading.[1] Section 2 provides a little historical background, and introduces two opposing views that underlie much of the literature on the subject. Section 3 describes the properties that make the scope of indefinites exceptional in several respects. Section 4 discusses the issue of 'intermediate island-escaping scope', which has featured prominently in the literature since Fodor and Sag (1982). Section 5 goes into some detail in describing a fairly recent approach, which holds that a semantic choice function mechanism is to be held responsible for the exceptional wide-scope readings found with specific NPs; section 6 discusses one prominent problem that seems to attend this approach. Section 7 discusses some of the, mostly tentative, work that has been devoted to delineating the class of indefinite NPs that show exceptional wide scope. A more detailed outline and summary is given as section 8.

Our aims are highly descriptive throughout. We will refrain from attempting to summarize the wide variety of (mainly semantic) theories that have been proposed in explanation of the specificity phenomenon. We will merely attempt to establish the reality of the phenomenon, describe some of its attendant properties and preconditions, and delineate the prerequisites for a successful theory of specificity as they emerge from recent research.

2 Specificity: a binary ambiguity?

This section introduces the specificity phenomenon. It provides some historical background, and along the way it presents some of the basic observations, and describes two prominent approaches to the analysis of specificity. The first

approach says that indefinite NPs show an inherent binary ambiguity: they may be interpreted as quantificational expressions (non-specific) or as something else (specific). The second approach holds that indefinites are always quantificational expressions, and that the specific vs. non-specific ambiguity is a scope ambiguity.

By way of introduction to the binary ambiguity approach to specificity, consider the following examples adapted from Karttunen (1968) (see also Baker 1966 for the observation regarding (4b)):

(3) Mary has *a car*. *It* is blue.

(4) a. *Mary doesn't have *a car*. *It* is blue.
b. *John wants to catch *a fish*. You can see *it* from here.
c. *All the boys in this town are in love with *a girl in this town*. *She* is very pretty.

In (3), the pronoun *it* can be felicitously used to refer to a car owned by Mary. This option is due to the appearance of the indefinite *a car* in the first sentence of the discourse, which, Karttunen claimed, introduces a discourse referent that the pronoun refers to. The pronouns in (4), on the other hand, cannot be so used. For instance, *it* in (4a) cannot be taken to refer to the car that Mary doesn't have. The generalization that apparently governs these facts is that in (4), the indefinite NPs are embedded in the scope of some other expression (*not*, *want*, *all the boys in this town*); this prevents the introduction of a discourse referent.

In many cases, however, some slight adjustment in the example will allow discourse anaphora even in the structures of (4):

(5) a. Mary doesn't own *a car she drives*. She rents *it* instead.
b. John wants to catch *a fish he spotted today*. You can see *it* from here.
c. All the boys in this town are in love with *a redheaded gogo-dancer who works at the Moonlight Inn*. *She* is very pretty.

Apparently, the indefinites in (5) do manage to introduce a discourse referent, despite the presence of a higher scoped element. Karttunen's (1968) description of these facts stated that indefinites are ambiguous between a specific and non-specific reading. He took this binary ambiguity to reside in the interpretation of the indefinite itself. The non-specific ones in (4), which do not introduce a discourse referent from a scopally embedded position, are interpreted as existentially quantified expressions; the specific ones in (5), which introduce a discourse referent even from a scopally embedded position, function semantically as name-like referential expressions.[2] This description provides no answer to the question why the non-specific readings are strongly favored in (4), whereas slight lexical and structural variations bring out the specific readings in (5) (a question that still goes unresolved; in fact, speakers generally allow a specific reading, and discourse anaphora, in (4) as well, albeit less readily than in (5); see section 7). The proposed quantificational/referential ambiguity does, however, point toward

an explanation for the different discourse anaphora options along the following lines.

If the indefinites in (3) and (4) are associated with existential quantifiers, then we expect them to be sensitive to the presence of other scopal expressions in the structure. From a more modern DRT perspective, the sentences in (3) and (4) might then be roughly represented (Heim 1982-style) as in (6) and (7):

(6) $[_T \exists x\ [_S \text{car}(x) \wedge \text{Mary has } x].\ [_S x \text{ is blue}]]$.

(7) a. ?? $[_T \exists\ [_S \text{NEG } \exists x\ [\text{car}(x) \wedge \text{Mary has } x]].\ [_S x \text{ is blue}]]$.
b. ?? $[_T \exists\ [_S \text{John wants } [\exists x\ [\text{fish}(x) \wedge \text{PRO catch } x]]].\ [_S \text{You can see } x \text{ from here}]]$.
c. ?? $[_T \exists\ [_S \forall x\ [\text{boy}(x) \rightarrow \exists y\ [\text{girl}(y) \wedge x \text{ loves } y]]].\ [_S y \text{ is very pretty}]]$.

Here, consecutive sentences are thought of as being attached to a single T(ext) node. Discourse anaphora can come about when an existential quantifier takes scope at T level, binding a variable in one sentence, and subsequently binding a pronoun, translated as the same variable, in the next sentence. Thus, the indefinite in (3), even if it is non-specific and interpreted through existential quantification as in (6), may antecede the pronoun because the existential quantification in question takes place at Text level, and this quantifier takes scope over the second sentence and binds the pronoun. The non-specific indefinites in (4), on the other hand, are associated with a lower existential quantifier in scope, which does not scope over, and hence does not bind, the pronoun; even if there is a Text-level (default) existential quantifier, it binds nothing in the first sentence and cannot relate the pronoun in the second sentence to the indefinite.

If, furthermore, the specific indefinites in (5) are indeed 'name-like' expressions, as Karttunen claimed, then we expect them to be insensitive to scope effects and to license discourse anaphora from any position, just like proper names. For instance, (5a) is expected to bear a close semantic resemblance to (8):

(8) Mary doesn't own *Fido*. She is looking after *him* for the weekend.

Karttunen's (1968) view of specific indefinites exemplifies an approach to specificity that plays an important role in the literature to this day – namely, that the phenomenon derives from a binary ambiguity residing in the indefinite NP itself: an indefinite may be interpreted through a quantificational or a referential mechanism.[3]

Around the same time, work by Heringer (1969) and Fodor (1970) on the interpretation of specific and non-specific indefinites in opaque contexts provided evidence against this view, and in favor of the view that indefinites are invariably quantificational expressions, involved in scope ambiguities. Fodor discussed several different effects that show up the ambiguity that obtains when an indefinite is embedded in an intensional context. First, such contexts block existential entailments:

(9) a. + John has a car ⇒ there is a car.
b. – John wants to marry a witch ⇒ there is a witch.
c. + John wants to marry a witch he met last week ⇒ there is a witch John met last week.

When an indefinite is not embedded, the proposition it occurs in is judged to allow the entailment that the noun-set of the indefinite is not empty, as indicated in (9a). When the indefinite is embedded in an opaque context, a *de re*/*de dicto* ambiguity arises. The *de re* reading, prominent in (9c), says that there is a particular witch that John wants to marry; this reading entails that there is such a witch. The *de dicto* reading, favored in (9b), can be paraphrased as saying that John wants to marry any witch at all, a wish he may well entertain even if there exist no witches; hence, the entailment does not hold. Similar entailment observations can be made with respect to the other embedding contexts illustrated in (4) and (5) above.[4]

Another ambiguity obtaining in opaque contexts relates to whether or not the description in the indefinite may be replaced by any extensionally equivalent description without changing the truth-conditions of the sentence. Such substitution is valid when the indefinite is not embedded, as the intuited validity of the inference in (10) illustrates:

(10) Mary employs an Italian man.
All Italian men drive a moped.
+_____
Mary employs a man who drives a moped.

When the indefinite is embedded in an opaque context, however, an ambiguity arises. On the *de dicto* reading, which is more prominent in (11), the inference is not valid; on the *de re* reading, which is more prominent in (12), it is:

(11) Mary wants to marry an Italian man.
All Italian men drive a moped.
–_____
Mary wants to marry a man who drives a moped.

(12) Mary wants to marry an Italian man she met in Venice the other day.
All Italian men drive a moped.
+_____
Mary wants to marry a man who drives a moped.

These ambiguities are traditionally described by assuming that indefinites are interpreted as existential quantifiers, which may take narrow or wide scope relative to the intensional verb (see, e.g., Bach 1968: 107, but also Quine 1956). The narrow-scope reading corresponds to the *de dicto* reading; the wide-scope reading to the *de re* reading. (13) illustrates this:[5]

(13) John wants to marry a witch.
  a. John wants [∃x [witch(x) ∧ PRO marry x]].
  b. ∃x [witch(x) ∧ John wants [PRO marry x]].

In (13b), the existential quantifier takes wide scope relative to *want* (so that the sentence is about a particular individual (witch), and existential entailment is valid), and so does the description *witch* (so that that particular individual is asserted to be a witch in the world in which the sentence as a whole is evaluated, or 'according to the speaker' – hence, substitution *salva veritate* is allowed). In (13a), both quantifier and description take narrow scope; hence the sentence is not about a particular individual, and both the existence of such an individual and the description *witch* need only hold in those worlds that conform to John's wishes; the description is not the speaker's responsibility, it is John who wants to marry any individual 'under the description of' her being a witch. (13b) logically allows the existential entailment and the substitution; (13a) does not.

(13) exemplifies a view on specific indefinites that opposes Karttunen's (1968) proposal. There is no binary ambiguity in the indefinite; rather, the indefinite is always interpreted with an existential quantifier. The observed ambiguities reflect the various scope positions available for the quantifier. Indeed, Karttunen (1971a) adopted this view and argued that it explains the discourse anaphora facts in (3–5) as well: the specific indefinites in (5) are existential quantifiers that escape the scope of the other operators, and therefore allow discourse anaphora just like the indefinite in (3) (cf. (6)). Much of the literature on specificity since then has revolved around the pros and cons of these two opposing views.

Fodor presented several observations that argue against a binary referential/quantificational ambiguity. One such observation is that the analysis in (13) is not fine-grained enough. There is no strict correlation between the existential entailment and substitution effects; with an effort, we can observe a four-way ambiguity according to these two parameters. (14) approximates the two additional readings for (13), where the scope of the existential quantifier and the scope of the description do not coincide:

(14) John wants to marry a witch.
  a. ?? witch(x) ∧ John wants [∃x ∧ PRO marry x].
  b. ?? ∃x John wants [witch(x) ∧ PRO marry x].

Some context can help to bring out the intended readings. Suppose, first, John wants to marry any old lady wearing a pointed hat who flies a broomstick, but believes these are called 'airline-hostesses'. Then we can truthfully utter (14); but the description *witch* is the speaker's responsibility (John's desires do not relate to that description) whereas there is not one particular such individual that John wants to marry – something like (14a) seems to be called for. Suppose, next, that John hallucinates the existence of several witches, and wants to marry a particular one among them. (14) is again true, but this time scope relations are reversed: John's desire is particularized to an individual (*de re*: wide-scope existential), but

the description *witch* is not the speaker's responsibility; we end up with something like (14b).

These two additional readings for indefinites have received relatively little attention in the literature; partly, no doubt, because the readings are more elusive than those in (13), partly because their analysis is so problematic. We will henceforth ignore them – the reader is referred to Farkas (1997) for an analysis that teases apart the scope of the restriction and the quantifier in a way that seems promising; see also Abbott (1993) for an insightful discussion. The observed four-way ambiguity does, however, indicate that a simple binary ambiguity of indefinite NPs does not provide sufficient descriptive latitude.[6]

Another observation by Fodor, and one which allows of analysis by more conventional means, also argues against a simple ± specific ambiguity. When more than one intensional verb c-commands an indefinite, more than two readings, corresponding to more potential scopal positions for the quantifier, are observed (the same observation, relating to definite NPs as well, is made in Karttunen 1971a; Jackendoff 1972: 281; Kripke 1979; the oldest version of this argument that I am aware of is due to Bach 1968: 107). Consider (15) (from Kripke):

(15) Hoover charged that the Berrigans plotted to kidnap a high American official
  a. . . . but he said they couldn't decide which one (to kidnap).
  b. . . . but he didn't know which one (they plotted to kidnap).
  c. . . . guess which one (he charged they plotted to kidnap).
  a′. Hoover charged (the Berrigans plotted (∃x [Hi.Am.Off.(x) ∧ PRO kidnap x])).
  b′. Hoover charged (∃x [Hi.Am.Off.(x) ∧ the Berrigans plotted (PRO kidnap x)]).
  c′. ∃x [Hi.Am.Off.(x) ∧ Hoover charged (the Berrigans plotted (PRO kidnap x))].

(15) allows three readings, brought out by the three sluices in (15a–c), and corresponding to three scope positions for the existential quantifier associated with *a high American official* as indicated in the primed formulae. An analysis of specificity which holds that indefinites show a binary ambiguity between a referential reading, and a reading as an existential quantifier that is interpreted in its position in overt syntax, fails, in particular because it cannot account for the 'intermediate scope' brought out by (15b). Here, *a high American official* is not referential (Hoover's charge is not about a particular individual, and there need not even exist any American officials for this reading to be felicitous and true). But if the indefinite is quantificational, the position of the quantifier here does not coincide with the surface position of the indefinite. Hence, it must be assumed that an indefinite may be interpreted by means of an existential quantifier that may be dislocated with respect to the indefinite's surface position. But if that much is assumed, the wide-scope reading (15c) and the other specific readings discussed above follow automatically, and no motivation for assuming a referential

reading in addition to the quantificational reading of indefinites seemed to remain. What did remain, of course, was the question of how to account for the fact that an indefinite can be so freely associated with different scope positions.

2.1 A brief note on ambiguity

Before we can turn to this question, there is a potentially confounding issue that needs to be addressed. We have so far assumed that the examples under discussion are truly ambiguous, not merely vague. This is an analytical assumption that is sometimes difficult to justify. Consider (16):

(16) Every girl saw some movie.
  a. $\forall x$ [girl(x) $\rightarrow$ $\exists y$ [movie(y) $\wedge$ saw(x,y)]]
  b. $\exists y$ [movie(y) $\wedge$ $\forall x$ [girl(x) $\rightarrow$ saw(x,y)]]

When we claim *some movie* in (16) can be specific or non-specific relative to *every girl*, we attribute to the sentence two different readings that can, for instance, be represented as in (16a) and (16b). However, as the two alleged readings are not logically independent, this might well be unnecessary. (16b) entails (16a), so that the situations in which (16b) comes out as true are just a subset of the situations in which (16a) is also true. We judge (16) true when some particular movie is seen by every girl, but to explain this we need not assume that (16) can *mean* that there is some movie that was seen by every girl, as (16b) states; if (16) just means (16a), we expect the same judgment.[7] We might conclude that (16) is ambiguous if we found we could confidently judge it *false* when every girl saw some movie, but a different one – that would indicate we had 'chosen' reading (16b). But readings that render a sentence false are usually, for pragmatic reasons, difficult to detect when a reading that renders it true, as (16a) would in this situation, is also available. For these reasons, it is wise to concentrate on examples where the two purported readings are logically independent, and one is not just a special case of the other:

(17) Every girl but one saw some movie.

We judge (17) true when every girl saw *Brazil*, but every girl but one saw *2001* – a narrow-scope construal of *some movie* does not allow that, but a wide-scope construal does. Below, we will be careful to point out the logical independence of the readings that we attribute to our examples.

3 The scope of indefinites and QR

Assume that the ambiguity of structures containing indefinite NPs reflects not some inherent binary ambiguity, but the different scope positions that may be taken by some (existential) quantifier involved in the interpretation of the indefinite,

as suggested by the multiple ambiguity of (15). Then what explains this variation in scope? An obvious answer, and one that will function as a straw-man theory from here on, is that the indefinite itself denotes an existential quantifier, and that the indefinite is subject to a general scope-shifting rule. Such rules have been proposed to be operative in semantics (e.g., Cooper's 1983 storage, which 'separates' a QNP's denotation from the denotation of the structure it is contained in, and then recombines the two; see Abusch 1994 for a similar approach geared specifically to indefinites) and in syntax as well – notably, Quantifier Raising (see chapter 53). The literature provides considerable evidence that this approach to specificity will not work. The present section reviews the evidence; we will concentrate mainly on the feasibility of explaining specificity as an effect of syntactic movement.

3.1 Island-escaping scope

Consider once more a simple example:

(18) Almost every girl saw a movie.
  a. $[_{IP}$ Almost every girl$_i$ $[_{IP}$ a movie$_j$ $[_{IP}$ t_i $[_{VP}$ saw $t_j]]]]$.
  b. $[_{IP}$ A movie$_j$ $[_{IP}$ almost every girl$_i$ $[_{IP}$ t_i $[_{VP}$ saw $t_j]]]]$.

Supposing that QR associates (18) with the two LFs (18a) and (18b) (and perhaps more), familiar techniques yield the wide-scope and narrow-scope (specific and non-specific) readings for *a movie*, in the same way they derive the ambiguity of (1a) when QR applies to *every movie*.

There exist, however, strong indications, put forward most forcefully by Fodor and Sag (1982), that treating indefinites on a par with other, especially universally quantified NPs in this manner is undesirable. Their scope properties are very different. First and foremost, while QR as it applies to such NPs as *every movie* is subject to a wide array of familiar constraints on movement, and may even be essentially clause-bounded, the scope of indefinites seems, at least superficially, to be insensitive to such constraints. Consider (19) (cf. Fodor and Sag 1982):

(19) a. If a relative of mine dies, I will inherit a fortune.
  b. IF a relative of mine dies THEN I will inherit a fortune.
  c. A relative of mine x [IF x dies THEN I will inherit a fortune].
  d. −(19b) ⇒ I have relatives.
  e. +(19c) ⇒ I have relatives.
  f. IF a relative of mine dies THEN I will inherit a fortune. (19b)
  John is a relative of mine.
  +_____
  IF John dies THEN I will inherit a fortune.
  g. A relative of mine x [IF x dies THEN I will inherit a fortune]. (19c)
  John is a relative of mine.
  −_____
  IF John dies THEN I will inherit a fortune.

Sentence (19a) is ambiguous between a narrow-scope and wide-scope reading for *a relative of mine*; the two readings are paraphrased schematically in (19b) and (19c). According to the first, I will inherit a fortune if any one of my relatives dies; according to the latter, I will become rich if one particular relative of mine dies. Neither supposed reading, furthermore, entails the other, so that no problems of the type described in section 2.1 arise. First, (19c) entails that I have at least one relative (see (19e)), whereas (19b) does not. So (19b) does not entail (19c), as it would then share all entailments of (19c). Second, in combination with the premise that John is a relative of mine, (19b) allows the conclusion that I will inherit if John dies (see (19f)). (19c) does not allow this reasoning; John may just not be the particular relative whose death will put me in clover. So (19c) does not entail (19b), or it would also allow the conclusion about John.

Since we judge the sentence true even if my indigent uncle John will not leave me a fortune, we need in particular to posit the wide-scope reading (19c); the narrow-scope reading (19b) is false in that situation. Under the QR hypothesis, obtaining the wide-scope reading involves extracting the indefinite from the *if*-clause:

(20) ??[A relative of mine$_i$ [[if t_i dies] [I will inherit a fortune]]].

However, this type of movement is generally disallowed as an Adjunct Condition violation; e.g., *wh*-expressions cannot be extracted from an *if*-clause (see chapter 64). And indeed, a universally quantified NP undergoing QR cannot escape this, or any other extraction island (see chapter 53):

(21) If every woman gave birth to John, then he has a nice mother.
  a. + IF every woman gave birth to John THEN he has a nice mother.
  b. – every woman x [IF x gave birth to John THEN he has a nice mother].

(21), adapted from Winter (1998), can only be understood in the pragmatically odd way paraphrased in (21a): if John has as many mothers as there are women, then he has a nice mother. This is the reading that corresponds to narrow scope of *every woman* inside the *if*-clause. Pragmatics thus pushes us toward a, much less odd, wide-scope reading (21b): whoever John's mother, she would be a nice mother. The fact that this reading is nevertheless unavailable shows very clearly that *every woman* cannot be QRed out of the extraction island. This observation constitutes a major obstacle to semantic treatments of quantifier scope such as Cooper storage; it is equally problematic for a QR treatment of the scope of the indefinite in (19).

Other Ross islands (Ross 1986; and see chapter 64) provide similar examples:

(22) a. Mary dates every man who has met a producer I know.
  b. $\forall x$ [[man(x) $\wedge$ $\exists y$ [producer_I_know(y) $\wedge$ x met y]] $\rightarrow$ Mary dates x].
  c. $\exists y$ [producer_I_know(y) $\wedge$ $\forall x$ [[man(x) $\wedge$ x met y] $\rightarrow$ Mary dates x]].
  d. – (22b) $\Rightarrow$ I know a producer.
  e. + (22c) $\Rightarrow$ I know a producer.

f. (22b)
John is a producer I know.
+_____
Mary dates every man who has met John.
g. (22c)
John is a producer I know.
–_____
Mary dates every man who has met John.

(22) is ambiguous between a narrow- and wide-scope reading for *a producer I know*, shown in (22b) and (22c). As before, neither reading entails the other.[8] (22d) and (22e) show that the narrow-scope reading does not entail the wide-scope reading, and, more significantly, (22f) and (22g) show that the wide-scope reading is not a special case of the narrow-scope reading. We can judge (22) true even if John is a producer I know, but Mary does not date every man who knows John. Hence, the wide-scope reading is well-motivated; but deriving it through QR would involve a Complex Noun Phrase Constraint (CNPC) violation. Compare (23):

(23) Mary dates a man who has met every producer I know.

(23) is not ambiguous, and only allows narrow scope for *every producer I know*, as we expect from the syntactic movement properties of QR.

These examples provide similar evidence from other extraction islands:

(24) a. Mary denied that *a theory of mine* was correct.
b. Mary denied that *every theory of mine* was correct.

(25) a. Almost every expert admired John's picture of *a statue in Washington*.
b. Someone admired John's picture of *every statue in Washington*.

(26) a. Almost every expert admired *an article of mine* and nominated me for a Pulitzer.
b. Some expert admired *every article of mine* and nominated me for a Pulitzer.

In each of the (a)-cases, the indefinite can take wide scope even though it occupies a position from which overt movement, as well as QR in the (b)-cases, is disallowed. Movement in (24) would cross a non-bridge verb (see chapters 10 and 64); in (25) it would violate the Specificity Condition (see Davies and Dubinsky 2003 for recent discussion and references); in (26) it would violate the Coordinate Structure Constraint (see, e.g., Fox 1999 and references cited there).

In conclusion, it seems unlikely that the same rule can be held responsible for the scope options of both indefinites and other types of quantificational NPs. Furthermore, any syntactic movement rule seems an inappropriate device for describing the scope of indefinites, as one would need to exempt such a rule from

all normal constraints on movement. On the other hand, semantic devices for lifting an indefinite NP denotation out of its context would need to be prevented from applying to other quantificational NPs as well.

Nonetheless, let us continue to assume that indefinite NPs unambiguously denote (existential) quantifiers, and let us now assume also, for the sake of argument, that for the purpose of scope assignment they can be dislocated from their observable position by some unrestricted mechanism which is somehow insensitive to the usual scope and movement islands – say, 'island-free QR'. This describes the observations in the present section. The following section presents arguments to the effect that these, already highly questionable, assumptions are still not sufficient to describe all scope properties of specific indefinites.

3.2 Against 'island-free QR'

This section takes as its point of departure a straw-man 'island-free QR' theory of specificity: indefinite NPs unambiguously denote quantifiers, which may be assigned wide scope regardless of the usual island constraints on movement and scope taking. Several types of observations argue against this approach: it both overgenerates and undergenerates readings. Fodor and Sag (1982) pointed out that on the island-free QR approach, one expects indefinites to be able to scope out of islands without necessarily having the widest scope in the structure; they claimed this is not the case (section 3.2.1). Fodor and Sag argued further that if indefinites are always quantifiers, they disregard not only island conditions, but also conditions on free variables in VP-deletion contexts (section 3.2.2). Ruys (1992) pointed out that if indefinites freely take wide scope, one naturally expects plural indefinites to freely take wide, distributive scope as well; he claimed this is not the case (section 3.2.3).

3.2.1 Intermediate readings

Having established the point made above in section 3.1, Fodor and Sag (1982) presented an empirical argument against an 'island-free QR' hypothesis. Consider (27):

(27) Every professor overheard [$_{NP}$ the rumor [$_{CP}$ that a student of mine had been called before the dean]].
   a. \+ Every professor x [x overheard the rumor [that a student of mine y [y had been called before the dean]]].
   b. – Every professor x [a student of mine y [x overheard the rumor that [y had been called before the dean]]].
   c. \+ A student of mine y [every professor x [x overheard the rumor that [y had been called before the dean]]].

The indefinite *a student of mine* is embedded in an extraction island (the complex NP *the rumor that . . .*); this NP itself is c-commanded by yet a higher quantifier, the matrix subject *every professor*. If the scope of indefinites were indeed

unbounded, one would expect *a student of mine* to be able to remain within the complex NP that contains it in overt syntax (as in 27a), or to leave the complex NP and land below the matrix subject (27b), or to take widest scope (27c). Fodor and Sag claimed that just the (b)-reading is unavailable. The unavailability of such 'intermediate island-escaping readings' for specific indefinites seems virtually impossible to describe with any 'free-scope' mechanism: if the indefinite is able to move all the way up to a position outside the scope of the matrix subject, then surely it should be able to move less far, and land outside the complex NP but below the matrix subject. Therefore, Fodor and Sag returned to the hypothesis, rejected by Fodor (1970) and others, that specificity is due to a binary ambiguity in the indefinite NP itself. An indefinite can be a quantifier, in which case it may undergo local QR but not leave an island: (27a). Or it can be a referential expression, in which case it is insensitive to all scope effects and yields a reading nearly equivalent to (27c).[9] (27b) is not derived: in order to derive the intermediate island-escaping reading, the indefinite would have to be neither referential (or the student could not vary with every professor), nor a regular quantificational NP subject to conditions on movement.[10]

Fodor and Sag's elegant demonstration has been the subject of considerable debate in the literature. Many counter-examples to the supposed impossibility of island-escaping intermediate readings have been put forward; we will turn to these in section 4.

3.2.2 *VP ellipsis*

Fodor and Sag (1982) presented one more imaginative argument in favor of a binary, quantificational/referential ambiguity in indefinites, based on a generalization from Sag (1980) and Williams (1977) concerning VP-deletion examples such as the following ((28a) from Fodor and Sag, (28b) from May 1985, (28c) from Fiengo and May 1994):

(28) a. Someone [$_{VP1}$ loves *everyone*]. Chris knows that someone does [$_{VP2}$ e].
b. Some student [$_{VP1}$ admires *every professor*], but John doesn't [$_{VP2}$ e].
c. Some student [$_{VP1}$ hit *everyone*], and Max did [$_{VP2}$ e], too.

The observation is that the italicized direct object may not scope over the subject in this context, in which VP1 functions as antecedent for the elided VP2. The Sag/Williams generalization was (roughly) that a VP containing a free variable may not function as antecedent for an elided VP.[11] This explains the observation: for the italicized NP to scope over the subject, it must move out of VP1, thereafter binding a variable in VP1; VP1 then contains a variable that is free in VP1; hence VP1 can no longer function as antecedent for VP2.

Now consider (29) ((29b) is from Fox 1995b):

(29) a. Sandy thinks that every student in our class [$_{VP1}$ plays chess better than *a guy I beat this morning*]. Chris thinks that every student does [$_{VP2}$ e] too.
b. Exactly half the boys [$_{VP1}$ admire *a certain professor*], and Mary does [$_{VP2}$ e] too.

(30) A certain professor x [exactly half the boys [$_{VP1}$ admire x]], and a certain professor x [Mary does [$_{VP2}$ admire x]] too.

In (29), the italicized indefinite in VP1 may be interpreted outside the scope of the quantificational subject. For instance, (29b) may involve one particular professor whom exactly half the boys admire. This cannot be due to a quantificational reading of the indefinite, as that would involve a variable free in the antecedent VP1 – this is illustrated for (29b) in (30).[12] Hence, indefinites must possess some other means of creating the impression of a wide-scope construal. This is the referential reading of indefinites.

Fodor and Sag's assumptions do allow for a potential escape from this conclusion, but its correctness depends on subtle and undecided intuitions. The Sag/Williams generalization comes with an exception clause: a VP containing a free variable may antecede an elided VP, provided that the same quantifier instance binds both variables. This is exemplified in (31) (Williams 1977: (85)):

(31) a. John saw everyone before Mary did [$_{VP}$ e].
b. Everyone x [John [$_{VP1}$ saw x] before Mary [$_{VP2}$ saw x]].

One of the readings of (31a) is given in (31b): here each of the antecedent and elided VPs contains a free variable, but both variables are bound (outside VP) by the same instance of *everyone*. Given this option, the indefinite in (29) might be interpreted through wide-scope quantification, provided that the quantifier takes scope over both conjuncts, and binds two variables Across-the-Board, as illustrated in (32) for (29b):

(32) A certain professor x [[exactly half the boys [$_{VP1}$ admire x]], and [Mary does [$_{VP2}$ admire x] too]].

However, unlike the proscribed structure (30), the ATB structure (32) is associated with a maximal-scope reading by which the *same* professor is admired by exactly half the boys and by Mary. Fox (1995b: fn. 44) reports that speakers' intuitions are unclear on whether this is indeed the only available reading. It is not clear to me from their discussion which of the two wide-scope readings Fodor and Sag perceived to be available; but their treatment of indefinites is such that the two instances of the indefinite may have different referents, suggesting that they would not be satisfied with a restriction to (32).[13] It is possible also that Fodor and Sag did not envisage the option that a quantifier might take cross-sentential scope, as an ATB analysis of their example, (29a) above, would require. Under DRT and related dynamic approaches to semantics, however, the option of cross-sentential quantification cannot be ruled out. So, a quantificational approach to the wide scope of indefinites is still conceivable; but the cross-sentential case (29a) does rule out a description in terms of syntactic movement.[14]

Quite apart from the possible ATB analysis of (29), the Sag/Williams generalization that Fodor and Sag rely on has itself not remained unchallenged. Hirschbühler (1982) presented examples such as (33) that contradict it ((33b) and (33c) from Fox 1995b; (33d) from Fiengo and May 1994):

(33) a. A Canadian flag was [$_{VP1}$ hanging in front of *each window*], and an American one was [$_{VP2}$ e] too.
b. One guard is [$_{VP1}$ standing in front of *every building*], and one policeman is [$_{VP2}$ e] too.
c. Some boy [$_{VP1}$ admires *every teacher*] and some girl does [$_{VP2}$ e] too.
d. Some student [$_{VP1}$ hit *everyone*], and some professor did [$_{VP2}$ e], too.

Further counter-examples are due to Lappin (1992, 1993) ((34a) cited from Fox 1995b; (34b) cited from Fiengo and May 1994):

(34) a. At least one MP [$_{VP1}$ attended *every committee meeting*], and Bill did [$_{VP2}$ e], too.
b. A guide [$_{VP1}$ accompanies *every tour of the Eiffel Tower*], and Jeanne does [$_{VP2}$ e], too.

In each of these examples, the italicized NP may take wide scope. Furthermore, the examples in (35) are incompatible with an Across-the-Board analysis as considered in (32) ((35a) from Hirschbühler; (35b) from Fiengo and May; (35c) from Fox):

(35) a. A Canadian flag was [$_{VP1}$ hanging in front of *most windows*], and an American one was [$_{VP2}$ e] too.
b. A Canadian flag was [$_{VP1}$ hanging in front of *many windows*], and an American flag was [$_{VP2}$ e], too.
c. A guard is [$_{VP1}$ standing in front of *many buildings*], and a policeman is [$_{VP2}$ e] too.

For instance, no building needs to have both a guard and a policeman standing in front of it for the wide-scope reading of (35c) to be true. So the Williams/Sag generalization requires modification. Fox (1995b) suggests that the correct generalization is this: the inverted scope order is allowed in the antecedent structure just in case inverting the order in the elided structure will also have some semantic effect; if not, economy forbids QR in the elided structure, and then the parallelism requirement on deletion forbids QR in the antecedent structure as well. QR is disallowed in, say, (28b) because whether *every professor* takes wide or narrow scope relative to *John* makes no semantic difference. In (33) and (35) the right-hand conjunct has a quantified subject; crossing it will have a semantic effect, hence we obtain a wide-scope reading for the objects in the both conjuncts. If this is the correct generalization,[15] then the specific reading of *a certain professor* in (29b) still argues against a QR explanation of specificity. But if we manage to derive a quantificational wide-scope interpretation for the indefinite by some mechanism, other than QR, that is insensitive to this type of economy, then economy is not violated here and we may still avoid a referential/quantificational ambiguity. See the references cited above for further discussion.

3.2.3 Distribution and scope

So far, we have considered only singular number indefinites. When we take plural indefinites into account, an additional problem arises for an 'island-free QR' approach to specific indefinites, as pointed out in Ruys (1992). Consider first (36):

(36) a. Three relatives of mine wore a tie.
b. $\lambda P\ [|\mathbf{relative_of_mine'} \cap P| \geq 3]\ (\lambda x_i\ \exists y[\mathbf{tie'}(y) \wedge \mathbf{wear'}(y)(x_i)])$

The natural interpretation of (36a) is a 'distributive' (as oppposed to 'collective') one: my three relatives did not together wear one and the same tie, but each his own. How this distributive reading for *three relatives of mine* is achieved depends, among other things, on the semantic treatment of plurals. We obtain the distributive effect for free with the simplest Generalized Quantifier (GQ) interpretation of the subject, as in (36b).[16] Alternatively, if the subject basically denotes a plural individual (see, e.g., Link 1983), a distributivity operator needs to be applied in order to obtain this reading.[17] In any case, whatever the analysis, we observe that *three relatives of mine* must be granted a distributive interpretation.

Keeping this simple observation in mind, consider (37):[18]

(37) a. If three relatives of mine die, I will inherit a house.
b. [three relatives of mine_i [[if t_i die] I will inherit a house]].
c. $\lambda P\ [|\mathbf{relative_of_mine'} \cap P| \geq 3]\ (\lambda x_i$ [IF x_i dies THEN I will inherit a house]).
d. $\exists X\ [X \subseteq \mathbf{relative_of_mine'} \wedge |X| = 3 \wedge$ [IF X die THEN I will inherit a house]].

Suppose, as before, that NPs such as *three relatives of mine* may undergo island-free QR. Then we derive the LF (37b), and we expect the interpretation represented in (37c). That is, we expect *three relatives of mine* to allow a distributive reading with scope over the *if*-clause, which says that there are three relatives of mine such that, if *any one* of them dies, I inherit a house. But this reading is not available. That is not to say that plural NPs such as *three relatives* cannot be specific. There is a reading on which *three relatives of mine* escapes the *if*-clause, but only the one roughly stated in (37d): there are three relatives of mine, such that if they *all* die, I inherit a house. In other words, while existential quantification over (sets of) relatives of mine can take scope outside the extraction island (so that we find the entailment properties illustrated for (19c) above), the distributivity that the NP normally allows cannot scope over the island.[19]

Consider some examples from Winter (1998) that illustrate this further:

(38) a. #Every artist who was born in *three cities* became famous.
b. #If *three women* gave birth to John then he has a nice mother.

To begin with, (38a) has an odd narrow-scope reading for *three cities*, which attributes fame to every artist with a triple birthplace. The sentence also has the (equally odd) specific reading that there is a set of three cities, such that every artist born in all three of them became famous. The wide-scope distributive reading (there are three cities x, such that every artist born in x became famous) would not share this oddity; hence we would expect it to be highly prominent if it were available. As we find (38a) to be odd, the wide-scope distributive reading must be impossible; similar observations apply to (38b). (39) provides further evidence ((39a) from Ruys 1992):

(39) a. John overheard the rumor that some friends of mine had been called before the dean.
b. I met a man who wore three neckties with red polka dots.
c. Exactly one house that some friends of mine built made it through the quake (so their business has lost its credibility).

(39a) allows an island-escaping specific reading for the plural indefinite, but it is necessarily about one single rumor. (39b) is not ambiguous (the wide-scope non-distributive reading and the narrow-scope reading happen to be equivalent here) and entails the existence of a man wearing three neckties – if the indefinite could both take wide scope (as we know it can) *and* distribute, the sentence should allow for different men wearing each of those ties.[20]

It follows from these observations that positing a simple-minded 'island-free QR' predicts readings that are in fact not available. If a plural indefinite can be lifted out of an island, as illustrated in LF (37b), then how do we prevent the interpretation (37c), assuming that the NP denotes a simple GQ? And if we take the more sophisticated view that indefinites start out with a collective interpretation, then how do we prevent the usual mechanisms for deriving distributivity from applying once the NP is outside the island?

One option that springs to mind is that, perhaps, 'island-free QR' may apply only to collectively interpreted NPs to begin with – but this maneuver is easily blocked:[21]

(40) If three workers on our staff have a baby soon, we will have to face some hard organizational problems.
a. $\exists X\,[X \subseteq \textbf{workers'} \wedge |X| = 3 \wedge$ [IF $\forall x \in X$ (x has a baby) THEN we face problems]].
b. $\exists X\,[X \subseteq \textbf{workers'} \wedge |X| = 3 \wedge \forall x \in X$ [IF (x has a baby) THEN we face problems]].

(40) allows a specific reading for *three workers on our staff* (without distribution over the *if*-clause), but on this reading each worker may still have her own baby. Schematically: although (40b) is not allowed (wide-scope existential, wide-scope distribution), (40a) is (wide-scope existential, narrow-scope distribution). There is distributivity associated with specific NPs, but it is island-restricted.

So far, we have looked at plural specific NPs in islands, and observed that they may not scope and distribute over those islands. We conclude that an 'island-free QR' analysis of specificity faces severe problems. But a similar point can be made on the basis of much simpler examples (Ruys 1992). If it were really the case that indefinite NPs undergo QR so easily, and with such greater freedom than other quantifiers do as the initial specificity data seem to suggest, then we certainly expect them to take wide scope with supreme ease when *no* islands intervene. And indeed, an indefinite in object position, as in (18), effortlessly escapes the scope of a quantifier in subject position. But when the specific object-NP is plural, we find that it allows a distributive reading with wide scope *over* the subject only with great difficulty, if at all. Consider (41):

(41) Two boys read three books.
   a. [three books$_i$ [two boys read t$_i$]].
   b. λP [$|$**books'** ∩ P$|$ ≥ 3] (λx$_i$ [two boys read x$_i$]).

Given the supposed exceptional wide-scope propensity of indefinites, we would expect LF (41a) with the interpretation (41b) to be most readily available. This is not the case. The boys may not vary with the books: for (41) to be judged true it is not sufficient that each of three books was read by a different set of two boys, or it is only marginally so. Evidence has been available since at least the mid-1970s, and consensus growing since the early 1990s, that weak plural NPs take inverse wide scope in this sense much less easily than strong quantificational NPs such as *every friend of mine* (cf. Ioup 1975b; Verkuyl 1988;[22] Liu 1990; Ruys 1992, 1997; Beghelli 1993, 1995; Kamp and Reyle 1993; and references cited there). Consider also a structure of inverse linking, in which strong quantifiers preferably take inverse scope (May 1977):

(42) a. Een paar mensen in iedere stad hadden de luchtballon gezien.
   a few people in every city had the hot-air balloon seen
   b. Een paar mensen in drie steden hadden de luchtballon gezien.
   a few people in three cities had the hot-air balloon seen
   c. Two pictures of every senator were on sale at the gift shop.
   d. Two pictures of three senators were on sale at the gift shop.

In Dutch, (42b), unlike (42a), is interpreted as making a statement about a few people each of whom were in three cities. Similarly, (42d) is about two 'three-senator pictures', not (or only marginally) about three times two 'single-senator pictures', in contrast with (42c), which easily allows wide scope for *every senator*. Consider finally (43):

(43) a. Everyone believed that three friends of mine had been called before the dean.
   b. A professor believed that three friends of mine had been called before the dean.

c. Three friends of mine$_i$ [a professor believed that t_i had been called before the dean].

If the wide-scope, specific reading of *three friends of mine* relative to *believed* and *everyone* in (43a) were due to non-clause-bounded QR, we would equally expect (43b) to have the LF (43c). But the evidence is against this, as *three friends of mine* cannot take wide distributive scope over *a professor*.

We seem to be faced with a contradiction. When we look at one set of data, such as presented in section 3.1, which show island-escaping specificity, we want to allow indefinites unlimited, 'island-free' QR. But to explain the absence of wide-scope distributive readings for indefinites outside islands, and even locally, we want to prevent indefinites from undergoing QR altogether. There are several ways of resolving the contradiction.

One option is to give up the assumption that specificity is due to wide-scope quantification, and to follow Fodor and Sag (1982) in returning to a referential/quantificational ambiguity in indefinites. Apparent wide scope is then due to the referentiality option, and we can, without contradiction, attempt to explain the limited distributive scope of indefinites in terms of limited QR. This option is discussed in section 4.

Another option is to describe the interpretation of indefinite NPs in terms of one mechanism for existential quantification over plural or singular individuals, and a separate mechanism for distributivity. We must then ensure that existential quantification can take unlimited scope, while the domain of application of the distributivity operator is kept very local. If we pursue this option, an approach that manages to assign an indefinite its wide existential scope without displacing the indefinite itself is preferred, as the in-situ distributive properties of the indefinite are then likely to follow automatically. We will discuss such an approach in section 5. In contrast, an approach that does, through syntactic movement or some other means, displace the indefinite in order to derive its existential scope must define and motivate some way of separating the distributive mechanism from the indefinite and ensure that *it* does not acquire unbounded scope. To appreciate some of the difficulties such an approach would have to overcome, note that it must, all the same, allow distributive readings for plural weak NPs that are displaced in overt syntax through A-movement or A-bar-movement, as in (44) and (45a), and even wide-scope distributive readings in certain examples that appear to be due to QR, as in (45b) (from Reinhart 1997):

(44) a. Fifty US senators appear to at least one supreme court judge to have violated the constitution.
b. Three languages are spoken by over a billion people.

(45) a. Which men did some woman love?
b. A guard is standing in front of two buildings.

For instance, (44b), where *three languages* c-commands *over a billion people* only after A-movement, allows wide distributive scope for *three languages*: it is true if

each of three languages is spoken by a different set of over a billion people. (45a) can be answered by providing a set of men each of whom was loved by a different woman.

We want to mention briefly another popular account of structures containing specific indefinites (as in (18), (41), etc.) which avoids island-free QR and diagnoses them as instances of branching quantification (see, e.g., Liu 1990; Ruys 1992), as illustrated for (41) in (46):

(46) Two boys read three books.

a. three books y — x read y
two boys x —

The usual interpretation for branching quantification structures such as (46a) is that the value for a quantifier on one branch does not vary with the value for quantifiers on other branches.[23] So, *three books* in (46a) is not in the scope of *two boys* (wide 'existential' scope for *three books*), but neither is *two boys* in the scope of *three books* (no 'distributive' wide scope for *three books*) – this seems to be exactly what we need.[24] The crucial problem, of course, is how to (compositionally) derive (a denotation equivalent to) (46a) given the syntactic structure of the sentence. Another problem is that a quantifier on one branch cannot bind a variable in the restrictive clause of a quantifier on another branch, which is what we would need if we wanted to use a branching quantification structure to represent the specific reading of a quantifier A relative to B when A is contained in B. So the representational mechanism does not work in cases such as (42b) and (42d) ('inverse linking'), or for island-escaping examples such as (19) and (20).

A syntactic description of specificity might, however, build on the 'branching quantification' insight by attempting to encode 'branching' relations among quantifiers in syntactic representations. Now, the desired type of 'upward branching' cannot be directly encoded in tree structures (in any sensible syntactic representation of (46), either *two boys* c-commands *three books* or vice versa). So to implement this idea, syntactic representations must be enriched with a diacritic mechanism with which the relative scopal dependence or independence of any two quantifiers (or other scoped expressions) can be encoded.[25] This is not an attractive prospect, unless considerable independent evidence for such a diacritic mechanism can be adduced. Furthermore, the problem of compositional interpretation of such 'scope-marked' syntactic representations is not at all straightforward.

In conclusion, an analysis that assigns wide scope to indefinites by raising them to a scope position across an unlimited distance (be it a syntactic 'island-free QR' or an unrestricted semantic storage mechanism) is not the optimal description (let alone explanation) of specificity effects. Such an analysis is likely to predict unattested wide-scope distributive readings for indefinites, unless special precautions are taken to prevent this. An analysis that does not predict such distributive readings is to be preferred.[26]

3.3 ACD and specificity

We might look for syntactic clues to determine whether the island-escaping scope of indefinites is due to syntactic movement, but we don't expect to find much evidence either way. QR does not, for instance, appear to feed Binding Theory in general (see chapter 54). One small piece of evidence, however, comes from Antecedent Contained Deletion. If ACD resolution is generally due to QR (see, e.g., May 1985; Fox 1995a; Kennedy 1997a), then a syntactic 'island-free QR' hypothesis would lead us to expect wide-scope indefinites to license unlimited ACD.[27] We cannot look directly at island-escaping specificity, though:

(47) a. Mary [$_{VP1}$ dates every man who knows a producer OP Sue does [$_{VP2}$ e]].
b. [$_{IP}$ [$_{NP}$ a producer OP Sue does [$_{VP2}$ e]]$_i$ [$_{IP}$ Mary [$_{VP1}$ dates every man who knows t_i]]].
c. *[$_{IP}$ [$_{NP}$ a producer OP$_j$ Sue does [$_{VP2'}$ date every man who knows t_j]]$_i$ [$_{IP}$ Mary [$_{VP1}$ dates every man who knows t_i]]].
d. *There is a producer x such that Sue dates every man who knows x, and such that Mary dates every man who knows x.

(47a) does not allow VP1 to antecede the empty VP2: the reading given in (47c), paraphrased in (47d), is not available. But this does not in itself entail that LF (47b) is not derived. If it were, matrix ACD resolution should still be out because the relation between the relative pronoun OP and the trace inside the copied VP, VP2', violates the CNPC in (47c). Consider, however, (48), from Kennedy (1997a):

(48) John [$_{VP1}$ believed that Bill [$_{VP2}$ had seen a certain film that I did [$_{VP3}$ e]]].

(48), according to Kennedy, has a *de re* reading with *a certain film that I did* specific relative to *believed*, but even on this matrix-scope reading, only VP2 may antecede the empty VP. Wide-scope specific readings apparently do not feed ACD resolution. This accords with our observation in section 3.2.3 that if indefinites undergo QR, QR must be (very) local.

3.4 Conclusions

In this section, we have investigated the option of analyzing the specific/non-specific ambiguity as a scope ambiguity. Several conclusions may be drawn from this section. First, if the scope of indefinites is to be determined in syntax, it cannot be through a rule of movement; that hypothetical rule would exhibit such extraordinary properties as to render its characterization as a syntactic movement rule vacuous. As a corollary, nothing can be learned about QR by observing the scope of singular indefinite NPs, as in *everyone loves someone*. Second, if specificity is a scope phenomenon, and not due to a referential reading on indefinites, then the mechanism responsible for the scope of indefinites cannot

be just the same one that also assigns scope to other quantificational NPs. QR is not a viable option; neither is a semantic storage mechanism that applies to all quantifier types. Third, if specificity is due to scope, not referentiality, then the mechanism that determines the scope of indefinites, be it syntactic or semantic, must distinguish two scope properties: free existential scope and scopally restricted distribution. This is likely to be easier when the indefinite itself is not displaced. Again, QR is not indicated, and neither is semantic storage. In section 5, we discuss one theory on the scope of indefinites that satisfies these requirements.

Several other issues have arisen that require further discussion. As we observe that not only singular indefinites but also plurals allow specific readings, we want to delineate the exact class of NPs that come with this property. Until we turn to that task in section 7, we will simply speak of 'indefinite NPs' as the relevant class. More urgently, we want to ascertain whether Fodor and Sag's 'intermediate reading' argument indeed provides conclusive evidence for a binary ambiguity in the indefinite, and against the scope ambiguity approach. This is the subject of the next section.

4 Intermediate readings

In section 3.2.1 above we outlined Fodor and Sag's (1982) claim that a specific indefinite cannot take island-escaping intermediate existential scope: *a student of mine* cannot scope above *the rumor* but below *every professor* in (27). If true, this implies that an indefinite does itself not denote an (existential) quantifier that is somehow interpreted at an arbitrary distance from its surface position. We subscribe to this conclusion. But there is a stronger implication. Specificity cannot involve quantification at all, unless one can define some quantificational mechanism that can take island-escaping maximal scope, but not island-escaping non-maximal scope. As they see no non-stipulative way of accomplishing this, Fodor and Sag return to the binary ambiguity position: indefinites are interpreted either through local quantification, or as referential expressions. Must we adopt this conclusion as well? This section outlines the case against it.

The weak point in Fodor and Sag's claim is that it involves subtle intuitions on complex examples containing at least three scope elements: the indefinite; the scope island from which it escapes; and the higher scoped expression below which the indefinite may or may not remain. Even before Fodor and Sag's paper had appeared in *Linguistics and Philosophy* in 1982, counter-examples to their generalization had been presented. The following is from Farkas (1981):

(49) Each student has to come up with [$_{NP}$ three arguments which show that *some condition proposed by Chomsky* is wrong].

It is fairly easy to obtain an intermediate scope reading for the italicized NP, saying that each student has some (different) condition assigned to her, and must

come up with three arguments regarding that particular condition. Unfortunately, as pointed out by Reinhart (1997), the wide-scope reading of the italicized NP relative to the complex NP entails the narrow-scope reading, so that we may just be considering a special case of the narrow-scope reading here, not a separate reading (cf. section 2.1).[28] But this is easily fixed:

(50) Each student has to come up with [$_{NP}$ exactly three arguments which show that *some condition proposed by Chomsky* is wrong].
   a. Each student x [some Chomsky-condition y [x has to come up with exactly three arguments which show that y is wrong]].

There is a fairly strong intuition that (50) has the reading schematized in (50a). If so, this is a reading that cannot be attributed to QR, for reasons outlined in the previous section, or to a referential reading of the indefinite, as the choice of problem varies with each student. It now appears that intermediate island-escaping readings *are* possible, so that Fodor and Sag's argument collapses.

Many other authors have taken up Fodor and Sag's challenge and constructed examples which display intermediate readings; see, e.g., Partee and Rooth (1983), King (1988), Ludlow and Neale (1991), Ruys (1992), Abusch (1994), and Reinhart (1997) for elaborate discussion of Fodor and Sag. We shall not go into all the details or discuss all the examples. We will present a few representative cases and consider ways of making the relevant intuitions more secure. Below are some more simple cases, from Abusch (1994) and Reinhart (1997):

(51) a. Every gambler will be surprised if one horse wins.
   b. Most linguists have looked at every analysis that solves some problem.

In both cases, the narrow-scope reading runs counter to our knowledge of the world; in (51b), the maximal-scope reading does so as well. This favors the intermediate-scope reading, which is felt to be available.

Ruys (1992) investigates several ways of rendering intermediate readings more easily detectable by suppressing the other two readings. The wide-scope reading can be eliminated by placing a pronoun bound by the higher quantifier inside the indefinite ((52b) is from Abusch):

(52) a. Every professor$_i$ will rejoice if *a student of his*$_i$ cheats on the exam.
   b. Every professor$_i$ rewarded every student who read *a book he*$_i$ *had recommended*.

In these examples, only two potential scope positions for the indefinite are left (given that we choose a bound reading for the pronoun) – the intermediate reading thereby becomes more prominent. Combining this with a mechanism that strengthens the specific reading (although such mechanisms are hard to find and ill-understood, as we will see later (section 7)), we obtain examples where the intermediate reading is strongly favored:

(53) a. Every professor$_i$ will rejoice if *a certain student of his*$_i$ cheats on the exam.
b. Every professor$_i$ rewarded every student who read *a particular book he*$_i$ *had recommended*.

Another method for isolating intermediate readings employed in Ruys (1992) requires some introduction. Recall from section 2 Karttunen's (1968) observation that an indefinite structurally embedded below a scope-taking expression may nonetheless introduce a discourse referent if it is interpreted specifically. Island-escaping specificity licenses discourse anaphora as well:

(54) a. If *a relative of mine* dies, I will inherit a fortune. *He* got lucky on the derivatives market.
b. Mary dates every man who has met *a producer I know*. She wants to talk about *him* all the time.

We may use this property to influence the scope of an indefinite, provided that we control for two exceptions to Karttunen's generalization. First, a *plural* pronoun may be used to pick up the collection of all verifying values for an indefinite in the scope of a quantifier: in (55a), *they* may be taken to refer to all the girls the boys brought to the party.[29] Second, when the pronoun is in the scope of a quantifier as well, it may have a functional reading relating it to the indefinite narrow-scope antecedent (cf. note 2); see (55b). (For work on such issues see Kamp and Reyle 1993, Chierchia 1995a, and references cited there; see also chapter 9.)

(55) a. Every boy brought *a girl* to the party. But *they*/**she* got bored quickly.
b. Every boy brought *a girl* to the party. And every boy took *her* home as well.

Given this background, we can use donkey anaphora structures to elicit wide-scope readings. The principle is illustrated in (56):

(56) a. He often reads a book about linguistics.
b. [Anyone who often reads *a book about linguistics*] understands *it* well.
c. [Anyone who often reads *a book about linguistics*] understands *them* well.
d. [Anyone who often reads *a book about linguistics*] usually understands *it* well.

The ambiguity of (56a) shows that in structures such as this, the indefinite *a book about linguistics* may take wide or narrow scope relative to the adverbial *often*. Next, when we embed the structure in such a way that the indefinite becomes the antecedent for a donkey anaphor, we observe the same effects that occur with discourse anaphora, only one 'scope level' down. A singular indefinite may antecede a singular donkey anaphor provided that the indefinite is not scopally

embedded, except of course relative to the universal quantifier which also takes scope over the pronoun. In other words, the indefinite must occur in the immediate scope of the 'unselective binder' *anyone*.[30] Thus, there is only a wide-scope reading relative to the adverbial for the indefinite in (56b). If we want to achieve narrow scope for the indefinite, we must either use a plural pronoun, as in (56c), cf. (55a), or use a similar adverbial to take scope over the pronoun, as in (56d), cf. (55b).

By placing the donkey antecedent in a scope island, we can now force an island-escaping intermediate-scope reading:

(57) a. Every critic who reviews each and every book that *some author* writes quickly grows sick of *him*.
b. Every country whose security is threatened if *a building* is attacked by terrorists protects *it* well.
c. Whenever Beatrix overhears the rumor that *some politician* is corrupt, *the poor slob* loses his job.

We observe that the pronouns in (57) can function as donkey anaphors, with their antecedents taking intermediate island-escaping scope. In (57a), for instance, *some author* cannot be referential, since it is in the scope of *every,* but it must scope outside the embedded complex NP or it could not antecede a singular donkey pronoun. (57c) is interesting in that it allows an intermediate reading even though its structure mirrors that of Fodor and Sag's example (27). See Ruys (1992: 213ff.) for examples with other island and donkey anaphora types; see also Abusch (1994: 93).

There may be yet another, more theory-internal argument for the existence of intermediate island-escaping specificity. Recall from section 3.2.3 that the mechanism responsible for specificity does not yield distributive wide-scope readings. Consequently, distributive wide scope must be the effect of some other scope mechanism, e.g., (island-bound) QR. We found that in most structures, including simple SVO configurations such as (46), plural indefinites take distributive inverse wide scope with great difficulty, if at all. That would entail that (almost) any structure is a QR-island for indefinites; in particular, one might suppose that such NPs are never subject to QR. If so, any scope position that does not match the indefinite's syntactic surface position is 'island-escaping' and must be due to the specificity mechanism. And any such scope taking would falsify Fodor and Sag's claim if it were non-maximal. Consider (58) (cf. Ruys 1992):

(58) a. Elke professor vindt dat iedere student *een bepaalde theorie* moet aanhangen.
'Every professor believes that every student should support a certain theory.'
b. It seems that every senator will accept *a proposal endorsed by Ronald Reagan*.
c. When every professor really likes *a student*, she is usually a genius.

Dutch (58a) supports a reading paraphrasable as 'for every professor there is a theory he believes every student should support'. This reading cannot be due to QR, since a plural indefinite in the position of *een bepaalde theorie* could not even distribute over an indefinite in the position of *iedere student*, let alone take matrix scope. But if it is a case of specificity, specificity cannot be due to referentiality. Similarly, the indefinite in (58b) can be specific relative to *every senator* but in the scope of *seems* at the same time; (58c) is an example of this type in a donkey anaphora context, as above. If this line of reasoning is valid, we could conceivably even recycle one of the original arguments against a binary, referential/quantificational ambiguity of indefinites, namely the intermediate reading in examples such as (15).

When we accept the findings reported in this section, Fodor and Sag's main argument for a binary referential/quantificational ambiguity in indefinites no longer holds. Instead, we have again a version of the argument *against* such a binary ambiguity, such as resulted from the work of Fodor (1970) and others, as discussed in section 2. Since intermediate-scope readings sometimes arise, as in (15), we need to assume a quantificational mechanism whose scope need not reflect the surface position of the indefinite. Since intermediate island-escaping scope readings sometimes obtain, as we now find, we need to assume that this quantificational mechanism is insensitive to scope islands. Hence, there is no need to assume a referential interpretation of indefinites as well, since the 'maximal-scope' readings that would result from that also follow from the required quantificational mechanism. The next section describes one quantificational mechanism that serves our purposes.

5 One solution: choice functions

We find ourselves with the following desiderata for a theory of specificity. It must specify a quantificational mechanism that is involved in the interpretation of indefinites, which can take any scope without being sensitive to scope islands, and which allows no distributive specific readings. Several quantificational mechanisms for indefinites have been proposed that meet these requirements to some degree (see, e.g., Ruys 1992; Abusch 1994; Farkas 1997; Kratzer 1998). It would not serve the purposes of our discussion to consider them all and compare their relative merits; empirical differences falling within the purview of this chapter are slight and not always essential. We will outline one treatment of the scope of indefinites, which was proposed by Tanya Reinhart in (1997) and earlier work, and refined and developed further in Winter (1997, 1998).

We concluded in section 3.4 that a description of the scope of indefinites is more likely to meet the empirical requirements if it does not involve movement, especially syntactic movement, of the indefinite itself. This entails that we must assume that the quantifier whose scope determines the existential import of the indefinite is not part of the interpretation of the indefinite itself; e.g., *some* does not denote the existential quantifier. The obvious alternative is to make use of the

mechanism of default existential closure familiar from DRT (Kamp 1981a; Heim 1982; Kamp and Reyle 1993). But it is well known (see, e.g., Heim 1982) that existential quantification over individuals will not work for our purposes, as (19), repeated as (59), shows:

(59) If a relative of mine dies, I will inherit a fortune.
  a. $\exists$ x IF relative_of_mine(x) $\wedge$ die(x) THEN I will inherit a fortune.

DRT holds that the indefinite *a relative of mine* is interpreted as an open sentence relative_of_mine(x); default existential closure binds the variable. If we now allow a default quantifier at matrix level to bind that variable in (59a), we have matrix scope but not the correct meaning, as the descriptive content of the indefinite is still interpreted inside the *if*-clause. (59a) does not state there is a relative of mine with such-and-such property, but that there is an individual such that *if* he is a relative of mine, I inherit. This comes out true if there exists any individual who is not a relative of mine. The reason is that we can then pick as a value for *x* any individual not a relative of mine; this will render the antecedent clause false; hence the implication should be judged true. We want to solve this problem without extracting the indefinite from the *if*-clause. Reinhart's solution to this puzzle, which occurs also when we want to interpret *wh*-expressions in situ (see chapter 77), was to use default existential quantification over choice function variables instead.

We will use the provisional definition of choice function, CF, in (60):

(60) $CF =_{df} \lambda f_{<<e,t>,e>} \forall P_{<e,t>} [P \neq \varnothing \rightarrow P(f(P))]$

A choice function is a function which, when applied to a non-empty set, yields as its value a member of this set (we will discuss the empty set case in section 6). Reinhart assumed that the free variable that DRT postulates in the interpretation of an indefinite is not of type e (individual) but of the type of CF. This free function variable takes the set denoted by the descriptive content of the indefinite as its argument; the resulting individual is the denotational value of the indefinite DP. The function variable is bound through default existential closure. For example, (61a) is interpreted as (61b):

(61) a. A woman entered the room.
  b. $\exists$f [CF(f) $\wedge$ f(woman) entered the room].

(61b) paraphrases as: 'there is some manner of choosing, such that the woman chosen in that manner entered the room'; in other words: 'some woman entered the room'. Given these assumptions, (59) now comes out correctly, as shown in (62):

(62) a. IF $\exists$f [CF(f) $\wedge$ f(relative_of_mine) dies] THEN I will inherit a fortune.
  b. $\exists$f [CF(f) $\wedge$ IF f(relative_of_mine) dies THEN I will inherit a fortune].

A relative of mine is interpreted, in situ, as f(relative_of_mine); default existential closure states that there is a CF *f* with the indicated property. If closure applies immediately, as in (62a), we get just the narrow-scope reading for the indefinite. We obtain specificity of the indefinite relative to the *if*-clause when default existential closure takes place outside this clause, as in (62b). (62b) paraphrases as 'there is a way of choosing an individual from a set, such that if the person we choose from my relatives in that way dies, then I inherit a fortune'. This does not fail in the way (59a) did, as it cannot be rendered trivially true by picking some individual that is not a relative of mine. Supposing that I have relatives, *f*, being a CF, is guaranteed to pick a relative of mine when applied to relative_of_mine. (62b) then comes down to the statement that there is a relative of mine that we can pick, such that if he dies, I will inherit.

To see that this analysis has the required properties, we want to look again at the entailment properties of (59) that we discussed in section 3.1 (see reading (19c)). We will ignore the existential entailment property until section 6, and concentrate on the weakening effect of wide scope in this context: the reasoning in (63) should not be valid:

(63) ∃f [CF(f) ∧ IF f(relative_of_mine) dies THEN I will inherit a fortune]. (= (62b))
John is a relative of mine.
– _____
IF John dies THEN I will inherit a fortune.

This reasoning is indeed not valid; if there is *some* way of choosing a relative of mine that renders the implication true, that does not entail that choosing *any* relative, such as John, will render the implication true.

Other observed properties of specific indefinites also follow. As existential closure is not directed by syntax and may take place wherever a quantifier can bind the CF variable, intermediate readings are generated – we have decided in section 4 that this is desirable. This is illustrated in (64) (from Winter 1998: ch.3, (89)):

(64) Every country's security will be threatened if some building is attacked by terrorists.
  a. Every country x IF ∃f [CF(f) ∧ f(building) is attacked by terrorists] THEN x's security will be threatened.
  b. Every country x ∃f [CF(f) ∧ IF f(building) is attacked by terrorists THEN x's security will be threatened].
  c. ∃f [CF(f) ∧ [every country x IF f(building) is attacked by terrorists THEN x's security will be threatened]].

(64b) gives the intermediate reading: it allows a different choice (of building) to be made for every country.

As for specificity in VP-deletion contexts, the CF hypothesis conforms to our conclusion in section 3.2.2 that this construction militates against a QR treatment

of wide-scope indefinites, but not against a quantificational treatment per se. As no syntactic movement is involved in existential closure, an account of the restrictions on wide-scope quantification in VP-deletion antecedents in terms of economy constraints on syntactic movement will not affect the scope of indefinites, as pointed out by Fox (1995b). We derive wide scope for *a certain professor* in (29b), repeated as (65), as indicated in (65a):

(65) Exactly half the boys [$_{VP1}$ admire *a certain professor*], and Mary does [$_{VP2}$ e] too.
   a. ∃f [CF(f) ∧ Exactly half the boys admire f(professor)] AND ∃f [CF(f) ∧ Mary admires f(professor)].
   b. ∃f [CF(f) ∧ [Exactly half the boys admire f(professor) AND Mary admires f(professor)]].

A potentially troubling situation would arise if it turned out that only the maximal-scope Across-the-Board reading (65b) is available. We would then need to rule out (65a), by returning, e.g., to the Sag/Williams ban on free variables in elided VPs, which allows only (65b).[31] But this would leave us without an account of the examples in (33–35) and other problems: see section 3.2.2 and references cited.

An important advantage of the CF hypothesis is that it explains the observations reported in section 3.2.3 above, as pointed out by Reinhart (1997) and Winter (1997, 1998). Indefinites may have unlimited existential scope, but the *distributive* scope of a plural indefinite is quite limited. Consider again example (37a), repeated as (66):

(66) If three relatives of mine die, I will inherit a house.
   a. ∃f [CF(f) ∧ IF f(three relatives of mine) die THEN I will inherit a house].

The observation was that *three relatives of mine* may scope, *qua* existential import, outside the *if*-clause, but may not be understood with distributive wide scope over the *if*-clause. This follows automatically from the CF mechanism, which yields the specific reading of (66) given in (66a). The reason is that the descriptive content of the indefinite, and in particular the cardinality information (*three*) associated with it, remains inside the *if*-clause. Taking wide scope over the *if*-clause is only the existential quantifier over CFs; no plurality is available there with respect to which distribution might take place.

For the CF mechanism to work with plural indefinites, we need to assume that these do not (always) denote generalized quantifiers. Instead, *three relatives of mine* must denote a set of plural individuals. Taking plural individuals to be sets, *three relatives of mine* then denotes the set of all sets that contain three relatives of mine; the CF *f* chooses one such set.[32] (66a) then paraphrases as 'there is a way of choosing, such that if the three relatives of mine chosen in that way die, I inherit a house'. This gives us the required wide-scope reading.

Still, as with any similar approach to the semantics of plurals, we must account for the fact that plural indefinites can be interpreted distributively in a local domain, as in *three relatives of mine wore a tie* ((36) above). Reinhart (1997) leaves open the option that indefinites are ambiguous and that in such examples *three relatives of mine* denotes a (distributive) generalized quantifier (with local scope), local distributivity in (66a) being due to a lexical property of the predicate *die*. But this is not sufficient, in view of our example (40), repeated as (67):

(67) If three workers on our staff have a baby soon, we will have to face some hard organizational problems.

On the intended reading, *three workers on our staff* in (67) is specific, hence not a generalized quantifier, but must take distributive wide scope relative to *a baby*. Therefore, we need to postulate a device that allows a distributive reading for the plural individual chosen by the CF. Given such a distributivity operator, we need not assume that indefinites ever denote in any other way than through the CF mechanism (see Winter 1997, 1998). More importantly, while the indefinite itself may move, covertly or overtly, within a local domain, and shift the scope of the distributivity operator in that way (see (44), (45)), there is no obvious way we can apply one in (66a) so as to derive island-escaping distributivity.

Nevertheless, the advantage gained by adopting the CF approach lies in its explanatory value, not just in its descriptive adequacy. We can see why this is so by comparing the present hypothesis with that put forward by Abusch (1994). Abusch proposes a semantic storage mechanism which may 'lift' an indefinite (a description applied to a free variable, as in DRT, and the associated cardinality information) out of islands. At any level, an existential closure rule may 'reattach' the indefinite and bind its free variable. The variable that gets bound with wide scope may range over plural individuals, and a distributivity operator is assumed that may apply to such a variable and pick out its members. Abusch especially stipulates that the distributivity operator may be syntactically deep-generated anywhere, so as to derive island-escaping distributivity (which she felt was possible; cf. note 20) without movement. It does not appear too problematic to adopt the reverse stipulation and allow the distributivity operator to be generated only close to the indefinite's syntactic position. This would lead to a system that is empirically hard to distinguish from the CF system. However, this merely demonstrates that Abusch's approach to indefinites does not *predict* that wide-scope distributivity is impossible; the basic approach allows one to shift the predictions in any desired direction. The CF approach, on the other hand, predicts that there will be no wide-scope distribution, as the numeral and descriptive content information never leave the island and are not available for any wide-scope distributivity operator one might wish to employ. The system would require significant stipulative modification in order for it to make the wrong prediction in this respect.

The CF Hypothesis performs well with regard to the properties of specific indefinites mentioned so far. There is, furthermore, accumulating independent

evidence that NL semantics makes use of the CF mechanism. For instance, Reinhart (1992) has argued that *wh*-in-situ is likewise interpreted through existential quantification over CFs, and Reinhart (1997) argues they can be profitably employed in the description of sluicing (see chapter 60); Ruys (1997) suggests that quantification over CFs might be used to resolve some of the semantic problems associated with the Move-Spec/Move-F analysis of Quantifier Raising proposed in Chomsky (1995c) (see chapter 53) (see also Von Heusinger 1999).

Not all properties of specific indefinites are easily treated in terms of CFs, however. Consider the complex issue of specificity in intensional contexts, exemplified by (68) (see section 2):

(68) John wants to marry a waitress.
  a. $\exists$f [CF(f) $\wedge$ **want'**(**John'**, ^(**marry'**(**John'**, f(**waitress'**))))]

In order to obtain the *de re* reading of (68), by which there is a particular individual, who *is* a waitress ('according to the speaker'), and who John wants to marry, we want to assign wide scope not only to the existential quantifier, but also to the description *waitress*. But so far, the best we can obtain is (68a), where *waitress* is interpreted inside the intensional context. Reinhart (1992), in the context of a CF treatment of *wh*-in-situ, proposed that the CF apply to the intension of the description of the indefinite. We may assume, for instance, the definition of intensional choice function in (69a), and represent the desired reading of (68) as (69b):

(69) a. ICF $=_{df} \lambda f_{<<s,<e,t>>,e>} \forall P_{<s,<e,t>>} [^{\vee}P \neq \varnothing \rightarrow {}^{\vee}P(f(P))]$
  b. $\exists$f [ICF(f) $\wedge$ **want'**(**John'**, ^(**marry'**(**John'**, f(^**waitress'**))))]

By (69b), *f* applies to the property **^waitress'** and, by the definition of ICF, assigns it to an individual who is a member of the extension of **waitress'** in the world of evaluation of the matrix sentence; John is said to want to marry that individual. The definition (69a) seems to work fine for this relatively simple case, but is difficult to maintain when we consider the possibility that the set of waitresses is empty (see next section). Also, we already observed in section 2 (see the discussion concerning (14)) that the issue of intensionality is considerably more complicated than this mechanism can handle. There are, furthermore, indications that 'wide-scope' readings of the descriptive content of, e.g., universally quantified noun phrases are also possible in certain contexts; see, e.g., Abusch (1994) and Farkas (1997) ((70) from Abusch):

(70) Things would be different if every senator had grown up to be a rancher instead.

This is not the place, and I am not qualified, to discuss these issues further.

Another question that requires further research is how CFs relate to anaphora. We noted in section 2 that specific indefinites introduce discourse referents; we saw in section 4 that specific indefinites may function as antecedents in donkey

anaphora contexts, as discussed in Ruys (1992) and Abusch (1994). Consider again (71) (cf. (57a)):

(71) Every critic who reviews each book that *some author* writes quickly grows sick of *him*.

Given that *some author* must be specific here relative to *each book that . . .* , we need to allow the value chosen by a CF to antecede the pronoun. A naive solution might be to assume that the relevant CF variable is unselectively bound by *every*, and that *him* is interpreted as f(some author). But it is unclear how this should be achieved; also, the solution is subject to the proportion problem.[33] Abusch's (1994) theory provides a more straightforward solution for these examples; since the mechanism she proposes can lift a restricted individual variable up to the highest universal quantifier, that quantifier can unselectively bind the variable and the pronoun can also be interpreted as that bound variable. But the proportion problem occurs here as well.

The next section takes a detailed look at one further complication that attends the CF hypothesis: the case of the empty restriction set.

6 Do specific NPs support existential entailments?

In section 3.1 we first considered such examples as (19) (repeated as (72)):

(72) If a relative of mine dies, I will inherit a fortune.
  a. IF ∃x [relative_of_mine(x) ∧ x dies] THEN I will inherit a fortune.
  b. ∃x [relative_of_mine(x) ∧ IF x dies THEN I will inherit a fortune].
  c. IF ∃f [CF(f) ∧ f(relative_of_mine) dies] THEN I will inherit a fortune.
  d. ∃f [CF(f) ∧ IF f(relative_of_mine) dies THEN I will inherit a fortune].

We observed that (72) has two readings, corresponding to two scope positions for the indefinite; we presented them schematically as in (72a) and (72b). In the previous section we discussed the CF Hypothesis, which attributes to (72) the two readings in (72c) and (72d). Unfortunately, the CF Hypothesis only partly accounts for the observations that initially led us to assume the readings (72a, b).

The truth conditions given by (72b) are weaker, in one sense, than those of (72a), which allowed us to construct a model where (72b) is true and (72a) false: uncle John dies, and I do not inherit. Since we judged (72) true in such a model, we concluded that a wide-scope reading such as (72b) must be assumed to exist. The wide-scope reading we now derive with the CF mechanism, (72d), is not directly equivalent to (72b), but it is sufficiently similar to (72b) in that it has the required property of being true in the given model.

We also noted that, in another sense, (72b) has stronger truth-conditions than (72a): (72b) entails that I have relatives, (72a) does not. We had already come across a similar observation in section 2 (see (9)): wide-scope, specific indefinites

have traditionally been taken to enable existential entailments (but see note 5). This does not, however, follow from the CF treatment (72d). In this section, we will consider whether this deviation from tradition is justified.

To see why the entailment fails, consider first this simple example:

(73) A unicorn appeared.
  a. (73) ⇒ There exists a unicorn.
  b. $\exists x$ [**unicorn′**(x) ∧ **appeared′**(x)]
  c. $\exists f$ [CF(f) ∧ **appeared′**(f(**unicorn′**))]
  d. $\exists f$ [CF(f) ∧ f(**unicorn′**)(**appeared′**)]

The indefinite *a unicorn* in (73) has wide scope (trivially). The sentence is judged to support the entailment stated in (73a). This is accounted for if the indefinite is interpreted as in (73b) – call this the Existential Hypothesis.

The entailment intuition is not accounted for if the indefinite is interpreted as in (73c). As Reinhart (1997) and Winter (1997) point out, the basic definition of CF in (60) states that for every non-empty set X, a CF f applied to X yields a member of X. It imposes no restriction on the value of f(X) when X is empty. Hence, when there are no unicorns, (73c) comes out as true if anything appeared at all. But (73) is solidly judged false when there are no unicorns, as the Existential Hypothesis predicts. In order to remedy this, Reinhart and Winter revise the definition so that, when a CF is applied to the empty set, the value will be something that gives falsehood for every predicate. Winter's (1997) revised definition is as follows:

(74) $\mathrm{CF} =_{df} \lambda f_{<<e,t>,<<e,t>,t>>} \cdot f(\varnothing_{<e,t>}) = \varnothing_{<<e,t>,t>} \wedge \forall P_{<e,t>}[P \neq \varnothing \rightarrow \exists x[P(x) \wedge f(P) = \lambda R_{<e,t>} R(x)]]$

We adopt this definition from now on. By this definition, a CF applied to a non-empty set yields the Generalized Quantifier corresponding to some member of the set, but applied to the empty set it yields the empty GQ, which is false of every predicate. This means that the CF reading of *a unicorn* in (73) now results in (73d), and comes out as false when there are no unicorns, as desired. Call this the CF Hypothesis.

For simplex examples such as (73) the CF Hypothesis, thus refined, yields the same existential entailments as the Existential Hypothesis. This does not hold, however, of such complex examples as (72), predicted to have the specific reading (72d). When the argument set of a CF is empty, its value is the empty GQ, which takes a predicate and yields False. But in (72d), the further embedding of this falsehood is such that the sentence as a whole comes out True. Hence, the CF Hypothesis, unlike the Existential Hypothesis, predicts that the specific reading of this sentence is true when I have no relatives.

We are faced with an empirical question. When they adopt the CF Hypothesis, Reinhart (1997) and Winter (1997) predict that an indefinite on its specific reading does not support an existential entailment in contexts such as (72), or in other

downward-entailing contexts such as below a single negation, or in the restriction of a universal quantifier. Abusch (1994) and the 'island-free QR' straw-man theory of section 3.2 do predict such entailments, by implementing the more traditional Existential Hypothesis illustrated in (72b).[34] Which is the correct prediction? It turns out that this question is difficult to answer.

The contexts mentioned so far do not decide the issue. Rather than considering (72) directly, we can show this more easily by looking at the simpler case of an indefinite embedded under a single negation:

(75)	It is not the case that a unicorn appeared.		**unicorn'** = ∅
	a.	NOT ∃x [**unicorn'**(x) ∧ **appear'**(x)]	TRUE
	b.	∃x [**unicorn'**(x) ∧ NOT **appear'**(x)]	FALSE
	c.	NOT ∃f[CF(f) ∧ f(**unicorn'**)(**appear'**)]	TRUE
	d.	∃f[CF(f) ∧ NOT f(**unicorn'**)(**appear'**)]	TRUE

Ignoring for the moment the option of applying QR to *a unicorn*, the Existential and CF Hypotheses predict the readings in (75a, b) and (75c, d) respectively. Only the wide-scope readings are different. The CF Hypothesis derives the wide-scope reading (75d), which is true in a model without unicorns (if **unicorn'** is empty, the subclause is false, hence (75d) as a whole true). The Existential Hypothesis gives the wide-scope reading (75b), which is false in such a model. But it is hard to evaluate this prediction, as the Existential Hypothesis still predicts that we may judge the sentence true in a model without unicorns – namely, on the basis of the narrow-scope reading (75a). In fact, if we take the truth-conditions of an ambiguous sentence to be simply defined as the truth-conditions of the disjunction of its readings, then both hypotheses are indistinguishable, since (75a) ∨ (75b) is equivalent to (75c) ∨ (75d).

There is one way in which we might conceivably distinguish the two hypotheses with regard to (75). Suppose the intuited truth-conditions for an ambiguous sentence need not be just the truth-conditions of the disjunction of its readings. Suppose instead that speakers have the ability to 'choose' one reading as the interpretation of a sentence, ignoring any other readings. Then by the CF Hypothesis, we still cannot judge (75) false in a model without unicorns, on any of its readings. But by the Existential Hypothesis we should be able to judge the sentence false in a model without unicorns, on the basis of its wide-scope reading (75b). If we were now to find that speakers do not succeed in judging (75) false in the relevant model, this would count as evidence against the Existential Hypothesis. Unfortunately, the evidence would be far from conclusive. Even if we attribute to speakers an ability to 'choose' readings, which is questionable in itself, the Existential Hypothesis still does not predict that the 'false' reading will be easy to discern. On the contrary, as already pointed out in section 2.1, even on the Existential Hypothesis we expect such a 'false' judgment to be difficult to secure, since it is in competition with a reading that renders the sentence true in the given model (narrow-scope (75a)), and a reading that renders the sentence true is likely to be much more prominent.

We may nonetheless look for ways of rendering the relevant intuitions more secure. Both Winter (1998) and Reinhart (1997) provide examples which, they claim, support the CF hypothesis. Reinhart presents the following paradigm:

(76) a. The organizers did not invite two American kings to the party.
b. There are two American kings that the organizers did not invite to the party.
c. The organizers did not invite two American linguists to the party.

(76a) is a simple variation on (75): given the non-existence of American kings, the CF Hypothesis predicts that (76a) is true on either reading; the Existential Hypothesis predicts that we might judge it false by 'choosing' its wide-scope reading. But, Reinhart notes, (76a) is most easily judged as true. We agree on the judgment, but we do not believe it is significant as an argument against the Existential Hypothesis. Reinhart points out that (76a) contrasts with (76b), where the 'false' reading (predicted by both hypotheses) is much more easily obtained. But (76a) and (76b) are not a clean minimal pair. The reason we expect a 'false' reading to be hard to obtain in (76a), even on the Existential Hypothesis, is that it is in competition with a true reading. We expect the 'false' reading to be completely apparent in (76b), since (76b) is not ambiguous and the false reading is the only one. The contrast between (76a) and (76c) does little more to disprove the Existential Hypothesis. Reinhart points out that it is easier to judge (76c) true in a model where two specific American linguists were not invited, but others were, than it is to judge (76a) false in a model without American kings, although both these judgments would follow from the same mechanism (taking the indefinite as specific) on the Existential Hypothesis. However, even if we can 'choose' readings, we do not expect readings that are false in a given model to be as easily accessed as ones that are true. As a matter of Gricean cooperativeness, we will lean toward the true reading.[35]

The logical equivalencies observed in relation to (75) also obtain in the other contexts we have mentioned (an indefinite in the antecedent clause of an implication, i.e., (72), or in the restriction of a universal quantifier). For instance, (72a) $\vee$ (72b) is equivalent to (72c) $\vee$ (72d), so that the distinction between our two hypotheses is obscured here, as well. Furthermore, as discussed at length in Reinhart (1997) and especially Winter (1998), such contexts present additional difficulties. In models where our two hypotheses differ (the restriction on the indefinite denotes the empty set), the CF Hypothesis predicts such sentences, on either reading, to be *trivially* true by rendering the antecedent clause of an implication false; such judgments are notoriously hard, which confounds the issue. We might, however, be able to avoid this particular problem. Instead of regular *if*-clauses, we might consider counterfactuals. Instead of *every,* we might consider other left monotone decreasing determiners:

(77) There were no real Americans who liked *a devoutly communist friend of mine*.

This example has the same logical properties as (75), but is a real example in that we no longer need to ignore QR in order to make the point, as the indefinite is safely embedded in an island. The Existential Hypothesis predicts that we may judge (77) false (but also true) if I have no communist friends; on the CF Hypothesis, (77) can only be judged true. However, even on this example I have not been able to obtain secure judgments.

I see two possible ways out of the present quandary, both of which require further research. We may look for configurations where the logical equivalencies observed in the examples above do not hold. Such structures exist, but quickly become too complex to process. Another option is to use some means of forcing a specific reading on the indefinite and thus remove the ambiguity that obscures the distinction between the two hypotheses. Again, this is not easy, as reliable specificity-inducing measures are scarce (see also next section).[36] We will conclude this section by looking at specificity in intensional contexts, which provides potential evidence of both types. Consider first (78), discussed by Winter (1997):

(78) John believes that some cat snored.
   a. $\exists x$ [**cat'**(x) $\wedge$ **believe'**(^[**snore'**(x)])(**john'**)]
   b. $\exists f$ [ICF(f) $\wedge$ **believe'**(^[f(^**cat'**)(**snore'**)])(**john'**)]
   c. ICF $=_{df} \lambda f_{<<s,<e,t>>,<<e,t>,t>>} . \forall P_{<s,<e,t>>}$ [($^{\vee}P=\varnothing \rightarrow f(P)=\varnothing_{<<e,t>,t>}$) $\wedge$ ($^{\vee}P\neq\varnothing \rightarrow \exists x[^{\vee}P(x) \wedge f(P) = \lambda R_{<e,t>}R(x)]$)]
   d. John believes that there are cats which are not cats.

When considering these examples, we first need to adapt the ICF definition (69a) to the empty set case, along the lines of (74) above. The revised ICF is defined in (78c).[37] We obtain the wide-scope reading (78b): *f* applies to the property ^**cat'** and assigns it the GQ corresponding to some member of the extension of **cat'** in the world of evaluation of the matrix sentence; if that extension is the empty set, *f* yields the empty GQ. By the Existential Hypothesis, we obtain (78a). Again, (78a) entails there are cats; (78b) does not. Rather, when evaluated in a model without cats, (78b) attributes to John the belief that **snore'** is a member of the empty GQ, a necessarily false proposition. In other words, in such a feline-free model, (78) should be on a par with (78d). This does not seem correct, but, as Winter states, the result is difficult to evaluate. However, we may be able to improve on the example.

In intensional contexts, there exist familiar ways of forcing wide or narrow scope. Consider Spanish (79), from Klein (1974):

(79) Busco a un guía que $\text{habla}_{\text{IND}}$/$\text{hable}_{\text{SUB}}$ quechua.
   'I'm looking for a guide who speak(s) Quechua.'

When an NP has a relative clause in the subjunctive mood, the NP must take narrow scope relative to the intensional operator that licenses the subjunctive; with *hable*, (79) means I'm looking for any such guide, not a particular one. Unfortunately, in many Romance languages, the reverse is not true: indicative

mood does not force the wide-scope reading we are looking for (see especially Farkas 1982). In Catalan, however, it sometimes does (see Quer 1998 and references cited there):

(80) Vull que un llibre que m'agrada$_{IND}$ / m'agradi$_{SUB}$ el convenci.
I-want that a book that me-pleases / me-please him convinces
'I want a book that pleases me to convince him.'

With indicative, (80) is not ambiguous and has only a *de re* reading for the embedded subject. When there are in fact no books that please me, the sentence with indicative is solidly judged false, as the Existential Hypothesis predicts. We may improve the example further as in (81):

(81) És impossible que una noia francesa que jo conec$_{IND}$ / conegui$_{SUB}$ faci
Is impossible that a girl French that I know / know do
una cosa així.
a thing like-that
'It is impossible that a French girl I know should do a thing like that.'

Again, with the indicative, the sentence is judged false when I know no French girls. The CF Hypothesis, at least as implemented in (78c), clearly fails here. With the set of French girls I know empty 'in the real world', a wide-scope CF analysis has the embedded sentence denoting a necessarily false proposition, as explained above. The statement that such a proposition is 'impossible' should be true, and quite natural, for instance in the context of a Semantics 101 class. Nevertheless, this reading is not obtained.[38]

It should be clear that more research is required, on extensional CF and certainly on intensional CF, in order to determine whether the weakening of existential entailments of specific indefinites that the CF Hypothesis predicts can be upheld. At present, it does not appear that the CF approach can easily be falsified in this respect.[39]

7 How to create a specific NP

In this final section we return to more basic empirical concerns, and ask what are the factors that contribute to specificity. We will look at some properties of indefinites that favor or disfavor a specific reading, and we briefly examine Kratzer's (1998) account of the conditions under which intermediate-scope readings arise.

The literature abounds with descriptions of types of indefinites, and contexts containing indefinites, that allegedly induce 'specificity'. In many cases, as noted, the property so identified is not the wide-scope property under examination here, but some other supposed semantic property of the indefinite, e.g., some sort of 'D-linking' (see chapter 77).[40] In many cases, authors simply state that a given

indefinite in a given context is 'specific' without detailing the semantic intuitions that lead them to this characterization, making it impossible to determine the relevance of the statement for any particular line of research, given the existing terminological confusion.[41] But such distractions apart, the crop of necessary and sufficient conditions for specificity still remains meager.

Fodor and Sag (1982) provide a useful list of factors that help or hinder what they consider (see sections 3.1, 3.2, 4) a referential reading on indefinites – i.e., the reading that we have diagnosed as involving wide-scope quantification over CF. For instance, increasing the 'descriptive content' of the indefinite (adding modifiers, adding relative clauses, especially appositive ones) contributes to this reading. The pragmatic rationale seems to be that a speaker who can provide such details apparently has a particular person in mind when using the indefinite; and, furthermore, that adding information to the indefinite that does not seem directly relevant to the truth of the intended assertion invites the inference that the information is added in order to single out a particular individual that verifies the assertion. It seems to me that these observations remain relevant, even though we do not adopt Fodor and Sag's contention that this individual the speaker has in mind is also, semantically, the referent of the indefinite; it still seems correct that wide-scope indefinites are often *used* in order to make a statement about a particular individual, who for some reason we cannot or would not identify more directly, e.g., by using a proper name. Nonetheless, what we describe here is only a tendency: indefinites endowed with considerable descriptive content, and even appositive relative clauses, may still be interpreted with narrow scope. Some reliable wide-scope-inducing modifiers I am aware of are positive polarity items – e.g., the Catalan indicative relative clauses cited in the previous section, or the German IV2 relative clause discussed by Gärtner (2000); unfortunately, none of these can be employed in a wide enough range of contexts for them to be a helpful tool in examining many of the empirical questions addressed in previous sections. Syntactic contexts that favor 'specific' readings as intended here have also been widely discussed (see, e.g., Kerstens 1975, Reuland 1988, and Rullmann 1989 on Dutch VP-external subjects; Kerstens 1975, de Hoop 1992, and Diesing 1992b on Germanic scrambling; see also chapter 43; and many references cited there) – but again, wide-scope readings are rarely the only readings available for indefinites in such contexts.[42]

Measures for inducing narrow scope, although less useful for the kind of research reported here, are often somewhat more reliable. Indefinites containing bound variable pronouns take narrow scope relative to their binders (but see later in this section), as do indefinites containing polarity items, or subjunctive mood relative clauses, relative to their licensers. Bare plurals are rarely interpreted with wide scope, and neither are indefinites in predicative position (but see Winter 1998), adverbial indefinite NPs, and certain indefinite pronominals (e.g., Dutch *wat* 'something'). Other syntactic contexts disfavoring 'specificity' typically include *there*-insertion sentences, but again this is only a tendency (see, e.g., Fodor and Sag 1982; De Hoop 1992). In addition, the explanation of many of these tendencies remains obscure.

However, since the early 1990s, evidence has accumulated that one factor systematically determines whether an indefinite may be specific in our sense: the choice of determiner. Liu (1990), Beghelli (1993, 1995), and Beghelli and Stowell (1997) conducted research on the scope properties of different NP types, distinguished by determiner (see chapter 71), which, although it was aimed at local (within-clause) scope phenomena, was relevant to our subject matter for the following reasons. We have found in section 3.2.3 that, in order to explain island-escaping, non-distributive wide scope (specificity), we need some interpretive mechanism that allows an indefinite to 'escape' the scope of any higher operator, but without scoping (distributing) over that operator. The CF mechanism explained in the previous sections is such a mechanism. Now, even though we needed examples of island-escaping scope to motivate such a specificity mechanism, now that we know it exists, we must assume that it can operate in a local domain as well. Consider therefore an indefinite in object position, and its scope relative to the (local) subject. If the indefinite seems to escape the scope of the subject, this may reflect any of a number of mechanisms in operation: e.g., non-distributivity of the subject, local QR of the indefinite object, or specificity. Indeed, when we find that the 'non-narrow' scope of the indefinite object in such a configuration can be described by the specificity mechanism (e.g., CF), then we should not look for another explanation, e.g., in terms of movement, as the specificity mechanism is needed independently to explain the phenomena in the previous sections (see note 24). More significant is the reverse situation: suppose we find that the indefinite object cannot escape the scope of the subject in a way that can be described by the specificity mechanism. Then we must conclude that the specificity (CF) mechanism cannot apply to this particular indefinite. Liu and Beghelli found several such cases:

(82) a. Fewer than five girls saw *more than five movies*.
b. Every girl saw *fewer than six movies*.
c. $\exists$f [CF(f) $\wedge$ fewer than five girls x [x saw f(more than five movies)]].
d. $\exists$f [CF(f) $\wedge$ every girl x [x saw f(fewer than six movies)]].

In these examples, it is impossible for the object to escape the scope of the subject: there is no 'independent' scope reading, in Liu's terms. For instance, (82a) does not have the reading that there was a particular set of more than five movies, such that fewer than five girls saw each of those movies; likewise, (82b) does not have a reading according to which there is a particular set of fewer than six movies, such that every girl saw those movies. Yet these are exactly the readings that would obtain if the specificity mechanism were to apply to the indefinite object; i.e., the readings that we do not find are exactly the readings given by wide-scope existential quantification over CF, as indicated in (82c) and (82d): a choice from the object is made independently of values of the subject, but the object does not show distributive scope over the subject.

Much more can be said about these examples. One point is that, apparently, a 'collective' interpretation for the subject is impossible here, as well, since that

would presumably lead to an interpretation very much like the interpretation we expect from specificity of the object (see especially Szabolsci 1997b and Winter 1998 for discussion of what property of the subject is responsible for this). Furthermore, a wide-scope *distributive* reading for the indefinite object (which could not result from the specificity mechanism, see section 3.2.3, but might conceivably result from QR of the object), is also missing. Beghelli and Beghelli and Stowell explain this by separating the (collective) indefinite from a syntactically fixed distributivity operator, and then allowing just the indefinite to move (Quantifier Raise) to a higher position. However, since such movement will never lead to island-escaping specific readings, so that some specificity mechanism that generates wide scope without movement is needed independently (as Beghelli confirms), it is unclear to me what purpose is served by assuming that these indefinites may move at LF at all (see section 3.2.3). The only readings we do find in (82) are wide-scope distributive readings for the subject, and possibly a 'cumulative' reading for (82a).

For our purposes, the relevant observation is that specificity is not an option for the italicized indefinites in (82). The class of weak NP determiners that show this behavior, according to Liu and Beghelli, are all modified numerals, and all determiners that are not monotone increasing. In other words, specificity is reserved for simple monotone increasing weak determiners: *a*, *several*, *some*, *three*, etc.[43] These observations, based initially on local scope phenomena, are confirmed by the absence of island-escaping wide scope with other than simple increasing DETs:

(83) a. If *fewer than three relatives of mine* die, I will inherit a house.
b. If *more than three relatives of mine* die, I will inherit a house.

Neither (83a) nor (83b) has a specific reading for the italicized indefinite. The same observation was made independently in Corblin (1997) for French:

(84) a. Chaque professeur a récompensé [$_{NP}$ chacque étudiant [$_{CP}$ qui a lu *un roman*]]. (Three readings)
'Every professor has rewarded every student who has read a novel.'
b. Chaque professeur a récompensé [$_{NP}$ chacque étudiant [$_{CP}$ qui a lu *au moins/au plus/exactement un roman*]]. (One reading)
'Every professor has rewarded every student who has read at least/at most/exactly one novel.'

(84a) has three possible scope positions for *un roman* (including an island-escaping intermediate-scope reading; cf. section 4); the modified numerals in (84b) allow only a narrow-scope reading.

All monotone decreasing (and non-monotone) weak NP determiners are included here in the set of determiners that resist specific readings. That the specificity (CF) mechanism must not be allowed to apply to NPs with such determiners is also apparent from much simpler examples:

(85) a. Fewer than six boys arrived.
b. Exactly six boys arrived.
c. $\exists f$ [CF(f) $\wedge$ f(fewer than six boys)(arrived)].
d. $\exists f$ [CF(f) $\wedge$ f(exactly six boys)(arrived)].

The CF analyses for (85a, b) given in (85c, d) describe adjectival readings for *fewer than six* and *exactly six*. For instance, (85c) states there is some way of choosing fewer than six boys, such that those boys arrived; allowing that many other boys may also have arrived. Such monotone increasing readings for these determiners are not attested unless under very special circumstances. Hence, we know that these NPs do not allow CF readings; the same holds of other specificity mechanisms I am aware of.

Explaining the Liu/Beghelli bifurcation is another matter. Beghelli and Stowell (1997) and Szabolcsi (1997b) distinguish the two types of weak NPs in terms of morphosyntactic features as well as semantically. But this is hard to achieve other than by stipulation. Reinhart (1997) proposes a distinction on the basis of DP-internal syntax, inspired by Danon (1996). Unmodified numerals may occupy the D head position, leaving the spec, DP position free for a covert CF variable, whereas modified numerals cannot, for obvious reasons, occupy D^0; these are in Spec, DP. This approach requires further elaboration. For instance, a separate stipulation is needed to prevent a CF reading for unmodified monotone decreasing determiners (*no*, *few*). Furthermore, syntactic considerations indicate that modified numerals may occur more deeply embedded in DP; they may, e.g., be preceded by demonstratives, definite and universal determiners, and possessive phrases. More research on this topic is required, but the progress that has been made in identifying at least one necessary condition for specificity is promising.

Let us finally consider the conditions under which intermediate, island-escaping scope readings for indefinites may arise. Recall from section 3.2.1 that Fodor and Sag (1982) claimed that such a reading did not occur in (27), repeated as (86a): either *a student of mine* scopes inside the complex NP island, or it takes the widest possible scope. We subsequently argued in section 4, on the basis of many counter-examples from the literature, that intermediate readings out of islands do occur: (86b) is an example (from Abusch 1994):

(86) a. Every professor overheard [$_{NP}$ the rumor [$_{CP}$ that a student of mine had been called before the dean]].
b. Every professor$_i$ rewarded [$_{NP}$ every student [$_{CP}$ who read some book he$_i$ had recommended]].

As a consensus began to emerge in the literature that intermediate readings exist, little further attention was paid to Fodor and Sag's original intuition: that no such reading exists in (86a). Indeed, given the complexity of the structure and the competition of other available readings, it does not seem unreasonable to suppose that (86a) is assigned an intermediate reading as well, which just

happens to be difficult to detect. We saw that in other examples special measures were often required to bring the intermediate reading to the fore.

Kratzer (1998) is an impressive and careful attempt to combine the best of both worlds. She takes Fodor and Sag's intuitions seriously, and develops a semantics for indefinites that is intended to explain the distinction between (86a) and (86b). This involves a return to an inherent binary ambiguity in indefinites, a sophisticated version of the referential/quantificational ambiguity postulated by Fodor and Sag and their predecessors and discussed at length in sections 2 and 3. Indefinites have one reading as a Generalized Quantifier, which yields the local-(narrow-)scope readings in (86). Alternatively, a CF variable may apply to an indefinite's description and pick a member of the set it denotes. But there is no free existential closure of CF variables, which would result in intermediate readings. Instead, the CF variable remains free and acquires its value from the context of utterance (just like a 'referential' indefinite in Fodor and Sag's analysis). This results in a 'maximal-scope' reading in (86a): the value of the indefinite is the particular individual picked from my students by the contextually given CF. The problem now lies in explaining how an intermediate reading arises in (86b).

Kratzer argues that the crucial difference between the two examples lies in the fact that the indefinite in (86b) contains a bound variable pronoun. We pointed out in section 4 that this prevents a maximal-scope reading and thereby removes some of the competition for the intermediate reading. Ruys (1992) and Abusch (1994) made use of this device in order to make the intermediate reading more prominent. But it was not assumed that the intermediate reading is *caused* by the bound variable.[44] Kratzer starts out by investigating this option: that the bound pronoun is directly responsible for the occurrence of the intermediate reading. Consider a simpler example:

(87) a. Every boy_i read *a book* $\textit{he}_i$ *liked*.
b. Every boy x [x read f(book x liked)].
c. $\exists$f [CF(f) $\wedge$ every boy x [x read f(book x liked)]].
d. Every boy x [x read f_x(book x liked)].

If we attempt to assign the indefinite wide scope here, either by wide-scope existential closure of CF, as in (87c) or by leaving the CF variable free, as in (87b), the reading we obtain is, paradoxically, almost a narrow-scope reading. Since *f* chooses from a set that may be different for every boy, the choice of book may be different for every boy, as in a narrow-scope reading. This would hold in (86b) as well: a free CF variable applied to *some book he had recommended* may give a different value for every professor, resulting in a reading where the indefinite seems to remain in the scope of *every professor*.

But the reading obtained is not quite the narrow-scope reading. Supposing that two boys happen to like exactly the same books, (87b) and (87c) would say that those boys would read the same books, as *f* chooses from the same set (call this the case of accidentally identical sets). This is not what a narrow-scope reading gives us, and it is also, more significantly, not what (87a) means: (87a) cannot be

false just because John and Bill like exactly the same books, but read a different choice from their common favorites. For the same reason, we do not quite obtain the intermediate-scope reading for (86b) in this way.

Kratzer's solution is to assume next that the CF variable itself is parameterized: (87a) may be interpreted as (87d), where *f* is a (contextually given) function from individuals to CFs. Since the (subscript) *x* on *f* may be bound by *every boy*, we may have a different CF for every boy, hence a different choice of book even if the set of books liked happens to be the same. Independent evidence for such a 'functional' reading on indefinites comes from the semantics of *a certain* analyzed by Hintikka (1986): Kratzer discusses (88):

(88) a. Each husband had forgotten a certain date – his wife's birthday.
b. Every husband x [x had forgotten f_x(date)].

In (88a), we may apparently interpret *a certain date* neither as a narrow-scope indefinite (for each husband any date at all), nor just as a wide-scope indefinite (one date, say September 14, for all husbands), but as a 'wife's birthday' function which, for each husband, gives a function which picks one date from the set of dates, as in (88b).

This seems to solve the problem of accidentally identical sets: both in (87) and in (86b) the CF is parameterized in this manner, which leads to a 'narrow-scope reading' relative to the binder of the parameterizing variable in the CF. The problem is that we have now lost our explanation for the distinction between (86a) and (86b). There is no relation between the presence of a bound pronoun in the indefinite, and the occurrence of a parameterized CF. Nothing prevents *every professor* in (86a) from binding a parameter on the CF as well. Kratzer's solution to this is more tentative. She suggests that 'functional readings' for indefinites (with parameterized CF) are generally hard to obtain – an appropriate function must be salient in the context (such as a function from husbands to their wives' birthdays in (88)). The reading seems easier to obtain in (86b) than in (86a) because the *un*parameterized CF reading already *almost* gives the same interpretation, the marginal case of accidentally identical sets apart.

Herein lies the weak point in Kratzer's analysis. For the explanation just given to go through, we must allow the unparameterized CF to be a freely available option in (86b) and (87). Indeed, given that parameterized, functional readings are assumed to be hard, we expect the unparameterized reading itself to be prominent in (86b) and (87). But this is not the case. We have seen this for (87), and it holds for (86b) as well: (86b) does not have a reading whereby for every professor there is some book he recommended, such that he rewarded all students who read it, with the proviso that two professors who happen to recommend the same books must also reward reading of the same book.

On the other hand, (87) presents a problem for any CF analysis of indefinites: the reading (87c) must not be allowed. The problem is discussed at length in Reniers (1997)[45] and in Winter (1998). Winter provides a solution very similar to Kratzer's, which is, furthermore, sensitive to the presence of a bound pronoun in

the indefinite; I speculate that Winter's proposal might be employed to complete Kratzer's program.

Other problems for Kratzer's approach are more directly empirical. As pointed out by Reinhart (1997), examples can be given of intermediate-scope readings for indefinites without bound pronouns, which do not seem to depend on a functional reading of the indefinite. Some examples can be found in section 4 above; (89) is a variation on an example from Abusch (1994):

(89) At most four committee members resisted my proposal that *a candidate* be turned down.

I feel (89) may be read with an intermediate-scope reading for *a candidate*, without its being understood that there is some relevant function from committee members to (choices from) candidates that they do not want to see turned down. One might further test Kratzer's predictions by constructing examples involving an indefinite escaping a scope island, while remaining inside the scope of some other operator, but one which does not bind a variable (e.g., negation). In spite of the problems mentioned, Kratzer's is an insightful suggestion, and it does not seem unreasonable to suppose that functional readings of indefinites may indeed account for many cases of apparent intermediate-scope readings.

8 Conclusion: outline and summary

Examples such as (19):

(19) If a relative of mine dies, I will inherit a fortune.

admit of a wide-scope (or 'specific') reading for the indefinite NP *a relative of mine*; it can be paraphrased as:

(i) There is a relative of mine, such that: if (s)he dies, I will inherit a fortune.

Wide scope is not available for other types of NPs (e.g., *every relative of mine*) in this structure, nor is extraction from the *if*-clause (of, e.g., *wh*-expressions) possible in overt syntax. Thus, (19) shows 'island-escaping scope' (section 3.1).

In order to describe island-escaping scope, one might postulate that indefinites can be extracted from the *if*-clause (through some semantic mechanism (storage) or through some exceptional form of syntactic movement): call this 'island-free QR'. But several observations argue against this (section 3.2).

If indefinites could be moved out of an island, one would naturally expect them to be able to move out of an island while still remaining in the scope of some other, yet higher scope-taking operator (section 3.2.1). So (27):

(27) Every professor overheard [$_{NP}$ the rumor [$_{CP}$ that a student of mine had been called before the dean]].

b. Every professor x [a student of mine y [x overheard the rumor that [y had been called before the dean]]].

would be expected to admit of the reading given in (27b): 'intermediate island-escaping scope'. Fodor and Sag (1982) claimed that it does not.

Wide-scope indefinites not only violate known movement and scope islands, they also appear to violate conditions on variable binding in VP-deletion contexts, so 'island-free QR' still undergenerates readings (section 3.2.2).

If indefinites underwent unrestricted QR, then wide-scope *distributive* readings for plural indefinites would naturally be expected (section 3.2.3); (37a) would be expected to allow the reading paraphrased in (ii):

(37) a. If three relatives of mine die, I will inherit a house.

(ii) There are three relatives of mine, such that if any one of them dies, I will inherit a house.

But (Ruys 1992) this is not the case. In fact, a distributive wide-scope reading is (all but) impossible even for *three books* in (41),

(41) Two boys read three books.

which suggests that these NPs do not freely undergo QR at all.

In conclusion, the 'island-free QR' straw-man is falsified; the scope of indefinites is not determined through syntactic movement; in fact, the scope of indefinites is not determined through displacement, either syntactic or semantic, of the indefinite itself.

An alternative explanation of the apparent island-escaping wide-scope readings of indefinites was proposed by Fodor and Sag (1982): there is an inherent ambiguity in the indefinite itself. Either it denotes a quantifier, which may scope locally but may not escape islands. Or it functions as a referential, name-like expression; such expressions are insensitive to scope effects, creating the impression of a wide-scope quantifier: this accounts for the (now: apparent) island-escaping wide scope in (19), and is in accordance with the other scope properties observed above (excepting perhaps (41)).

However (section 4), it has since become apparent that intermediate island-escaping scope readings do exist. (51b) admits of the reading in (iii):

(51) b. Most linguists have looked at every analysis that solves some problem.

(iii) For most linguists there is some problem x such that they have looked at every analysis that solves x.

This argues against the Fodor and Sag approach: the indefinite on its referential reading cannot be interpreted in the scope of any higher operator; the indefinite on its quantificational reading should not escape islands.

An alternative analysis due to Reinhart (1997) (section 5) says that indefinites do not have a referential reading and cannot be extracted from islands. Instead they may be interpreted in situ as open formulae containing a free variable that may be bound by an existential quantifier anywhere in the structure; when the indefinite is in an island, and its variable is bound from outside the island, 'island-escaping scope' results. In order to obtain the correct semantics, the variable must be of the choice function (CF) type: a choice function is a function which, when applied to a set, picks out a member of this set. For (19), this gives the island-escaping wide-scope reading (62b), which is paraphrased in (iv):

(19) If a relative of mine dies, I will inherit a fortune.

(62) b. $\exists$f [CF(f) $\wedge$ IF f(relative_of_mine) dies THEN I will inherit a fortune].

(iv) There is a way of choosing an individual from a set, such that if the person we choose from my relatives in that way dies, then I inherit a fortune.

The CF approach correctly predicts that intermediate island-escaping scope is possible, and that island-escaping distributive wide scope is not.

It has traditionally been assumed that wide-scope indefinites support existential entailments. For instance, the wide-scope reading for *a relative of mine* in (19) has been taken to entail that I have at least one relative. The CF approach, however, predicts that this is not always the case; for instance, (62b) for (19) does not entail that I have relatives. Section 6 takes a close look at the relevant intuitions and concludes that the CF approach cannot easily be falsified; it may well be that wide-scope indefinites do not always support existential entailments.

Section 7 looks into the conditions on (island-escaping) wide-scope readings for indefinites. There are many ill-understood factors that help or hinder these readings; there appears to be at least one cross-linguistically constant and reliable necessary condition: the indefinite must have a simplex, monotone increasing determiner. Thus, there is no wide-scope reading in (83):

(83) a. If *fewer than three relatives of mine* die, I will inherit a house.
b. If *more than three relatives of mine* die, I will inherit a house.

This section also returns to intermediate island-escaping scope, and looks at Kratzer's (1998) investigation of the factors that make these readings possible.

NOTES

I would like to thank Sarah Kennelly, Josep Quer, Yoad Winter, and two referees for helpful comments and suggestions.

1 A note on this terminology: the label 'specific' has been attached to indefinite (as well as definite) NPs for widely different reasons, and on the basis of widely different observations – whether those observations will all permit of one unified analysis is highly questionable. We use it here as a non-theoretical term in the sense of, e.g., Karttunen (1971a), Ruys (1992): an indefinite or weak NP is specific relative to a given operator (that c-commands it in overt syntax) if it is not interpreted in the scope of that operator, under some reasonable analysis.

2 Karttunen did not fail to observe that even non-specific indefinites may introduce discourse referents, albeit short-term ones that quickly 'decay'. Thus, the scopally embedded indefinites in (i) allow for discourse anaphoric pronouns, provided the pronouns are embedded in a similar way (see further (54–56) below):

(i) a. You must write *a letter* to your parents. *It* has to be sent by airmail.
b. Harvey courts *a girl* at every convention. *She* always comes to the banquet with him.

3 To avoid the terminological confusion that hindsight may bring, the reader should note that 'quantificational' is used here in the uncomplicated sense of 'involving a quantifier' (namely, the existential quantifier ∃ (or, notationally, the ŋ-operator)). We are not concerned yet with such niceties as the 'quantificational' (as opposed to 'cardinal') use of weak determiners (Milsark 1974), or with 'essentially quantificational' NPs in the sense of non-intersective and necessarily distributive NPs (see Szabolcsi 1997b and references cited there). Likewise, the 'referential' reading in Karttunen's work was thought of as simply being brought about by translating the indefinite as an individual constant, just like a proper name.

4 There may be grounds for doubting the validity of the existential entailment intuition for (9c) and similar examples. We discuss this issue in section 6.

5 To be slightly more historically accurate: for reasons having to do with such cases as (14) below, Fodor proposed a novel operator instead of the existential quantifier employed here – one which does not allow existential entailment but merely captures the 'individuating' effect of the *de re* reading. The existential entailment does, however, appear to be real in many cases.

6 Example (70) below may indicate, furthermore, that the problem is not restricted to indefinites.

7 For an analysis of this issue and an overview of its role in the literature, see Ruys (1992: 7–15).

8 Despite mistaken claims to the contrary in the literature; see Cooper (1979) and Farkas (1981).

9 Nearly, but not quite, as pointed out also by Abbott (1993). The referential reading is obtained in Fodor and Sag (1982) by enriching the model with a context that includes a value for "the individual the speaker has in mind"; a specific indefinite refers to this individual. This implies that the specific reading of, say, (19a) could be falsified in case uncle Winston's death would make me rich, but I had my penniless aunt Sue in mind when I uttered (19a). This subtle prediction is difficult to verify, if only because the non-specific, narrow-scope reading is also false in that situation.

10 Recall that intermediate readings are possible for examples like (15), a fact that was originally put forward as an argument against a simple binary ambiguity analysis of specificity. But (15) does not falsify Fodor and Sag's position, which allows island-obeying Quantifier Raising in addition to the inherent binary ambiguity. Since *a high*

American official in (15) is not embedded in an extraction island, the intermediate reading (15b) can be derived by Quantifier Raising the indefinite on its quantificational reading to the intermediate position. We will attempt to revive the argument from (15) in section 4.

11 . . . unless the copy of that variable in the elided VP is bound by the same quantifier (see below).

12 (30) assumes a 'deletion under LF identity' approach to VP ellipsis, as in Sag (1980) and Fox (1995b); under Williams's (1977) copying of LF theory, VP2 in (30) would contain an unbound variable.

13 Fiengo and May (1994: 232, fn. 34) likewise report on *every student hit someone, and every professor did, too* that it "permits a reading in which the existential has broad scope, but under which different people were hit."

14 Hirschbühler (1982), however, speculates that a sequence of sentences might constitute a single conjoined structure, allowing syntactic scope taking across sentence boundaries.

15 The right-hand conjuncts in (34) do not have a quantificational subject; Fox argues that QR is licensed here because it results in inverse scope relative to a covert quantifier over events and a generic quantifier, respectively. The reported intuitions on (28a) and (28c), however, remain unaccounted for.

16 For an introduction to Generalized Quantifier theory, see, e.g., Gamut (1991), Keenan (1996). (36b) paraphrases as: 'Among the sets whose intersection with the set of my relatives contains three elements, is the set of individuals wearing a tie.' This is equivalent to:

(i) $\exists X\,[X \subseteq \textbf{relative_of_mine'} \wedge |X| = 3 \wedge \forall x \in X\ \exists y[\textbf{tie'}(y) \wedge \textbf{wear'}(y)(x)]]$.

17 For an introduction to plurality, see Landman (1996) and references cited there.

18 (37a) is used here for simplicity's sake but may be susceptible to the objection that (taking *If* as material implication) (37c) entails (37d), creating a problem of the type hinted at in section 2.1 (see also Winter 1998: 95ff.). The problem does not arise with the examples given below. ((37) is not from Ruys 1992 but from Ruys 1995; however, it was deleted from the published version of that manuscript due to space limitations.) For those unfamiliar with Generalized Quantifiers: (37c) is equivalent to:

(i) $\exists X\,[X \subseteq \textbf{relative_of_mine'} \wedge |X| = 3 \wedge \forall x \in X$ [IF x dies THEN I will inherit a house]].

19 This description of the problem in terms of 'existential scope' and 'scope of distributivity' follows the detailed discussion of specificity and its interaction with distributivity/collectivity effects in Winter (1998).

20 I know of one example in the literature that has been claimed to show island-escaping distributive scope for a plural indefinite: Abusch's (1994: (44)):

(i) Every critic who reviewed two books by Henry Miller panned them.

Abusch states that (i) can be read as conveying that there is a set of two books by Miller, such that for each book x from this set, whoever reviewed x, panned x. If this intuition is genuine, it undermines the argument being made here, but it is hard to see how one could derive a wide-scope distributive reading for (i) without predicting that (37–39) also have such a reading, which they clearly do not. If we must choose

which intuition is genuine, I would hesitate to follow Abusch, for two reasons. First, the reading Abusch attributes to (i) is not logically independent from the reading that all agree on, the wide-scope non-distributive reading that there is a set of two books by Miller such that whoever reviewed both, panned both. The alleged distributive reading entails the non-distributive reading, and can therefore be explained away as a 'special case' (see section 2.1 above, and Abusch 1994: 88ff.). Second, Abusch appears to feel that a wide-scope distributive reading is also possible when we replace *two books* in (i) with the strong quantifier *most books* – if so, this cannot be an effect of specificity and her dialect must allow real island-insensitive QR. See also Winter (1997: fn. 21) for discussion of Abusch's claim.

21 This example represents joint work with Yoad Winter: see Winter (1997, 1998). That specific indefinites distribute locally was assumed also in Ruys (1992: 217) (but not demonstrated).

22 Verkuyl (1999: ch. 6) does allow inverse wide scope for *three books* in (41), albeit grudgingly.

23 For recent discussion of branching quantification see Beghelli et al. (1997), as well as references cited there.

24 Hence, the interpretation of *three books* given in (46a) is often described as the 'branching' or 'independent' reading. The similarity with the island-escaping non-distributive readings in (37–40) above, however, is often ignored, although it is hard to see how an account of specificity that explains the island-escaping examples could fail to explain the 'independent' reading (46a) as well. See also section 7.

25 This describes the approach advocated in Ruys (1992).

26 See section 5 for further discussion, and comparison of possible solutions.

27 And if ACD resolution is due to Case-movement in general, that still would not necessarily exclude the possibility that in certain instances ACD can be resolved through QR. This might explain why we find a contrast between QNPs and referential NPs in contexts without Case-movement such as (i):

(i) a. *Mary stood near Susan, who Emily did [$_{VP}$ e] as well.
b. Mary stood near everyone Emily did [$_{VP}$ e].

28 Actually, this is not quite true, since the structure really contains *four* scoped elements if we count the modal *has to*. Wide scope relative to this expression does not entail the narrow-scope reading. But taking advantage of this would again involve very subtle judgments.

29 Kamp and Reyle's (1993) 'abstraction'.

30 Other types of intervening scope takers are disallowed as well. Thus, (ia) only has a *de re* reading for *a dog*. As in (56d), we need to repeat the modal to obtain a *de dicto* reading, as (ib) illustrates; see also Roberts (1987):

(i) a. Every farmer who was looking for a dog found it.
b. Every farmer who was looking for a dog wanted it to be really big.

31 Fox suggests that the problem, if it exists, might be overcome by resorting to Kratzer's (1998) CF account without existential closure, to be discussed in section 7 below; but to the extent that Kratzer allows apparent intermediate-scope readings as an effect of functional readings on indefinites, she would also allow the intermediate reading (65a).

32 CF must then be of a higher type than stated in definition (60); we shall not discuss such technical details; the reader is referred to the publications by Reinhart and Winter cited above.
33 See Von Heusinger (1999) for a dynamic choice function approach to indefinites.
34 Yet another hypothesis might be that specific indefinites carry existence presuppositions; this naturally fits, e.g., the referential approach to specific indefinites advocated by Fodor and Sag (1982). We will not consider this option here; see Reinhart (1997: 388ff.) for some discussion. Reinhart also considers a way of using partial choice functions in a three-valued logic that emulates the Existential Hypothesis; see also Kratzer (1998).
35 An additional complication attends Reinhart's discussion of (76a). Strictly, she makes the same prediction as the Existential Hypothesis: that (76a) has a false reading next to its true readings. In view of (45b), she assumes that indefinites may undergo QR. If *two American kings* in (76a) QRs across the negation, the CF analysis renders the sentence false. Thus, in order to explain her observation that it is difficult to judge (76a) false, she must attribute it either to a pragmatic preference for true readings, thereby vindicating the Existential Hypothesis, or to a dispreference for QR in this context, to be explained. A similar problem attends Winter (1998: ch. 3, (128a)).
36 Many 'specificity markers' discussed in the literature (e.g., overt Accusative Case in Turkish; see Enç 1991) are either unrelated or only tangentially related to the 'specificity' phenomenon under discussion here.
37 This is not precisely the definition given in Winter (1997), which mistakenly lifts the embedded predicate (**snore′**) out of the intensional context as well; the corrected version (78c) is due to Yoad Winter (p.c.).
38 Furthermore, the context (81) is a scope island for *tot* 'every', so this wide-scope reading should be the only reading on the CF Hypothesis. I am grateful to Josep Quer for help in constructing these examples.
39 See the references cited above, and Ruys (1999), for further discussion.
40 See Abbott's (1995) excellent review of Enç (1991) for an illustration.
41 For instance, there is a considerable body of literature (much of it in the typological tradition, but also in the generative framework) on 'specificity markers' in various languages: Persian *râ* is a famous example (see, e.g., Browne 1970; Karimi 1990, 1999). Unfortunately, most of this work bears little relevance to our present concerns, for the reasons stated in the text. A recent exception is Matthewson's (1999) description of St'át'imcets: some indefinite determiners in this language force (island-escaping, non-distributive) wide scope; another indefinite determiner prevents it.
42 See also Ruys (2001).
43 For convenience, we will continue to call NPs with these determiners 'indefinites'. See the references cited above, and also Reinhart (1997), for discussion of other properties that set these determiners apart. Unfortunately, the generalization is not without exception; e.g., *exactly n* sometimes seems to allow a specific reading, as in *if exactly one relative of mine dies, I will inherit a house*.
44 Matthewson (1999), however, claims that in St'át'imcets, certain indefinite determiners force a wide-scope reading, and allow an intermediate- (or narrow-)scope reading only when the NP contains a bound pronoun. Matthewson takes this as evidence that existential closure of CF in this language is always in the widest scope position, contra Reinhart (1997) and Winter (1997, 1998).
45 Reniers concludes from this and similar problems that the CF line must be abandoned.

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75 Verb Clusters, Verb Raising, and Restructuring

SUSI WURMBRAND

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1 Introduction

The term 'verb cluster' refers to constructions involving more than one verbal element, such as the examples in (1). The notation in this chapter will follow common practice used in works on verb clusters, which is to label the different verbal elements with numbers representing the hierarchical (i.e., deep-structure or selectional) order of the elements. In particular, ascending numbering will be used such that the structurally highest verb (i.e., the verb that scopes over all other verbs) is assigned 1, the next highest 2, etc. As the examples in (1a–c) show, in a language like English, the linear order of verbs in a verb cluster strictly follows the hierarchical order in that a verbal complement follows the selecting verb. To express, for instance, a sense that John is required to have the desire to leave, a sentence like (1a) would be used, whereas the sense that John has a desire to be required to leave would be expressed by a sentence like (1b). In a language like German, on the other hand, the linear order of verbs in a verb cluster corresponds to the opposite hierarchical order: as can be seen in (1d), the verbs appear in a descending 3-2-1 order – i.e., hierarchically lower verbs precede hierarchically higher verbs:

(1) **English vs. German:**
   a. John has to (1) want to (2) leave. (3)
   b. John wants to (1) have to (2) leave. (3)
   c. that John must (1) have (2) been (3) elected (4)
   d. daß Hans gewählt (4) worden (3) sein (2) muß (1)
      that Hans elected become be must

The contrast between (1c) and (1d) might not appear particularly surprising, given that the order between heads and complements is often inverted in the two languages. However, looking in more detail at the distribution of verb clusters in German and other West Germanic languages and dialects, it has been observed that the situation is in fact far more complex in that not only ascending and descending word orders are possible, but also (in at least certain languages and constructions) various other combinations. To give an illustration of (some aspect of) the verb-cluster phenomenon, consider Swiss-German. As is shown in (2) (cf. Schönenberger 1995: 382), constructions involving two modal verbs can (at least for certain Swiss speakers) be expressed with a fully ascending order of the verbs (cf. the 'English' order in (2a)), with a fully descending order as in (2b), or with mixed orders such as the 1-3-2 order in (2c) and the 3-1-2 order in (2d). Importantly, all versions of (2) have the same meaning – i.e., *want* takes scope over *can* and not vice versa.

(2) **Swiss-German – double modal construction:**
   a. das er ... wil chöne vorsinge
      that he ... wants (1) can (2) sing (3)

b. das er ... vorsinge chöne wil
that he ... sing (3) can (2) wants (1)
c. das er ... wil vorsinge chöne
that he ... wants (1) sing (3) can (2)
d. das er ... vorsinge wil chöne
that he ... sing (3) wants (1) can (2)
All: 'that he wants to be able to sing'

Beside differences among languages or dialects in the order of the verbal elements of a cluster, the distribution of verb clusters is also subject to various language-internal properties. As is illustrated by the contrast between the examples in (2) and in (3) (all from Swiss-German), different types of constructions do not necessarily allow the same orders. While double modal constructions can be represented by the four orders in (2), a modal(1)–auxiliary(2)–participle(3) construction is best in 1-3-2 order, accepted by some speakers in 3-2-1 order and 3-1-2 order, and excluded in 1-2-3 order:

(3) **Swiss-German – modal–auxiliary–participle construction:**
a. wil er si mues gsee ha
since he her must (1) seen (3) have (2)
b. %wil er si gsee ha mues
since he her seen (3) have (2) must (1)
c. %wil er si gsee mues ha
since he her seen (3) must (1) have (2)
d. *wil er si mues ha gsee
since he her must (1) have (2) seen (3)
All: 'that he must have seen her'

In the context of verb clusters a number of interesting empirical and theoretical questions have been raised, which this chapter attempts to summarize. Beginning with the empirical characterization – i.e., the determination of the (im)possible orders of verbal elements in different constructions and different languages and dialects – a phenomenon one is immediately struck by is the notable speaker, language, and dialect variation found in this area. It has long been known that among the West Germanic languages, closely related languages (in particular, languages with comparable syntactic properties) diverge significantly in the distribution of verb clusters. For instance, while Dutch and German are quite similar regarding the general layout of their syntactic structures, they show the exact opposite word orders in many verb-cluster constructions. Apart from these well-known differences among languages, recent dialect studies have revealed that the distribution of verb clusters also shows significant microparametric variation and that in addition to the 'standard' word orders reported in grammars, many other orders are possible in certain dialects as well. Some aspects of this complex distribution and the variation attested in verb clusters will be presented in section 2.

To see what the basic theoretical questions are that have been addressed in the works on clusters, we begin with a very simple example: an auxiliary–participle construction (i.e., a verb cluster involving two verbal elements). As is shown in (4), Dutch allows both of the two possible orders between these elements.

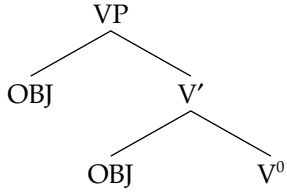
(4) **Dutch – auxiliary–participle construction:**

a.	dat	Jan	het boek	gelezen		heeft	
	that	Jan	the book	read	(2)	has	(1)
b.	dat	Jan	het boek	heeft		gelezen	
	that	Jan	the book	has	(1)	read	(2)

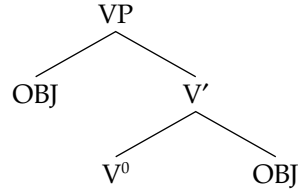
The first question raised by the distribution in (4) is whether the two orders are both basic orders (i.e., whether the two verbs are freely generated in any order) or whether there is a derivational relation between the two orders. The predominant view in the works on verb clusters is that only one of the orders in (4) is the basic order and that the other order is derived. The details of (i) what the basic order is and (ii) how the reordering is derived, however, are far from being agreed upon and have led to very interesting discussions among researchers interested in the topic.

One such issue is the question of whether languages like German and Dutch involve a head-initial or a head-final base structure. The traditional view is that the verb is base-generated to the right of its complement in Dutch and related languages (cf. (5a)), since objects generally precede the verbs in these languages. A more recent view, on the other hand, which has been inspired by Kayne's (1994) Linear Correspondence Axiom (LCA), is that all languages involve a basic head-initial structure (cf. (5b)) and that the final position of the verb is derived by leftward movement of the complement:

(5) a. **Head-final structure:**



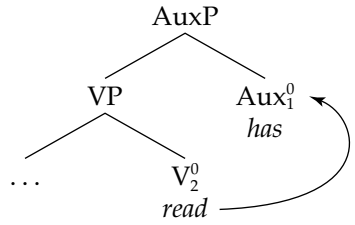
b. **Head-initial structure:**



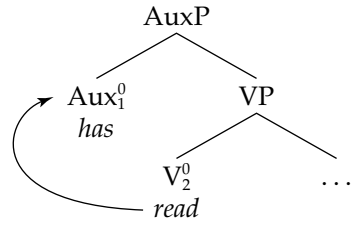
Assuming the different orders in verb clusters are not base-generated but derivationally related, one obviously has to pick one of the structures as the basic structure. An interesting question then is whether the distribution of verb clusters provides any indication for the superiority of one of the approaches in (5). As we will see in the course of this chapter, the mechanical derivation of the possible word orders is fairly trivial under both a head-final and a head-initial structure, given generous assumptions about movement possibilities. To give a basic illustration, consider again the two orders in (4). Assuming a basic head-final structure (cf. (6a)), nothing is required to derive the 2-1 order, whereas the

1-2 order would require reordering such as rightward movement of the lower verb or verb phrase. Assuming a basic head-initial structure (cf. (6b)), nothing is required to derive the 1-2 order, whereas the 2-1 order would require reordering such as leftward movement of the lower verb or verb phrase:

(6) a. **Head-final structure:**



b. **Head-initial structure:**



Thus, this overview will show that the question of whether one of the two approaches in (6) is superior cannot be determined on purely empirical grounds. The more interesting question then is whether one of the two approaches is superior in terms of its explanatory power. Comparing representative examples of both approaches, the conclusion this chapter will reach (see section 3.4) is that the choice between the two approaches can only be made in conjunction with the choice of a particular syntactic framework or aspect of a syntactic theory, and hence the decision between the head-final and the head-initial structure is largely a subjective one.

Besides the directionality issue, questions that have been discussed concerning the actual derivation of the different orders in verb clusters (i.e., the technical implementation of the arrows in (6)) include the question of whether the reorderings involve head-movement or phrasal movement, the question of what the target positions are, the question of what the triggers for the reorderings are, and the question of where the reorderings apply (i.e., surface structure, PF, LF). Furthermore, an interesting issue that is raised by verb clusters is the question of what elements are involved in clustering phenomena. As we have seen in the Swiss examples in (2) vs. (3), verb clusters are not homogeneous constructs (in one and the same language), but rather, different orders depend crucially on the category of the elements involved. In general, clustering phenomena are found with auxiliaries and modal verbs. In some languages, other so-called 'restructuring verbs' (which include, for instance, *try*, *begin*, *dare*) also participate in various reordering phenomena. Since in many approaches, auxiliaries and modal verbs are distinguished from full main verbs, the distribution of verb clusters also raises interesting questions regarding the general architecture of clauses, the classification of verbal elements (auxiliaries vs. main verbs, functional vs. lexical categories, thematic vs. non-thematic verbs), and the issue of restructuring.

The aim of this chapter is to present the progress that has been made in answering these questions. The works on verb clusters have brought to light a wealth of fascinating facts, and among the numerous interesting proposals on the topic, many insightful explanations have been offered as answers to the issues

mentioned. There is, however, one question which has not received a fully satisfactory answer yet. As we will see in the course of this overview, many interesting accounts have been suggested addressing the question of *how* verb clusters are derived. However, what still appears to be an open question is that of *why* the elements of a verb cluster are inverted in certain languages and constructions. An answer to the question of what the (deep) motivation of verb-cluster formation is and why this phenomenon exists only in certain languages is still outstanding, and any new insight into this question would be highly beneficial not only to the study of verb clusters and restructuring, but also to our general understanding of clause structure and the architecture of grammar.

This overview is organized as follows. Section 2 presents a summary of the empirical situation of verb clusters as attested so far in some West Germanic languages and dialects, and provides a descriptive account along the lines of the analysis developed in Haegeman and Van Riemsdijk (1986). Section 3 addresses the questions of whether verb-cluster reordering involves head or phrasal movement, what the motivation of verb-cluster reordering is, and whether a head-final or a head-initial approach can be considered to be superior. Finally, section 4 presents an overview of the restructuring phenomenon and summarizes the major findings related to this topic.

2 Empirical overview

2.1 Verb-cluster languages

To define the set of languages that display verb-cluster phenomena, various criteria have been invoked depending on the theoretical background assumptions. The most common criterion is word order: a language is a verb-cluster language if it does not display a rigid word-order pattern in multiple verb constructions – i.e., if the unmarked order of verbal elements is different from the underlying order in at least one construction.[1] Languages that fall into this category (independently of whether one takes the underlying order to be a head-final or a head-initial order) are Afrikaans, Dutch, German, Swiss-German, West Flemish (including all the dialects of these languages), and Hungarian. Setting aside Hungarian, which differs from the other languages in many respects, the remaining languages have all traditionally been characterized as head-final. However, the correlation between the head-final nature of these languages and verb-cluster formation might also be challenged. First, apart from Hungarian, one could see Yiddish as a counter-example to the generalization that all head-initial Germanic languages display a rigid 1-2-3 order. Since Yiddish, which many researchers treat as a head-initial language, allows optional reordering of passive participles in multiple verb constructions (cf. Den Besten and Moed-van Walraven 1986), Yiddish could be classified as a head-initial verb-cluster language. Second, it can be debated whether all head-final Germanic languages indeed display verb-cluster phenomena. Frisian, for instance, features a rigid 3-2-1 order in modal and auxiliary

constructions (i.e., configurations that typically show clustering effects in other languages; see sections 2.2 and 2.3). Assuming an underlying OV structure, Frisian thus would not involve any verb-cluster reordering. If, however, the empirical domain is extended to include *te/to/zu*-infinitives, certain reorderings are obligatory (cf. De Haan 1992, 1993, 1996), and hence Frisian would qualify as a verb-cluster language, allowing us to maintain the generalization that all head-final Germanic languages are verb-cluster languages.

In light of more recent approaches – in particular, approaches that are based on the Universal Base Hypothesis (cf. Kayne 1994) – the 'head-initial' vs. 'head-final' distinction is not a grammatical notion, since all languages are considered to be organized along a head-initial schema. Hence, the generalization noted above cannot be stated by referring to the directionality setting of the base structure. Thus, in these approaches, verb-cluster languages do not share an underlying typological property, but are rather defined by the overt/covert settings of various movement operations or the factors that trigger verb-cluster formation itself.

A further commonality of the (Germanic) verb-cluster languages that has been noted in the works on verb clusters is the so-called Infinitivus Pro Participio ('Infinitive For Participle', or IPP) effect. As illustrated in (7), Dutch modal verbs that occur in a perfective construction (i.e., under the auxiliary *have*) do not show up as participles but rather as infinitives (the same is the case for causative and perception verbs, as well as other restructuring verbs in Dutch):

(7) **Dutch – Infinitivus Pro Participio (IPP):**

a. dat Jan het boek heeft kunnen lezen
that Jan the book has (1) can-IPP (2) read (3)
'that Jan has been able to read the book'

b. *dat Jan het boek heeft gekund lezen
that Jan the book has (1) can-PART (2) read (3)
'that Jan has been able to read the book'

The IPP effect is found in Dutch, German, and West Flemish – i.e., languages that are also classified as verb-cluster languages.[2] Thus, an interesting question arising from this first generalization is whether there is a strong or weak correlation between the IPP effect and verb-cluster formation (i.e., whether it is the case that all languages displaying the IPP effect also involve verb-cluster reordering and/or whether it is the case that all languages involving clustering also display the IPP effect). Other languages that have to be considered in this respect are Afrikaans, Frisian, and Swiss-German. Note first that Afrikaans and Swiss-German, which are other clustering languages (again independently of the base structure), appear to be irrelevant for the present issue, since these languages do not distinguish between infinitives and participles, and hence, it is not testable whether these languages display the IPP effect (cf. Robbers 1997 for Afrikaans and Schönenberger 1995 for Swiss). Turning to Frisian, it has been noted that Frisian permits only rigid descending (i.e., 3-2-1) orders in multiple-verb constructions (except – as pointed out above – in constructions with *to*-infinitives); thus, under a head-final

base structure, no reordering takes place in these constructions in this dialect. If the IPP effect is only found when reordering takes place we would expect that Frisian should not display the IPP effect. According to what is reported in the literature, this seems to be correct. It has been pointed out by a number of researchers (cf., for instance, De Haan 1992; Hoekstra and Taanman 1996; IJbema 1997) that Frisian lacks the IPP effect (in the descending order).[3] Thus, we can state a one-way generalization between languages that involve verb-cluster reordering and languages that display the IPP effect: IPP is only found in languages that divert from the strict descending 3-2-1 order. Although this correlation appears to be quite striking and is unlikely to be accidental, it is not clear what property of grammar it targets and what its importance is. The reason is that this correlation is an indirect generalization about languages and not about a causal relationship between the properties involved (verb-cluster formation and the IPP effect). To strengthen the IPP/verb-cluster correlation, it has therefore been suggested that there is in fact a direct causal relationship between the IPP effect and verb-clustering (see, for instance, Den Dikken 1989; Van der Meer 1990). This step, however, has to be taken with some caution (see IJbema 1997 for a critical overview of this issue).

Although a detailed illustration will be postponed until section 2.3 (see in particular table 75.2), it should be mentioned at this point that (i) the IPP effect is licensed in the presence and absence of verb-cluster formation; and (ii) verb-cluster formation takes place in the presence and absence of the IPP effect. Regarding the first point, it is the case that independently of what one considers to be the base structure for the languages under consideration, there are constructions displaying the IPP effect but lacking verb-cluster reordering (assuming a head-final base structure, certain Austrian and German dialects would be problematic for the claim that the IPP effect is triggered by or tied to verb-cluster reordering; assuming a head-initial base structure, Dutch, Swiss-German, and West Flemish IPP constructions would be problematic for this claim). Thus, verb-cluster reordering cannot be seen as the (sole) cause of the IPP effect. Regarding the second point, we will see that verb-cluster formation takes place in all types of constructions (e.g., double modal constructions, auxiliary–participle constructions) and is not restricted to IPP constructions. Furthermore, IJbema (1997) also shows that there are dialects such as Achterhoeks where, although reordering takes place in potential IPP constructions, the IPP effect nevertheless does not occur or is optional in these constructions. Thus, the IPP effect cannot be considered to be the cause for clustering.

In sum, while there are interesting generalizations between verb-cluster reordering and the directionality setting of a language as well as the IPP effect, the generalizations are only one-way and direct causal relationships between these properties cannot be established. In what follows, an overview of the distribution of verb clusters in West Germanic will be provided (Hungarian is set aside here; the reader is referred to Koopman and Szabolcsi 2000). Since the majority of works on verb clusters concentrate either on a single construction or on a single language or dialect, it is sometimes hard to see how particular word orders and

specific theoretical claims and analyses relate to a more global characterization of this phenomenon. The aim of the following overview is hence to present a summary of the verb-cluster patterns as documented for the major West Germanic languages and dialects. While this empirical overview has the aim of presenting the verb-cluster patterns for all major constructions in any given language, it also has to be kept in mind that it is by no means an exhaustive characterization – in particular, many interesting micro-parametric differences cannot be distinguished here. The overview will then form the basis for the subsequent review of the theoretical accounts of the verb-cluster phenomenon.

2.2 *Two-verb clusters*

The constructions involving verb clusters with two verbs are auxiliary–participle constructions (e.g., *John has left*) and auxiliary/modal–infinitive constructions (e.g., *John will/must leave*). Table 75.1 summarizes the possible word orders for two-verb clusters in a number of West Germanic languages/dialects; data illustrating these orders are provided in the appendix to this chapter.

The following three generalizations emerge from the languages/dialects investigated so far. First, the distribution of auxiliary–participle constructions does not (necessarily) coincide with the distribution of modal–infinitive constructions. In

Table 75.1 Verb clusters with two verbal elements

Language	Aux-Part	Mod-Inf
Afrikaans	2-1	1-2[a]
Dutch (1 = finite)	1-2	1-2
	2-1	2-1
Dutch (1 = non-finite)	1-2	1-2
	2-1	
Frisian	2-1	2-1
German	2-1	2-1
Swiss-1	2-1	2-1
		1-2
Swiss-2	2-1	2-1
	1-2	1-2
West Flemish	2-1[b]	1-2

Notes:

[a] *Come* + INF allows the 2-1 order (Robbers 1997).

[b] 1-2 is possible if 2 is followed by an extraposed PP or CP (Haegeman 1995a: 53; 1998c: 294).

Sources: References are given only for cases that might be considered to be controversial or are not well established.

Swiss-1: Schönenberger (1995); Haeberli (p.c.); Van Riemsdijk (p.c.).

Swiss-2: Schönenberger (p.c.; Bernese), Hsiao (1999, p.c.).

Frisian: Quoted from Zwart (1996) and IJbema (1997); confirmed by the results of a questionnaire conducted by Peter Ackema.

Afrikaans, Dutch (when 1 is non-finite), Swiss-1, and West Flemish, the orders vary with respect to the constructions involved – i.e., there is no general (1-2 or 2-1) word order schema for two-verb clusters in these languages. Note in particular that in Afrikaans and West Flemish, where only one order is possible in each construction, the order required in the auxiliary–participle construction is excluded in the modal–infinitive construction (and vice versa). Second, the 2-1 order is possible in all dialects for auxiliary–participle constructions. In other words, no dialect requires the 1-2 order in this construction (this is again different in the modal–infinitive construction). Third, if the 1-2 order is possible in an auxiliary–participle construction it is also possible in the modal–infinitive constructions (but not vice versa).

Given the distribution in table 75.1, dialects can be grouped into five types: (i) dialects with rigid 2-1 order (German, Frisian); (ii) dialects with rigid 2-1 order in auxiliary–participle constructions, but flexible order in modal–infinitive constructions (Swiss-1); (iii) dialects with flexible order in both constructions (Swiss-2, Dutch when 1 is finite); (iv) dialects with flexible order in auxiliary–participle constructions and finite modal–infinitive constructions, but rigid 1-2 order in non-finite modal–infinitive constructions (Dutch when 1 is non-finite); and (v) dialects with rigid 2-1 order in auxiliary–participle constructions and rigid 1-2 order in modal–infinitive constructions (West Flemish, Afrikaans). What appears to be unattested (at least to this end) are, first, dialects that display clustering effects but only allow a 1-2 order for auxiliary–participle constructions, and, second, languages that allow a flexible order for auxiliary–participle constructions but a rigid 2-1 order for modal–infinitive constructions.

2.3 Three-verb clusters

The five major types of constructions involving verb clusters with three verbal elements are: double modal constructions, two types of auxiliary–modal constructions, modal–auxiliary constructions, and double-auxiliary constructions.[4] Examples are given in an abstract form in (8) (English words are used to illustrate the constructions, but of course, some of the examples would be impossible in English, since modals can only be part of a multiple-verb construction when they are the highest verbal element in English). Constructions involving infinitival complements with an infinitival marker (*to*, *zu*, *te*, etc.) are not considered in this section (see section 3.1.3 and section 4):

(8) a. **Mod-Mod-V:** John must (1) can (2) sing. (3)
FIN (1) INF (2) INF (3)
'John must be able to sing.'

b. **Aux-Mod-V:** John will (1) must (2) sing. (3)
FIN (1) INF (2) INF (3)
'John will have to sing.'
John has (1) must (2) sing. (3)
FIN (1) IPP (2) INF (3)
'John has had to sing.'

c. **Mod-Aux-V:** John must (1) have (2) sung. (3)
John must (1) be (2) elected. (3)
FIN (1) INF (2) PART (3)
d. **Aux-AUX-V:** John has (1) been (2) elected. (3)
FIN (1) PART (2) PART (3)

The distribution of these constructions in various West Germanic languages and dialects is given in table 75.2 (for examples the reader is referred to the appendix to this chapter). Note that the rows 'German and Austrian dialects' and 'Swiss dialects' refer to the superset of various dialects (i.e., there are speakers who accept all the orders listed, however, there are also speakers who only accept subsets of these orders). The reader is referred to Hsiao (1999, 2000) and Wurmbrand (2000, 2004) for some more refined characterizations of the distribution in different dialects. If a cell contains more than one option, the word orders are given in order of preference where the highest order one is the most preferred option. Furthermore, it should be noted that column 4 (i.e., 'AUX-MOD-V; FIN-IPP-INF') refers to the orders in the second construction in (8b) irrespective of whether a language overtly displays the IPP effect. In Afrikaans, for instance, infinitives and particles are non-distinct and hence it cannot be concluded that the modal verb occurs in the IPP form. However, as the different word orders show, it is still necessary to distinguish this construction from others.

Before going into details about the distribution of verb clusters, some general points should be noted. First, of the six possible combinations involving three verbal elements, five orders are indeed possible. The 2-1-3 order, on the other hand, has not been attested in any of the constructions or languages and dialects in table 75.2 (it is found in extraposition contexts; however, many authors have argued that these constructions display different properties and have to be distinguished from the constructions in table 75.2; see, for instance, Rutten 1991, Robbers 1997, and Wurmbrand 2001). Furthermore, the 2-3-1 order is found only in the IPP construction.

Second, as is evident from table 75.2, verb-cluster reordering is not restricted to a particular type of construction (such as the IPP construction), but is found in all types of constructions. Since the fully ascending and descending orders do not necessarily involve reordering (i.e., the 1-2-3 and 3-2-1 orders could be treated as basic orders depending on whether one takes a language to follow the head-initial or head-final schema), we restrict our attention for the moment to the 1-3-2, 3-1-2, and 2-3-1 orders, which clearly involve some sort of reordering under both the head-final and the head-initial approach. As the table shows, at least one language displays one or more of these orders in each construction: German/Austrian dialects and Swiss-German in the double-modal construction; all varieties of German in the auxiliary–modal construction; Afrikaans, all varieties of German, Swiss, and West Flemish in the IPP construction; Afrikaans, Dutch, German/Austrian dialects, Swiss, and West Flemish in the modal–auxiliary–participle construction; and Dutch and West Flemish in the double-participle construction. Thus, as mentioned before, since verb-cluster reordering is neither restricted to IPP environments nor necessary in IPP constructions, it cannot be assumed that

Table 75.2 Verb clusters with three verbal elements

Language	Mod-Mod-V Fin-Inf-Inf	Aux-Mod-V Fin-Inf-Inf	Aux-Mod-V Fin-IPP-Inf	Mod-Aux-V Fin-Inf-Part	Aux-Aux-V Fin-Part-Part
Afrikaans	1-2-3	1-2-3	2-3-1	1-3-2 3-1-2[a]	N/A
Dutch	1-2-3	1-2-3	1-2-3	1-2-3 3-1-2 1-3-2 [3-2-1]	?3-1-2 ?1-3-2 [?Others]
Frisian	3-2-1	3-2-1	3-2-1 [1-2-3][b]	3-2-1	3-2-1
German (Standard)	3-2-1	3-2-1 1-3-2	1-3-2	3-2-1	3-2-1
German and Austrian dialects	3-2-1 1-3-2	3-2-1 1-3-2 3-1-2	1-3-2 3-1-2 3-2-1 [1-2-3]	3-2-1 1-3-2	3-2-1
Swiss dialects	1-2-3 3-2-1 1-3-2 3-1-2	N/A	1-2-3 1-3-2 3-1-2	1-3-2 3-2-1 3-1-2	3-2-1
West Flemish	1-2-3		1-2-3[c] 2-3-1[c]	1-3-2 3-1-2	3-2-1 1-3-2

Notes:
Orders in brackets are attested but very restricted in the language for which they are listed and could not be verified; these orders will not be considered as possible orders for these languages, but they are listed in the table to indicate that a further refinement and dialect separation is necessary.
[a] 3-1-2 is only possible when 2 is a passive auxiliary.
[b] IPP is not obligatory; some speakers do not use IPP; 1-2-3 is mentioned in Hoekstra and Taanman (1996) and IJbema (1997) for certain constructions (perception verbs and aspectual auxiliaries) in West Frisian.
[c] 1-2-3 is obligatory when the auxiliary is in the past or has a negative marker attached; 2-3-1 is obligatory when the auxiliary is non-finite.
Sources: **Dutch:** The 1-3-2 and 3-2-1 orders for the Mod-Aux-V construction are mentioned in Zwart (1996), IJbema (1997), and Robbers (1997); the authors note variation among Dutch speakers; the 3-2-1 order is possible in certain Dutch dialects (but very marked). Double-participle constructions involving *geworden* are generally considered marginal; for double-participle constructions involving *get*+ PART (i.e., 'has gotten PART'), the 1-3-2 order is mentioned in Robbers (1997: 124).
Frisian: Quoted from De Haan (1993), Zwart (1996), and IJbema (1997); confirmed by Peter Ackema (p.c.).
German: The orders are the result of a literature survey and a questionnaire-based study conducted by the author in 1999–2000 (approx. 100 informants; see Wurmbrand 2000 for detailed results); the 1-3-2 order is documented for the double-modal construction in Den Besten and Edmondson (1983), Broekhuis (1992: 189), and Koopman (1999a), and confirmed by a subgroup of the informants of the questionnaire-based study; the 1-3-2 order is noted for the Mod-Aux-V construction in Zwart (1996) but confirmed by only very few of the informants (mainly speakers from Vorarlberg); the 3-1-2 order is reported

in Patocka (1997) as the unmarked order in Austrian German, which was robustly confirmed for both AUX-MOD-V constructions by the informants of the questionnaire-based study (the 3-1-2 order has not been tested for the other modal constructions); the 1-2-3 order for the IPP construction was accepted by only a very small group of informants and was rejected in most non-Allemanic dialects; a systematic documentation of the variation in the IPP construction is also available in Hsiao (1999).
Swiss: Schönenberger (p.c.), Haeberli (p.c.), Van Riemsdijk (p.c.), and five other consultants. The auxiliary *will* is not used in Swiss dialects and therefore this construction could not be tested. A systematic dialect characterization (and in particular, a survey of how the distinction between Swiss-1 and Swiss-2 in two-verb clusters compares to the options in three-verb clusters) is not available at this point.

a causal relation holds between these two properties. This point is particularly important for (Standard) German. As has been observed by many researchers, the IPP construction is special in German, since it involves obligatory reordering, which contrasts with the otherwise typical 3-2-1 order in that language. However, what has often been ignored (but see Kathol 1996, 1998a, 1998b for exceptions) is that the special reordering is *not* restricted to IPP constructions but is also found in auxiliary–modal constructions in which the 'auxiliary' is the future element *werden* 'will'. Importantly, these constructions are not IPP constructions, but involve an infinitive which is selected by the future element. Thus, the generalization regarding Standard German is that the 3-2-1 order is obligatory in all constructions except auxiliary–modal constructions. Thus, the 1-3-2 order cannot be attributed to the IPP property but has to be seen as a special property of auxiliary–modal constructions.

Third, it is also obvious from the distribution in table 75.2 that verb-cluster formation cannot be seen as a simple rule or operation that arranges verbs in multiple-verb constructions according to some language-specific hierarchical schema (such as 'the lowest verb precedes/follows the n-highest verb'). Rather, the distribution of verbal elements is crucially dependent on the type of construction. This is most strikingly the case in West Flemish. West Flemish allows all five orders attested in verb clusters; however, the distribution of these orders is severely restricted by the type of construction: the 1-2-3 order is possible only in the double-modal construction and certain IPP constructions; the 1-3-2 order is possible only in participle constructions; the 3-1-2 order is possible only in the modal–auxiliary–participle construction; the 3-2-1 order is possible only in the double-auxiliary construction; and finally, the 2-3-1 order is restricted to IPP constructions. Thus, an account of the distribution of word orders in multiple-verb constructions has to take into account the language-specific and construction-specific nature of this phenomenon.

While the distribution in table 75.2 might look overwhelming at first sight, there are generalizations that emerge both within one language and across languages. In particular, the word-order patterns show interesting generalizations when the category of the elements involved is taken into consideration. This is most clearly the case in Dutch. Dutch verb clusters display a rigid 1-2-3 schema, with the exception that participles are free to occur anywhere in the cluster. That is, if 3 is a participle, it can occupy any position in the cluster, resulting in three

possible word orders: {3}-1-{3}-2-{3}. We can also note that participles can always precede the auxiliary (with the possible exception of the passive auxiliary *werden* 'become' in Dutch); i.e., if 3 is a participle, the order 3 . . . 2 is possible (but not necessary) in all dialects; or in other words, there is no dialect that requires the auxiliary to precede the participle (in fact, Dutch is the only language that allows the participle to follow the auxiliary; cf. the 1-2-3 order in the modal–auxiliary–participle construction).

In the next section, the generalizations regarding the distribution of verb clusters in the languages/dialects mentioned will be fleshed out. The (descriptive) generalizations will be stated from both a head-final and a head-initial perspective in the framework of the analysis of Haegeman and Van Riemsdijk (1986).

2.4 Generalizations of the inversion patterns

One of the first works that takes into account the variation in the distribution of verb clusters across West Germanic is the reanalysis approach suggested by Haegeman and Van Riemsdijk (1986). The account consists of two parts. First, the authors propose that in certain constructions (namely, in restructuring constructions that show verb-cluster phenomena) the underlying structure can be 'reanalyzed'. Reanalysis is essentially a rebracketing procedure for syntactic structure which reduces the distance between the elements in a cluster and unifies elements that are further away in the basic structure. The second part of the analysis is the postulation of PF-inversion rules that specify which elements can, cannot, or have to invert in a reanalyzed structure. Thus, in contrast to most syntactic approaches to the verb-cluster phenomenon (see section 3), Haegeman and Van Riemsdijk suggest that reordering operations are not operations of syntax proper; rather, reordering operations are post-syntactic morpho-phonological operations (this view has recently been revived again by Wurmbrand 1999c, 2000, 2004). The inversion parameters suggested by Haegeman and Van Riemsdijk (1986) are summarized in (9). As can be seen, the rules consist of specifications regarding the complexity of the inverting elements (cf. (9a)), the category of the inverting elements (such as modal, auxiliary, etc.), a specification regarding (non-)optionality, and specifications regarding the node dominating the inverting elements (cf. (9d), which states that the node Vα that dominates the inverting elements has to or does not have to be the highest node in a verb cluster):

(9) **Inversion – main parameters** (Haegeman and Van Riemsdijk (1986: 426)):
   a. The non-head must be (non-)branching or need not be branching.
   b. The head of V must be V-AUX or V-MOD or is unrestricted.
   c. Inversion is optional or obligatory.
   d. Vα is maximal or unrestricted.

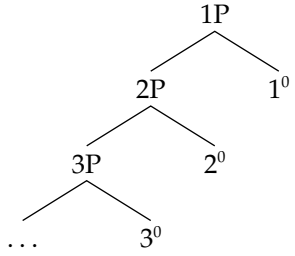
Since the Haegeman and Van Riemsdijk system offers a straightforward way to formulate the conditions regulating verb-cluster formation in the different languages, it will be used here (in a slightly modified way) to illustrate the generalizations and the specifications necessary to capture the distribution of the

verb clusters in tables 75.1 and 75.2. Whether the first step in a verb-cluster configuration – i.e., the step that creates mono-clausal structures – indeed involves reanalysis as Haegeman and Van Riemsdijk suggest, or any other mechanism that has been suggested to account for clause union or restructuring constructions (see section 4), will not be essential for the discussion here. Furthermore, although the Haegeman and Van Riemsdijk analysis is coached in a head-final approach, the inversion rules will be provided for both a head-final and a head-initial system. Note that the derivations suggested below will be preliminary and require certain revisions as we go on. However, this preliminary overview seems instructive as a first approximation to the question of how all the structures in the tables above can be derived.

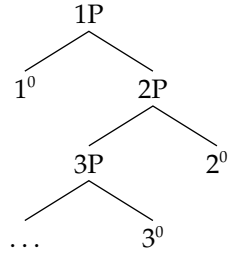
The major idea of inversion is that under certain circumstances, two sister nodes are flipped with each other (see also Williams 1998, 1999, 2004 for a more recent implementation of this idea). Inversion in this sense is reminiscent of precedence constraints as developed in the HPSG framework by, for instance, Kathol (1996, 1998a, 1998b) and Meurers (1999), among many others. As illustrated in (10) and (11), inversion of sister nodes straightforwardly derives the orders 3-2-1, 1-2-3, 1-3-2, and 2-3-1 in three-verb clusters. To be more specific, under the head-final approach, the 3-2-1 order in (10a) is the basic structure which does not involve any inversion; the 1-3-2 order is derived by inverting the highest verb with its sister (cf. (10b)); the 2-3-1 order is derived by inverting the middle verb with its sister (cf. (10c)); and the 1-2-3 order is derived by inverting both the highest and the middle verb with their sisters (cf. (10d)). Similarly, under the head-initial approach, the 1-2-3 order in (11a) is the basic structure which lacks any inversion; the 2-3-1 order is derived by high inversion (cf. (11b)); the 1-3-2 order is derived by low inversion (cf. (11c)); and the 3-2-1 order is derived by both high and low inversion (cf. (11d)). Regarding the 3-1-2 order, however, simple inversion of sister nodes is not sufficient and both approaches have to make recourse to an additional operation. One option would be to assume that the lowest verb phrase undergoes some form of leftward movement prior to or independent of verb-cluster inversion. As illustrated in (10e), if this form of leftward movement is followed by high inversion, the 3-1-2 order is derived in a head-final structure. Similarly, in (11e), leftward movement of the lowest verb phrase yields the 3-1-2 order (in this approach, additional inversion would result again in the 3-2-1 order).[5]

(10) **Head-final inversions:**

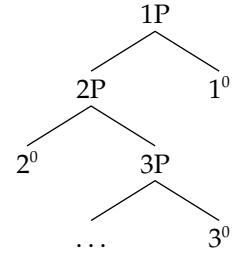
a. **No inversion:**



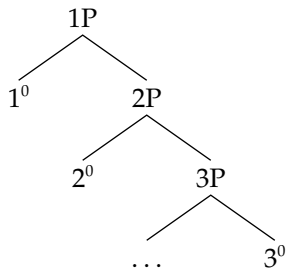
b. **High (=1-2) inversion:**



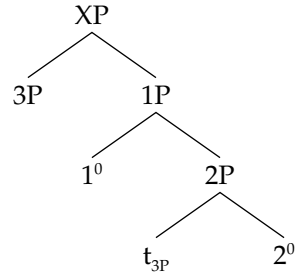
c. **Low (=2-3) inversion:**



d. **Two inversions:**

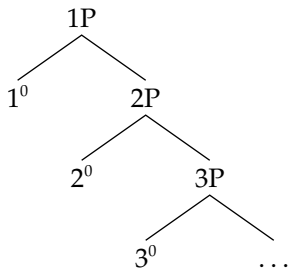


e. **Leftward movement of 3: and high inversion:**

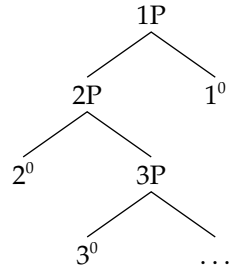


(11) **Head-initial inversions:**

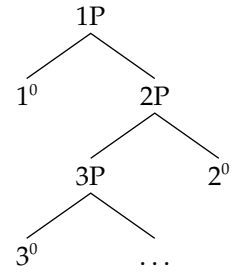
a. **No inversion:**



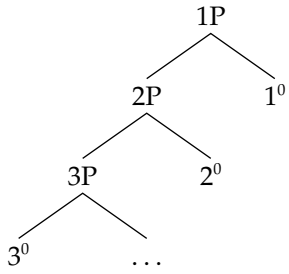
b. **High (=1-2) inversion:**



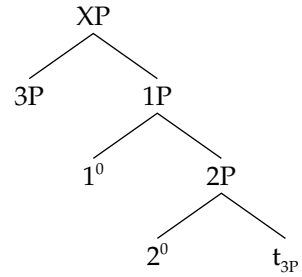
c. **Low (=2-3) inversion:**



d. **Two inversions:**



e. **Leftward movement of 3:**



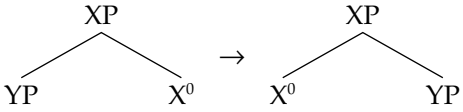
Importantly, if inversion under sisterhood and leftward movement of the lowest verb phrase are the only tools available to derive verb-cluster constructions (modulo object movement, etc.), the lack of the 2-1-3 order can be accounted for. To derive this order in the head-final approach, rightward movement of the lowest verb phrase would be necessary; to derive it in the head-initial approach, movement of 2 to the exclusion of 3 would be necessary.

Armed with these tools, let us now turn to the generalizations and specifications required to account for the distribution of verb clusters in the languages mentioned in tables 75.1 and 75.2. Starting with the head-final approach, the inversion rule is given in (12) and the conditions under which inversion applies are listed in table 75.3 ("3-LEFT" refers to leftward movement of 3 as in (10e))[6].

Table 75.3 Inversion rules (head-final base)

Language	Inversion rules	Optionality	Other
Afrikaans	X is a modal	Obligatory	• *Will*: modal • Passive participles: optional 3-LEFT
Dutch	A: Y is an infinitive B: Y is a participle	A: Obligatory B: Optional	• Inversion is optional in finite 2-verb clusters • Participles: optional 3-LEFT
Frisian	No inversion	–	–
German (Standard)	X is an auxiliary and Y is a modal	Obligatory	• *Will*: modal or auxiliary
German/Austrian dialects	Y is a non-main verb infinitive	Optional	• AUX-MOD-V: optional 3-LEFT
Swiss dialects	A: X is an auxiliary and Y is a modal B: Y is an infinitive	A: Obligatory B: Optional	• Optional 3-LEFT • 3-2 inversion only if 2-1 inversion
West Flemish	A: X is an operator (MOD, TENSE, NEG) and Y is an infinitive B: X and Y are auxiliaries	A: Obligatory B: Optional	• Present: [±TENSE] • MOD-AUX-V: optional 3-LEFT

(12) **Head-final inversion rule:**

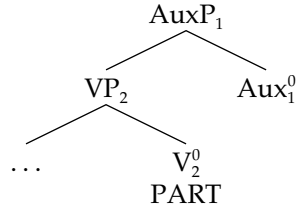


iff the conditions in table 75.3 hold.

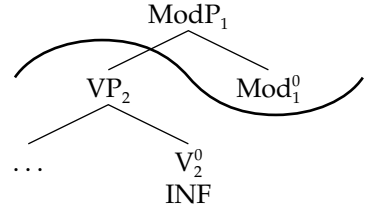
An illustration of these inversion rules is provided in (13), which summarizes the application of the inversion rules in Afrikaans (all data are from Robbers 1997). The Afrikaans inversion rule is stated such that it applies obligatorily to modals and their complements.[7] Thus, in (13b, c, d, e, e'), inversion applies as indicated. Furthermore, it is assumed that the future 'auxiliary' is a modal in Afrikaans, which has been argued for independently by, for instance, Erb (2001). Thus, future constructions behave essentially like double-modal constructions. Finally, passive participles allow the special leftward movement (cf. (13e')), in which case inversion between the modal and its complement does not include the lowest VP – resulting in the 3-1-2 order. Assuming that no other inversions are allowed, the rule specifications given in table 75.3 derive exactly the structures attested in Afrikaans and only those structures. An illustration of the inversion rules in the other languages can be found in the appendix to this chapter.

(13) **Afrikaans – head-final inversions:**

a. **AUX-PART (no inversion – 2-1):**



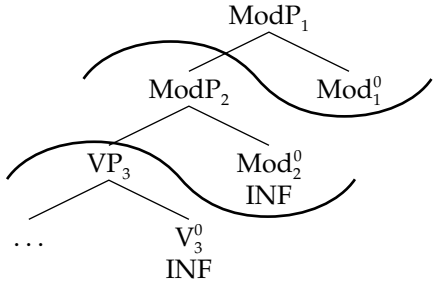
b. **MOD-INF (inversion – 1-2):**



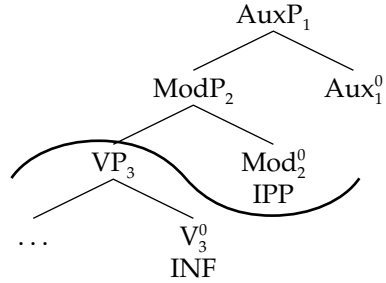
a. dat Jan Marie gesien het / *het gesien
that Jan Marie seen-2 has-1 / *has-1 seen-2

b. dat Jan môre kan werk / *werk kan
that Jan tomorrow can-1 work-2 / *work-2 can-1

c. **MOD-MOD-V**
(2 inversions – 1-2-3):



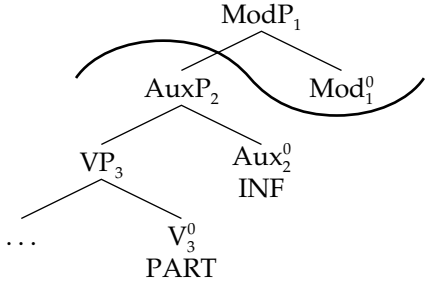
d. **AUX-MOD-V**
(1 inversion – 2-3-1):



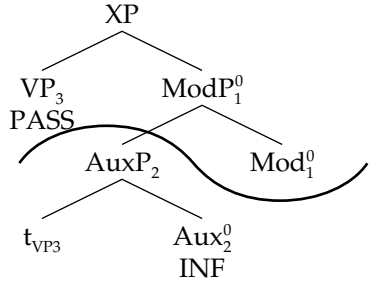
c. dat Jan môre sal kan werk (*All others)
that Jan tomorrow will-1 can-2 work-3

d. dat Jan kon werk het (*All others)
that Jan could-2 work-3 has-1

e. **Mod-Aux-V**
(1 inversion – 1-3-2):



e′. **Mod-Aux-V (1 inversion + 3-LEFT – 3-1-2):**

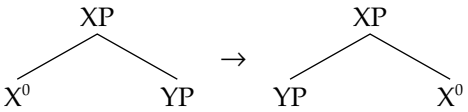


e. dat Jan Marie kan gesien het (*All others)
that Jan Marie can-1 seen-3 have-2
dat Jan toe kon gevang word
that Jan then could-1 caught-3 be-2

e′. dat Jan toe gevang kon word
that Jan then caught-3 could-1 be-2

Turning to the head-initial approach, the inversion rule is given in (14) and the specifications necessary to derive the verb cluster patterns are listed in table 75.4.

(14) **Head-initial inversion rule:**



iff the conditions in table 75.4 hold.

To illustrate these rules, consider again Afrikaans; the head-initial derivations are given in (15) (the derivations for the other languages can be verified in the appendix to this chapter). In Afrikaans, auxiliaries invert obligatorily with their sisters (thus (15a, d, e) involve inversions as indicated). Assuming that *will* is a modal again groups future constructions with double-modal constructions rather than with IPP constructions and no inversion takes place in (15b, c). Finally,

Table 75.4 Inversion rules (head-initial base)

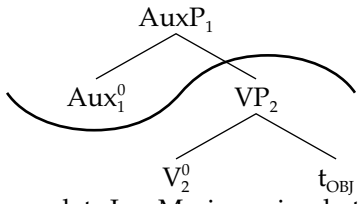
Language	Inversion rules	Optionality	Other
Afrikaans	X is an auxiliary	Obligatory	• *Will*: modal • Passive participles: optional 3-LEFT
Dutch	A: Y is a participle B: X is finite and Y is a main verb	A: Optional B: Optional	• Participles: optional 3-LEFT
Frisian	X and Y are verbs	Obligatory	
German (Standard)	X and Y are verbs, except when Y is an auxiliary and Y is a modal[a]	Obligatory	• *Will*: modal or auxiliary
German/ Austrian dialects	A: Y is a participle B: Y is a main verb C: Y is an infinitive	A: Obligatory B: Obligatory C: Optional	• Infinitives: optional 3-LEFT across a higher auxiliary
Swiss dialects	A: Y is a participle B: X is a modal	A: Obligatory B: Optional	• Optional 3-LEFT • 1-2 inversion only if 2-3 inversion
West Flemish	A: X is a [–TENSE] auxiliary B: Y is a main verb participle	Obligatory	• Present: [±TENSE] • NEG, PAST: [+TENSE] • Participles: optional 3-LEFT across a modal

Note: To avoid the 'except' clause in the rule for German, one could state instead the following three obligatory rules: A: Y is a participle; B: Y is a main verb; C: X is a modal. These rules would guarantee inversion in all but auxiliary–modal constructions, but would also involve a significant amount of redundancy.

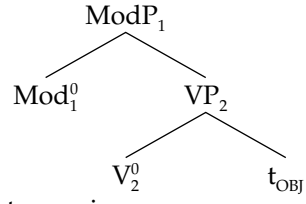
passive participles again allow an optional leftward movement which results in the 3-1-2 order illustrated in (15e′). In principle, inversion would also take place in (15e′); however, since the complement of the auxiliary is a trace, inversion is vacuous. The rules suggested for Afrikaans thus again derive exactly the word orders found in verb clusters with two and three verbs in this language.

(15) **Afrikaans – head-initial inversions:**

a. **AUX-PART (inversion – 2-1):**



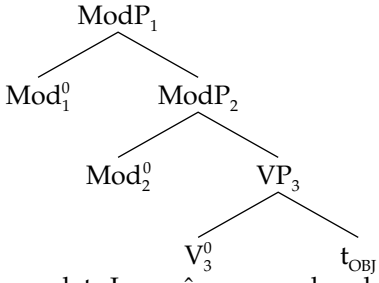
b. **MOD-INF (no inversion – 1-2):**



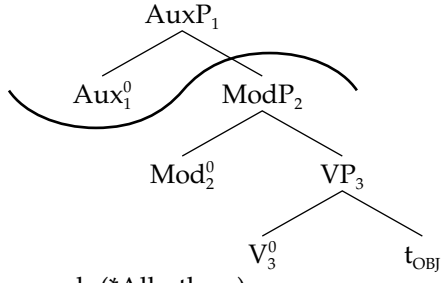
a. dat Jan Marie gesien het / *het gesien
that Jan Marie seen-2 has-1 / *has-1 seen-2

b. dat Jan môre kan werk / *werk kan
that Jan tomorrow can-1 work-2 / *work-2 can-1

c. **MOD-MOD-V (no inversion – 1-2-3):**



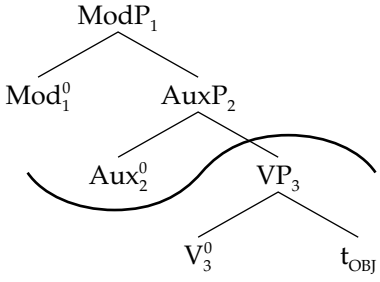
d. **AUX-Mod-V (1 inversion – 2-3-1):**



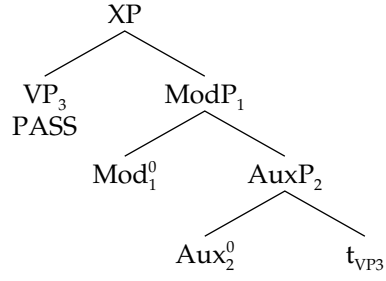
c. dat Jan môre sal kan werk (*All others)
that Jan tomorrow will-1 can-2 work-3

d. dat Jan kon werk het (*All others)
that Jan could-2 work-3 has-1

e. **MOD-AUX-V (1 inversion – 1-3-2):**



e′. **MOD-AUX-V (3-LEFT – 3-1-2):**



e. dat Jan Marie kan gesien het (*All others)
that Jan Marie can-1 seen-3 have-2
dat Jan toe kon gevang word
that Jan then could-1 caught-3 be-2
e'. dat Jan toe gevang kon word
that Jan then caught-3 could-1 be-2

To conclude, a Haegeman and Van Riemsdijk-type approach to the verb cluster phenomenon has the advantage that language-specific and category-specific conditions as well as the notion of optionality can be built into the reordering rules, and hence, the varied distribution of verb clusters in tables 75.1 and 75.2 can straightforwardly be derived. However, one might object (as many researchers have) that this type of approach also has a number of disadvantages. In particular, the systems outlined above are unattractive for their arbitrariness, lack of motivation of the inversion rules, and lack of predictive power. What would be preferable is an explanatory account – i.e., an account that relates the reordering rules to other aspects of grammar or derives them from independent principles or constraints (while nevertheless keeping its empirical adequacy). The next section will address this issue, and in particular the question of whether such an explanatory account exists and what it must look like, in light of the distribution of verb clusters in the languages and constructions summarized in tables 75.1 and 75.2.

3 Deriving verb clusters

As noted above, the majority of analyses of the verb cluster phenomenon are based on the idea that verb-cluster reordering is a form of syntactic movement. This section addresses four major issues arising for such accounts:

(i) Are verb-cluster reordering operations best described as head-movement or as phrasal movement?
(ii) What kind of material can occur interspersed in a verb cluster (i.e., what is the distribution of so-called 'verb-projection-raising' constructions)?
(iii) What is the motivation for verb-cluster reordering?
(iv) Do verb clusters shed light on the directionality debate (i.e., does verb-cluster formation provide evidence for or against either a head-final or a head-initial approach)?

These issues will be discussed in turn in the next subsections.

3.1 Head-movement vs. phrasal movement

Before discussing some specific approaches to verb-cluster reordering, a more technical question that has been central to the discussions of verb-cluster formation from very early on will be addressed. To illustrate the issue, consider again

a simple two-verb cluster such as the Dutch auxiliary–participle construction in (16) (repeated from (4)).

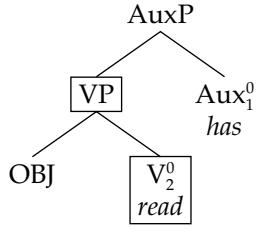
(16) **Dutch – auxiliary–participle construction:**

a. dat Jan het boek gelezen heeft
that Jan the book read (2) has (1)

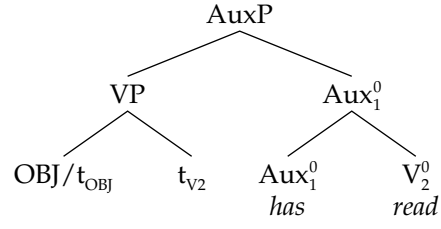
b. dat Jan het boek heeft gelezen
that Jan the book has (1) read (2)

As mentioned above, (16a) would count as the derived version under a head-initial base structure, whereas (16b) would be the derived version under a head-final base structure. Besides the issue of directionality, there are two options (for both the head-final and the head-initial structures) concerning the actual derivation of the non-basic examples in (16): head-movement vs. phrasal movement. The two options are illustrated in (17) and (18) for both approaches. The diagrams in (17a) and (18a) display the basic orders and indicate what categories can undergo movement to derive the non-basic orders. As shown, movement can apply either to the head V^0-2 or to the whole VP-2 (or a functional projection containing 2 but excluding 1 if one were to assume a more refined structure for these examples). The diagrams in (17b) and (18b) show the derivations with head-movement; the diagrams in (17c) and (18c) show the derivations with phrasal movement. Note that the object occurs to the left of the auxiliary in both examples in (16). To accommodate this fact, movement of the verb or the VP has to be preceded by leftward movement of the object (i.e., scrambling or object shift) in the head-initial structures (cf. (18b, c)) as well as the head-final structure involving VP-movement (cf. (17c)). Since reordering operations such as (17c) and (18b, c) apply to incomplete constituents, movement operations of this type have been dubbed 'remnant movement'.

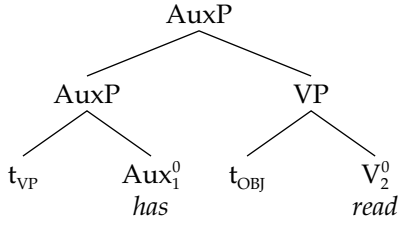
(17) a. **Head-final structure:**



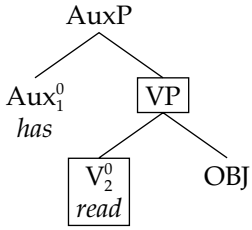
b. **X^0-movement (head-final):**



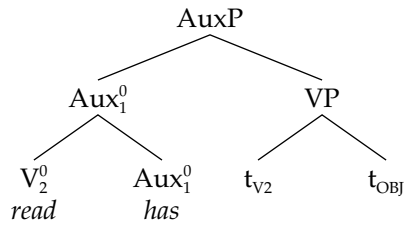
c. **XP-movement (head-final):**



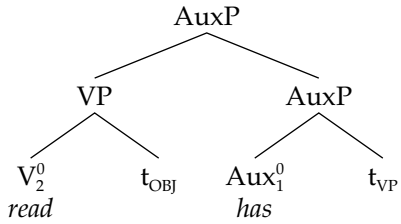
(18) a. **Head-initial structure:**



b. **X^0-movement (head-initial):**



c. **XP-movement (head-initial):**



In light of these options, the following questions arise: how can head-movement vs. phrasal movement structures be distinguished? Can verb clusters be derived solely by head-movement? Can verb clusters be derived solely by phrasal movement? The following subsections attempt to shed light on these questions.

3.1.1 Against an incorporation account

In this section, we will see that verb clusters cannot be seen as complex heads derived (exclusively) by head incorporation, but that (at least) certain constructions require a derivation involving phrasal movement or a non-incorporation analysis of head-movement (see below). Importantly, this conclusion will be based entirely on the mechanics of the derivations and will hold for both head-initial and head-final base structures.

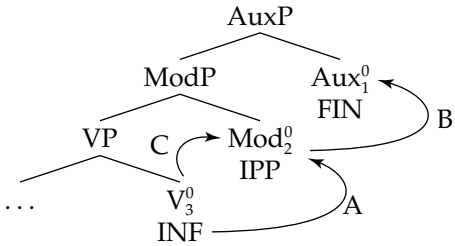
To illustrate the basic movement operations necessary to derive verb clusters by head incorporation, we will look at the distribution of IPP constructions (repeated here in table 75.5). As pointed out in section 2.3, of the six possible orders, five are attested in the IPP construction.

Table 75.5 West Germanic IPP construction

Language	3-2-1	3-1-2	1-2-3	1-3-2	2-3-1	2-1-3
Afrikaans	*	*	*	*	OK	*
Dutch	*	*	OK	*	*	*
Frisian	OK	*	*	*	*	*
German (Standard)	*	*	*	OK	*	*
German and Austrian dialects	OK	OK	*	OK	*	*
Swiss dialects	*	OK	OK	OK	*	*
West Flemish	*	*	OK	*	OK	*

Let us start with the head-final structure. To derive the five orders attested in West Germanic by head incorporation (again, the purpose of this section is merely to mechanically derive the different word orders; conditions attached to different orders will be ignored for this basic illustration), three movement operations are necessary (A, B, and C in the diagram in (19a)): movement of the lowest verb to the right of the higher verb (A), movement of the lowest verb to the left of the higher verb (C), and movement of the middle verb to the right of the highest verb (B). The reader can verify that the various combinations in (19b) yield exactly the five word orders attested (see, for instance, Evers 1975b and Den Besten and Edmondson 1983 for accounts similar to the one sketched):

(19) a. **Head-final structure:**



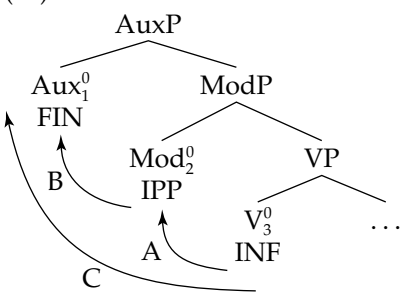
b. **Possible derivations:**

No overt movement:	3-2-1
Only A:	2-3-1
Only B:	3-1-2
Only C:	3-2-1 (vacuous)
A and B:	1-2-3
C and B:	1-3-2

The sixth order – the unattested 2-1-3 order – can be excluded by the assumption of (some version of) the Head Movement Constraint (HMC): in order to derive 2-1-3, the lowest verb 3 would have to move and adjoin to 1, skipping over 2 and hence causing an HMC violation.

Turning to the head-initial approach, again three movement operations are necessary: movement of the lowest verb to the left of the higher verb (A), movement of the lowest verb to the left of the highest verb (C; potentially with a stopover in 2), and movement of the middle verb to the left of the highest verb (B). These movement operations are illustrated in (20a) and the possible combinations are listed in (20b). Note that to derive the 2-3-1 order either movement C applies before movement B (i.e., movement C creates the complex head 3-1 to which 2 attaches afterwards), or movement B applies first (creating the complex 2-1) followed by movement C; however, 3 does not left-adjoin to the complex 2-1 but 'tucks in' between the two verbs (cf. Hsiao 1999, following Richards 1997, for an account along these lines):

(20) a. **Head-initial structure:**



b. **Possible derivations:**

No overt movement:	1-2-3
Only A:	1-3-2
Only C:	3-1-2
A and B:	3-2-1
C and B:	2-3-1
B and C:	3-2-1
	2-3-1 ('tucking in')

Assuming a system that allows the derivations in (20), it is again straightforward to derive the five word orders found in West Germanic IPP constructions. To exclude the unattested 2-1-3 order under this approach, the following options come to mind. Since movement B has to be possible in principle (i.e., to derive the orders in which 2 precedes 1), one has to ask why a derivation that involves *only* movement B is prohibited. A way to approach this question would be to assume that movement from the middle of a verb cluster is excluded, or in other words, that only the lowest verb in a configuration can move (i.e., movement B would only be licensed after movement A or movement C has occurred). Note that in this case, the 2-3-1 order could only be derived by tucking in. Another option (Marcel den Dikken, p.c.) would be to see the impossibility of the 2-1-3 order as the result of a licensing failure of the lowest verb. Under the assumption that the lowest verb (V-3) has to move (either overtly or covertly) to the next higher verb (Mod-2), overt dislocation of Mod-2 could be seen as an obstruction to the licensing of V-3. That is, one could develop an account according to which (i) adjunction to traces is prohibited (i.e., V-3 cannot adjoin to the trace of Mod-2), and (ii) some locality condition excludes covert tucking in or covert adjunction of V-3 to Mod-2 when the latter is in a dislocated position (i.e., adjoined to Aux-1).

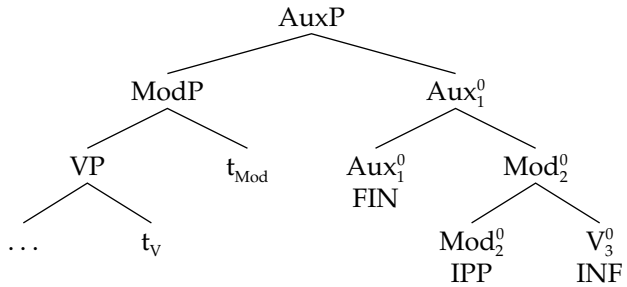
The systems outlined in (19) and (20) naturally raise a number of questions, depending on the type of syntactic theory one assumes and the principles and conditions that hold in one's favorite framework. For example, if a syntactic theory has no room for head-movement (cf. Sportiche 1996a; Koopman 1999a; Koopman and Szabolcsi 2000), a proponent of such a system would obviously not consider any of the above derivations. If a system involves an assumption such as Kayne's (1994) Linear Correspondence Axiom (LCA), derivations involving a head-final structure and rightward movement (such as (19)) would not be an option in that framework. If (head-)adjunction has to be uniformly in one direction, movement C in (19) would be excluded. If a system does not tolerate a violation of the HMC or involves a notion such as 'Attract closest', movement C as depicted in (20) might be problematic.

Questions of this sort are doubtless important to keep in mind when developing an actual analysis of verb-cluster formation. However, since these types of questions are only valid in their particular frameworks, they do not seem to challenge analyses along the lines of (19) or (20) beyond the framework they are couched in, and hence they do not bear on the question of whether a (pure) head-movement approach is in principle an option to account for the distribution of verb clusters. There is, however, an empirical phenomenon that goes beyond theory-internal considerations. The empirical evidence that, as we will see, will argue strongly against a (pure) head-incorporation approach to verb-cluster formation has become known as the verb projection raising phenomenon (see Haegeman and Van Riemsdijk 1986, among many others). The argument against verb clusters as complexes of incorporated heads (whether head-initial or head-final) is straightforward. Under both approaches, it is predicted that in certain orders the verbs form a complex head, and hence these clusters should be impenetrable for XP-material. We will see that this prediction is not borne out and that hence head-incorporation derivations as outlined above are problematic (but

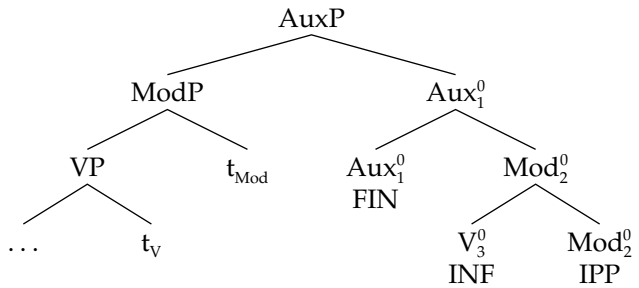
see below for a different way to nevertheless make use of head-movement in verb clusters).

To begin with the head-final structure in (19), (21) shows in detail the structures for the 1-2-3 order ((21a)), the 1-3-2 order ((21b)), and the 2-3-1 order ((21c)). According to this approach, it should be impossible for XP-material to occur between 1 and 2, and 1 and 3 in (21a), between 1 and 3, and 3 and 2 in (21b), and between 2 and 3 in (21c):

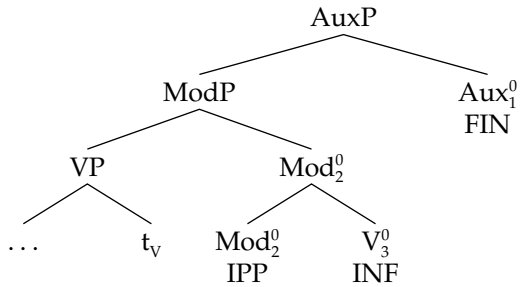
(21) a. **1-2-3 order in head-final approach:**



b. **1-3-2 order in head-final approach:**



c. **2-3-1 order in head-final approach:**



The following data from Swiss-German, West Flemish, and German show that these predictions are not fulfilled in all but one case (see also section 3.2 for a more detailed discussion of verb projection raising). The examples in (22) make the point for the 1-2-3 order; the examples in (23) represent the 1-3-2 order; and the example in (24) illustrates the problem in the 2-3-1 order. In more detail, in

(22a) from Swiss-German (SG), a definite object occurs between 1 and 2, and in the Swiss example in (22b) and the West Flemish (WF) example in (22c), various XPs occur between 2 and 3.[8] Since the verb clusters in (22) are split up by material which is clearly phrasal, it seems unclear how these examples can be accommodated under a structure like (21a):

(22) **Verb projection raising (1-2-3):**

a. Ob si hett **d Prüeffig** chöne besto. SG
whether she had (1) the exam can (2) pass (3)
'[Who knows] whether she would have been able to pass the exam.'

b. Ob si hett chöne **d Prüeffig** besto.
whether she had (1) can (2) the exam pass (3)
'[Who knows] whether she would have been able to pass the exam.'

c. da Valère oa willen **morgen no Gent** goan WF
that Valère had (1) want-ipp (2) tomorrow to Gent go (3)
'that Valère had wanted to go to Gent tomorrow'

(Haegeman 1995a: 72)

The same problem arises in the 1-3-2 order and the 2-3-1 order. In the German (GE) example in (23a) and the SG example in (23c), phrasal material appears between 1 and 3 in the 1-3-2 order (see also Den Besten and Broekhuis 1992 for further examples), and in the WF example in (24), both objects occur between 2 and 3 in the 2-3-1 order. The only case which indeed requires adjacency between elements of a cluster is illustrated in (23b) and (23d) (i.e., examples with elements between 3 and 2 in the 1-3-2 order). The generalization, which will be discussed in more detail in section 3.4.2, is that XP-material is allowed within a verb cluster (in certain languages and dialects) only if the intervening XPs precede the lowest verb. Thus, in the 1-3-2 order as well as in the 3-1-2 order, phrasal material cannot occur between 3 and 2 or between 1 and 2, respectively (examples for the latter claim will be provided in section 3.4.2).

(23) **Verb projection raising (1-3-2):** GE

a. daß er das Buch hätte **genau** durchsehen sollen
that he the book had (1) carefully through-look (3) shall (2)
'that he should have looked through the book carefully'

(Zwart 1996)

b. *daß er das Buch hätte durchsehen **genau** sollen
that he the book had (1) through-look (3) carefully shall (2)
'that he should have looked through the book carefully'

c. Ob si hett **d Prüeffig** besto chöne. SG
whether she had (1) the exam pass (3) can (2)
'[Who knows] whether she would have been able to pass the exam.'

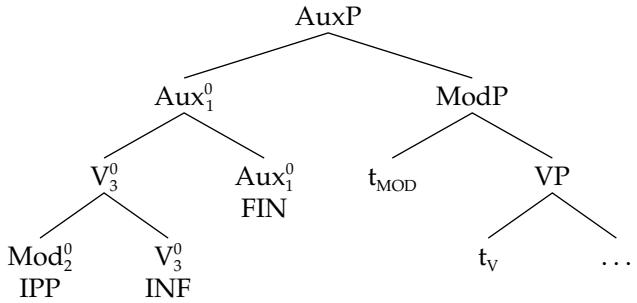
d. *Ob si hett besto **d Prüeffig** chöne.
whether she had (1) pass (3) the exam can (2)
'[Who knows] whether she would have been able to pass the exam.'

(24) **Verb projection raising (2-3-1):**
da Valère willen [**Marie** dienen boek geven] eet WF
that Valère want-ipp (2) [Marie that book give] (3) has (1)
'that Valère has wanted to give Marie that book'
(Haegeman 1998c: 260)

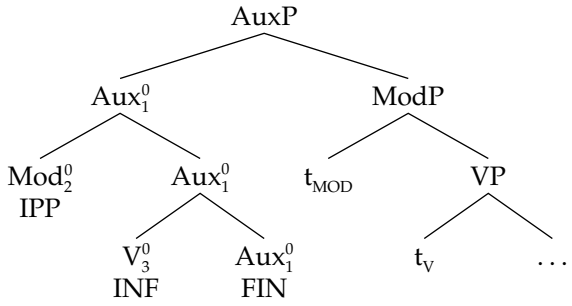
To conclude, it seems that the only way to maintain an incorporation analysis for the (grammatical) constructions in (22–24) would be to assume that the intervening material is X^0-incorporated in the verb clusters. This claim might be conceivable for certain small adverbs such as the one in (23a); however, it appears highly implausible for the definite objects and prepositional phrases. It can thus be concluded that in light of verb projection raising constructions, a pure incorporation account is insufficient to derive the full range of verb cluster constructions in the head-final approach.

The same situation holds for the head-initial approach in (20); however, there is only one case which allows us to make the argument – the 2-3-1 order. To derive this order under a head-initial base structure by making use solely of head incorporation, two derivations have been suggested above (the two options are fleshed out in more detail in (25)). For the point to be made here, we do not have to decide between these two options, since under both the same prediction is made: 2 and 3 are part of a complex head, and hence, it should not be possible for phrasal material to occur between these two verbs. As we have seen above, this prediction is not borne out: examples such as the WF (24) show that 2 and 3 do not form a complex head, and hence a head-movement derivation as in (25) has to be excluded:

(25) a. **2-3-1 order in head-initial approach (movement C before movement B):**



b. **2-3-1 order in head-initial approach (tucking in):**



In sum, the phenomenon of verb projection raising which is found in a subset of West Germanic languages and dialects poses a serious challenge for accounts that aim to derive verb clusters solely by head incorporation. This conclusion, however, does not force us to give up head-movement as a means to derive verb clusters altogether.[9] First, as many authors have suggested, verb-cluster formation can involve both types of movement – that is, certain configurations are derived by head-movement, others by phrasal movement (see Bennis and Hoekstra 1989, Haegeman 1990, 1992, 1994, 1998b, Rutten 1991, Broekhuis et al. 1995, Zwart 1996, and Den Dikken and Hoekstra 1997 for accounts that also involve head-movement derivations). Second, for both the head-final and the head-initial approach, there is in principle an option that maintains a pure head-movement account. The assumption necessary would be that the verbs of a cluster do not form a complex head with each other (i.e., the verbs do not incorporate into each other), but that head-movement targets different (non-overt) heads. That is, if for example in (21c), the lowest verb does not attach to the next higher verb but to a functional head between 2 and 1; or similarly, if in (25a), the modal (MOD–2) does not attach to the higher verb but to a functional head above the AuxP; verb-cluster movement could again be analyzed as head-movement. One might object that these derivations involve violations of the HMC. However, as has been argued by Den Dikken and Hoekstra (1997), the problem arises only under the strict version of the HMC. If the locality conditions for head-movement – like A or A'-movement – are *relativized* (i.e., head-movement is not blocked by intervening heads in general, but only by heads of the same type), skipping of certain heads becomes possible. Thus, while a general verb-to-verb incorporation account seems inadequate to capture the verb cluster phenomenon, a head-movement account is nevertheless conceivable assuming the relativized version of the HMC.

3.1.2 Phrasal movement derivations

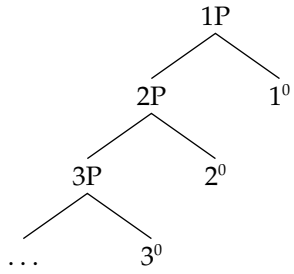
The second question regarding the head vs. phrasal movement debate is whether verb clusters can be derived solely by phrasal movement or whether certain constructions necessitate head-movement. Before laying out arguments that have been presented for head-movement in verb clusters (section 3.1.3), a quick overview of the different phrasal movement operations necessary to derive verb clusters in the head-initial and head-final approach will be provided. The purpose is to simply illustrate the basic derivations and to show that none of the orders poses an a priori challenge for phrasal movement accounts.

To begin with the head-final approach, the 3-2-1 order (cf. (26a)) is the underlying order and hence no movement is necessary (or all movements are covert). The 2-3-1 order (which is found in WF and Afrikaans) can be derived by movement of the lowest XP to the right of the middle XP (cf. (26b)). Movement of the middle XP to the right of the highest XP yields the 1-3-2 order as in (26c) (see Den Besten and Broekhuis 1992 for one of the first suggestions of this derivation). Movement of both lower XPs as in (26d) results in the 1-2-3 order. Finally, there are two options for deriving the 3-1-2 order which are illustrated in (26e, e'). The first option involves movement of the lowest XP to some specifier or adjoined

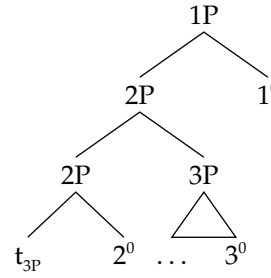
position on the left, followed by rightward movement of the middle XP. The second option involves rightward movement of the lowest XP, followed by rightward movement of the lower XP-2 created by adjunction:

(26) **Head-final derivations:**

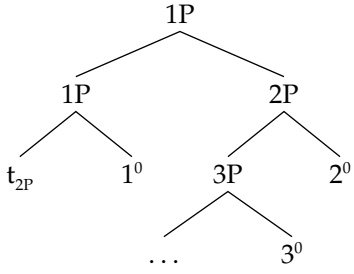
a. **3-2-1 – basic head-final structure:**



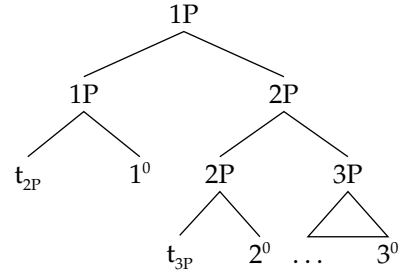
b. **2-3-1 movement of lowest XP:**



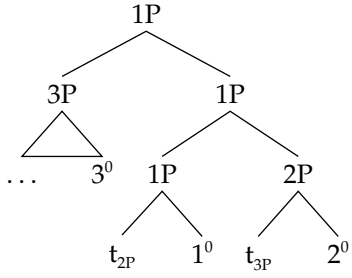
c. **1-3-2 – movement of middle XP:**



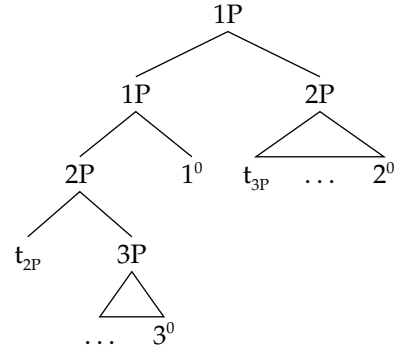
d. **1-2-3 – movement of both lower XPs:**



e. **3-1-2 – movement of middle XP:**



e′. **3-1-2 – movement of both lower XPs:**



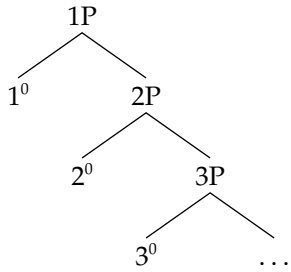
To exclude the unattested 2-1-3 order of the verb clusters in table 75.2 (i.e., constructions involving modal and auxiliary verbs; the situation is slightly more complex for *to*-infinitives), one can follow Haegeman (1992), who suggests that verb clusters of this type are subject to some form of Relativized Minimality. That

is, if it is assumed that verb-cluster movement has to target the next higher XP and that intervening XPs (except adjunction segments) cannot be skipped, movement of the lowest VP and adjunction to the highest XP by skipping the middle XP would be prohibited, and hence the 2-1-3 order could not be derived.

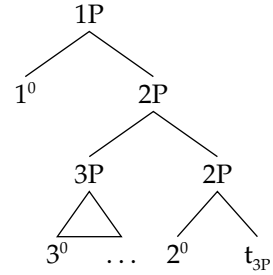
Under the head-initial approach, the 1-2-3 order is the basic order, which does not require any movement operations (cf. (27a)). To derive the 1-3-2 order, the lowest XP undergoes movement to left of the middle XP (cf. (27b)). Movement of the middle XP to the left of the highest XP yields the 2-3-1 order in (27c). Movement of both lower XPs results in the 3-2-1 order (cf. (27d)). Finally, the 3-1-2 order is derived by movement of the lowest XP to the left of the highest XP (whether it moves in one step or stops in the specifier of the middle XP is not crucial at this point; cf. (27e)):

(27) **Head-initial derivations:**

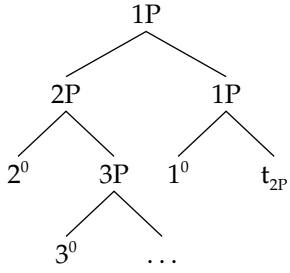
a. **1-2-3 – basic head-initial structure:**



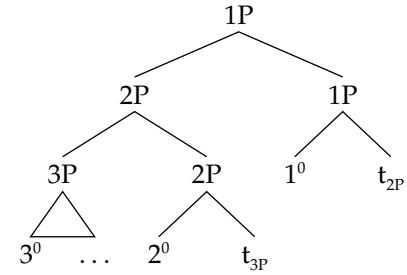
b. **1-3-2 – movement of lowest XP:**



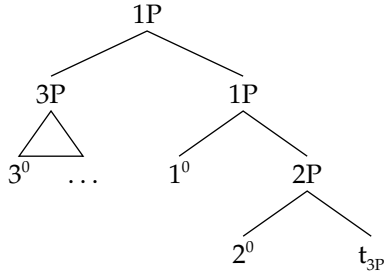
c. **2-3-1 – movement of middle XP:**



d. **3-2-1 – movement of both lower XPs:**



e. **3-1-2 – movement of lowest XP (above highest XP):**



In order to block the 2-1-3 order, one could assume for instance that movement of the lowest XP targets the specifier position of the middle XP (and not, for instance, the specifier position of a functional projection between 1P and 2P). Since the lowest XP would then be part of the middle XP, movement of the latter would always carry along the lowest XP, and hence 2-1-3 could not be generated. Alternatively, one could assume that traces must be c-commanded by their antecedents (at surface structure). Thus, in a derivation where 3P moves to a position (whether adjoined or a specifier) above 2P (but below 1P) and 2P undergoes further movement to the left of 1P, the 2-1-3 order would be derived; however, the trace of 3P (which is contained in 2P) would not be c-commanded by the actual 3P anymore.

In contrast to (pure) head-movement approaches, the challenge for phrasal movement approaches is generally not that they are too restrictive but rather that they massively overgenerate. Thus, deriving verb projection raising configurations is trivial in the structures in (26) and (27). What is less clear, however, is how verb projection raising configurations can be excluded in languages that do not allow phrasal material between the elements of a cluster (see 3.2). As will be illustrated in more detail below, the way to achieve these restrictions in phrasal movement structures is by assuming additional (leftward) movement operations that (fully or partially) pre-empty the phrases that undergo verb-cluster movement (i.e., remnant movement instead of full phrasal movement has to become obligatory in certain languages and constructions).

To conclude, both head-final and head-initial approaches have the capacity to derive verb clusters via phrasal movement operations (in terms of the mechanical derivation; nothing has been said so far about how the movement operations can be motivated and restricted).

3.1.3 Head- and/or phrasal movement accounts (head-final approach)

The question that will be addressed in this section is whether a pure phrasal movement approach is sufficient to derive verb clusters across West Germanic or whether there is reason to assume that certain constructions must involve head-movement. A number of interesting arguments have been put forward for the claim that certain (parts of) verb clusters are derived by head-movement. The arguments fall into two groups: arguments from locality and arguments from the size of the moved material. Let us begin with the first type of argument.

Under the standard assumption that head- and phrasal movement are subject to different locality domains (in the sense that only heads intervene in head-movement dependencies and only XPs intervene in phrasal movement dependencies), the lack vs. existence of certain locality effects can be taken as evidence for/against a particular type of movement. An elaborate instantiation of this argument can be found in Den Dikken and Hoekstra (1997). Den Dikken and Hoekstra investigate an interesting property found in Frisian verb clusters, namely the Participium Pro Infinitivo (PPI) effect. The Frisian PPI effect can be seen as the opposite of the IPP effect (which Frisian lacks, incidentally): as illustrated in (28), infinitives in certain environments can also be realized as participles:

(28) **Frisian – Participium Pro Infinitivo (PPI) effect:**

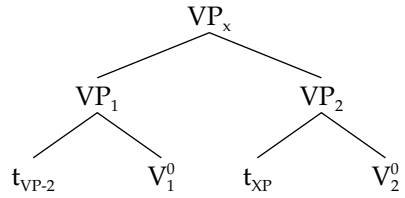
a. Hy soe it dwaan/dien wollen ha.
he would it do-INF/do-PART want-PART have-INF
'He would have liked to do it.'

b. Hy soe it dien ha wolle /wollen.
he would it do-PART have-INF want-INF /want-PART
'He would like to have done it.'

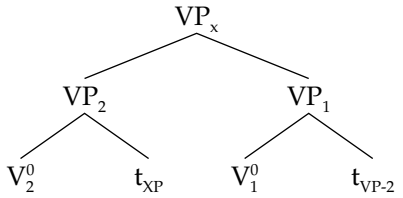
The analysis suggested in Den Dikken and Hoekstra (1997), which crucially makes use of both head-movement and phrasal movement, not only derives the word orders in Frisian verb clusters but also accounts for the existence of the PPI effect and the distribution thereof. Although it is not possible to replicate the details of the analysis here, the conclusion is essentially that movement of participles (which is necessary to license both true and PPI participles) can skip intervening heads of the same type (i.e., heads with the same features), whereas movement of auxiliaries is blocked by intervening heads with the same features. Assuming a restrictive theory of movement, the authors conclude that participle movement is phrasal movement (hence not sensitive to intervening heads), whereas in the same language, movement of auxiliaries is head-movement (hence subject to the (relativized) HMC).

Before presenting the second type of argument for head-movement in verb clusters (the argument from the size of the moved material), it should be noted that there are certain phenomena – in particular, certain adjacency requirements – which will not be considered as arguments for head-movement here. As discussed in the previous section, a commonly accepted restriction for head-movement configurations is that a complex head cannot include phrasal material. Thus, if phrasal material can occur between two verbs, it can safely be concluded that these two verbs do not form a complex head (see the previous section for arguments along this line). However, the opposite does not hold. If a verb cluster disallows phrasal material between the verbs, it does not follow that the verb cluster has to be formed by head-movement. In other words, while it is true that a head-movement configuration entails adjacency between the elements involved, adjacency does not entail a head-movement configuration (for instance, Case adjacency in English does not entail that the verb and the object form a complex head). To illustrate the fallibility of arguments that are built on an adjacency requirement between the verbs of a cluster, let us assume a context in which the two verbs of a two-verb cluster cannot be separated by phrasal material. Under a head-movement derivation, this adjacency requirement follows directly from the derivation itself. However, under a phrasal movement derivation, it is also possible to derive this adjacency requirement. As shown in (29), adjacency can be created by remnant movement of the lower VP under both the head-final and the head-initial approach. The only assumptions necessary to enforce adjacency in these contexts are that movement of the VPs and XPs in (29) is obligatory, and that nothing can adjoin between the (originally) higher VP (labeled VP-1 in (29)) and the landing site of the lower VP (labeled VP-x):

(29) a. **XP-movement (head-final):**



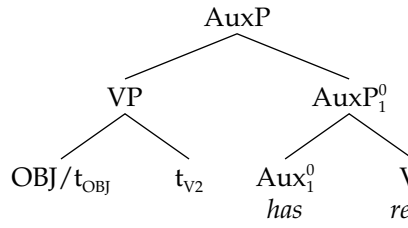
b. **XP-movement (head-initial):**



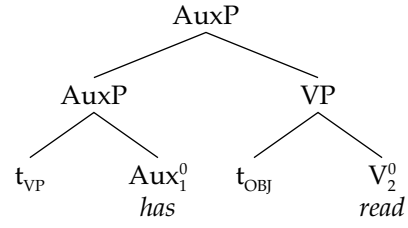
While these assumptions would of course have to be motivated, the possibility of deriving adjacency in phrasal movement constructions nevertheless shows that adjacency between elements in a verb cluster does not allow us to jump to the conclusion that the cluster has to involve head-movement. Adjacency requirements found in verb clusters will hence be ignored in this section.

An important contribution to the issue of head vs. phrasal movement has been provided in Den Besten and Rutten (1989) (see also Rutten 1991; Den Besten and Broekhuis 1992; Broekhuis et al. 1995; and many others). As mentioned at the beginning of this section, a crucial difference between the head-movement structure in (17b) and the phrasal movement structure in (17c) (repeated below in (30a, b) is that in the latter a remnant constituent is moved – i.e., all but the verb has to have left the VP prior to verb-cluster movement. This difference leads to the following predictions. If the leftward movement step is prohibited (i.e., if a construction involves VP-internal elements that are not allowed to scramble/object shift), and a construction of the form OBJ-1-2 is well-formed, the derivation can only involve head-movement. If, on the other hand, leftward movement of (certain) VP-internal XPs is prohibited and a construction of the form OBJ-1-2 is ungrammatical in these contexts (but well-formed when the VP contains movable XPs), the derivation can only involve phrasal movement. In what follows, we will see that in Dutch under certain assumptions, both predictions find an instantiation:

(30) a. **X^0-movement (head-final):**



b. **XP-movement (head-final):**



Contexts that have been taken to involve elements that cannot undergo movement (but see below) are particle constructions such as *to call up* and (semi-)idiomatic expressions such as *to take into consideration*. As is illustrated in (31a, b), (non-idiomatic) objects are free to move to the left of adverbs such as *toen toch* (with some subtle differences in meaning). For material that is part of an idiomatic expression ((31c)) and particles ((31d)), on the other hand, this movement operation is prohibited (the position of the object has no influence on the ungrammaticality):

(31) **Dutch – particle and (semi-)idiomatic constructions:**

a. dat Jan {dat aanbod} toen toch {dat aanbod} in overweging nam
that Jan {that offer} then ADV {that offer} in consideration took
'that Jan then did take that offer into consideration'

b. dat Marie {haar vader} toen toch {haar vader} op belde
that Marie {her father} then ADV {her father} up called
'that Marie then did call her father'

c. *dat Jan dat aanbod in overweging toen toch nam
that Jan that offer in consideration then ADV took
'that Jan then did take that offer into consideration'

d. *dat Marie haar vader op toen toch belde
that Marie her father up then ADV called
'that Marie then did call her father'

Assuming that adverbs such as *toen toch* mark the left edge of the VP, one can conclude (but see again below) that parts of idiomatic expressions and particles cannot leave the VP. These types of constructions thus offer contexts in which the two predictions mentioned above can be tested.

Let us first look at a situation where the constructions in (31) are embedded in a verb cluster (in particular an auxiliary–participle construction). In the 1-2 order (which is the relevant order for the head-final approach), idiomatic material can only appear to the (immediate) left of the auxiliary as in (32a), and can occur neither to the left of the VP-adverb (cf. (32c)) nor between the auxiliary and the participle (cf. (32e)). Particles, on the other hand, are also prohibited from occurring to the left of a VP-adverb (cf. (32d)), but they can appear either to the (immediate) left of the auxiliary as in (32b) or between the auxiliary and the participle as in (32f):

(32) **Dutch – particle and (semi-)idiomatic constructions in verb clusters:**

a. dat Jan {dat aanbod} toen toch {dat aanbod} in overweging heeft
that Jan {that offer} then ADV {that offer} in consideration has
genomen
taken
'that Jan then HAS taken that offer into consideration'

b. dat Marie {haar vader} toen toch {haar vader} op heeft gebeld
that Marie {her father} then ADV {her father} up has called
'that Marie then HAS called her father'

c. *dat Jan dat aanbod in overweging toen toch heeft genomen
that Jan that offer in consideration then ADV has taken
'that Jan then has taken that offer into consideration'

d. *dat Marie haar vader op toen toch heeft gebeld
that Marie her father up then ADV has called
'that Marie then has called her father'

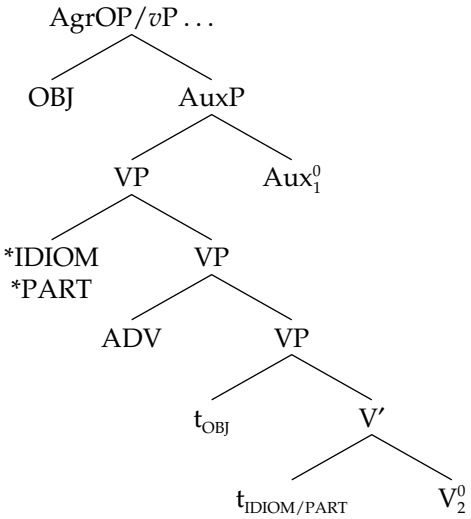
e. *dat Jan dat aanbod toen toch heeft in overweging genomen
that Jan that offer then ADV has in consideration taken
'that Jan then has taken that offer into consideration'

f. dat Marie {haar vader} toen toch {haar vader} heeft op gebeld
that Marie {her father} then ADV {her father} has up called
'that Marie then has called her father'

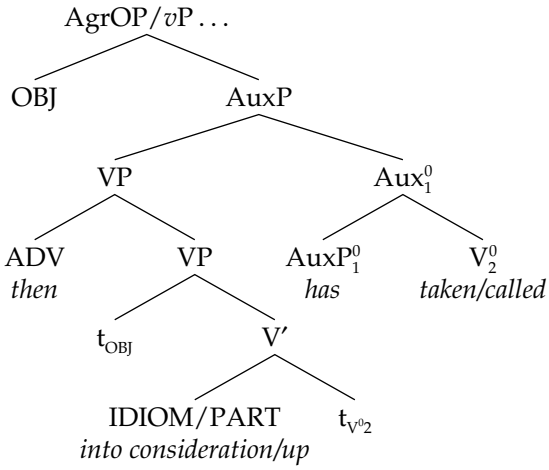
Under the assumption that parts of idiomatic expressions and particles cannot leave the VP, the distribution in (32) provides an argument for head-movement and against phrasal movement in this type of construction.

Let us start with (32c, d). The prohibition against movement of parts of idioms and particles (cf. (33a)) immediately accounts for the ungrammaticality of these examples (independent of the question of whether the lower verb has undergone head- or phrasal movement). Furthermore, assuming idioms and particles cannot leave the VP, remnant VP movement cannot be an option for (32a, b). If, on the other hand, the examples in (32a, b) involve head-movement as in (33b), idioms and particles can be stranded in the VP when the lower verb (head) moves and adjoins to the higher auxiliary. Finally, assuming that (at least in this language and construction) verb-cluster formation can only involve head-movement and phrasal movement is prohibited, (32e) is expected to be ungrammatical since in this case, the (remnant) VP has undergone movement. Similarly, (32f) can be accounted for if it is assumed that the particle and the verb form a complex head at the level where verb-cluster formation applies. That is, either particle constructions are base-generated X^0-elements (cf., for instance, Neeleman and Weerman 1993; Neeleman 1994a; and references therein) or involve incorporation of the particle into the verb (cf. for instance Den Dikken 1995c; Koopman 1995; among many others).[10] Under the assumptions mentioned, particle and (semi-)idiomatic constructions can thus be seen as an instantiation of the first prediction–verb-cluster formation in auxiliary–participle constructions (and the same holds for modal–infinitive constructions) can only involve head-movement in Dutch:

(33) a. **Illicit particle/idiom movement:**



b. **No particle/idiom movement and X^0-movement:**



Before turning to an alternative analysis, cases instantiating the second prediction will be discussed. Dutch verb-cluster formation is found not only with auxiliary and modal constructions but also with certain infinitival constructions involving the infinitival marker *te* 'to'. As is shown in (34), the object appears to the left of the higher verb (i.e., the matrix verb), whereas the particles and idiomatic phrases occur between the two verbs. The grammaticality of (34a, b) thus contrasts sharply with the ungrammaticality of the auxiliary–participle construction in (32e). Under a head-final base structure, (34a, b) then lead to the conclusion that remnant XP-movement is possible in infinitival constructions involving matrix verbs such as *try* or *decide*:[11]

(34) **Dutch – particle and (semi-)idiomatic constructions in infinitival constructions:**

a. dat Elsje de prijs probeerde [in ontvangst te nemen]-XP
that Elsje the award tried [in acceptance to take]-XP
'that Elsje tried to accept the award'

b. dat Elsje de prijs besloot [in ontvangst te nemen]-XP
that Elsje the award decided [in acceptance to take]-XP
'that Elsje decided to accept the award'

c. dat Elsje haar vader probeerde op te bellen
that Elsje her father tried up to call
'that Elsje tried to call her father'

d. dat Elsje haar vader besloot op te bellen
that Elsje her father decided up to call
'that Elsje decided to call her father'

To determine whether phrasal movement is possible or necessary, we must look again at contexts in which phrasal movement would be excluded. As above, the immovability of particles and parts of idiomatic expressions allows us to construct such a context. If these elements can occur to the left of the higher verb

in the 1-2 order, the construction can only involve head-movement (again assuming that particles and idiom chunks cannot leave their base position); if these elements cannot occur to the left of the higher verb in the 1-2 order, head-movement is prohibited. Changing the examples in (34) along these lines reveals an interesting contrast, which is illustrated in (35):

(35) **Dutch – particle and (semi-)idiomatic constructions in infinitival constructions:**

a. dat Elsje de prijs in ontvangst probeerde [te nemen]-X^0
that Elsje the award in acceptance tried [to take]-X^0
'that Elsje tried to accept the award'

b. *dat Elsje de prijs in ontvangst besloot [te nemen]-X^0
that Elsje the award in acceptance decided [to take]-X^0
'that Elsje decided to accept the award'

c. dat Elsje haar vader op probeerde [te bellen]-X^0
that Elsje her father up tried [to call]-X^0
'that Elsje tried to call her father'

d. *dat Elsje haar vader op besloot [te bellen]-X^0
that Elsje her father up decided [to call]-X^0
'that Elsje decided to call her father'

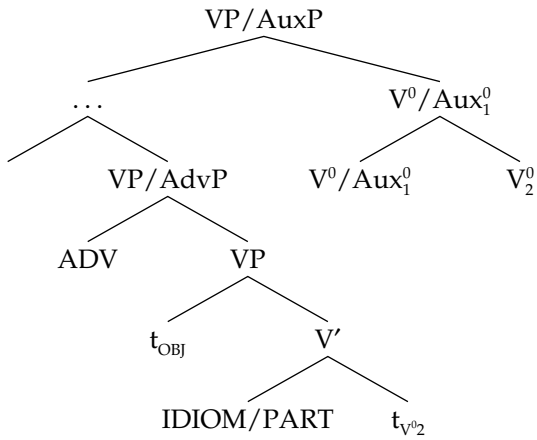
While *try*-constructions allow particles and idiomatic phrases to occur to the left of the higher verb, *decide*-constructions prohibit stranding of these elements. Assuming again that movement of particles and idiomatic phrases is excluded, one can conclude from the examples in (35) that head-movement is possible in *try*-constructions but not an option in *decide*-constructions. Thus, infinitives of the latter type instantiate the second prediction – verb-cluster formation in infinitival constructions of the *decide*-type can only involve phrasal movement in Dutch.

To recapitulate, the account sketched leads to the conclusion that there are three types of verb clusters: verb clusters that only allow head-movement (auxiliary–participle constructions), verb clusters that only allow phrasal movement (*decide*-type infinitives), and verb clusters that allow both head and phrasal movement (*try*-type infinitives). Although this account seems advantageous in that it allows us to develop criteria to distinguish between head and phrasal movement in verb clusters, one might object that the arguments presented in (31–35) are built on assumptions that are not necessarily generally shared (such as the immovability of particles and idiom chunks), and that a unified account (i.e., an analysis that employs only one type of movement in verb-cluster constructions) might be preferable. In the rest of this section, an outline of such an alternative analysis will be presented.

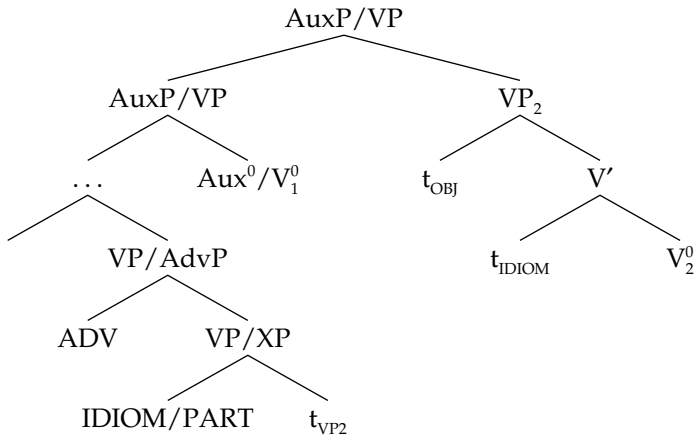
The crucial examples that led to the conclusion that certain constructions can only involve head-movement are (32a, b, e), (35a, c), and, under certain assumptions about the structure of particle verbs, (32f). The head-movement derivation suggested for these examples is repeated in (36a).[12] However, (36a) is not the only

derivation for these examples; as shown in (36b), a phrasal movement account is conceivable as well. To be more specific, under a phrasal movement account, the idiomatic phrase or particle first moves out of the VP and (string-vacuously) adjoins to the VP (or it moves to a specifier of a functional projection between the adverb and the VP). The lowest VP can then undergo remnant XP-movement to the right, 'stranding' the particle or idiom chunk to the left of the higher verb:

(36) a. **X^0-movement:**



b. **XP-movement:**

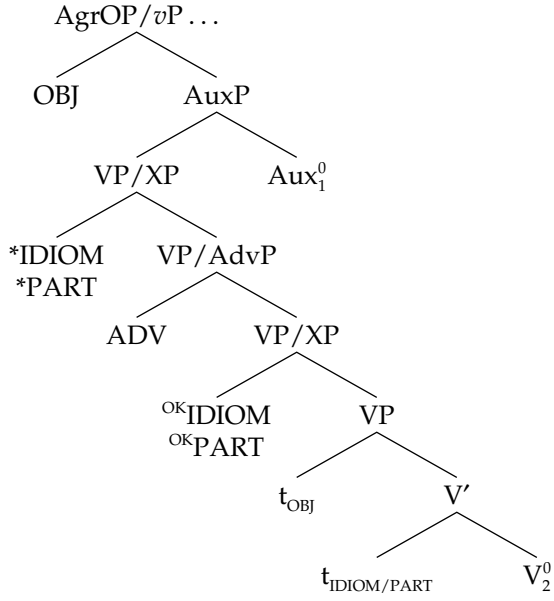


A derivation such as (36b) has been excluded above by the assumption that particles and parts of idioms cannot move out of the VP. The reason for this assumption was the ungrammaticality of the examples in (32c, d) and (35b, d) – i.e., examples that show that particles and parts of idioms cannot occur to the left of VP-adverbs. In the previous account, this fact was seen as a direct consequence of the assumption that idiomatic phrases and particles are immobile – i.e., they

cannot undergo any kind of movement. To accommodate these facts under a phrasal movement account such as the one outlined in (36b), on the other hand, it cannot be the case that movement of idiomatic phrases and particles is inherently blocked (otherwise the derivation in (36b) would be impossible). Rather it has to be assumed that particles and idiomatic phrases are able to move, although only as long as they do not cross any other material (see Den Besten and Broekhuis 1992 and Broekhuis et al. 1995 for claims along these lines).[13] Thus, short string-vacuous movement as in (36b) is licensed; however, movement across the adverb as in (32c, d) is ruled out (cf. (37)).

At this point, one has to ask why particle and idiom movement should be subject to such a restriction. However, note that the same question arises for the claim that particles and idiom chunks are immobile. A detailed motivation cannot be given here, but it seems that either assumption could be motivated by some syntactic or semantic adjacency requirement between the different parts of an idiomatic expression and between the particle and the verb:

(37) **Idiom/particle movement:**



While an analysis along these lines accounts for the examples in (32a–d), it raises some questions concerning (32e) and examples involving *te*-infinitives. Starting with the former, the importance of (32e) (repeated as (38a)) and the examples in (38b–e) is that in auxiliary–participle constructions, no phrasal material can intervene between the auxiliary and the participle. This restriction follows straightforwardly in a head-movement approach. For the phrasal movement account in (36b) and (37), however, it would mean that objects and idioms (but not particles; cf. (32f)) not only can move out of the VP, but in fact must leave

the VP obligatorily. Furthermore, it has to be ensured that only the lowest VP undergoes movement to the right in this construction:

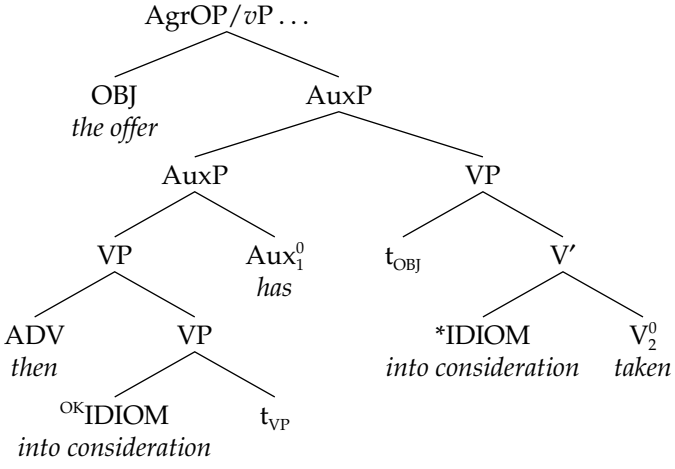
(38) **Dutch – objects and (semi-)idiomatic constructions in two-verb clusters:**

a.	*dat Jan dat aanbod	toen toch	heeft	in overweging	genomen
	that Jan that offer	then ADV	has	in consideration	taken
b.	*dat Jan toen toch	een aanbod	heeft	in overweging	genomen
	that Jan then ADV	an offer	has	in consideration	taken
c.	*dat Jan toen toch	in overweging	heeft	een aanbod	genomen
	that Jan then ADV	in consideration	has	an offer	taken
d.	*dat Jan toen toch	heeft	een aanbod	in overweging	genomen
	that Jan then ADV	has	an offer	in consideration	taken
e.	*dat Jan dat aanbod	in overweging	heeft	toen toch	genomen
	that Jan that offer	in consideration	has	then ADV	taken

All intended: 'that Jan then HAS taken that/an offer into consideration'

Thus in sum, the assumptions necessary to account for the distribution of particles and idiomatic phrases in verb clusters under a phrasal movement approach are as follows: (i) all VP-internal elements except particles are required to leave the VP; (ii) particles can move out of the VP; (iii) idiomatic phrases and particles can only move string-vacuously; and (iv) in auxiliary–participle constructions only the lowest VP can move to the right (cf. (39)):

(39) **XP-movement:**



Note that this analysis has a direct consequence for the structure of examples such as the one in (40a), where both the object and the idiomatic phrase appear below the VP adverb. In the phrasal movement analysis just sketched, both the object and the idiomatic phrase must have left the VP and attached *below* the VP adverb (as is evident from (40b), these movement operations can again not change the underlying order between the two phrases):

(40) **Dutch – objects and (semi-)idiomatic constructions in two-verb clusters:**
a. dat Jan toen toch een aanbod in overweging heeft genomen
that Jan then ADV an offer in consideration has taken
'that Jan has taken an offer into consideration at that moment'
b. *dat Jan toen toch in overweging een aanbod heeft genomen
that Jan then ADV in consideration an offer has taken
'that Jan has taken an offer into consideration at that moment'

The second set of examples that requires some adjustment in a pure phrasal movement approach involves the examples in (35), schematically repeated in (41):

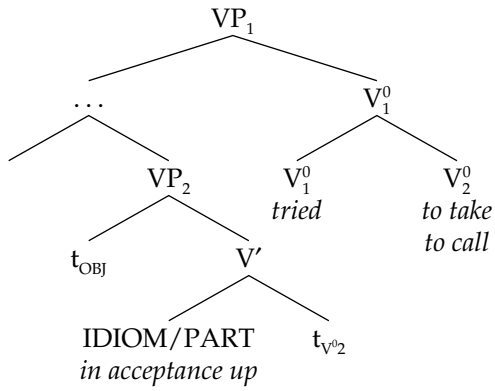
(41) **Dutch – particle and (semi-)idiomatic constructions in infinitival constructions:**

a.	*that*	SUBJ	OBJ	*decided*	IDIOM/PART	*to* VERB
b.	*that*	SUBJ	OBJ	*tried*	IDIOM/PART	*to* VERB
c.	**that*	SUBJ	OBJ	IDIOM/PART	*decided*	*to* VERB
d.	*that*	SUBJ	OBJ	IDIOM/PART	*tried*	*to* VERB

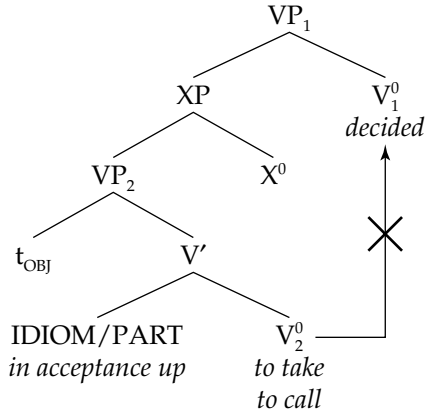
As has been laid out above, an account that makes use of head and phrasal movement offers a straightforward explanation for the distribution in (41): *try*-infinitives allow both head-movement and phrasal movement, whereas *decide*-infinitives permit only phrasal movement.

An interesting question is why only certain infinitival constructions permit head-movement. Without going into detail at this point (see section 4), a common feature of most approaches to this problem is the claim that *try* and *decide* infinitives represent two different types of infinitival constructions. While *try*-infinitives are in some sense deficient (i.e., they either lack certain functional projections or involve projections that are or become ineffective by various mechanisms), *decide*-infinitives are made of more 'solid' material (i.e., projections that make them less transparent and hence block certain operations). To be more concrete, one can assume (as many authors have) that *try*-type infinitives are transparent in that they do not involve categories or features that would block head-movement (it is not crucial for the point to be made here whether *try*-infinitives simply lack offending projections or whether the projections are present but somehow rendered invisible by the time verb-cluster formation takes place). An illustration is given in (42a) vs. (42b). Assuming that *decide*-infinitives involve more (operative) structure than *try*-infinitives, the prohibition of head-movement in the former can be reduced to some version of the HMC. That is, if *decide*-infinitives but not *try*-infinitives include a projection which is simply labeled XP for now, the intervening head X^0 would block head-movement across it in (42b) but not in (42a). On the other hand, no problem arises for phrasal movement in *decide*-infinitives – depending on the position of the object, either the XP or the lower VP can undergo movement to the right in (42b):[14]

(42) a. **X^0-movement – *try*-infinitive:**



b. **X^0-movement – *decide*-infinitive:**



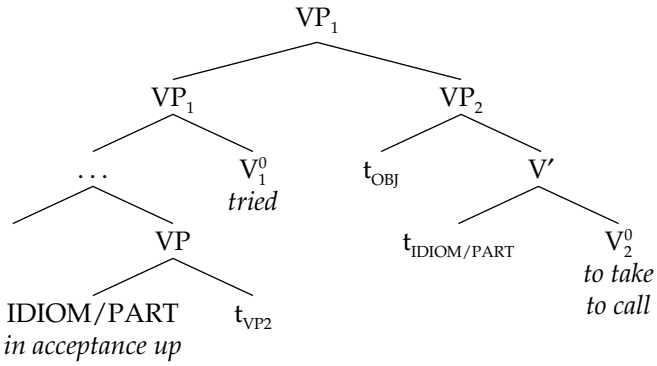
The question then of course is what kind of element X is and why it is present or active in one construction but not in the other. As will be shown in section 4.4, a likely candidate for X is tense, since the two types of infinitival constructions differ in their tense properties. In particular, we will see that *decide*-infinitives contribute independent tense information, whereas *try*-infinitives lack any independent tense interpretation (see also Guéron and Hoekstra 1988, Bok-Bennema and Kampers-Manhe 1994, Wurmbrand 1997, 1998a, 1998c, 2001, and Gonçalves 1998, among others, for the claim that certain infinitives lack tense or are tense-deficient).

Returning to the account that employs only phrasal movement to derive verb clusters (as outlined in (36b), (37), and (39)), the derivation of (41d) (i.e., a *try*-infinitive with a stranded particle or idiomatic phrase) is straightforward. As before, the idiomatic phrase leaves the VP, and the lowest VP undergoes movement to the right (cf. (43a)). To account for the difference between auxiliary–participle constructions and *try*-infinitives (i.e., the contrast between (32e) and (41b)) in the mixed account, it has been suggested that the former allow only head-movement, whereas the latter allow head or phrasal movement. A similar

distinction can be made in the pure phrasal movement approach. While auxiliary–participle constructions permit only movement of the lowest VP, *try*-infinitives allow movement of higher VPs/XPs as well. Thus, in (41b), the idiomatic phrase again leaves the VP; however, what moves to the right is not the lowest VP but the VP/XP dominating the idiom.[15]

Turning lastly to *decide*-infinitives, the assumption necessary is that in contrast to *try*-infinitives only the higher VPs/XPs can undergo rightward movement. Thus, depending again on the derived position of the object, either the XP or the VP-2 in (43b) moves to the right, but movement of the lowest VP is prohibited. While under the mixed account, the more restricted behavior of *decide*-infinitives could be derived from the structure of these infinitives (i.e., the presence of X^0, which blocks head-movement), it is not clear that the presence vs. absence of functional projections in the infinitive should have an effect on the possibility vs. impossibility of movement of the lowest VP in the pure phrasal movement approach. All else being equal, considerations of parsimony would seem to favor the mixed account sketched above; however, the ultimate decision between the two approaches evidently depends on the framework used:

(43) a. **XP-movement – *try*-infinitive:**



b. **XP-movement – *decide*-infinitive:**

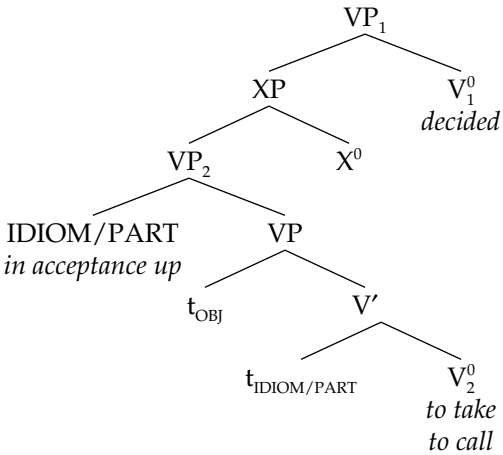


Table 75.6 Two head-final approaches to (some) verb clusters in Dutch

Constructions	Mixed approach	Pure XP-movement approach
Auxiliary–participle construction	Optional X^0-movement	Optional movement of lowest VP
Try-infinitives	X^0 or XP-movement	Movement of VP or higher XP
Decide-infinitives	XP-movement	Movement of higher XP
	X^0-movement impossible (HMC)	Movement of VP impossible
Particles	No movement	Optional movement Constraint: only string-vacuous movement
Idiomatic phrases	No movement	Obligatory movement Constraint: only string-vacuous movement

To conclude, if it is assumed that idiomatic phrases and particles are immobile, the distribution of these elements in Dutch verb clusters leads to the conclusion that both head- and phrasal movement are necessary to derive verb clusters under a head-final base structure. If it is assumed that idiomatic phrases and particles are not immobile per se but subject to a vacuous movement constraint, a pure phrasal movement approach can in principle be maintained. Table 75.6 summarizes the constructions discussed and the assumptions necessary to account for the distribution of these constructions in the mixed account and in a pure phrasal movement approach.

3.2 Verb projection raising

This section focuses on the distribution of non-verbal elements (such as objects, particles, and prepositional phrases) in verb-cluster constructions. A phenomenon that has interesting repercussions for a number of issues arising in the verb-cluster debate is that of verb projection raising, illustrated in (44) from WF, Afrikaans (AF), and SG. What is crucial in these constructions is that phrasal material appears between the verbs of a cluster:[16]

(44) **Verb projection raising – 1 – [. . . 2]:**

a. da Valère wilt vele boeken lezen WF
that Valère wants many books read
'that Valère wants to read many books' (Haegeman 1998c: 261)

b. da Jan . . . {da boek} wilt {da boek} vuor Marie kopen
that Jan . . . {that book} wants {that book} for Marie buy
'that Jan wants to buy that book for Marie' (Haegeman 1992: 148)

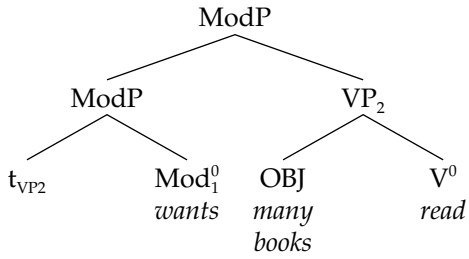
c. as hulle daar moet goeie onderwys gee AF
if they there must good education give
'if they must provide a good education there' (Robbers 1997: 76)

d. das si am Grendel wöt sini velore chlaue zruggeh SG
that she to-the Grendel wants his lost paw back-give
'that she wants to return the lost paw to Grendel'

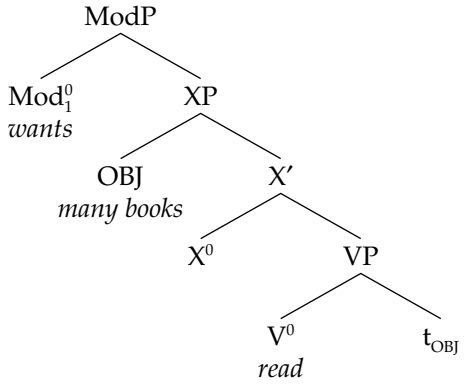
To derive these configurations under the head-final approach, the entire lower VP moves to the right of the modal verb (i.e., the object remains inside the VP as in (45a)). Equivalently, it could be assumed (see, for instance, Van den Wyngaerd 1989b) that the object moves to a functional projection outside the VP (e.g., SpecAgrOP) and that this functional projection rather than the VP undergoes movement to the right. To derive the examples in (44) under a head-initial approach, no verb or verb phrase movement takes place; the only movement operation necessary is object movement to a functional projection between the modal and the main verb (as in (45b)):

(45) **Verb projection raising – 1 – [. . . 2] (= (44a)):**

a. **Head-final base:**



b. **Head-initial base:**



Note that verb projection raising is not an obligatory phenomenon (except for certain elements; see below). In particular, in all of the above examples, the objects can also precede the higher verb. For the head-final approach, this means that the object can move out of the VP prior to VP movement in (45a) (or, under the AgrOP-movement analysis, one has to allow for either AgrOP movement or VP movement). For the head-initial approach, these facts indicate that the object

can move (further) to a functional projection above the higher verb. Thus, either approach has to involve some notion of optionality – in head-final approaches, optionality comes in as a choice between overt and covert movement of the object or a choice between two (or more) categories that can undergo verb projection raising (i.e., VP or AgrOP); in head-initial approaches, optionality comes in as an option for the ordering of functional projections (i.e., whether XP is below or above ModP in (45b)).

Looking across the West Germanic languages/dialects, there are some interesting restrictions and cross-linguistic generalizations regarding what elements can, cannot, or must intervene between the verbs of a verb cluster. First, verb projection raising is not possible in all West Germanic languages/dialects. Examples such as the verb projection raising ones in (44), for instance, are ungrammatical in Dutch (i.e., while Dutch allows the 1-2 order in these clusters, the object has to precede the higher verb). Second, we find that among the languages allowing verb projection raising structures, the types of elements that can occur inside a cluster are not the same across these languages. Although the distribution shows some degree of variation, there is also an interesting generalization that emerges. As can be seen in the summary in table 75.7 (illustrations will be provided below), the 'bigger' or the more 'independent' an element is, the less likely it is to be licensed as part of a verb cluster. Furthermore, if a language allows verb projection raising with elements from a certain category in table 75.7, it also allows verb projection raising with the elements that are in columns further to the left – i.e., if 'bigger' elements can occur in a cluster, all 'smaller' elements are also allowed to occur between the verbs of a cluster.

Let us begin with the distribution of particles which are considered the 'smallest' category. The claim that these elements are small finds support in the assumption (which most researchers make in one form or another) that particles form a complex head (whether base-generated or derived) at some level with the verb they are associated with. Importantly for the present discussion, these elements can be part of verb clusters in all languages (cf. (46a–e)), and in fact, they must

Table 75.7 Verb projection raising (with modals, auxiliaries)

Language	Separable particles	Low adverbs, idioms, bare Ns	Indefinite objects, PPs	Definite objects
Afrikaans	Obligatory[a]	Possible	%Possible	Impossible
Dutch	Possible	Marginal[b]	Impossible	Impossible
German	Obligatory[a]	Possible	%Possible	Impossible
Swiss	Obligatory[a]	Possible	Possible	Possible
West Flemish	Possible	Possible	Possible	Possible

Notes: **Adjustments**

[a] Obligatory with 'idiomatic' particles (cf. Robbers 1997, citing le Roux 1988); 'transparent' particles are marginal in stranded position in Swiss and German (Wurmbrand 1999b).

[b] Only possible if element is morphologically not complex (cf. Neeleman 1994a).

be part of the cluster and cannot be stranded in some of the languages (cf. the examples from AF, GE, and SG in (46a, c, d), respectively – DU = Dutch):[17]

(46) **Particles in verb clusters:**

a. Die bende sal ons {*aan} bly {aan} rand. AF
The gang will us {*on} remain {on} assault
'The gang will go on assaulting us.' (Robbers 1997: 61, fn. 14)

b. dat Jan zijn moeder {op} wil {op} bellen DU
that Jan his mother {up} wants {up} call
'that Jan wants to call his mother' (Neeleman 1994: 24)

c. dass er das Buch {*durch} hätte {durch} sehen sollen GE
that he the book {*through} had {through} look shall
'that he should have looked through the book'

d. dass er da Buech {*doere} het soele {doere} laese SG
that he the book {*through} has shall {through} read
'that he should have read (through) the book'
(Schönenberger p.c.; Haeberli p.c.)

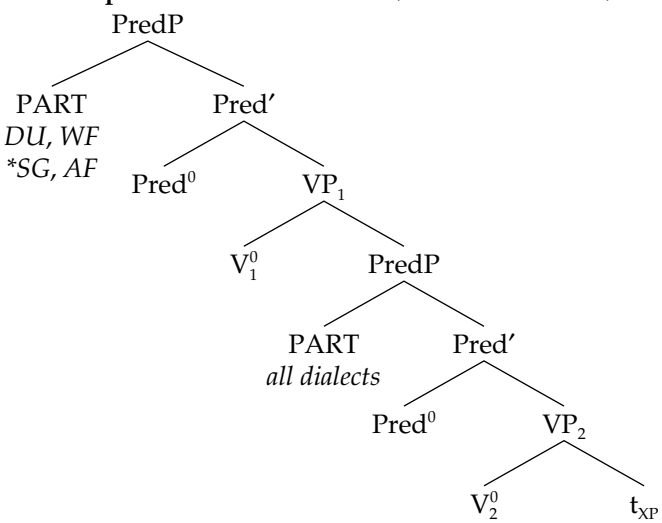
e. dan ze hem vu dienen cursus {in} moeten {in} schrijven WF
that they him for that course {in} must {in} write
'that they must register him for that course' (Rutten 1991: 60)

There are two basic ways to capture this distributional difference regarding particle placement. First, it has been assumed that the difference lies in the properties of the particles in the two language groups (i.e., DU and WF, on the one hand, and AF, GE, and SG, on the other hand). Second, it has been assumed that the difference lies in the properties of verb-cluster formation. Starting with the head-final approach, particle incorporation could be seen as obligatory in the non-stranding languages and optional (or optionally covert) in the stranding languages. Thus, independent of whether verb clusters are formed by head- or phrasal movement, in a language with obligatory overt incorporation of particles, particles will always be carried along with the verb or verb phrase, and hence the particle will show up next to the verb it is associated with. According to the second option, the difference between DU and WF, on the one hand, and AF, GE, and SG, on the other hand, would lie in a difference in the process of verb-cluster formation. If – as discussed in section 3.1.3 – it is assumed that particles are immobile, the difference could be seen as a contrast between the possibility (DU, etc.) vs. impossibility (GE, etc.) of head-movement to derive verb-cluster reordering (i.e., in the latter only phrasal movement is allowed, and hence stranding of the particles would be prohibited). Finally, under a pure phrasal movement approach to verb-cluster formation, it could be assumed that DU and WF allow leftward movement of particles prior to VP movement (and hence stranding of particles when the VP undergoes rightward movement), whereas particles cannot undergo phrasal movement in AF, GE, and SG. Turning to the head-initial approach, the most common assumption is that in AF, GE, and SG, the projection targeted by particles is directly above the phrase hosting the

verb with which the particle is associated, whereas the landing site for particles can be higher up the tree in DU and WF.

Thus, to account for the properties of particle placement in West Germanic, both the head-final and the head-initial approach require certain language-specific assumptions. The ultimate goal is to derive these assumptions from other properties of grammar; however, at this stage, it seems that this goal has not been reached. While there are accounts (such as Zwart 1996; see section 3.4.1) that provide algorithms for why particles can target higher positions in certain languages, it is still an open question why this position is not available in other languages. To be more specific, the question is how differences such as the one illustrated in (47) can be motivated. Assuming for simplicity a head-initial structure (although the same question arises for the head-final approach), AF, DU, SG, and WF allow the basic 1–2 order in modal–infinitive constructions, and hence involve a structure without verb-cluster movement. However, since the languages show a difference regarding the position where particles can go (DU and WF allow the particles to precede the higher verb, whereas AF and SG require the particle to be next to the lower verb), it has to be assumed that the landing site of particles (PredP) is different in the two language groups (i.e., PredP is above or below the higher verb). While this assumption derives the correct word order, it should also be noted that an analysis along these lines is based on a stipulation. That is, the stipulated ordering of functional projections gives us the right result, but the question as such remains: why can PredP be higher than VP-1 or why can particles move to a higher PredP in some languages but not in others?

(47) **Particle placement in 1-2 order (head-initial base):**



Thus, what seems to be still called for is an account that does not simply restate the distribution of particles (and in fact of all elements in table 75.7, as we

will see below) as assumptions about the ordering of syntactic projections, but that derives the variation from independent principles. More can be said about the intricacies of particle placement in West Germanic verb clusters, and some issues will be addressed in section 3.4; however, for the present discussion, the crucial observation is that particles are always allowed to interrupt a verb cluster (which, in the head-initial setting, could be seen as evidence for the presence of a PredP between the verbs of a cluster), but that particle placement is also driven by language-specific properties.

The next class of elements in table 75.7 consists of bare nouns, low adverbs, resultatives, and parts of idioms. Since the distribution of these elements is by and large the same in any given language, they will be considered together here (however, refinements are likely to be necessary). As is illustrated in (48), all languages allow these elements as parts of a verb cluster (modulo the restriction noted by Neeleman 1994a, namely that only morphologically non-complex elements are possible in DU; cf. the contrast between (48b′) and (48b″)). Furthermore, in contrast to particles, no language *requires* that these elements be part of the cluster:

(48) **Other 'small' elements in verb clusters:**

a. dat hulle hier kom water drink het AF
that they here come water drink have
'that they have come here to drink water' (Robbers 1997: 75)

a′. Jy sal seker moet vinnig reageer.
You will certainly must quickly reply
'You will certainly have to reply quickly.' (Robbers 1997: 83)

a″. Jy sal dit moet in ag neem.
You will it must into consideration take
'You will have to take this into consideration.' (Robbers 1997: 73)

b. dat Jan de deur {groen} wil {groen} verven DU
that Jan the door {green} wants {green} paint
'that Jan wants to paint the door green' (Neeleman 1994a: 24)

b′. dat Jan de meloen {open} zal {open} snijden
that Jan the melon {open} will {open} cut
'that Jan will cut open the melon' (Neeleman 1994a: 237)

b″. dat Jan de meloen {helemaal open} zal {*helemaal open} snijden
that Jan the melon {all-the-way open} will {*all-the-way open} cut
'that Jan will cut the melon all the way open' (Neeleman 1994a: 237)

b‴. dat Jan de bloemen {water} heeft willen {?*water} geven
that Jan the flowers {water} has want-ipp {?*water} give
'that Jan wanted to water the flowers' (Veraart p.c.)

c. daß er vor der Abreise noch {Blumen} hätte {Blumen} GE
that he before the departure still {flowers} had {flowers}
gießen sollen
water shall
'that he should have watered the flowers before his departure'

c′. dass er das Buch {genau} hätte {genau} durchsehen sollen
that he the book {carefully} had {carefully} through-look shall
'that he should have looked through the book carefully'

c″. daß er dieses Faktum {in Betracht} hätte {in Betracht}
that he this fact {in consideration} had {in consideration}
ziehen müssen
take must
'that he should have taken this fact into consideration'

d. dass er vor de Abreis no {Blueme} het soele SG
that he before the departure still {flowers} had shall
{Blueme} guesse
{flowers} water
'that he should have watered the flowers before his departure'
(Schönenberger p.c.; Haeberli p.c.)

d′. dass er da Buech {gnau} het soele {gnau} doere laese
that he the book {carefully} had shall {carefully} through read
'that he should have read through the book carefully'
(Schönenberger p.c.; Haeberli p.c.)

d″. dass er das {i Betracht} het soele {i Betracht} zieh
that he that {in consideration} had shall {in consideration} take
'that he should have taken this into consideration'
(Schönenberger p.c.; Haeberli p.c.)

e. da Jan dat boek absoluut wilt thuis lezen WF
that Jan that book absolutely wants at-home read
'that Jan absolutely wants to read that book at home'
(Haegeman 1992: 190)

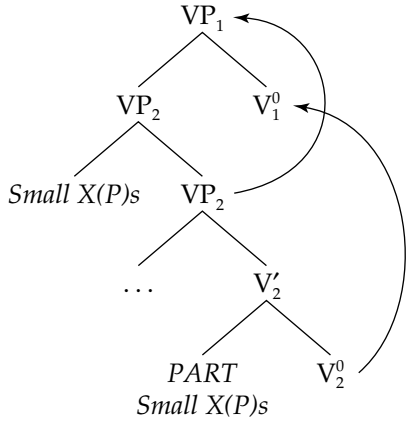
e′. da Valère oa willen morgen no Gent goan
that Valère had want-ipp tomorrow to Gent go
'that Valère had wanted to go to Gent tomorrow'
(Haegeman 1995a: 72)

The fact that the elements in (48) behave like particles in that they are allowed to split up a verb cluster (across West Germanic) could be seen as support for the claim that resultatives, bare nouns, idiom chunks, and perhaps certain adverbs share a common property with particles (e.g., they form a complex head with the verb as suggested by Neeleman 1994a, or they target the same functional projection – PredP in (45)). On the other hand, the fact that these elements do not have to be part of the verb cluster in any of the languages discussed shows that these elements also contrast with particles in some crucial respect (e.g., depending on one's analysis of particle constructions, the elements in (48) do not have to form a complex head with the verb, even in languages where particles are required to do so; or in the head-initial setting, the landing site of the elements in (48) can be further away from the verb than the one where particles must move to). The derivation of the word orders attested in verb clusters involving 'small' elements such as bare nouns, adverbs, etc., is fairly straightforward. The diagrams in (49)

illustrate possible head-final and head-initial derivations and summarize the assumptions necessary to capture the distribution of particles and other small elements in verb clusters. As in the case of particles, an open question regarding the distribution of these elements is whether the assumptions in (49) can be related to other properties of the particular languages, or whether they simply constitute irreducible language-specific facts that do not follow from other conditions or constraints but that must be learned for each language:

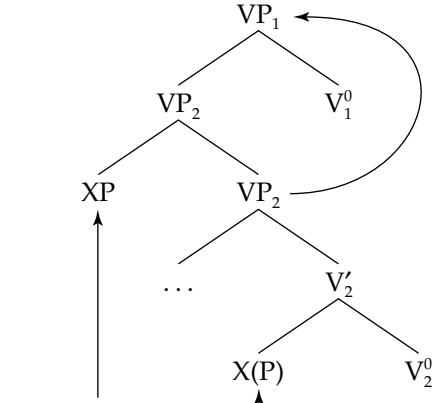
(49) **Verb projection raising with particles and other 'small' elements:**

a. **Head-final base – mixed account:**



X^0-movement: DU, WF
XP-movement: All others

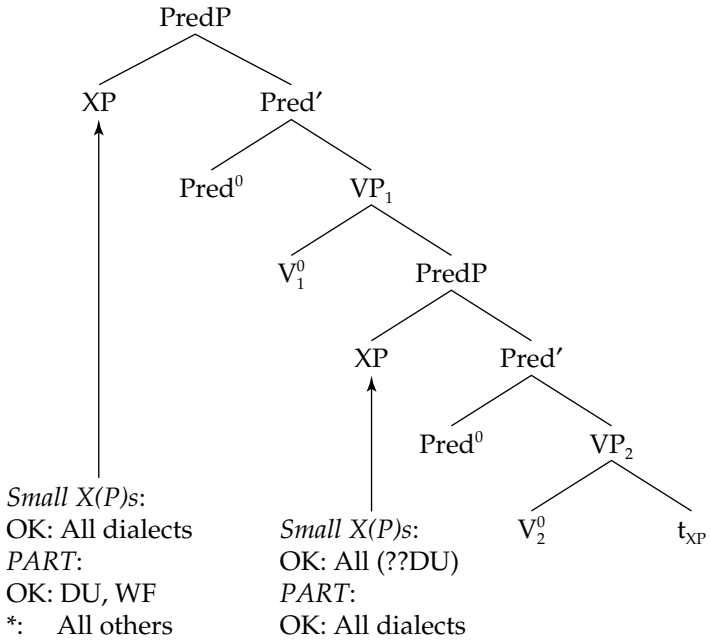
a'. **Head-final base – XP-movement account:**



Small X(P)s:
OK: All dialects
PART:
OK: DU, WF
*: All others

Small X(P)s:
OK: All (??DU)
PART:
OK: All dialects

b. **Head-initial base:**



The final two categories that have to be distinguished in verb projection raising constructions (see again table 75.7) are indefinite (or weak) noun phrases and prepositional phrase, on the one hand, and definite or (strong) noun phrases on the other hand. While the phrases of the former type are allowed to occur within a verb cluster in SG, WF, and (at least for some speakers) in AF and GE, the latter are allowed only to separate the verbs of a cluster in SG and WF. The examples in (50) illustrate this last difference found among the West Germanic dialects regarding the kind of material allowed in verb projection raising configurations (further examples illustrating verb projection raising in GE can be found in Den Besten and Broekhuis 1992; Broekhuis 1992: 190):

(50) **DPs and PPs in verb clusters:**

a. Dink jy ek sal kan in Pretoria bly? AF
Think you I will can in Pretoria stay
'Do you think I will be able to get a place to stay in Pretoria?'
(Robbers 1997: 82)

a'. %Ek sal nou kan twee boeke betaal.
I will now can two books pay
'I will now be able to pay for two books.' (Robbers 1997: 77)

a''. *Sy sal graag wil die boek lees.
she will gladly want the book read
'She would be happy to read the book.'
(Robbers 1997: 78; my paraphrase)

b. dat Jan {naar Wenen} heeft willen {*naar Wenen} gaan DU
that Jan {to Vienna} has want-ipp {*to Vienna} go
'that Jan wanted to go to Vienna' (Veraart p.c.)

b′. dat Jan {een huis} wil {*een huis} kopen
that Jan {a house} wants {*a house} buy
'that Jan wants to buy a house'
(Haegeman and Van Riemsdijk 1986: 419)

b″. dat Jan {het huis} wil {*het huis} kopen
that Jan {the house} wants {*the house} buy
'that Jan wants to buy the house' (Veraart p.c.)

c. %dass er nicht hätte nach Turkestan fahren sollen GE
that he not had to Turkestan go shall
'that he should not have gone to Turkestan'

c′. %dass er zumindest hätte einen Trostpreis gewinnen sollen
that he at least had a consolation prize win shall
'that he should at least have won a consolation prize'

c″. *dass er vor der Abreise hätte die Kakteen gießen sollen
that he before the departure had the cacti water shall
'that he should have watered the cacti before his departure'

d. dass er noed het soele noch Turkeschtan fahre SG
that he not had shall to Turkestan go
'that he should not have gone to Turkestan'
(Schönenberger p.c.; Haeberli p.c.)

d′. dass er vor de Abreis het sole pBlueme/t Rose guesse
that he before the departure had shall the-flowers/the roses water
'that he should have watered the flowers/roses before his departure'
(Schönenberger p.c.; Haeberli p.c.)

d″. dass er het soele da Buech gnau doerelaese
that he had shall the book carefully through-read
'that he should have read through the book carefully'
(Schönenberger p.c.; Haeberli p.c.)

e. da Jan . . . {da boek} wilt {da boek} vuor Marie kopen WF
that Jan . . . {that book} wants {that book} for Marie buy
'that Jan wants to buy that book for Marie'
(Haegeman 1992: 148)

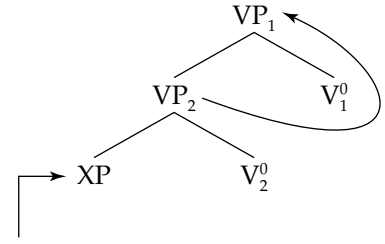
e′. da Valère wilt vele boeken lezen / een hus kopen
that Valère wants many books read / a house buy
'that Valère wants to read many books/buy a house'
(Haegeman 1998c: 261; Haegeman and Van Riemsdijk 1986: 419)

e″. da Valère willen [Marie dienen boek geven] eet
that Valère want-ipp [Marie that book give] has
'that Valère has wanted to give Marie that book'
(Haegeman 1998c: 260)

Under a head-final approach (cf. (51a)), definite objects must leave the VP prior to verb projection raising in AF, DU, and GE. For some AF and GE speakers, indefinite objects and prepositional phrases can remain inside the VP. Finally, in WF and SG, objects and prepositional phrases can be part of the projection that undergoes rightward movement. Under a head-initial approach (cf. (51b)), all XPs must leave the VP; indefinite objects and prepositional phrases can target a position lower than the higher verb in SG and WF, and in some AF and GE dialects. Definite objects can target the intermediate position in SG and WF, but they must move to a position higher than the highest verb in all other dialects:

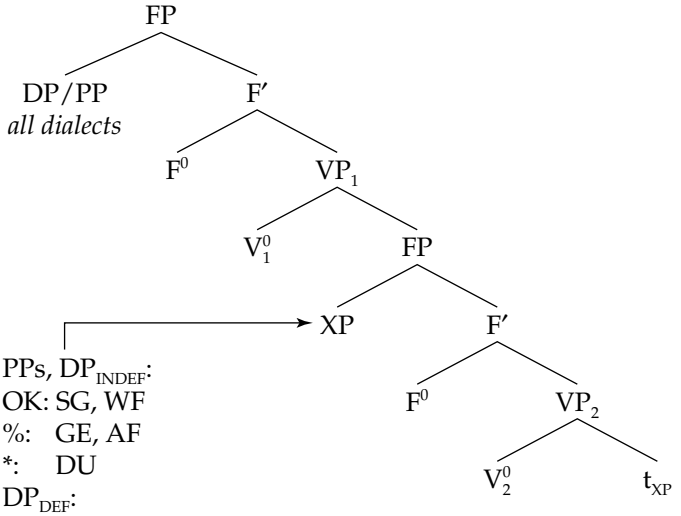
(51) **Verb projection raising with objects and prepositional phrases:**

a. **Head-final base – XP-movement account:**



t_{XP}: OK: All dialects
PP/DP_{INDF}: OK: SG, WF
%: AF, GE
*: DU
DP_{DEF}: OK: SG, WF
*: AF, DU, GE

b. **Head-initial base:**



PPs, DP_{INDEF}:
OK: SG, WF
%: GE, AF
*: DU
DP_{DEF}:
OK: SG, WF
*: All other dialects

Parts of the above distribution of objects and prepositional phrases in verb clusters can be related to inherent differences between these elements. In particular, a frequent assumption is that definite objects are subject to different licensing conditions than indefinite objects (or more accurately, the conditions differ depending on whether an object represents old or new information). In more detail, it is commonly assumed that definite objects in contrast to indefinite objects must leave the VP for semantic reasons (see, for instance, Diesing 1990a, 1996, 1997; Bobaljik 1995; among many others). Thus, if it is assumed that definite objects are required to move to a VP-external position (head-final approach) or that they must target a higher specifier than indefinite objects and prepositional phrases (head-initial approach), the difference encountered in AF and GE between definite and indefinite objects can be related to the semantic difference of the elements involved. The distribution of objects in verb clusters thus provides further evidence for this view. However, unfortunately, this semantic correlation captures only parts of the distribution. Further language-specific assumptions are again necessary to account, e.g., for the fact that definite objects can target the lower FP (in a structure like (51b)) in SG and WF, or the fact that the lower FP is unavailable for all objects in DU (and for some AF and GE speakers).

In conclusion, the verb projection raising phenomenon is not an absolute property of a language (i.e., languages do not simply allow or disallow verb projection raising structures), but the felicity of these structures depends crucially on the type of material that occurs between the verbs of a cluster. Comparing the composition of verb clusters across West Germanic, some interesting generalizations regarding the material that can occur interspersed in a verb cluster can be found. However, the distribution of verb projection raising material is also subject to language-specific properties that do not necessarily follow from other properties of grammar.

3.3 Motivation for verb-cluster movement

One of the biggest challenges verb clusters provide for syntactic theories is the fact that the orders found in verb clusters are to some extent arbitrary (though, as we have seen, there are some robust generalizations). Hence in order to develop an explanatory account for the facts noted that goes beyond the statements in tables 75.3 or 75.4, one has to find principles that motivate the verb-cluster reorderings found across languages and that exclude the structures that are unattested (both cross-linguistically and in any particular language). The issue of the motivation of verb-cluster movement has been approached by many researchers, and the general idea most analyses are built on is that verb-cluster movements are triggered by the presence of certain syntactic features or the needs of various elements to fulfill certain licensing conditions. If these features or conditions can be independently motivated, an account deriving the distribution of verb clusters by means of these features or licensing conditions would

offer an insightful explanation for the phenomenon, and hence be clearly preferable to the descriptive accounts outlined in section 2.4.

This section will focus on the issue of the motivation of verb-cluster formation, and it will be shown that, while there are numerous ways to account for the distribution of verb clusters by the assumption of features that have to be checked or licensing conditions that have to be met, there nevertheless does not seem to be a principled way to motivate differences among languages. What we will see is that generally, these features or conditions are simply stated as being present in one language vs. absent in another, or weak in one language vs. strong in another, and moreover they are not related to any other property of the particular language (group) they are postulated for. Thus, many verb cluster triggers end up as 'parameters' that capture only the facts of verb-cluster reordering in one particular language. The conclusion will be that, although perhaps 'dressed' in a nicer way than the inversion rules in tables 75.3 or 75.4, assumptions along the lines of 'language A has feature X but language B does not have feature X', or 'feature X is strong in language A but weak in language B', are nevertheless arbitrary stipulations with little or no predictive power, and hence the postulation of these assumptions contributes little to the basic questions of how verb-cluster structures are motivated and why this phenomenon exists. It should be emphasized, however, that the aim of this perhaps slightly negative discussion is not to criticize any of the existing approaches to verb clusters, but rather to point out that there are issues that have not been settled yet and hence offer an interesting terrain for further research.

To illustrate the problem of motivating verb-cluster movements, it will suffice to look at the distribution of two-verb clusters. To recapitulate, in the head-final approach, it is assumed that the 1-2 order is derived by movement, whereas in the head-initial approach, the 2-1 order requires movement. Tables 75.8 and 75.9

Table 75.8 Five language types (two verbs): head-final derivations

Language	Order: AUX-PART	Derivation	Order: MOD-INF	Derivation
GE, Frisian	2-1	No movement	2-1	No movement
DU (1 = non-FIN)	2-1/1-2	Optional movement	*2-1/1-2	Obligatory movement
Swiss-1	2-1	No movement	2-1/1-2	Optional movement
Swiss-2, DU (1 = FIN)	2-1/1-2	Optional movement	2-1/1-2	Optional movement
WF, AF	2-1	No movement	*2-1/1-2	Obligatory movement
Unattested	*2-1/1-2	Obligatory movement		
Unattested	2-1/1-2	Optional movement	2-1/*1-2	No movement possible

Table 75.9 Five language types (two verbs): head-initial derivations

Language	Order: AUX-PART	Derivation	Order: MOD-INF	Derivation
GE, Frisian	2-1	Obligatory movement	2-1	Obligatory movement
DU (1 = non-FIN)	2-1/1-2	Optional movement	*2-1/1-2	No movement
Swiss-1	2-1	Obligatory movement	2-1/1-2	Optional movement
Swiss-2, DU (1 = FIN)	2-1/1-2	Optional movement	2-1/1-2	Optional movement
WF, AF	2-1	Obligatory movement	*2-1/1-2	No movement
Unattested	*2-1/1-2	No movement possible		
Unattested	2-1/1-2	Optional movement	2-1/*1-2	Obligatory movement

summarize the distribution of two-verb clusters in the languages discussed and also list whether movement is necessary, possible, or impossible in each of the constructions (table 75.8 is from a head-final perspective, and table 75.9 is from a head-initial perspective).

The descriptive accounts offered in section 2.4 derive this distribution by rules demanding, allowing, or prohibiting the reordering of the elements involved (e.g., the head-final settings specify that AF and WF require a shift between modals and their complements, whereas the head-initial settings specify that these two languages require a shift between certain auxiliaries and their complements). As noted, these rules are arbitrary and do not offer a way of accounting for the unattested orders. That is, nothing should prevent a rule that requires (head-final) or disallows (head-initial) inversion between auxiliaries and participles; or a rule that allows inversion between auxiliaries and participles but prohibits it (head-final) or requires it (head-initial) for modals and auxiliaries. The aim of an explanatory syntactic account is thus to (i) derive the distribution in tables 75.8 and 75.9 (i.e., account for what is possible *and* what is impossible), and (ii) motivate the operations by principles independently attested (either cross-linguistically or in the particular language). The next subsections summarize and evaluate three types of approaches to verb-cluster formation in light of these two criteria.

3.3.1 Overt vs. covert movement

A common way of encoding (word-order) differences between languages is to assume that movement of a particular type applies in all languages, but that languages differ as to whether a particular movement operation is overt or covert (see, for instance, Zwart 1996 for assumptions along these lines). To accommodate West Germanic two-verb clusters, one would then have to assume the

following overt/covert settings (note that it does not matter for the discussion here if covert movement is seen as movement at LF or overt movement with pronunciation of the lower copy):

(52) **Overt/covert settings for two-verb clusters:**

a. **Head-final structure:**

GE, Frisian:	Infinitives and participles move covertly
DU (1 = non-FIN):	Infinitives move overtly, participles overtly or covertly
DU, Swiss-2:	Infinitives and participles move overtly or covertly
Swiss-1:	Infinitives move overtly or covertly, participles covertly
WF, AF:	Infinitives move overtly, participles covertly

b. **Head-initial structure:**

GE, Frisian:	Infinitives and participles move overtly
DU (1 = non-FIN):	Infinitives move covertly, participles overtly or covertly
DU, Swiss-2:	Infinitives and participles move overtly or covertly
Swiss-1:	Infinitives move overtly or covertly, participles overtly
WF, AF:	Infinitives move covertly, participles overtly

While the settings in (52) derive the possible word orders in the languages listed, the question arises whether this approach goes beyond the descriptive accounts presented in section 2.4. It seems that the two criteria mentioned above for an explanatory account are both unfulfilled. First, although the overt/covert approach accounts for what is possible across the languages discussed, it does not account for what is impossible. That is, there is no reason why there should not be a language with the settings 'participles move overtly' or 'participles move overtly or covertly and infinitives move covertly' (head-final), or the settings 'participles move covertly' or 'participles move overtly or covertly and infinitives move overtly' (head-initial). Second, the overt/covert assumptions in (52) do not correlate with any other property found in the language(s) discussed but only serve the purpose of deriving the word orders in verb clusters – i.e., they are not independently motivated and as such are as good or bad as the inversion rules in tables 75.3 or 75.4.

3.3.2 Positional approach without covert movement

A different (more recent) approach to word-order variation is what will be called the 'positional' approach here. The core idea of positional analyses is that word-order differences are not the result of a difference in the timing of movement, but rather arise from different positions an element can occupy in different languages. This approach is a direct consequence of recent expansions

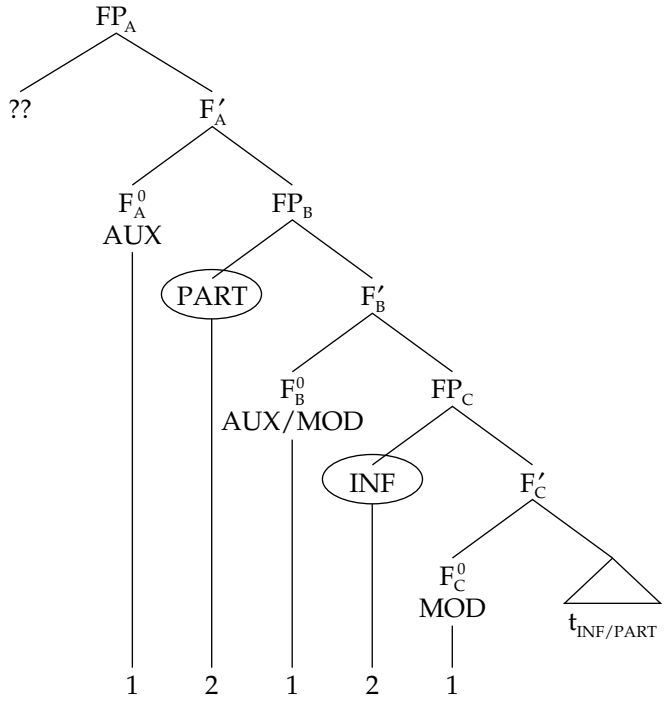
of phrase structure (as, for instance, suggested by Rizzi 1997 or Cinque 1999) and the Minimalist idea that movement is triggered by the presence of features. In particular, the increase of the number of functional projections offers new landing sites for movement, and hence ways to encode differences between languages without reference to an overt/covert distinction. The step from the traditional verb (projection) raising approach to an analysis of verb-cluster movement as movement to functional projections also (partially) solves a constant problem arising for V-to-V and VP-to-VP raising analyses – namely, the question of how movement can be motivated. In particular, head-movement (i.e., movement of a lexical head to another lexical head) has proven quite difficult to motivate since, as pointed out by Den Dikken (2000), lexical heads typically do not serve as attractors and the assumption of a featural deficiency is insufficient to account for the optionality of verb-cluster movement in many dialects.

The idea that word-order variation is the result of different positions rather than an overt/covert distinction is reflected (fully or partly) in many recent analyses of verb clusters (see Haegeman 1995a, 1998b, 1998c; Den Dikken and Hoekstra 1997; Robbers 1997; Koopman and Szabolcsi 2000; among many others). The challenge of positional analyses is to avoid overgeneration and to limit the options offered by the (in principle unrestricted) number of functional projections (i.e., although the core idea of positional analyses is that certain elements can occur in different positions in different languages, it is not the case that they can occur just anywhere). The general approach to the overgeneralization problem is to assume that one of the elements in a two-verb cluster is fixed to one (derived) position, whereas the other element is arranged around it. Haegeman (1995a, 1998b, 1998c), for instance, assumes that the positions of the participle and the infinitive are fixed, whereas the positions of the auxiliary and the modal are variable. Robbers (1997) and Zwart (1996), on the other hand, assume that the position of the auxiliary is fixed, whereas the position of the participle is variable (Zwart's account also makes use of an overt/covert distinction).

Turning to two-verb clusters, a positional account is outlined in (53). As can be seen, three functional projections are necessary to account for the word-order differences in the languages discussed. SpecFP(B) has been chosen as the designated position for participles, whereas SpecFP(C) is the position targeted by infinitives. That is, under a positional approach, participles (cross-linguistically) move to SpecFP(B) and infinitives move to SpecFP(C) in overt syntax. Modals and auxiliaries, on the other hand, are variable in that they can occur in F(A), F(B), or F(C). Thus, if the auxiliary occupies F(A), the 1-2 order is derived; if it occupies F(B) or F(C), the 2-1 order is derived. Similarly, if the modal is in F(A) or F(B), the 1-2 order is derived; if it is in F(C), the 2-1 order is derived (to limit the positions, it would be sufficient to assume that auxiliaries occupy either F(A) or F(B), whereas modals occupy either F(B) or F(C); cf. (53a)). The variation found across West Germanic can now be derived from the settings in (53b):

(53) **Positional analysis of two-verb clusters:**

a. **Structure:**



b. **Settings:**

GE, Frisian:	AUX: F(B/C)	MOD: F(C)
DU (1=non-FIN):	AUX: F(A, B/C)	MOD: F(A/B)
DU, Swiss-2:	AUX: F(A, B/C)	MOD: F(A/B, C)
Swiss-1:	AUX: F(B/C)	MOD: F(A/B, C)
WF, AF:	AUX: F(B/C)	MOD: F(A/B)

This approach is appealing, since it reduces the variation found across languages to simple claims about the position of certain elements. Despite this, the question one has to ask is whether an account involving assumptions of the form in (53) is an explanatory account. That is, does this approach make any predictions about impossible combinations, and are the assumptions in (53) independently motivated? Unfortunately, it seems that the answers are again negative. First, it is not clear under this approach why certain combinations are unattested. In particular, there are no languages/dialects that require auxiliaries to occupy F(A) only; and there are no languages/dialects that allow auxiliaries in any position but require modals to occur in F(C). Regarding the former case, one might suggest that languages that allow auxiliaries only in F(A) and not in F(B) do not exist, since overt specifier–head configurations between elements that are in some checking relation (such as auxiliaries and participles) have to be at least

possible in every language. However, this seems to be falsified by WF and AF, which allow modals only in F(A)/(B) and not in F(C) (i.e., an overt specifier–head configuration between two elements in a checking relation is *not* allowed in these languages). Thus, while the positional approach derives the possible orders, it does not provide any obvious way other than by stipulation to exclude the unattested configurations.

An answer to the second question of the explanatory value of positional approaches such as the one outlined above crucially depends on whether it is possible to assign a function or meaning to the functional projections in (53). As for F(B) and F(C), it could be assumed that these heads are the designated positions for auxiliaries (i.e., F(B) encodes, e.g., aspectual information) and modal verbs (i.e., F(C) encodes modality). Furthermore, the idea that these heads must enter into a checking relation (i.e., in particular a specifier–head relation) with a participle (SpecF(B)) or an infinitive (SpecF(C)) is a fairly standard assumption in theories that define licensing as checking in specifier–head configurations. A question, however, arises regarding the highest projection F(A): what type of information or feature is expressed by this projection? It is not obvious what the answer to this question is. A similar concern arises for F(B). Assuming that F(C) represents the base position for modals, one has to ask why modals can or must move further to F(B) in certain languages.

This question becomes an even more important issue if we look more closely at the way positional analyses (in particular, pure surface positional analyses that dispense with covert movement) handle optionality. Although positional analyses are built on the claim that certain elements can occur in different positions (both within one language and across languages), on closer inspection, this optionality seems in fact to be inherently inconsistent with a pure positional approach. To illustrate this problem, a concrete example will be examined in more detail. As we have seen above, in DU and Swiss-2, modals and auxiliaries can occur in any of the functional heads postulated (i.e., they can either precede or follow the participle and infinitive). There are two ways to derive this optionality. First, it can be assumed that modals and auxiliaries do not have universally designated positions but are inserted in different positions in different languages and/or constructions. Second, modals and auxiliaries are base-generated (universally) in designated positions (i.e., modals in F(C) and auxiliaries in F(B)) and undergo further movement in some languages. Regarding the first option, it should be noted that this does not provide a way to relate the assumption about where elements are inserted in a particular language to any other property (even the idea that the functional projections in (53) are related to notions such as aspect or modality would be given up in this approach). Thus, since this option is entirely descriptive, in that it simply states the order of elements in a clause, it lacks any explanatory value and hence does not provide any insight into the distribution of verbal elements.

According to the second option, modals and auxiliaries are inserted universally in the lower positions; in DU and Swiss-2, however, these elements have

a choice of moving on or remaining in their base positions. Since in a pure positional account no covert movement is available, it must be the case that all licensing/checking requirements are met in surface positions. For DU and Swiss-2 modals and auxiliaries, this means that since these elements can stay in the lower positions (i.e., in F(C) or F(B), in the 2-1 orders), they must also be licensed in the lower positions (otherwise, the 2-1 orders should be ungrammatical, given that covert movement is unavailable). However, if this is the case, a serious question arises for the orders that involve movement. What triggers this movement? The conclusion one must draw is that this movement must be untriggered and cannot be caused by any licensing/checking requirement. If there were such a requirement, it would not be met in the case where movement does not occur (again, since this approach rejects covert movement). Thus, under these premises, movement as in DU or Swiss would have to be movement that is not motivated by any syntactic licensing requirement. The only way licensing could be built into such an approach is if it is assumed that the 1-2 order and the 2-1 order involve crucially different features or properties that must be licensed in different positions. However, the works on verb clusters seem to agree that apart from word order there is no difference between examples showing the 1-2 order and those showing the 2-1 order (furthermore, this claim would lead one to conclude that the constructions corresponding to *John must leave* are entirely different constructions in WF and GE, despite the fact that they mean the same).

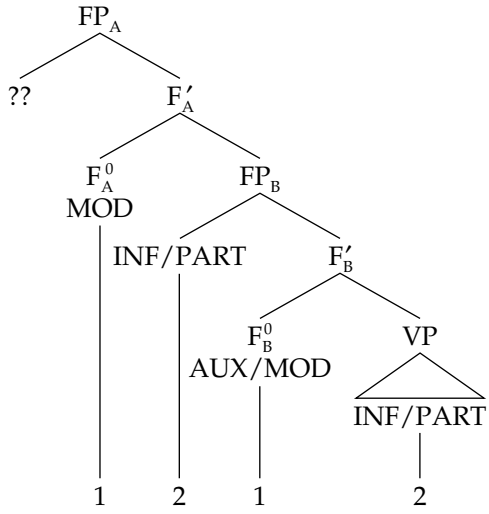
To conclude, a positional approach that is based on the claims that (i) there is no covert movement, and (ii) movement is motivated by feature checking, leads to a paradox that can only be solved by giving up one of the two assumptions. If the second assumption is given up – i.e., if movement is not considered to be motivated – the assumptions in (53) reduce to stipulations about whether certain elements can or cannot precede other elements. Hence, an account along these lines would not go beyond simple descriptive statements about the word order in verb clusters, and therefore cannot be seen as superior to the descriptive accounts outlined in section 2.4. The second option – i.e., a positional account that allows covert movement – seems more promising, and will therefore be discussed in some more detail in the next subsection.

3.3.3 Positional approach with covert movement

In a combined positional and overt/covert account, the minimal structure for two-verb clusters would be as in (54). In (54), auxiliaries occur in F(B), infinitives and participles move overtly or covertly to SpecFP(B), and modals can occupy either F(A) or F(B). Thus, if VP-movement is covert, the 1-2 orders are derived; if VP-movement is overt, the 2-1 order is derived in the auxiliary–participle construction, and either the 1-2 or the 2-1 order in the modal–infinitive construction, depending on the position of the modal. The settings necessary to account for the distribution of two-verb clusters in the languages discussed are listed in (54b):

(54) **Positional analysis of two-verb clusters and covert movment:**

a. **Structure:**



b. **Settings:**

GE, Frisian:	MOD in F(B); overt movement
DU (1 = non-FIN):	Non-fin MOD in F(A); overt/covert
DU, Swiss-2:	MOD in F(A) or F(B); overt or covert movement
Swiss-1:	MOD in F(A) or F(B); overt movement
WF, AF:	MOD in F(A); overt movement

As these settings show, the advantage of a combined positional and overt/covert system over an account as outlined in section 3.3.1 (i.e., an account that makes use of only the overt/covert distinction to account for differences between constructions and languages) is that a single overt/covert setting is sufficient in (54) for all constructions (and languages), and no construction-specific stipulations are necessary to derive differences between auxiliary–participle constructions and modal–infinitive constructions. Nevertheless, the system in (54) involves two types of parameters that have to be set for each language: an option between overt and covert movement and an option between two positions for modals. The two positions for modals are essential to account, for instance, for the difference between GE and WF. In both languages, overt VP movement takes place, which guarantees that auxiliary–participle constructions appear in the 2-1 order. However, to derive the 1-2 order in modal–infinitive constructions in WF and AF but not in GE (by keeping the claim that VP movement is overt in these languages; if it were overt for participles but covert for infinitives in WF and AF, we would end up again with a system such as the one in (52)), two positions for modals are necessary.

To return to the major question of this section, we now have to ask again whether a system such as (54) meets the criteria of an explanatory account. Let

us first consider if a positional account involving overt and covert movement can exclude the unattested cases. In the scenario in (54), these would be languages with obligatory covert movement, and languages with overt or covert movement for participles but obligatorily covert movement for infinitives. Thus, to exclude these scenarios, all one has to do is to add a ban on obligatorily covert movement and a requirement that the overt/covert parameter is set uniformly for all constructions in one language. Thus, while these assumptions would have to be evaluated with respect to other constructions (in particular, they must be tested in three-verb clusters), it is important to note that this account appears to be the most successful one in providing a way to approach this overgeneralization problem.

Without engaging in an endless discussion of larger verb-cluster constructions, there are, however, two concerns that cast some doubt on the straightforwardness of the account outlined in (54). First, the system in (54) crucially relies on the assumption that cross-linguistically, auxiliaries occur in a fixed position, whereas modals and main verbs have a choice. It is not easy to see why there should be this distinction. In particular, the difference between modals and auxiliaries does not seem to follow from any obvious property of these elements, and hence one could easily imagine the opposite situation (it is also important to note in this respect that this difference between modals and auxiliaries is essential to exclude the impossible orders, as suggested above). The second question the account in (54) is faced with is whether the settings can be independently motivated or whether they only serve the purpose of deriving (two-)verb clusters. One way to motivate the two functional projections in (54) is to assume that FP(B) is the projection responsible for the licensing of auxiliaries (F(B)) and main verbs (SpecF(B)), whereas FP(A) is the projection responsible for the licensing of modals.[18] Under this assumption, modals which start out in F(B) or a lower VP move (overtly or covertly) to F(A) to check whatever 'modal' features have to be checked. Thus, in WF and AF, for instance, modals move overtly, whereas in GE and Frisian, they move covertly. However, assuming that much, a re-evaluation of the point that has been mentioned as an advantage of this system seems necessary. Although no construction-specific settings are necessary under this approach for auxiliaries, infinitives, and participles, and a general overt/covert setting is sufficient for VP movement, the distribution of modals does require additional assumptions. In particular, GE and Frisian require different timing settings for VP movement (which must be overt) and movement of modals (which must be covert). Thus, the claim that there is a uniform overt/covert setting should be qualified; in particular, different timing settings must be stipulated for modals, on the one hand, and main verbs, on the other hand. To conclude, although the system in (54) appears attractive in its restrictiveness, it nevertheless – like the other approaches sketched – involves crucial stipulations that do no more than state the orders of verbal elements in a cluster.

In sum, the discussion in this section has shown that to account for the distribution of West Germanic two-verb clusters, all three approaches outlined above

must make crucial reference to category-specific assumptions (in terms of either the timing of movement or the position a particular category targets). In particular, what seems to be unavoidable is the assumption of two differences that so far have not been correlated with any other (universal or language-specific) property: (i) an overt vs. covert difference or different positions for different categories within one language (i.e., an element occurs in FP(A) vs. FP(B) depending on the category of the element, such as modal, auxiliary, etc.); and (ii) an overt vs. covert difference or different positions for elements of the same category in different languages (i.e., an element of a particular type occurs in FP(A) vs. FP(B) depending on the language). To conclude, while it is undoubtedly the case that descriptive accounts such as the ones presented in tables 75.3 and 75.4 are unattractive for their lack of explanatory value, it is not clear at the current stage of the research on verb clusters that it is trivial (or possible at all) to come up with an alternative that does not suffer from these very same inadequacies.

3.4 The issue of directionality

A central question in many works on West Germanic verb clusters is the question of whether a head-initial or head-final approach can be considered as superior (for works that directly address the issue of directionality see, for instance, Kaan 1992a, 1992b; Koster 1994; Den Dikken 1994, 1995d, 1996; Den Dikken and Hoekstra 1997; Zwart 1996; Robbers 1997; Haegeman 1998c; Koopman and Szabolcsi 2000; Ackema 2004). In this section, some of the issues and problems that have been raised in the discussions of the directionality issue will be highlighted.

As the illustrations of the various options to derive verb-cluster configurations have shown (see in particular section 3.1), the answer to the directionality question does not lie in success vs. failure of the (mechanical) derivation of verb-cluster patterns. Both a head-final and a head-initial approach have the tools to create the right word orders by movement. Rather, one has to look for an answer by considering questions of the explanatory value of the approaches under consideration. The common questions that have been raised in this respect are again the two questions utilized in the previous section. First, is one of the two approaches superior in that it not only accounts for what is possible but also accounts for what is impossible (universally and in any particular language)? Second, is one of the two accounts superior in that it not only provides possible derivations but also offers motivations for the operations postulated? The works cited above claim to have positive answers to these questions. Den Dikken (1994, 1995d, 1996) investigates the scope properties in WF verb clusters, and argues for the superiority of a head-initial approach. Zwart (1996) discusses the distribution of verb clusters in a number of West Germanic languages and dialects, and concludes that the variation found across West Germanic is best accounted for in a head-initial approach. The same conclusion is reached by Robbers (1997) for AF and by Haegeman (1998c) for WF. Since Zwart's analysis covers a range of languages and constructions, and the directionality issue appears to be the foremost

goal of Zwart's contribution, it will be used here as a 'straw-man' for head-initial approaches. Zwart's contribution is also noteworthy in that it not only offers an analysis for various verb-cluster constructions, but also provides an explicit comparison between the head-final and the head-initial approach that takes into account the questions raised above. To present the directionality debate, Zwart's analysis and critique of head-final approaches will be summarized first (section 3.4.1). Section 3.4.2 will then provide a discussion and comparison of the head-initial approach with a head-final approach. The conclusion will be that certain questions pointed out by Zwart are important challenges – not, as Zwart concludes, solely for head-final approaches, but rather for accounts of verb clusters in general.

3.4.1 Zwart (1996)

The constructions Zwart concentrates on and provides an analysis for are the auxiliary–participle construction and the modal–auxiliary–participle construction (i.e., the constructions showing the greatest variability in DU; see table 75.2). The examples in (55–57) summarize the distribution of these verb clusters. To recapitulate, as is shown in (55), the order between the two verbs in an auxiliary–participle construction is free (but see Zwart for some remarks concerning dialect preferences). In modal–auxiliary–participle constructions (cf. (56)), the unmarked orders are 1-2-3 and 3-1-2, and some speakers also accept the 1-3-2 order. Furthermore, Zwart discusses the distribution of particles in these constructions. As is illustrated in (57), the generalizations regarding particle placement are: (i) the particle has to follow the object; and (ii) the particle has to precede the verb it is associated with:[19]

(55) **Auxiliary–participle construction (with particle verb):**
   a. dat Jan {*uit} het boek {uit} heeft {uit} gelezen (1-2)
      that Jan {*out} the book {out} has {out} read
      'that Jan has read/finished the book'
   b. dat Jan {*uit} het boek {uit} gelezen {*uit} heeft (2-1)
      that Jan {*out} the book {out} read {*out} has
      'that Jan has read/finished the book'

(56) **Modal–auxiliary–participle construction:**
   a. dat Jan het boek moet hebben gelezen (1-2-3)
      that Jan the book must have read
      'that Jan must have read the book'
   b. dat Jan het boek gelezen moet hebben (3-1-2)
      that Jan the book read must have
      'that Jan must have read the book'
   c. %dat Jan het boek moet gelezen hebben (1-3-2)
      that Jan the book must read have
      'that Jan must have read the book'
   d. *All others (some dialects marginally allow 3-2-1).

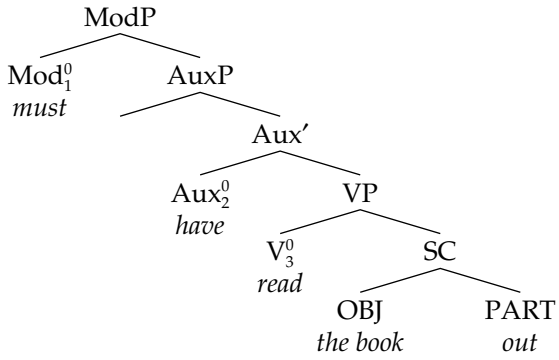
(57) **Modal–auxiliary–participle construction (with particles):**

a. dat Jan {*uit} het boek {uit} moet {uit} hebben {uit} gelezen (1-2-3)
that Jan {*out} the book {out} must {out} have {out} read
'that Jan must have read/finished the book'

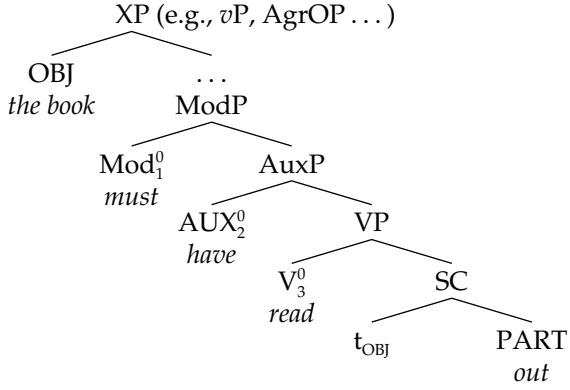
b. dat Jan {*uit} het boek {uit} gelezen {*uit} moet {*uit} hebben (3-1-2)
that Jan {*out} the book {out} read {*out} must {*out} have
'that Jan must have read/finished the book'

Let us now turn to Zwart's analysis of the clusters in (55–57). The core assumption in Zwart's approach is that – starting from a basic structure as in (58a) – a number of 'licensing' operations (i.e., movements to specifier positions of functional projections to check features) have to apply. First, the object obligatorily moves to an object licensing position (e.g., Spec AgrOP), which is the highest licensing position in the cluster (i.e., it is above the licensing positions of particles and participles, but lower than the licensing position of the subject; cf. (58b)). This is a fairly straightforward assumption, except that (in contrast to what is generally assumed for object shift in Germanic) this movement has to apply obligatorily for all objects (i.e., it is not sensitive to notions such as definiteness, old vs. new information, etc.):

(58) a. **Base structure:**

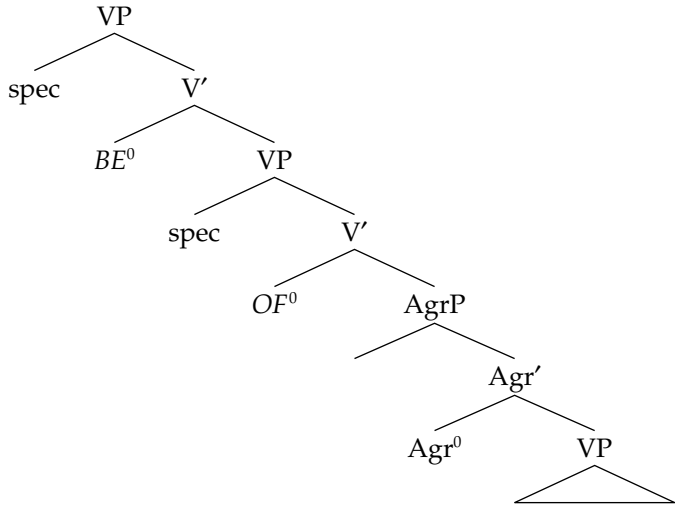


b. **Object movement:**

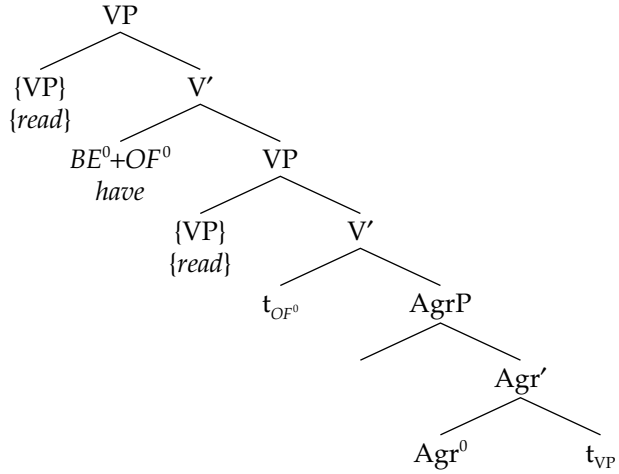


The second and most innovative licensing operation is the one that applies to participles. According to Zwart, participles also move obligatorily; however, they can move to one of two positions in DU. Following Kayne (1993), Zwart assumes that the auxiliary *have* is composed of two heads: *OF* and *BE* (cf. (59a)). The complement of *OF* is a small clause consisting of an AGR phrase, which in turn selects a lexical projection (an NP in *He has a book*, or a VP as in *He has read a book*). The derivation proceeds as follows. First, *OF* incorporates into *BE* and the complex *BE+OF* is pronounced as *have*. Second, the (remnant) VP (i.e., the participle) moves to either the specifier of *OF* or the specifier of *BE* (in DU).[20] Assuming that *have* is pronounced in the position of *BE*, the two orders in (55) are then the result not of movement vs. non-movement of participles, but rather of the two different landing sites for participle phrases (cf. (59b)):

(59) a. **Complex *have*:**

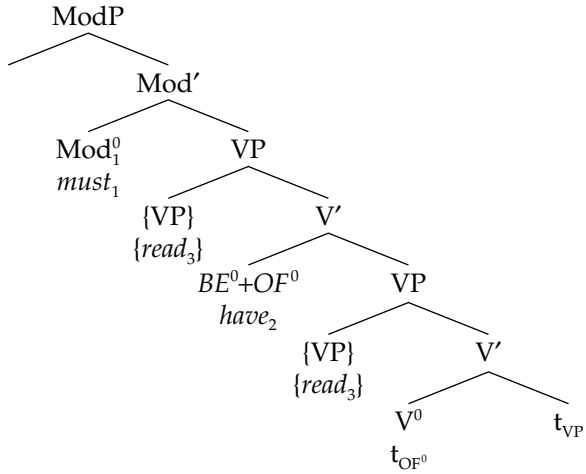


b. **Participle movement:**

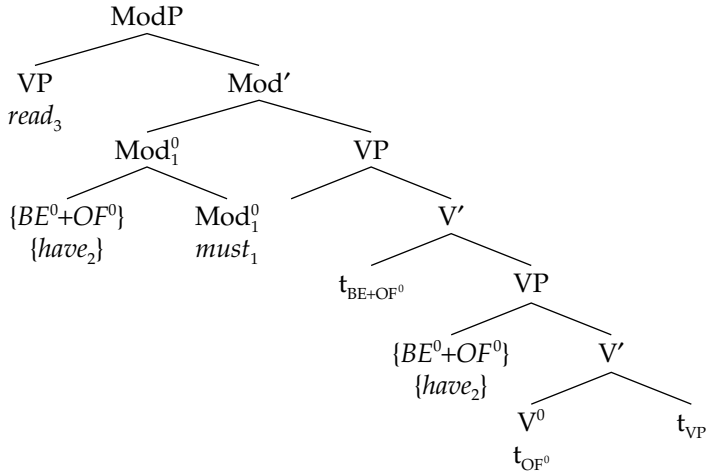


This analysis carries over straightforwardly to the 1-2-3 and 1-3-2 order in modal–auxiliary–participle constructions (cf. (60a); AgrP is ignored from now on since, it does not play a crucial role in the analysis). However, additional assumptions are necessary to account for the 3-1-2 order and to exclude the 2-1-3 and 2-3-1 orders (which do not occur for this construction in any of the West Germanic languages/dialects; see table 75.2). Regarding the 3-1-2 order, Zwart suggests that infinitives overtly or covertly adjoin to the selecting modal verbs, and that this mechanism of adjunction transfers the licensing ability of the adjoining element to the host head. Thus, in (60b), the infinitive auxiliary (i.e., the *BE+OF* complex) adjoins to the modal, and hence the modal becomes a licenser for participles. In DU, infinitive incorporation is covert, whereas in a language like GE, it is overt (but see below):

(60) a. **Modal–auxiliary–participle construction – 1-2-3 and 1-3-2:**

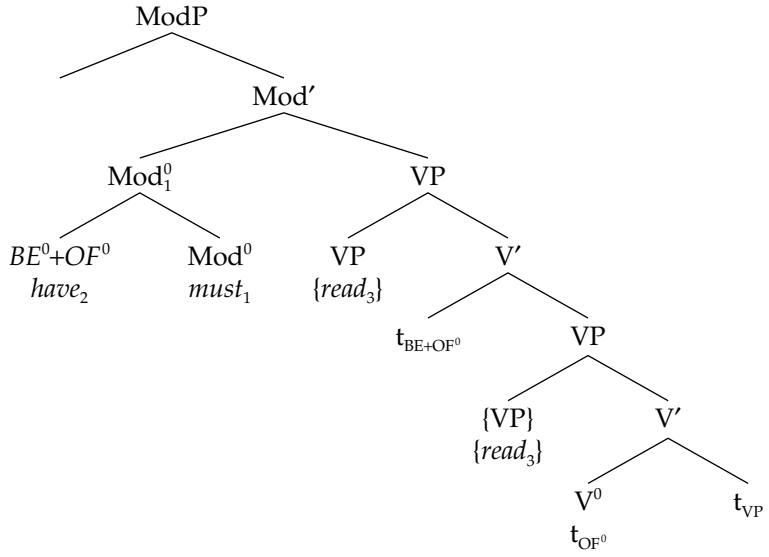


b. **Modal–auxiliary–participle construction – 3-1-2:**



Note that transferring the capacity to license participles to the modal head does not mean that the lower licensing positions are unavailable. Since Zwart treats incorporation of the infinitive into the modal head in (60b) as an obligatory process – i.e., it applies in all the constructions in (56) (but it is necessarily covert in DU) – the fact that participles can occur in the lower positions in (56a) and (56c) leads to the conclusion that covert incorporation simply increases the number of licensing positions (or in other words, covert incorporation extends the licensing domain but does not force a particular position where licensing has to take place). There is one exception, however: as Zwart notes, the lower specifiers become unavailable as licensing positions for participles when the auxiliary incorporates overtly. Thus, in all languages, it is the case that the participle has to precede the auxiliary when the auxiliary (overtly) precedes the modal. (61) illustrates the potential structure that is unattested across West Germanic and that is excluded in Zwart's account by the assumption that the licensing transfer is obligatory and licensing positions are deactivated when overt adjunction takes place:

(61) **Unattested 2-1-3:**

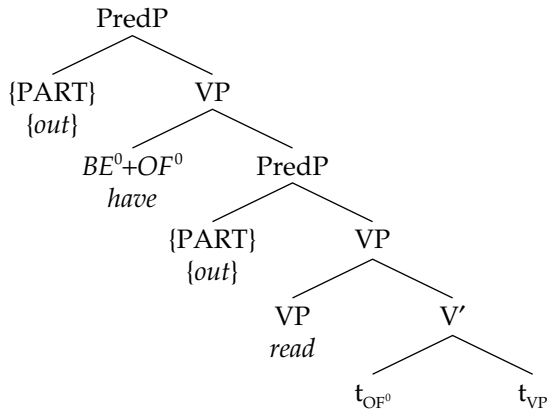


Finally, let us now turn to the third licensing operation: the licensing of particles. In the same spirit as above, Zwart assumes that particles obligatorily move to a particle-licensing position (e.g., PredP). The location of PredP is in principle flexible; however, it has to obey the following constraints: (i) it is lower than the object licensing position; and (ii) it is higher than the overt position of the verb with which the particle is associated. To be more specific, Zwart suggests that the PredP is projected above the projection that hosts the licensing verb. The licensing capacity can again be transferred. If the licensing verb is in a specifier position of an XP (as, e.g., the participle in (60)), the licensing capacity is transferred

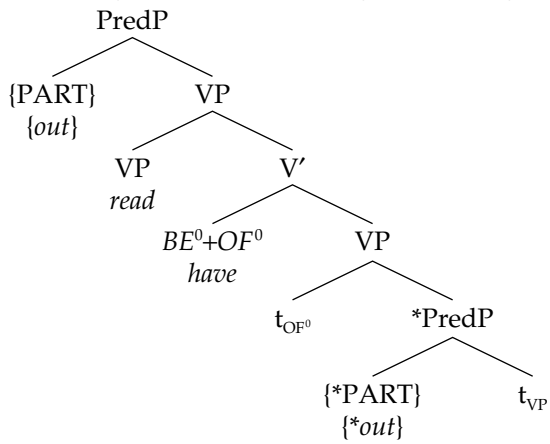
to the head X^0 of that projection (cf. the VP in SpecVP in (62a), which transfers the licensing capacity to (the trace of) OF^0). Further incorporation of X^0 into higher heads extends the domain where PredPs can be projected (i.e., incorporation of *OF* into *BE* in (62a) allows the projection of PredP above the VP headed by *OF+BE*). Similarly, if *OF+BE* incorporates (overtly or covertly) into a higher head (e.g., a higher modal), PredP would be licensed above the XP hosting this higher head. In contrast, if the verb the particle is associated with moves overtly, PredP can only be generated above the XP hosting the (original) licensing verb. As shown in (62b), if the participle occurs in the higher specifier, PredP can only be projected above the VP hosting the participle – the lower position becomes unavailable. These assumptions thus account for the fact that particles can be further up the tree than the (overt position of the) verb they are associated with, but not further down:

(62) **Particle licensing:**

a. **Licensing transfer – licensing verb in lower position:**



b. **Licensing transfer – licensing verb in higher position:**



To conclude, the attractiveness of Zwart's account is that the system excludes the ungrammatical cases discussed and that the movement operations in verb clusters are motivated by (presumably universal) licensing conditions for the elements involved. It thus appears that the account meets both criteria mentioned at the beginning of this section that are necessary for it to qualify as an explanatory account. However, to conclude that the account is in fact superior, one has to go a step further – i.e., it has to be shown that alternative accounts lack these two properties. Zwart's contribution to this comparison is given in (63). (Note that Zwart does not present (63) as a critique of one particular analysis but rather as general weaknesses of head-final approaches. Thus, not all points necessarily apply to all head-final analyses.)

(63) **Zwart's critique of OV approaches** (1996: 238ff.):
   a. There is no consistent direction of adjunction, either across continental West Germanic dialects, or even within particular continental West Germanic dialects.
   b. There is no fixed phrase-structure level of the category adjoined.
   c. It is not clear what triggers the various movements, in the sense that there is no understanding how particular asymmetries are to be explained (for instance, the asymmetry between infinitives and participles, the former adjoining to the left and the latter to the right in a number of dialects (e.g., Luxemburgish)).
   d. The parameterization makes no reference to the *timing* of the movements (i.e., either in overt syntax or in covert syntax), which is generally considered to be a major source of parametric variation (see, e.g., Chomsky 1993).
   e. It is unclear why, in the Germanic SOV languages, multi-verb constructions show such a variety of word orders within the cluster, whereas in the Germanic SVO languages multi-verb constructions invariably show strictly 'ascending' orders.
   f. It is unclear why certain phenomena (the IPP effect, verb projection raising) are sensitive to the surface order of the members of the verb cluster.
   g. The analysis relies on a phrase structural split among the Germanic languages for which there is no independent empirical basis.

Before discussing these points in detail and evaluating the critique of head-final approaches Zwart has offered, it has to be noted that despite the straightforwardness of Zwart's system, there are also minor inconsistencies and empirical problems that should be taken into account when comparing Zwart's approach with an alternative head-final approach (and in particular when evaluating the two approaches against the critique raised).

The first adjustment concerns the licensing of particles. The claim is that the overt position of the verb in which the capacity to license originates determines

the range of licensing positions. Crucially, these licensing positions must be above the overt position of the licensing verb (see (62)). An immediate question that comes to mind is how these assumptions can account for the stranding of particles in verb-second configurations. That is, as shown in (64), particles must remain in sentence-final position when the main verb (i.e., the licensing verb) moves to second position. If it is indeed the overt position of the verb that counts, these facts are unexpected:

(64) **Verb-second:**
a. dat Jan zijn moeder {op} belt
that Jan his mother {up} calls
'Jan calls his mother up'
b. Jan {*op} belt zijn moeder {op}
Jan {*up} calls his mother {up}
'Jan calls his mother up'

There are various ways to deal with this problem. One option would be to assume that verb-second movement of the verb is a type of A'-head-movement (along the lines of the relativized HMC suggested in Den Dikken and Hoekstra 1997) which does not affect the licensing of particles. A different solution would be to assume that particle licensing is not (directly) dependent on the verb the particle is associated with, but rather is subject to certain locality conditions on particle movement. In particular, all that seems necessary is to assume that the particle has to be able to c-command its trace in overt syntax (see Robbers 1997 for this suggestion). Thus, if the VP containing the trace of the particle moves to a position higher than the landing site of the particle, this condition cannot be met and the structures are excluded. If, however, only the verb moves to a position higher than the particle (as in (64b)), the particle continues to c-command its trace and the structures are licensed. The advantage of this account is that the vague notion of licensing 'transfer' could be dispensed with. In what follows, this revised account of particle placement will be used.

The second problem of Zwart's account is the claim that infinitives can only move covertly in DU (cf. (60); if overt movement were possible, the 3-2-1 order would be expected in (60), contrary to fact). While this assumption accounts for the orders in three-verb clusters, it does not suffice for two-verb clusters, which can involve the 2-1 order in modal–infinitive constructions (i.e., infinitives can move overtly in these constructions). Thus, an additional assumption is necessary to capture this fact. However, since the 2-1 order, which is only possible in finite two-verb clusters (Rutten 1991; Den Besten and Broekhuis 1992; Robbers 1997; Koopman and Szabolcsi 2000; among others), is considered to be a marked word order by some speakers (Marcel den Dikken, p.c.,) one might set this fact aside.

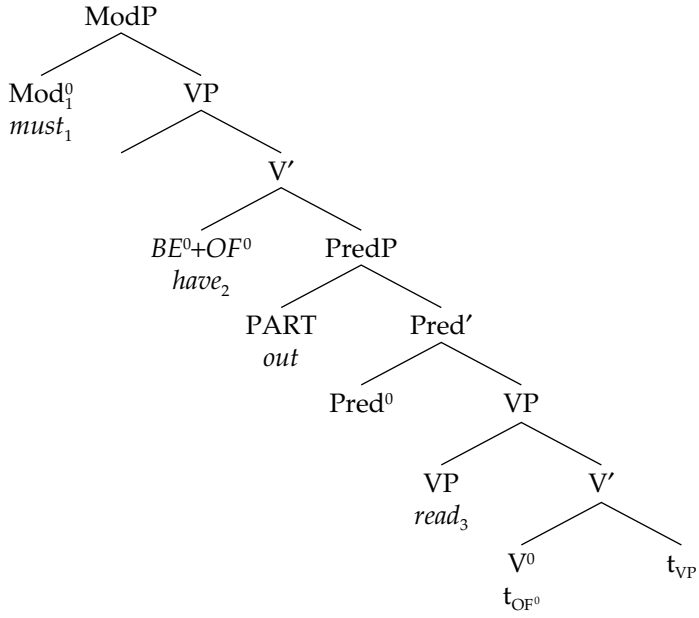
A third and important point concerns the mechanism of licensing transfer. Recall that Zwart claims that overt adjunction disables the licensing capacity of lower heads. This claim seems problematic for at least two reasons. First, this assumption does not hold generally in Zwart's system. In particular, there is an inconsistency between the loss of the licensing capacity in (61) – i.e., when the auxiliary overtly incorporates into the modal (lower licensing positions are lost) – and the retention of the licensing capacity in (59b) – i.e., when *OF* incorporates into *BE* and is pronounced in the higher position (lower licensing position is retained). Thus, the (already rather ad hoc) assumption that overt movement behaves crucially differently from covert movement appears even less justified, since it holds only for cases in which the auxiliary incorporates into the modal. Second, Zwart suggests that movement of the auxiliary as in (60b) may in fact be overt movement with obligatory pronunciation of the lower copy (in the spirit of the copy theory of movement; cf. Bobaljik 1995; Brody 1995b; Groat and O'Neil 1996; Pesetsky 1997). If this analysis were adopted, the consequence would be that the licensing capacity of various heads is in fact determined in the PF component. While a PF approach to verb-cluster formation is in principle an option that one might pursue to account for the distribution of verb clusters (see Wurmbrand 2000), the claim that PF choices have an influence on the syntactic licensing conditions would not be compatible with the system Zwart suggests. Since (i) there is no obvious reason why licensing should be subject to this overt/covert constraint, and (ii) it holds only for very specific cases in Zwart's system (note also the point above that suggested that this assumption should be dispensed with for the licensing of particles), it appears that this assumption does no more than restate that the 2-1-3 order is not possible.

Finally, a minor question which does not seem to be problematic for the account as it stands, but nevertheless has certain consequences which should be pointed out, concerns the derivation of one of the examples in (57a) (the relevant order is repeated below as (65a)). The claim is that in (65a), the licensing projection for the particle is projected between the VP headed by *BE* and the VP headed by *OF* (cf. (65b); note that participles have to move overtly in Zwart's analysis and hence the lowest position the participle can occur in is the specifier of *OF*). A similar case can be construed for modal–auxiliary–participle constructions. A question that comes up in this context is whether this intervening head is problematic for the incorporation of *OF* into *BE* or the auxiliary into the modal. A priori, nothing seems to exclude step-by-step incorporation; the only consequence that could affect the analysis is that in these cases, the specifier positions of the projections below and above PredP are not equidistant any more:

(65) **Modal–auxiliary–participle construction (with particles):**

a. dat Jan het boek moet hebben uit gelezen (1-2-3)
that Jan the book must have out read
'that Jan must have read/finished the book'

b. ***OF-BE* incorporation:**



To conclude this overview of Zwart's analysis, the ingredients of the account are summarized in table 75.10 (including the assumptions that are necessary to accommodate the problems mentioned above). The table also distinguishes (as far as it is possible to determine) between assumptions or conditions that (presumably) hold universally and those that are language-specific.

3.4.2 The head-final and head-initial approach in comparison

To compare the head-initial analysis with a head-final analysis, an outline of an account of DU verb clusters based on a head-final structure will first be provided. The assumptions necessary for DU are: (i) particles do not move (or only move string-vacuously; see the discussion in section 3.1.3); (ii) participles move optionally to the right; (iii) infinitives move obligatorily to the right; (iv) verb-cluster movement can affect either minimal or maximal categories and is subject to a strict locality condition; and (v) objects move obligatorily to a specifier position. Point (v) will insure that objects are not part of the verb cluster (the position of objects will be ignored in the diagrams below). The examples in (55) (repeated here as (66)) are derived as follows. In (66b), no movement occurs; the elements appear in their base positions. The examples in (66a) are derived as in (67): the object leaves the VP; and then either the lower verb (as in (67a)) or the lower VP (as in (67b)) moves (optionally) to the right. Both movement operations yield the 1-2 order; however, in the first case, the particle is stranded (i.e., occurs to the left of the auxiliary), whereas it is carried along with the verb in the second case. The impossible positions of the particles in (66) follow from the assumption that particles do not move (either to the right or to the left):

Table 75.10 DU verb clusters in a head-initial account (Zwart 1996 revised)

Properties	Zwart's approach (revised)
Basic structure	• Universally VO
Size of moved categories	• X^0 and XP
Particles	• Licensed in SpecPredP (universal) • PredP is below AgrOP (universal?) • Licensing has to be overt (West Germanic) • Particle has to c-command its trace (universal?)
Participles	• Licensed by *OF* or *BE* (universal) • Licensing has to be overt (West Germanic; universal?) • Have to be licensed in the specifier position of the VP that includes the overt copy of the auxiliary • Exception: when *have* is pronounced in BE^0, the specifier of OF^0 is also a licensing position
Infinitives	• Licensed by modal (universal) • Covert X^0-adjunction (DU) • Exception: finite two-verb clusters (overt adjunction possible)
Objects	• Licensed in SpecAgrOP (universal) • Licensing has to be overt (West Germanic) • AgrOP is higher than all VPs/ModPs, etc. (DU)
*2-1-3 (MOD-AUX-V)	• Licensing conditions of participles
*2-1-3 (DU)	• No overt X^0-movement of infinitives (DU)
*2-3-1 (DU)	• No XP-movement of infinitives (DU)
Universal *2-1-3	• ?? No X^0-movement of 2 unless 3 moves as well

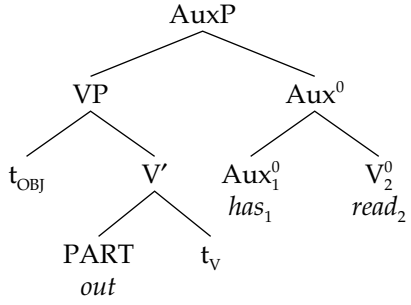
(66) **Auxiliary–participle construction (with particle verb):**

a. dat Jan {*uit} het boek {uit} heeft {uit} gelezen (1-2)
that Jan {*out} the book {out} has {out} read
'that Jan has read/finished the book'

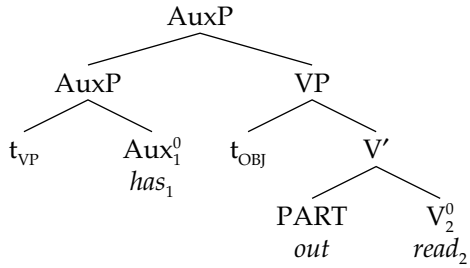
b. dat Jan {*uit} het boek {uit} gelezen {*uit} heeft (2-1)
that Jan {*out} the book {out} read {*out} has
'that Jan has read/finished the book'

(67) **Two-verb cluster:**

a. **Optional participle movement (X^0):**



b. **Optional participle movement (XP):**



The examples involving a modal–auxiliary–participle construction are repeated in (68). The 3-1-2 order is straightforwardly derived by X^0-movement of the infinitive. Given that particles do not move (or only move string-vacuously), it also follows that the only place the particle can occur is immediately preceding the lowest verb (cf. (69a)). Note that movement of 2 – i.e., the infinitive – is obligatory in DU; thus the order 3-2-1 is not possible. XP-movement of the infinitive would yield the 1-3-2 order, which is attested in certain dialects (cf. (56c)).[21] The more challenging constructions are the ones in (68a). There are four possible derivations: (i) two applications of X^0-movement, which yields the order particle-1-2-3; (ii) two applications of XP-movement, which yields the order 1-2-particle-3; (iii) XP-movement of the higher verb and X^0-movement of the lower verb, which yields the order 1-particle-2-3; and (iv) X^0-movement of the higher verb and XP-movement of the lower verb, which yields the order particle-3-1-2. These derivations are illustrated in (69b–e), respectively:

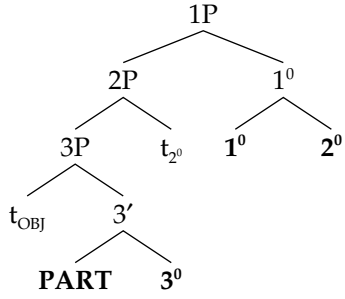
(68) **Modal–auxiliary–participle construction:**

a. dat Jan {*uit} het boek {uit} moet {uit} hebben {uit} gelezen (1-2-3)
that Jan {*out} the book {out} must {out} have {out} read
'that Jan must have read/finished the book'

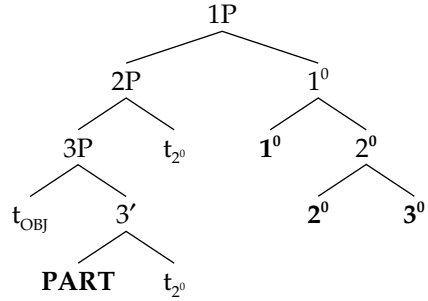
b. dat Jan {*uit} het boek {uit} gelezen {*uit} moet {*uit} hebben (3-1-2)
that Jan {*out} the book {out} read {*out} must {*out} have
'that Jan must have read/finished the book'

(69) **Modal–auxiliary–participle construction:**

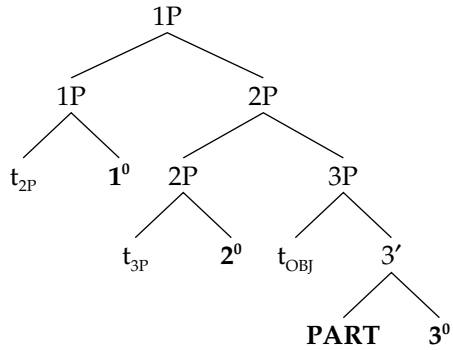
a. **Particle-3-1-2 – 1 X^0-movement:**



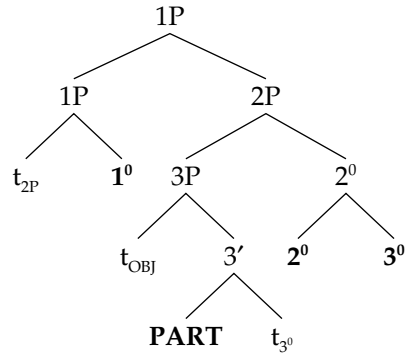
b. **Particle-1-2-3 – 2 X^0-movements:**



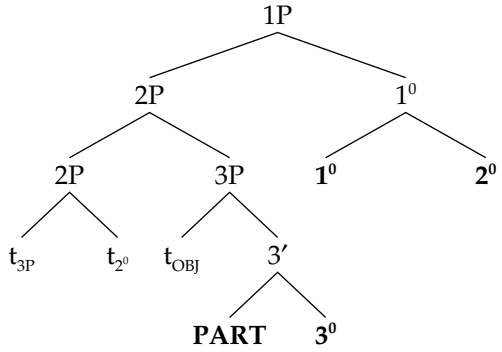
c. **1-2-particle-3 – 2 XP-movements**



d. **1-particle-2-3 – 1 X^0, 1 XP-movement**



e. **Particle-3-1-2 – 1 X^0, 1 XP-movement**



Note that under this analysis, the direction of adjunction is uniform (i.e., to the right). Thus, Zwart's first point of criticism in (63a) does not seem to be justified (furthermore, as we have seen in section 3.1.1, all other orders can also be derived by uniform right-adjunction in a head-final approach if reordering involves phrasal movement). To discuss the other points in (63), let us now compare the two approaches. The assumptions of the head-final approach are summarized in table 75.11, together with the assumptions of Zwart's account.

As can be seen in table 75.11, the two approaches both make use of head and phrasal movement, and both involve obligatory object movement. Hence, on these points, the accounts do not differ, and neither account can be seen as superior or more economical than the other.[22] Similarly, both accounts require a stipulation regarding finite two-verb clusters, and hence this point also does not enter into the comparison (however, see Koopman and Szabolcsi 2000 for an analysis that incorporates this fact). Regarding the other assumptions, a comparison is not an easy task (if possible at all); in particular, the analyses are based on underlying assumptions that are not shared by the proponents of the approaches that are compared. One such assumption is the claim that structures have to be compatible with Kayne's (1994) LCA, which would prohibit head-final structures and rightward movement. Note, however, that the fact that Zwart's analysis

Table 75.11 DU verb clusters: head-final vs. head-initial approach

Properties	OV approach	Zwart's approach (revised)
Basic structure	• Directionality	• Universally VO
Size of moved categories	• X^0 and XP	• X^0 and XP
Particles	• Do not move or only move string-vacuously	• Licensed in SpecPredP (universal) • PredP is below AgrOP (universal?) • Licensing has to be overt (West Germanic) • Particle has to c-command its trace (universal?)
Participles	• Move optionally	• Licensed by *OF* or *BE* (universal) • Licensing has to be overt (West Germanic; universal?) • Have to be licensed in the specifier position of the VP that includes the overt copy of the auxiliary • Exception: when *have* is pronounced in BE^0, the specifier of OF^0 is also a licensing position
Infinitives	• Move obligatorily • Exception: finite two-verb clusters	• Licensed by modal (universal) • Covert X^0-adjunction (DU) • Exception: finite two-verb clusters (overt adjunction possible)
Objects	• Move obligatorily (e.g., SpecAgrOP)	• Licensed in SpecAgrOP (universal) • Licensing has to be overt (West Germanic) • AgrOP is higher than all VPs/ModPs, etc. (DU)
*2-1-3 (MOD-AUX-V)	• Locality condition on verb-cluster movement	• Licensing conditions of participles
*2-1-3 (DU)	• Locality condition on verb-cluster movement	• No overt X^0-movement of infinitives (DU)
*2-3-1 (DU)	• Infinitives move obligatorily in DU	• No XP-movement of infinitives (DU)
universal *2-1-3	• Locality condition on verb-cluster movement	• ?? No X^0-movement of 2 unless 3 moves as well

conforms to the LCA, whereas head-final approaches obviously conflict with this view, does not demonstrate that this approach is superior. What Zwart's account demonstrates is that the facts can be described within a system invoking the LCA. If one is independently committed to that framework, then Zwart's approach shows the range of ancillary assumptions necessary to derive the facts. However, if one is not independently persuaded by the LCA (see, for instance, the works on scope by Büring and Hartmann 1996, 1997b and Fox and Nissenbaum

1999, which have shown that the LCA might be too strong), table 75.11 shows that Zwart's arguments alone are not persuasive on this matter.

Similarly, the claim that the uniformity of structures presents an advantage under a head-initial approach has to be balanced against the non-uniformity of overt vs. covert settings. To give an example, under an approach involving directionality, languages have to set the directionality parameter but do not have to involve any settings, for instance, for particles (particles do not move, and hence they occur to the right of the verb in English, whereas they occur to the left of the verb in GE and DU). Under an approach involving a uniform base, languages do not have to set any directionality parameter, but they have to involve an overt vs. covert setting for particles (in English, particles do not move or move covertly, whereas in GE and DU, they obligatorily move overtly). Since the overt/covert settings are arbitrary, the directionality differences found between 'head-final' and 'head-initial' languages are as stipulated in the head-initial approach as they are in the head-final approach (i.e., there is no deep reason for the claim that movement is overt in GE and DU, whereas it is covert in English – as there is no reason for the claim that GE and DU are head-final). Thus, while the idea of a uniform base structure is certainly attractive, it does not solve the problem that languages are different; it simply shifts the burden of explanation to a different area. In other words, at the stage of our current understanding, under both the head-initial and the head-final approach, these directionality differences among languages have to be represented somewhere in the system as stipulations – i.e., as irreducible facts about languages that cannot be explained but simply must be learned. However, importantly, neither approach appears to be superior with respect to the way it handles these facts.

The final two points to be considered in this section are the two by now familiar questions of whether either approach is superior in motivating the operations suggested, and whether either approach is superior in providing an account of the impossibility of certain structures. To begin with the latter, the head-final approach can account for the fact that the 2-1-3 order is not found cross-linguistically by the assumption that verb-cluster movement, as in table 75.2, is strictly local and cannot skip intervening heads or projections (cf. Haegeman 1992; see section 3.1.1). Under the head-initial approach, it is less clear how this fact can be accommodated. While Zwart suggests a way to exclude the 2-1-3 order in DU and in modal–auxiliary–participle constructions in general (however, see the discussion at the end of the previous section regarding Zwart's account of participle licensing, which the account of the prohibition of the 2-1-3 order is crucially based on), this account does not carry over to other languages, and in particular to languages that allow or require overt movement of infinitives. As noted in table 75.11, this order can only be excluded if the system includes an assumption such as 'X^0-movement of 2 is only possible if 3 moves as well', which is of course possible, but is unmotivated in that it a priori does not follow from any other property of grammar (such as locality).

Finally, to compare the approaches with respect to the motivation of the operations again proves a rather delicate issue. While proponents of head-initial

approaches often claim that movement to specifiers is per se more motivated than rightward movement (which, like V-to-V movement, has no apparent motivation), this claim is also subject to debate. As discussed in section 3.3, it is in principle correct that feature-driven movement to specifier positions is motivated in that it has a definable cause – the presence of features that have to be checked. However, one also has to ask whether the features themselves are motivated. If the features triggering movement are not motivated by any other syntactic or semantic property and are only postulated for the constructions or languages they are needed for, they boil down to simple 'word-order' features, which can hardly be claimed to be motivated (see also Koopman 1984 for this point). Thus, feature checking or movement to specifier positions per se does not solve the motivation problem; it simply shifts the burden of explanation from the question of how movement is motivated to the question of how particular features are motivated (including distinctions such as weak vs. strong features). Regarding the current comparison of the head-final and the head-initial approach in table 75.11, one has to conclude that both approaches require language-specific and category-specific assumptions that are not motivated by other properties of grammar or the particular language. To give a concrete example, the claims that infinitives undergo covert X^0-movement whereas participles undergo overt phrasal movement (head-initial approach), or the claim that participles move optionally whereas infinitives move obligatorily (head-final approach), simply serve the purpose of deriving the order of verb clusters and do not correlate with other properties of these elements. While under the head-initial approach the movement operations are triggered by the need to check certain features, the assumption of licensing projections and features which are only evidenced by word-order properties, in conjunction with the arbitrary overt/covert or weak/strong distinction, suffers from the same arbitrariness and lack of motivation as the assumptions in the head-final approach. In other words, the stipulated licensing operations simply mask the fact that at the core of any account of the distribution of verb clusters are language-specific stipulations. In this sense, the head-initial approach cannot be seen as superior to the head-final approach – both types of accounts have to invoke crucial assumptions that only target the word order in verb clusters. While most researchers will undoubtedly find one type of 'arbitrariness' more attractive (or perhaps less bothersome) than the other, this preference is not sufficient to establish the superiority of either the head-final or the head-initial approach.

4 Restructuring

4.1 The verb raising–restructuring connection

In an extensive study of infinitives, Gunnar Bech (1955) developed one of the first characterizations of infinitival complements in GE. Bech showed that infinitives fall into two classes: infinitives that form an independent clausal domain and

infinitives that do not exhibit clausal behavior. He labeled the former class *kohärente Infinitive* 'coherent infinitives', the latter *inkohärente Infinitive* 'incoherent infinitives'. The first study of the two classes of infinitives in a generative framework was provided by Evers (1975a, 1975b). Evers observed that the split among infinitival constructions in DU and GE correlates with a reordering process of the verbal elements in an infinitival construction. He proposed that this reordering is the result of a process of verb raising which applies in certain infinitival clauses but not in others. Evers's analysis – which laid the groundwork for most later analyses of clause structure in GE and DU – is the first work that builds on the correlation between mono-clausality and verb movement. In particular, he suggests a structure pruning principle which applies to the S-node of infinitives that have lost their head (i.e., by movement of the embedded verb to the higher clause). The formulation of Evers's Guillotine Principle is given in (70):[23]

(70) **Guillotine/S-pruning Principle** (Evers 1975a: 147):
An S that has lost its head (i.e., its V-constituent) does not survive.

Thus, in Evers's account, verb raising – i.e., the formation of a complex verb consisting of the matrix verb and the infinitive – creates a sentence that has lost its head, and therefore the S-node cannot survive and is deleted.

At the same time, Aissen and Perlmutter (1976) and Rizzi (1976) observed that in Italian and Spanish, certain infinitives lack clausal properties.[24] That is, while in most cases infinitives constitute a boundary for processes that are restricted to apply within one clause (such as clitic climbing, passive), certain infinitives are transparent for the same processes. Aissen and Perlmutter suggest that certain infinitives undergo a process of 'clause union' with the matrix clause and hence cease to function as independent clauses. Similarly, Rizzi proposes that what is special about infinitives lacking clausal properties is that they have undergone a process of 'restructuring'. In Rizzi's analysis, like Evers's, the close relation between clause union or restructuring and some form of verb-complex formation is essential. In particular, Rizzi suggests that restructuring is an optional rule according to which the embedded infinitive and the matrix verb are reanalyzed as one complex verb. This process of restructuring then again transforms a bi-clausal structure into a mono-clausal one. In contrast to DU, however, the claim that the verbs in a restructuring construction form a complex head is less straightforward for Italian. While the verb cluster in DU cannot be separated by any elements other than particles, suggesting that there is indeed a very tight (e.g., head-to-head) relation between the verbal elements, phrasal elements which cannot be argued to be incorporated into the verbs may intervene between the matrix verb and the infinitive in Italian. As Rizzi notes, clitic climbing (cf. (71a)), object preposing (cf. (71b)), and auxiliary switch (cf. (71c)) are possible in cases where adverbs show up between the two verbs. Rizzi therefore suggests that "Restructuring creates a syntactic constituent 'verbal complex', and that this constituent cannot be simply a V. . . . Italian syntax makes use of a syntactic category, distinct from V, dominating non-lexical verbal compounds" (Rizzi 1982a: 38):

(71) **Italian – verb raising and adjacency** (Rizzi 1982a: 38):
   a. Lo verrò subito a scrivere.
      it-cl I-will-come at-once to write
      'I will come to write it at once.'
   b. Gli stessi errori si continuano stupidamente a commettere.
      the same errors SI continue-3PL stupidly to make
      'People continue to make the same errors in a stupid way.'
   c. Maria è dovuta immediatamente tornare a casa
      Maria is must immediately return at home
      'Maria has had to come home immediately.'

Since head raising creates X^0 categories rather than X' categories, it is not clear how Rizzi's syntactic complex verb could be implemented in a more recent Government and Binding- or Minimalist-style analysis of head-movement. To account for the discontinuity of the two verbs found in Romance restructuring infinitives (while keeping Rizzi's assumption that the infinitive and the matrix verb form a complex head), two types of analyses have been proposed: excorporation and covert movement. The first approach (see Den Dikken 1990; Roberts 1991a; Guasti 1992, 1993, 1997) is based on examples such as the one in (72) from Italian, in which a matrix causative and an embedded verb precede a floating quantifier associated with the matrix subject. Under the assumption that the floating quantifier originates in a position above the base position of the causative, the example in (72a) provides evidence for overt movement of the infinitive to the matrix predicate and further overt movement of both verbs to the left of the floating quantifier. Assuming the infinitive incorporates into the higher verb and the complex verb then undergoes further movement to the left, (72b) can then be taken to show that the matrix verb excorporates from the complex head:[25]

(72) **Italian – causative constructions** (Guasti 1997: 136):
   a. I professori facevano commentare tutti quel libro a Ugo.
      the professors make comment all that book to Ugo
      'The professors all made Ugo comment on that book.' (my paraphrase)
   b. I professori non fanno più commentare tutti quel libro a Ugo.
      the professors NEG make anymore comment all that book to Ugo
      'All the professors do not make Ugo comment on that book any more.'

The second type of analysis is based on the idea that restructuring constructions involve *covert* head-movement (the major approaches are summarized in section 4.3.2). The main reason for the assumption of covert verb raising is theory-internal. In approaches where it is assumed that restructuring infinitives are full clauses (see section 4.3.2), a mechanism is required to unite the matrix and the embedded clause in order to create the clause-union effects. Since head-movement is a standard tool to deactivate projections or barriers (see, for instance, Chomsky 1986a; Baker 1988a) this process has thus proven useful in the context of restructuring constructions to achieve the lack of clause-boundedness

effects. A further reason that has been given repeatedly to motivate verb raising in restructuring constructions is the observation that the infinitival tense is deficient in these constructions (tense deficiency can be observed, for instance, from the impossibility of temporal modification of the embedded event in a restructuring infinitive, or from the fact that the embedded event has to be interpreted as simultaneous with the time of the matrix event). On the basis of this observation, Guéron and Hoekstra (1988) and Bennis and Hoekstra (1989) suggest that verbs have to be in a local relation with a tense head, which is generally achieved via movement of the verb to the closest tense head. What is special about restructuring constructions is that the infinitival tense head is deficient and thus not capable of licensing the infinitival verb. Hence, the verb (or the infinitival tense) has to move to the matrix clause.

It is important to note that both reasons – the deactivation of barriers and the need to be tense licensed – for a special verb raising operation in restructuring constructions apply only in so-called 'bi-clausal' approaches to restructuring (i.e., in analyses in which the infinitival complement has a clausal status at D-structure). For approaches that treat restructuring infinitives as non-clausal (e.g., VP) predicates throughout the derivation, the issue of covert verb raising reduces to 'normal' verb raising in a simple clause, and no special restructuring verb raising has to be assumed. The two types of approaches and the issue of verb raising in restructuring constructions will be discussed in more detail in section 4.3.

Besides the questions of whether and how verb raising applies in restructuring infinitives, the study of restructuring/clause union has yielded many interesting and important observations regarding clause structure, the nature of verbal categories, and general issues of the organization of grammar. Three of the main research questions that have been addressed are: (i) the determination and characterization of the class of restructuring infinitives; (ii) the structure of restructuring infinitives; and (iii) the motivation for restructuring or clause union. The next sections give an overview of the major insights and analyses.

4.2 *The class of restructuring predicates*

In most studies on restructuring, it has been noted that the class of restructuring predicates varies across languages and also shows some variation among speakers of one language. As shown in Wurmbrand (2001), large parts of this variation can be accounted for if infinitival constructions are not simply divided into restructuring vs. non-restructuring infinitives, but involve a finer-grained classification. For instance, it is shown there that GE distinguishes between four classes of infinitival constructions, each with its own syntactic and semantic properties. While passive and non-focus scrambling pick out one class of infinitival constructions, pronoun fronting and focus scrambling pick out a different class. Similarly, in DU, remnant extraposition singles out a different class of predicates than verb raising (both in their original senses) and the IPP effect.

Despite the existence of these subgroupings and the variation encountered, one can nevertheless observe a certain semantic cohesion to the classes of restructuring

Table 75.12 The grades of restructuring

Type of verb	Grade of restructuring	Degree of restructuring
Modal verbs	Generally among restructuring predicates	Highest
Aspectual verbs	Generally among restructuring predicates	
Motion verbs	Generally among restructuring predicates	
Causatives	Generally among restructuring predicates	
try, manage, dare	Some degree of restructuring (some languages)	
(Other) irrealis, implicative verbs	Minimal degree of restructuring (some languages)	
Propositional verbs	Generally not among restructuring predicates	
Factive verbs	Generally not among restructuring predicates	Lowest

predicates. Table 75.12 lists different classes of infinitival-taking predicates according to their 'degree of restructuring'. As the table shows, restructuring is determined on a scale rather than by a rigid binary distinction (both within one language and cross-linguistically). That is, if a language exhibits restructuring effects with a predicate lower down in the list in table 75.12, all predicates above that predicate can also function as restructuring predicates (however, the opposite does not hold). Infinitives selected by modal verbs (*must*, *may, can*, *want*, etc.) motion verbs (*come*, *go*, *return*), aspectual verbs (*begin*, *continue*, *finish*), and causative verbs (*let*, *make*) are typically among the class of restructuring verbs. Verbs like *try, manage*, and *dare* are also core restructuring verbs, although in fewer languages (e.g., they are typical restructuring verbs in GE and DU, but only marginally allow restructuring in Romance). Going further down the list, irrealis and implicative constructions show some restructuring effects, although much less so (again both within one language and across languages) than the predicates listed in the higher rows of table 75.12. Finally, propositional and factive constructions generally prohibit any restructuring properties. While the scale in table 75.12 provides a first approximation to the classification of infinitival constructions, a cross-linguistic study of the subgroupings (in particular the determination of how far down different restructuring properties are licensed in different languages) is still outstanding.

The fact that the class of restructuring predicates shows semantic cohesion as well as variation and apparent arbitrariness is reflected in the general tension between two basic directions authors take regarding the question of how the class of restructuring predicates is determined. One type of approach considers the regularities of the class of restructuring predicates as the basic cases of restructuring, and language and speaker variation are assigned a special status or set aside. According to this view, restructuring is motivated through a semantic (and/or thematic) property found among the class of restructuring verbs. Another type of approach treats restructuring as a language-specific and irregular phenomenon, and the cohesion among the class of restructuring predicates is

Table 75.13 Syntactic vs. semantic approaches to restructuring

Restructuring	References
Lexically/syntactically determined	Aissen and Perlmutter 1976, 1983; Di Sciullo and Williams 1987; Fanselow 1989; Kayne 1989b, 1990, 1991; Sternefeld 1990; Rutten 1991; Roberts 1993b, 1997b; Grewendorf and Sabel 1994; Sabel 1996b; Kiss 1995; Meurers 1999
Semantically/thematically determined	Strozer 1976; Luján 1980; Napoli 1981; Zagona 1982; Picallo 1985, 1990; Rochette 1988, 1990a, 1999; Rosen 1989, 1990; Rosengren 1992; Cinque 1997a, 1997b, 2004; Roberts 1997b; Wurmbrand 1997, 1998a, 1998c, 2001

considered as an accident. According to this view, restructuring is generally considered as a lexical property that is assigned (arbitrarily) to a subclass of infinitive-taking verbs and parametrically restricted to certain languages. The major references addressing the question of whether restructuring is (mainly) a lexical/syntactic or (mainly) a semantic phenomenon are summarized in table 75.13.[26]

As is often the case, it seems that the truth lies somewhere in between. While the class of restructuring predicates displays a certain degree of uniformity regarding the semantic properties of the predicates involved, the semantics of a configuration alone does not seem to be sufficient to determine whether a construction allows or disallows restructuring. Rather, syntactic and language-specific factors have to be taken into account to successfully characterize the restructuring phenomenon.

4.3 The structure of restructuring infinitives

Central to most works on restructuring is the question of what the structure of a restructuring infinitive is. The various approaches fall into two general groups, which are labeled here as mono-clausal vs. bi-clausal approaches. According to mono-clausal approaches, a sentence with a restructuring infinitive is a single clause throughout the derivation and a restructuring infinitive never constitutes an independent clausal domain. According to bi-clausal approaches, the clause-union effect is attained derivationally. Restructuring infinitives and non-restructuring infinitives start out with the same syntactic structure; however, a further application of restructuring (to be made precise below) alters the structure and/or properties of restructuring infinitives in a way that ultimately renders the clause boundaries ineffective. The advantage of mono-clausal approaches is that no mechanism of restructuring is necessary and that no additional language- or construction-specific assumptions have to be made to account for the transparency of restructuring infinitives. Since there is no representation or stage of the derivation in which a sentence with a restructuring verb consists of two clauses, the issue of unifying the clauses does not arise. The challenge for approaches of this sort is to motivate the existence of different initial structures for infinitival

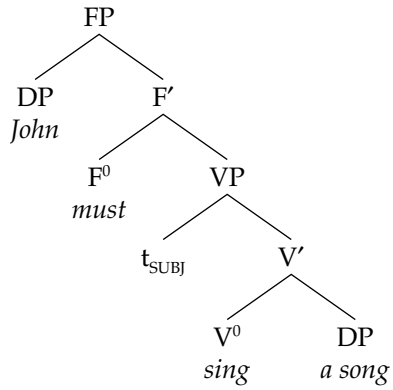
complements. The main motivation for bi-clausal approaches is the idea of uniformity of phrase structure; i.e., (control) infinitives project a TP, CP, etc., irrespective of the syntactic or semantic content of these projections. The challenge for approaches of this sort is to provide evidence for the initial clausal structure of restructuring infinitives and to characterize and motivate the operation of restructuring.

4.3.1 Mono-clausal approaches

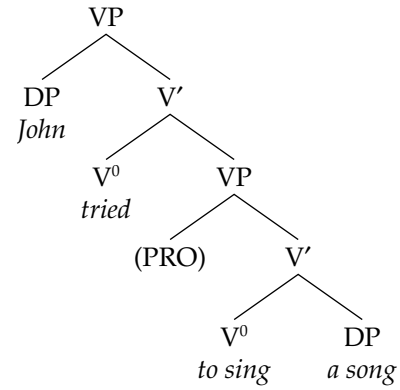
The essential claim of mono-clausal approaches is that non-restructuring infinitives are generated as clausal complements, whereas restructuring infinitives are smaller categories (typically it is assumed that they are VP complements, as in (73)). Importantly, a restructuring infinitive is not derived from a non-restructuring infinitive in these approaches:

(73) **Mono-clausal approaches:**

a. **Functional restructuring:**



b. **Lexical restructuring:**



The main questions raised and addressed by mono-clausal approaches are whether restructuring verbs are lexical or functional categories, whether there is an embedded infinitival (PRO) subject, and how the difference between VP infinitives (restructuring) and CP/IP infinitives (non-restructuring) is motivated. Regarding the first question, Cinque (1997a, 1997b, 2004) argues that all restructuring configurations are of the form in (73a). In Wurmbrand (2001), on the other hand, evidence from GE is provided for the claim that a structure such as (73a) is inadequate to capture all restructuring constructions, and that certain predicates cannot be treated as raising predicates but are best analyzed as lexical categories combining with VP complements, as in (73b). The arguments provided come from systematic differences between lexical and functional predicates regarding their thematic properties, scope properties, and syntactic properties such as extraposition and the IPP phenomenon.

The second question – whether restructuring constructions and infinitival constructions in general include an embedded PRO subject – has been a long-standing issue in both the syntactic and the semantic literature. The perhaps

more common approach is that control infinitives are clauses (CPs) syntactically and propositions semantically, since the infinitival complements are interpreted with an infinitival subject. This view, however, is not the only way to approach this question. In particular, considering the semantic properties of different infinitival constructions, many works have shown that a uniform treatment of all control infinitives seems untenable. Rochette (1988), for instance, proposes that the size of an infinitive corresponds to its semantic category: CP infinitives denote *propositions*, IP infinitives denote *events*, and subjectless VP infinitives denote *actions*. In standard Lexical Functional Grammar (LFG), control infinitives are considered as subjectless VPs in syntax and propositions in semantics (cf. Bresnan 1982b). Similarly, Chierchia (1984a, 1984b, 1989) and Chierchia and Jacobson (1986) argue that control infinitives are properties – i.e., subjectless predicates – in syntax and semantics and become associated with a subject later on in context by means of a semantic control principle. On the basis of Chierchia's work, Wurmbrand (2001, 2002) shows that this semantic view receives additional support from the syntactic properties of these constructions. In particular, the A-movement and binding properties of restructuring infinitives in GE strongly suggest that no embedded subject is present to block movement and to bind embedded anaphors.

The last question – the motivation for two distinct structures of infinitival constructions – is indirectly connected to the second question. Following the idea that structure and meaning are closely related (i.e., that syntactic structure translates directly into the meaning of a construction), the different sizes of restructuring infinitives and non-restructuring infinitives simply reflect the different semantic properties of these constructions. For instance, as mentioned in section 4.1, many researchers agree that restructuring infinitives are tense deficient, and hence this property motivates the lack of a TP. Similarly, restructuring infinitives are often considered as subjectless predicates semantically (see the references in the previous paragraph), which, assuming again that semantic properties of this sort are reflected in the syntactic structure, would mean that the infinitive is represented by a VP-type complement rather than an IP or a CP. Table 75.14 presents a selective summary of mono-clausal approaches.

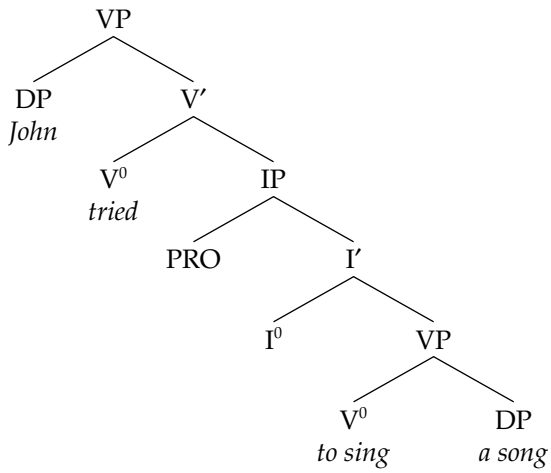
Before turning to bi-clausal approaches, it should be mentioned for completeness that there are also approaches that are somewhere in between mono-clausal

Table 75.14 Mono-clausal approaches

Property	References
Restructuring infinitives are base-generated VPs	Strozer 1976, 1981; Zagona 1982; Cremers 1983; Chierchia 1984a, 1984b, 1989; Picallo 1985, 1990; Haider 1986a, 1986b, 1991b, 1991c, 1993; Di Sciullo and Williams 1987; Rochette 1988, 1990a, 1999; Rosen 1989, 1990; Moore 1990, 1994; Rutten 1991 (some infinitives); Rosengren 1992; Broekhuis et al. 1995 (some infinitives); Cinque 1997a, 1997b, 2004; Wurmbrand 1998a, 1998c, 2001

and bi-clausal approaches. A number of works develop what one might want to call a reduced clausal approach (cf. Tappe 1984; Fanselow 1989; Li 1990a; Rooryck 1994a; and in some sense Wurmbrand 2001). The basic idea of this approach is that a sentence with a restructuring infinitive essentially involves a bi-clausal structure; however, restructuring infinitives nevertheless differ from non-restructuring infinitives in the size of the infinitival complement. In particular, it is assumed that restructuring infinitives lack a CP boundary (cf. (74)):

(74) **Reduced clausal approach:**



4.3.2 Bi-clausal approaches

The central idea of bi-clausal approaches is that restructuring infinitives start out as clausal (CP) complements and that the clausal status of restructuring infinitives is altered by one or more of the following mechanisms: structure-changing operations, head-movement, or topicalization. According to the first set of approaches, restructuring infinitives involve a special structure-changing process that transforms or reanalyzes a CP complement into a VP complement. Evers (1975a) suggests a pruning principle, Rizzi (1978, 1982a) postulates a restructuring rule, Haegeman and Van Riemsdijk (1986) assume a reanalysis process, and Von Stechow (1990) speculates that restructuring infinitives might be created by deletion of the CP and IP nodes.[27] The common property of these approaches (see also table 75.15) is that restructuring infinitives start out as sentential complements, then get reanalyzed or lose various projections in the course of the derivation, and finally end up as VP complements. Arguments generally raised against structure-changing processes of this sort are that they cause a violation of the Projection Principle (Chomsky 1981, 1982, 1986b) and that they are to a large degree arbitrary rules.

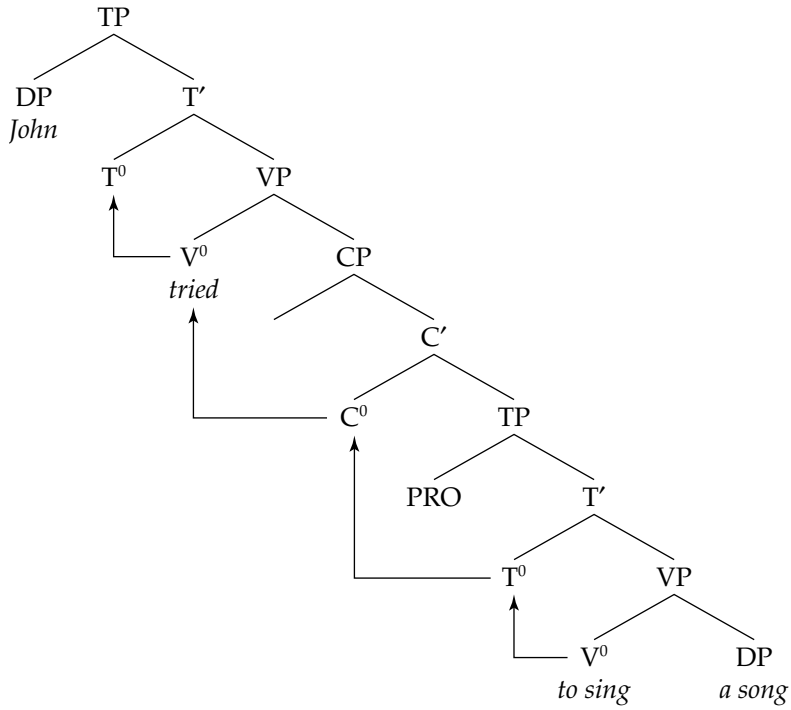
The second (and predominant) mechanism to derive clause union is head-movement such as verb raising. The variety of head-movement analyses share one common property and assumption: it is assumed that some verbal head of

Table 75.15 Structure-changing approaches

Restructuring infinitives	References
Clauses that lose their clausal status	Evers 1975a, 1975b, 1986, 1988, 1990; Aissen and Perlmutter 1976, 1983; Rizzi 1976, 1978, 1982a; Hoekstra 1984a; Grewendorf 1987, 1988; Von Stechow 1990
Reanalysis, multidimensional structures	Manzini 1983b; Haegeman and Van Riemsdijk 1986; Di Sciullo and Williams 1987; Goodall 1987b, 1991; Von Stechow and Sternefeld 1988

the infinitive moves (overtly or covertly) to the matrix predicate (cf. (75)), and that this movement renders the infinitive transparent, either for government by the matrix verb (cf. Evers 1975a, 1975b; Rizzi 1978, 1982a; Baker 1988a) or for further movement of other elements from the infinitive (such as DPs, clitics):

(75) **Head movement approaches:**



As mentioned above, since overt verb raising raises serious empirical questions, many authors thus claim that some form of covert or abstract head-movement applies to restructuring infinitives. One set of approaches assumes that head-movement in restructuring infinitives does not apply in overt syntax but takes place in the covert component (i.e., as LF-incorporation of the infinitive;

Table 75.16 Head-movement approaches

Mechanisms	References
Overt verb (infinitive) raising; or formation of a complex V	Evers 1975a, 1975b; Rizzi 1978, 1982a; Haider 1986a, 1986b, 1991b, 1991c, 1993; Prinzhorn 1987, 1990; Sternefeld 1990; Rutten 1991; Guasti 1992, 1993, 1996b, 1997
Covert verb (infinitive) raising	Grewendorf and Sabel 1994; Gonçalves 1998
Overt verb raising + pronunciation of lower copy	Roberts 1997b
Overt raising of embedded T/INFL (without the infinitive)	Kayne 1989b, 1990, 1991; Roberts 1993b; Bok-Bennema and Kampers-Manhe 1994; Terzi 1996a
AgrS+T raising	Rooryck 1994a
Covert AgrO-raising	Sabel 1996b

cf. Sternefeld 1990; Grewendorf and Sabel 1994; Gonçalves 1998). The second set of approaches assumes that head-movement in restructuring infinitives does take place in overt syntax, but that for various reasons, this movement is not reflected in the (phonological) output of the structure. First, adopting a version of the copy theory of movement in which either copy may be accessible to PF or LF, Roberts (1997b) suggests that head-movement applies overtly, but that in the phonological component, the tail rather than the head of the chain is pronounced. Second, many authors assume that the head that undergoes movement is not the actual infinitival verb but rather the (abstract) infinitival tense or Agr-node. This form of overt (though abstract) head-movement thus creates a complex head in restructuring constructions but at the same time leaves behind the infinitival verb (cf. Kayne 1989b, 1990, 1991; Roberts 1993b; Bok-Bennema and Kampers-Manhe 1994; Rooryck 1994a; Sabel 1996b; Terzi 1996a). Finally, there are approaches that assume that overt head-movement of the infinitive takes place, followed by further excorporation of the higher verb (cf. Roberts 1991a; Guasti 1992, 1993, 1997). The major head-movement approaches are listed in table 75.16.

A general question head-movement approaches are faced with is how deficient projections are licensed. If there are no relevant properties or features, the building of vacuous structure would be prohibited according to many syntactic theories. Thus, assuming that verb raising is triggered by the need to check features and the infinitival tense head is incapable of doing so, the tense head presumably lacks tense features, and a different reason has to be found for the presence of a TP.

Apart from this problem of how the presence of a featureless projection can be motivated in a restrictive theory of syntax, head-movement approaches that consider the lack of tense as the trigger for restructuring are faced with a number of other questions. For instance, if head-movement takes place covertly (i.e., if the infinitive only becomes transparent at LF), one might wonder how overt

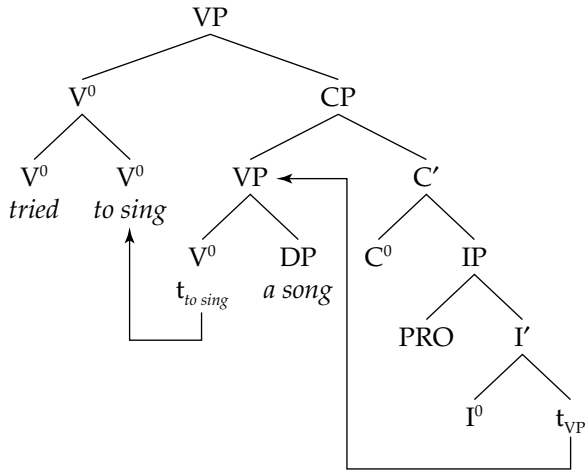
restructuring properties such as clitic climbing, long object movement, or auxiliary switch are licensed. Roberts (1997b) notes this problem and hence suggests the modification to covert movement described above, namely that verb raising is always overt, but that languages pick different copies for pronunciation. A further question concerns an asymmetry found in many languages between V-to-T movement in finite clauses and V-to-T movement in restructuring infinitives. Most authors assume that in Italian, (short) verb movement takes place overtly (cf. Kayne 1989b; Belletti 1990). In particular, it is claimed that the ordering of verbs and adverbs indicates that short overt verb movement applies in finite clauses as well as in infinitives (and crucially, in restructuring as well as non-restructuring infinitives). Since, according to head-movement approaches, infinitival T in restructuring infinitives is deficient and hence cannot check features, this short overt movement of the infinitival verb in a restructuring infinitive has to target a functional head other than T (in order to avoid the rather unattractive claim that the tense head in a restructuring infinitive, despite being unable to license the infinitive, nevertheless attracts it). An interesting question for these approaches is then why finite verbs undergo overt movement to T, whereas the non-finite verb in a restructuring infinitive – which by assumption also has to move to the finite T of the higher predicate – can move to some infinitival head overtly, but can only undergo covert movement to the matrix T. While these questions are not insurmountable, they seem to point to the special nature of head-movement in restructuring infinitives.

Finally, the most serious problem for the claim that the lack of tense is the trigger for restructuring is that this claim appears to be too strong. In Wurmbrand (2001), it is shown that not all tenseless infinitives are restructuring infinitives. While the lack of tense is indeed a necessary condition for restructuring, it is not a sufficient one; to qualify as a restructuring infinitive, other properties have to be met as well. Thus, the question arising for head-movement approaches is how restructuring can be excluded in certain tenseless infinitives (and – depending on the answer to this question – how the embedded verb can be tense licensed in a tenseless non-restructuring infinitive). To accommodate these problems, one might suggest that restructuring infinitives are [+tense deficient], whereas non-restructuring infinitives (whether tenseless or tensed) are [–tense deficient]. Note however, that this modification seems to defeat the original idea that head-movement is motivated by the tense properties – that is, it essentially dissociates head-movement from the actual tense properties of a construction, and hence the notion of 'tense deficiency' is reduced to a lexical diacritic marking restructuring (as, for instance, suggested by Sabel 1996b). Thus, it appears that one is forced to conclude that head-movement is not motivated by the tense properties of infinitival constructions, but that the sole purpose of head-movement in restructuring infinitives is to derive restructuring in a bi-clausal structure.

The final mechanism to derive clause union goes back to Burzio (1986), who suggested that the CP boundary of a restructuring infinitive is bypassed by moving the embedded verb phrase to the matrix clause (this approach can thus

be seen as the ancestor of the more recent remnant movement approaches to restructuring by Hinterhölzl 1997, 1998, 1999 and Koopman and Szabolcsi 2000). Furthermore, Baker (1988a), Sternefeld (1990), Grewendorf and Sabel (1994), and Sabel (1996b) pursue a mixed head-movement plus topicalization approach. In these approaches, it is assumed that head-movement is required in restructuring constructions; however, it cannot proceed through the embedded C^0. Rather, head-movement applies after the embedded VP or AgrOP has undergone topicalization to the embedded SpecCP (cf. (76) for a simplified structure). Questions arising for this approach are mainly questions about the motivation of these topicalization operations:

(76) **Topicalization plus head-movement:**



4.4 The motivation for restructuring

The last question addressed briefly in this overview is why certain infinitives but not others trigger restructuring. Some approaches to this question have already been touched upon in passing in the previous sections. For instance, many mono-clausal approaches involve the assumption that restructuring verbs are auxiliary-like in that they are less thematic than full verbs, are part of the functional structure of the clause, or are simple predicates semantically that correspond to VPs or similar projections syntactically (see table 75.17 for references). In bi-clausal approaches, the question has to be asked in a slightly different way, namely why restructuring mechanisms (such as reanalysis, deletion of projections, head-movement, topicalization, etc.) can apply in only a subgroup of infinitival constructions. As mentioned, a common view that occurs throughout the works on restructuring is that restructuring verbs or restructuring infinitives are in some way or another deficient, and hence either lack certain projections (mono-clausal approaches) or require support from the matrix clause, which, for instance, can be achieved by head-movement. Li (1990a), for instance, assumes

Table 75.17 Motivation for restructuring

Motivation	References
Restructuring verbs are not (fully thematic) lexical verbs	Strozer 1976; Napoli 1981; Zagona 1982; Picallo 1985, 1990; Prinzhorn 1987, 1990; Rochette 1988, 1990a, 1999; Rosen 1989, 1990; Rutten 1991; Cinque 1997a, 1997b, 2004; Roberts 1997b (but see note 26)
Restructuring involves argument or event structure unification	Napoli 1981; Rochette 1988, 1990a, 1999; Rosen 1989, 1990; Rosengren 1992; Haider 1993; Kiss 1995
Restructuring infinitives are tense deficient	Guéron and Hoekstra 1988; Rochette 1988, 1990a, 1999; Bennis and Hoekstra 1989; Rutten 1991; Broekhuis 1992; Guasti 1992, 1993, 1996b, 1997; Roberts 1993b, 1997b; Bok-Bennema and Kampers-Manhe 1994; Haegeman 1994; Rooryck 1994a; Wurmbrand 1997, 1998a, 1998c, 2001; Gonçalves 1998

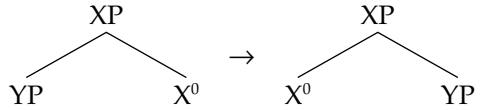
that restructuring infinitives involve a deficient 'dummy' INFL; Sternefeld (1990) argues that restructuring infinitives lack an embedded complementizer position, whereas non-restructuring infinitives involve a complementizer (which can be empty); and many researchers follow the idea that restructuring infinitives are deficient for tense. Table 75.17 summarizes some of the major proposals that suggest motivations for restructuring.

While the semantic properties allow us to make important generalizations about the nature and class of restructuring infinitives, it also has to be emphasized again that this is only a part of the picture. In particular, many differences among languages in the distribution of restructuring classes do not easily fall out from the semantic properties, and it is essential to take into account syntactic properties and other language-specific properties as well. However, as this short summary will hopefully have shown, while many important observations have been made regarding the syntactic and semantic properties of restructuring infinitives, there are also many questions that are still open, and hence the issue of restructuring provides an interesting and potentially very fruitful area for further research.

5 Appendix

5.1 Head-final derivations (inversion)

(77) **Head-final inversion rule:**



iff the conditions in table 75.18 hold.

Table 75.18 Inversion rules (head-final base)

Language	Inversion rules	Optionality	Other
AF	X is a modal	Obligatory	• *Will*: modal • Passive participles: optional 3-LEFT
DU	A: Y is an infinitive B: Y is a participle	A: Obligatory B: Optional	• Inversion is optional in finite 2-verb clusters • Participles: optional 3-LEFT
Frisian	No inversion	–	–
GE (Standard)	X is an auxiliary and Y is a modal	Obligatory	• *Will*: modal or auxiliary
GE/Austrian dialects	Y is a non-main verb infinitive	Optional	• AUX-MOD-V: optional 3-LEFT
Swiss dialects	A: X is an auxiliary and Y is a modal B: Y is an infinitive	A: Obligatory B: Optional	• Optional 3-LEFT • 3-2 inversion only if 2-1 inversion
WF	A: X is an operator (MOD, TENSE, NEG) and Y is an infinitive B: X and Y are auxiliaries	A: Obligatory B: Optional	• Present: [±TENSE] • MOD-AUX-V: optional 3-LEFT

(78) **DU – head-final inversions** (data from Rutten 1991; Zwart 1996; Robbers 1997):

a. **AUX-PART** (optional inversion of participle (B)):
dat Jan het boek gelezen heeft /heeft gelezen (2-1/1-2)
that Jan the book read-2 has-1/has-1 read-2

b. **MOD-INF** (optional inversion in finite 2-verb clusters (A; special)):
dat Jan het boek lezen kan /kan lezen (2-1/1-2)
that Jan the book read-2 can-1/can-1 read-2

c. **MOD-MOD-V** (obligatory inversions of infinitives (A)):
dat Jan morgen zal/moet kunnen werken (1-2-3)
that Jan tomorrow will/must-1 can-2 work-3 (*All others)

d. **AUX-Mod-V** (obligatory inversions of infinitives (A; IPP = infinitive)):
dat Jan het boek heeft kunnen lezen (1-2-3)
that Jan the book has-1 can-2 read-3 (*All others)

e. **MOD-AUX-V** (optional inversion of participle (B); obligatory inversion of infinitive (A); optional 3-LEFT):
dat Jan Marie kan hebben gezien (1-2-3)
that Jan Marie can-1 have-2 seen-3
dat Jan Marie kan gezien hebben (1-3-2)
that Jan Marie can-1 seen-3 have-2
dat Jan Marie gezien can hebben (3-1-2)
that Jan Marie seen-3 can-1 have-2

(79) **GE (Standard) – head-final inversions:**

a. **AUX-PART** (no inversion (PART is not a modal)):
weil er das Buch gekauft hat /*hat gekauft (2-1/*1-2)
since he the book bought-2 has-1/*has-1 bought-2

a′. **AUX-INF** (no inversion (INF is not a modal)):
weil er das Buch kaufen wird /*wird kaufen (2-1/*1-2)
since he the book buy-2 will-1/*will-1 buy-2

b. **MOD-INF** (no inversion (INF is not a modal)):
weil er das Buch kaufen muß /*muß kaufen (2-1/*1-2)
since he the book buy-2 must-1/*must-1 buy-2

c. **MOD-MOD-V** (no inversions (MODs are not auxiliaries)):
weil er es kaufen können will (3-2-1)
since he it buy-3 can-2 wants-1 (*All others)
weil er es kaufen können wird (3-2-1)
since he it buy-3 can-2 will-1 (*will* = modal)

d. **AUX-Mod-V** (obligatory inversion of AUX and MOD):
weil er es hat kaufen können (1-3-2)
since he it has-1 buy-3 can-2 (*All others)
weil er es wird kaufen können (1-3-2)
since he it will-1 buy-3 can-2 (*will* = auxiliary)

e. **MOD-AUX-V** (no inversions (V/AUX are not modals)):
weil er es gekauft haben muß (3-2-1)
since he it bought-3 have-2 must-1 (*All others)

f. **AUX-AUX-V** (no inversions (V/AUX are not modals)):
weil es gekauft worden ist (3-2-1)
since it bought-3 been-2 is-1 (*All others)

(80) **GE/Austrian (dialects) – head-final inversions:**

a. **AUX-PART** (no inversion):
weil er das Buch gekauft hat /*hat gekauft (2-1/*1-2)
since he the book bought-2 has-1/*has-1 bought-2

a′. **AUX-INF** (no inversion (INF is main verb)):
weil er das Buch kaufen wird /*wird kaufen (2-1/*1-2)
since he the book buy-2 will-1/*will-1 buy-2

b. **MOD-INF** (no inversion (INF is main verb)):
weil er das Buch kaufen muß /*muß kaufen (2-1/*1-2)
since he the book buy-2 must-1/*must-1 buy-2

c. **MOD-MOD-V** (optional inversion of infinitive; no main verb inversion; no 3-LEFT environment):
weil er es kaufen können will (No inversions: 3-2-1)
since he it buy-3 can-2 wants-1
weil er es will kaufen können (Inversion: 1-3-2)
since he it wants-1 buy-3 can-2

d. **AUX-Mod-V** (optional inversion of infinitive; optional 3-LEFT; no main verb inversion):

weil er es hat kaufen können (Inversion: 1-3-2)
since he it has-1 buy-3 can-2
weil er es wird kaufen können (Inversion: 1-3-2)
since he it will-1 buy-3 can-2
weil er es kaufen können hat (No inversions: 3-2-1)
since he it buy-3 can-2 has-1
weil er es kaufen können wird (No inversions: 3-2-1)
since he it buy-3 can-2 will-1
weil er es kaufen hat können (3-LEFT and inversion: 3-1-2)
since he it buy-3 has-1 can-2
weil er es kaufen wird können (3-LEFT and inversion: 3-1-2)
since he it buy-3 will-1 can-2

e. **MOD-AUX-V** (optional inversion of infinitive; no 3-LEFT environment):
weil er es gekauft haben muß (3-2-1)
since he it bought-3 have-2 must-1
weil er es muß gekauft haben (Inversion: 1-3-2)
since he it must-1 bought-3 have-2

f. **AUX-AUX-V** (no inversions):
weil es gekauft worden ist (3-2-1)
since it bought-3 been-2 is-1 (*All others)

(81) **SG (dialects) – head-final inversions** (data from Schönenberger 1995, p.c.; Hsiao 1999; Haeberli p.c.):[28]

a. **AUX-PART** (no inversion (PART is not a modal or an infinitive)):
das t chatz fisch gässe hät /*hät gässe (2-1/*1-2)
that the cat fish eaten-2 has-1/*has-1 eaten-2

b. **MOD-INF** (optional inversion (B)):
das t chatz fisch ässe mues /mues ässe (2-1/1-2)
that the cat fish eat-2 must-1/must-1 eat-2

c. **MOD-MOD-V** (optional inversion of infinitives (B); optional 3-LEFT):
das er . . . wil chöne vorsinge (2 inversions: 1-2-3)
that he . . . wants-1 can-2 sing-3
das er . . . wil vorsinge chöne (1 inversion: 1-3-2)
that he . . . wants-1 sing-3 can-2
das er . . . vorsinge wil chöne (3-LEFT and inversion: 3-1-2)
that he . . . sing-3 wants-1 can-2
das er . . . vorsinge chöne wil (No inversion: 3-2-1)
that he . . . sing-3 can-2 wants-1

d. **AUX-Mod-V** (obligatory inversion of AUX/MOD (A); optional inversion of infinitive (B); optional 3-LEFT):
das de Jonas hät müese schwimme (A and B: 1-2-3)
that the Jonas has-1 must-2 swim-3
das de Jonas hät schwimme müese (A: 1-3-2)
that the Jonas has-1 swim-3 must-2
das de Jonas schwimme hät müese (3-LEFT and A: 3-1-2)
that the Jonas swim-3 has-1 must-2

e. **MOD-AUX-V** (optional inversion of infinitive (B); optional 3-LEFT):
wil er si mues gsee ha (B: 1-3-2)
since he her must-1 seen-3 have-2
wil er si gsee ha mues (No inversions: 3-2-1)
since he her seen-3 have-2 must-1
wil er si gsee mues ha (3-LEFT: 3-1-2)
since he her seen-3 must-1 have-2

f. **AUX-AUX-V** (no inversions (3-LEFT also yields 3-2-1)):
das de Hans gwäält worde isch (No inversions: 3-2-1)
that the Hans elected-3 been-2 is-1

(82) **WF – head-final inversions** (data from Haegeman 1994: 511, 517, 1995a: 59, 1998c, p.c.):

a. **AUX-PART** (no inversion):
da Valère dienen boek gelezen oat /*oa gelezen (2-1/*1-2)
that Valère that book read-2 had-1/*had-1 read-2

b. **MOD-INF** (obligatory inversion with modal (= operator)):
da Valère dienen boek *kuopen wilt /wilt kuopen (1-2/*2-1)
that Valère this book *buy-2 wants-1/wants-1 buy-2

c. **MOD-MOD-V** (obligatory inversion with modals (= operator)):
dan ze dienen boek kosten willen kupen (1-2-3)
that they this book could-1 want-2 buy-3

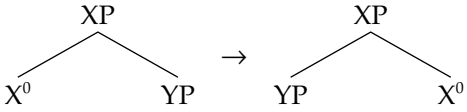
d. **AUX-Mod-V** (obligatory inversion with modal (= operator); obligatory inversion with AUX when operator (i.e., when [+TENSE/+NEG])):
da Valère willen Marie dienen boek geven eet (2-3-1)
that Valère want-2 Marie that book give-3 has-1
da Valère ee willen Marie dienen boek geven (1-2-3)
that Valère has-1 want-2 Marie that book give-3
da Valère oa willen Marie dienen boek geven (1-2-3)
that Valère had-1 want-2 Marie that book give-3
da Valère nooit en-ee willen Marie dienen boek geven (1-2-3)
that Valère never NEG-has-1 want-2 Marie that book give-3
?*da Valère willen Marie dienen boek geven oat (?*2-3-1)
that Valère want-2 Marie that book give-3 had-1
?*da Valère nooit willen Marie dienen boek geven en-eet (?*2-3-1)
that Valère never want-2 Marie that book give-3 NEG-has-1

e. **MOD-AUX-V** (inversion with modal (= operator); optional 3-LEFT):
dat Jan . . . moe gezien een (Inversion: 1-3-2)
that Jan . . . must-1 seen-3 have-2
da Jan . . . gezien moet een (3-LEFT: 3-1-2)
that Jan . . . seen-3 must-1 have-2

f. **AUX-AUX-V** (optional inversion of AUX&AUX):
da Jan gekozen geworden is (No inversions: 3-2-1)
that Jan elected-3 been-2 is-1
dat Jan is gekozen geworden (Inversion: 1-3-2)
that Jan is-1 elected-3 been-2

5.2 Head-initial derivations (inversion)

(83) **Head-initial inversion rule:**



iff the conditions in table 75.19 hold.

Table 75.19 Inversion rules (head-initial base)

Language	Inversion rules	Optionality	Other
AF	X is an auxiliary	Obligatory	• *Will*: modal • Passive participles: optional 3-LEFT
DU	A: Y is a participle B: X is finite and Y is a main verb	A: Optional B: Optional	• Participles: optional 3-LEFT
Frisian	X and Y are verbs	Obligatory	
GE (Standard)	X and Y are verbs, except when Y is an auxiliary and Y is a modal[a]	Obligatory	• *Will*: modal or auxiliary
GE/Austrian dialects	A: Y is a participle B: Y is a main verb C: Y is an infinitive	A: Obligatory B: Obligatory C: Optional	• Infinitives: optional 3-LEFT across a higher auxiliary
Swiss dialects	A: Y is a participle B: X is a modal	A: Obligatory B: Optional	• Optional 3-LEFT • 1-2 inversion only if 2-3 inversion
WF	A: X is a [–TENSE] auxiliary B: Y is a main verb participle	Obligatory	• Present: [±TENSE] • NEG, PAST: [+TENSE] • Participles: optional 3-LEFT across a modal

Note: To avoid the 'except' clause in the rule for GE, one could state instead the following three obligatory rules: A: Y is a participle; B: Y is a main verb; C: X is a modal. These rules would guarantee inversion in all but auxiliary–modal constructions, but would also involve a significant amount of redundancy.

(84) **DU – head-initial inversions** (data from Rutten 1991; Zwart 1996; Robbers 1997):

a. **AUX-PART** (optional inversion of participle (A) or main verb (B)):
dat Jan het boek gelezen heeft /heeft gelezen (2-1/1-2)
that Jan the book read-2 has-1/has-1 read-2

b. **MOD-INF** (optional inversion of main verb (B)):
dat Jan het boek lezen kan /kan lezen (2-1/1-2)
that Jan the book read-2 can-1/can-1 read-2

c. **MOD-MOD-V** (no inversions):
dat Jan morgen zal/moet kunnen werken (1-2-3)
that Jan tomorrow will/must-1 can-2 work-3 (*All others)

d. **AUX-Mod-V** (no inversions (IPP = infinitive)):
dat Jan het boek heeft kunnen lezen (1-2-3)
that Jan the book has-1 can-2 read-3 (*All others)

e. **MOD-AUX-V** (optional inversion of participle; optional 3-LEFT):
dat Jan Marie kan hebben gezien (1-2-3)
that Jan Marie can-1 have-2 seen-3
dat Jan Marie kan gezien hebben (1-3-2)
that Jan Marie can-1 seen-3 have-2
dat Jan Marie gezien can hebben (3-1-2)
that Jan Marie seen-3 can-1 have-2

(85) **GE (Standard) – head-initial inversions:**

a. **AUX-PART** (obligatory inversion (PART is not a modal)):
weil er das Buch gekauft hat /*hat gekauft (2-1/*1-2)
since he the book bought-2 has-1/*has-1 bought-2

a′. **AUX-INF** (obligatory inversion (INF is not a modal)):
weil er das Buch kaufen wird /*wird kaufen (2-1/*1-2)
since he the book buy-2 will-1/*will-1 buy-2

b. **MOD-INF** (obligatory inversion (INF is not a modal)):
weil er das Buch kaufen muß /*muß kaufen (2-1/*1-2)
since he the book buy-2 must-1/*must-1 buy-2

c. **MOD-MOD-V** (obligatory inversions (MODs are not auxiliaries)):
weil er es kaufen können will (3-2-1)
since he it buy-3 can-2 wants-1 (*All others)
weil er es kaufen können wird (3-2-1)
since he it buy-3 can-2 will-1 (*will* = modal)

d. **AUX-Mod-V** (obligatory inversion of MOD and V; no inversion of AUX and MOD):
weil er es hat kaufen können (1-3-2)
since he it has-1 buy-3 can-2 (*All others)
weil er es wird kaufen können (1-3-2)
since he it will-1 buy-3 can-2 (*will* = auxiliary)

e. **MOD-AUX-V** (obligatory inversions (V/AUX are not modals)):
weil er es gekauft haben muß (3-2-1)
since he it bought-3 have-2 must-1 (*All others)

f. **AUX-AUX-V** (obligatory inversions (V/AUX are not modals)):
weil es gekauft worden ist (3-2-1)
since it bought-3 been-2 is-1 (*All others)

(86) **GE/Austrian (dialects) – head-initial inversions:**

a. **AUX-PART** (obligatory inversion of main verbs (B) or obligatory inversion of participle (A)):
weil er das Buch gekauft hat /*hat gekauft (2-1/*1-2)
since he the book bought-2 has-1/*has-1 bought-2

a'. **AUX-INF** (obligatory inversion of main verbs (B)):
weil er das Buch kaufen wird /*wird kaufen (2-1/*1-2)
since he the book buy-2 will-1/*will-1 buy-2

b. **MOD-INF** (obligatory inversion of main verbs (B)):
weil er das Buch kaufen muß /*muß kaufen (2-1/*1-2)
since he the book buy-2 must-1/*must-1 buy-2

c **MOD-MOD-V** (obligatory inversion of main verb (B); optional inversion of infinitive (C)):
weil er es kaufen können will (3-2-1)
since he it buy-3 can-2 wants-1
weil er es will kaufen können (1-3-2)
since he it wants-1 buy-3 can-2

d. **AUX-Mod-V** (obligatory inversion of main verb (B); optional inversion of infinitive (C; IPP = infinitive); optional 3-LEFT across AUX):
weil er es hat kaufen können (1-3-2)
since he it has-1 buy-3 can-2
weil er es wird kaufen können (1-3-2)
since he it will-1 buy-3 can-2
weil er es kaufen können hat (3-2-1)
since he it buy-3 can-2 has-1
weil er es kaufen können wird (3-2-1)
since he it buy-3 can-2 will-1
weil er es kaufen hat können (3-1-2)
since he it buy-3 has-1 can-2
weil er es kaufen wird können (3-1-2)
since he it buy-3 will-1 can-2

e. **MOD-AUX-V** (obligatory inversion of main verbs (B) or obligatory inversion of participle (A); optional inversion of infinitive (C)):
weil er es gekauft haben muß (3-2-1)
since he it bought-3 have-2 must-1
weil er es muß gekauft haben (1-3-2)
since he it must-1 bought-3 have-2

f. **AUX-AUX-V** (obligatory inversions of participles (A)).
weil es gekauft worden ist (3-2-1)
since it bought-3 been-2 is-1 (*All others)

(87) **SG (dialects) – head-initial inversions** (data from Schönenberger 1995, p.c.; Hsiao 1999; Haeberli p.c.):[29]

a. **AUX-PART** (obligatory inversion of participle (A)):
das t chatz fisch gässe hät /*hät gässe (2-1/*1-2)
that the cat fish eaten-2 has-1/*has-1 eaten-2

b. **MOD-INF** (optional inversion (B)):
das t chatz fisch ässe mues /mues ässe (2-1/1-2)
that the cat fish eat-2 must-1/must-1 eat-2

c. **MOD-MOD-V** (optional inversion with modals (B); optional 3-LEFT):
das er . . . wil chöne vorsinge (No inversions: 1-2-3)
that he . . . wants-1 can-2 sing-3
das er . . . wil vorsinge chöne (1 inversion: 1-3-2)
that he . . . wants-1 sing-3 can-2
das er . . . vorsinge wil chöne (3-LEFT: 3-1-2)
that he . . . sing-3 wants-1 can-2
das er . . . vorsinge chöne wil (2 inversions B: 3-2-1)
that he . . . sing-3 can-2 wants-1

d. **AUX-Mod-V** (optional inversion with modal (B); optional 3-LEFT):
das de Jonas hät müese schwimme (No inversions: 1-2-3)
that the Jonas has-1 must-2 swim-3
das de Jonas hät schwimme müese (B: 1-3-2)
that the Jonas has-1 swim-3 must-2
das de Jonas schwimme hät müese (3-LEFT: 3-1-2)
that the Jonas swim-3 has-1 must-2

e. **Mod-AUX-V** (obligatory inversion of participle (A); optional inversion with modal (B); optional 3-LEFT):
wil er si mues gsee ha (A: 1-3-2)
since he her must-1 seen-3 have-2
wil er si gsee ha mues (A & B: 3-2-1)
since he her seen-3 have-2 must-1
wil er si gsee mues ha (3-LEFT: 3-1-2)
since he her seen-3 must-1 have-2

f. **AUX-AUX-V** (obligatory inversion of participles (A) (3-LEFT also yields 3-2-1)):
das de Hans gwäält worde isch (2 inversions A: 3-2-1)
that the Hans elected-3 been-2 is-1

(88) **WF – head-final inversions** (data from Haegeman 1994: 511, 517; 1995a: 59; 1998c; p.c.):

a. **AUX-PART** (obligatory inversion of main verb participles):
da Valère dienen boek gelezen oat /*oa gelezen (2-1/*1-2)
that Valère that book read-2 had-1 /*had-1 read-2

b. **MOD-INF** (no inversion):
da Valère dienen boek *kuopen wilt /wilt kuopen (1-2/*2-1)
that Valère this book *buy-2 wants-1 /wants-1 buy-2

c. **MOD-MOD-V** (no inversions):
dan ze dienen boek kosten willen kupen (1-2-3)
that they this book could-1 want-2 buy-3

d. **AUX-Mod-V** (obligatory inversion when AUX is [–TENSE] (NEG = [+TENSE])):
da Valère willen Marie dienen boek geven eet (2-3-1)
that Valère want-2 Marie that book give-3 has-1
da Valère ee willen Marie dienen boek geven (1-2-3)
that Valère has-1 want-2 Marie that book give-3
da Valère oa willen Marie dienen boek geven (1-2-3)
that Valère had-1 want-2 Marie that book give-3
da Valère nooit en-ee willen Marie dienen boek geven (1-2-3)
that Valère never NEG-has-1 want-2 Marie that book give-3
?*da Valère willen Marie dienen boek geven oat (?*2-3-1)
that Valère want-2 Marie that book give-3 had-1
?*da Valère nooit willen Marie dienen boek geven en-eet (?*2-3-1)
that Valère never want-2 Marie that book give-3 NEG-has-1

e. **MOD-AUX-V** (obligatory inversion of main verb participle; optional 3-LEFT):
dat Jan . . . moe gezien een (Inversion: 1-3-2)
that Jan . . . must-1 seen-3 have-2
da Jan . . . gezien moet een (3-LEFT: 3-1-2)
that Jan . . . seen-3 must-1 have-2

f. **AUX-AUX-V** (obligatory inversion of main verb participle; inversion with AUX):[30]
da Jan gekozen geworden is (A and B: 3-2-1)
that Jan elected-3 been-2 is-1
dat Jan is gekozen geworden (B: 1-3-2)
that Jan is-1 elected-3 been-2

NOTES

1 The notion of 'unmarked' word order is crucial to distinguish verb clusters from constructions like stylistic fronting in Icelandic or VP topicalization.

2 As will be shown in section 2.3, these languages allow word orders that cannot be treated as basic word orders under either a head-final or a head-initial base structure. Thus, these languages clearly involve verb-cluster reordering (in certain constructions) independently of what one assumes to be their base structure.

3 According to a preliminary study conducted by Peter Ackema, there is some potential variation among Frisian speakers regarding the possibility of the IPP effect in descending orders. However, the empirical situation is not clear at this point; in particular, as pointed out by Germen de Haan (p.c.), there is a strong influence from DU which interferes with the data.

4 Not considered for this overview are causative and perception verb constructions, or double-auxiliary constructions of the form *John will have left*, since these constructions are less discussed in the literature.

5 For this basic illustration of the orders attested in verb clusters, the distribution of objects in verb clusters will be ignored. One might imagine that inversion in cases such as (10b, c, d) should result in a structure in which the object occurs between the verbs of a cluster; similarly, without further assumptions, the object should occur after the lowest verb in the structures in (11). However, despite the fact that both expectations are generally not borne out (but see section 3.2), these facts do not challenge the types of inversion suggested in (10–11). An important ingredient of head-initial structures is that in the West Germanic languages, material that is generated to the right of the lowest verb (such as objects) undergoes obligatory movement to some position further to the left. In the course of this overview, this property will be discussed in detail; however, for the present discussion, it might be useful for the reader to simply imagine that the object is not in its base position but somewhere to the left of the cluster (in both the head-initial and the head-final structures).

6 The rules do not capture double-participle constructions in DU as listed in table 75.2. The reason why this construction is ignored is that no systematic empirical characterization is available at this point. For one, constructions involving the auxiliary *geworden* are generally considered as marked and rejected by most DU speakers. Furthermore, while the 1-3-2 order is attested for the *get*+PART construction (Robbers 1997: 124), it is not clear at this point what the status of the other orders in this construction is. Thus, the rules given in table 75.3 and in table 75.4 below might have to be modified after establishing the empirical situation for this construction.

7 The formulation of the inversion rule as in table 75.3 (in particular the assumption that the rule is sensitive to modals rather than to infinitives) receives further support from the fact that modals also invert with non-verbal complements in AF (see Robbers 1997: 167–171).

8 The Swiss data in these examples are from Haeberli (p.c.) and partly also from Hsiao (1999, 2000).

9 But see Den Dikken 1989, Den Besten and Broekhuis 1992, Coppen and Klein 1992, IJbema 1997, and Koopman and Szabolcsi 2000, for instance, for exactly that position – i.e., a pure phrasal movement approach.

10 To account for the optionality of particle stranding (cf. (32b) and (32f)) it has to be assumed that either excorporation is possible or that incorporation can occur before or after verb-cluster formation. Since the structure of particle constructions is a topic on its own, a detailed discussion cannot be provided here. See Neeleman (1994a), Den Dikken (1995c), and references therein for in-depth discussions.

11 For the present discussion, the structure of these infinitival constructions will be left unspecified; in particular, no label is assigned to the remnant constituent in (34). See section 4.

12 The exact landing site of the object (i.e., whether it is higher or lower than the higher VP) is ignored here since it is orthogonal to the question addressed.

13 In fact, particles can appear to the left of certain elements (namely stranded prepositions), which has been taken as support for a movement analysis of particles and against the claim that particles are immovable (cf., for instance, Zwart 1997a). However, since these reduced elements are the only categories that can appear between a particle and a verb, the conclusion that particles undergo leftward movement should also be drawn with some caution. An alternative view would be to assume that

particles and other preposition-like elements undergo syntactic or phonological cliticization; if this process occurs in the phonological component, the order between a particle and a stranded preposition could be seen as a phonological ordering effect, and hence these constructions would not provide evidence for syntactic movement.

14 Assuming that phrasal movement in verb clusters is some form of extraposition, it is expected that this form of movement does not have to target the closest XP on the right but can attach to a higher projection, as long as no clause boundary is crossed. Thus, movement of VP-2 in (42b) across XP would be unproblematic unless the latter is a CP. Since not all infinitival constructions allow the remnant movement operation in (41a, b) (in particular, factive and propositional infinitives prohibit this configuration), the presence vs. absence of a CP (like the suggested presence vs. absence of the XP in (42)) could be seen as the crucial property that distinguishes infinitives allowing a remnant movement construction from ones that prohibit it (see Wurmbrand 2001 for an analysis along these lines).

15 Note that the main issue of this section is simply to determine how different structures can be derived. The question of why certain things move or do not move will be addressed in section 3.3.

16 Although technically speaking, the term 'verb projection raising' is no longer the correct description of these constructions in light of (certain) head-initial approaches, it will be kept here as a descriptive label for constructions of the form 'V-1 . . . [XP V-2]'.

17 As mentioned below table 75.7, the prohibition against stranding of particles holds only for idiomatic particles; particle constructions with a transparent meaning readily allow particle stranding in AF (cf. Robbers 1997), and under the right focus conditions, also in GE and SG (see Wurmbrand 1999b and Ackema 2004 for discussions of this distinction). In DU and WF, however, both types of particles can be stranded. The statements in the text should thus be seen as referring only to idiomatic particles.

18 The claim that movement to functional projections is motivated by the need to check features is itself based on an assumption which appears to be controversial. What kind of features do verbs, modals, auxiliaries, etc., check? Features commonly assumed are so-called V-features. Although it seems that these rather vague features do no more than account for movement in the absence of any other good reason (see also Koopman 1984 for a similar observation regarding features such as [±AFFIX]), it will be granted for the discussion here that movement that is triggered by these kind of features is 'motivated' movement.

19 Unfortunately, the paradigm is incomplete and it is not entirely clear what the options regarding particle placement are in the 1-3-2 order. According to Marcel den Dikken (p.c.), particles can occur to the left or to the right of 1 in the 1-3-2 order. However, since these intuitions have not been confirmed by a speaker of this dialect, the facts are only noted preliminarily at this point.

20 This is not an entirely correct description of Zwart's analysis, since Zwart leaves open (1996: 249) the phrase-structure status of the participle (i.e., whether the element that moves to Spec*OF/BE* is a head or a phrase). The reason – according to Zwart – is that clausal complements are not carried along when the participle moves to its licensing position. However, this problem can of course be avoided (by keeping the assumption that participle movement is XP-movement) if the clausal complement undergoes prior movement to a position above the VP but below the landing site of the participle (see Hinterhölzl 1997, 1998, 1999 and Koopman and Szabolcsi 2000 for extensive

use of this option). Since this remnant movement approach seems to be more in the spirit of Zwart's proposal than the rather ad hoc assumption that heads move into specifier positions, the participle movement will be represented as VP movement, with the understanding that additional movements might have occurred that pre-emptied the VP.

21 As noted in note 19, it is not entirely clear where particles can go in this order. If speakers of this dialect share Marcel den Dikken's intuition that particles can occur to the right or to the left of 1 in the 1-3-2 order, one of the options for particles as discussed in the text would have to be eliminated – i.e., particles could then not be considered as immobile, but one would have to pursue an analysis according to which particles undergo string-vacuous movement (see section 3.1.3).

22 One of Zwart's critiques of the head-final approach which is mentioned repeatedly in the article is that both head- and phrasal movement are necessary to derive verb clusters. Although the account presented in the text indeed involves both head- and phrasal movement, it is important to note that this is not necessarily the only way to derive DU verb clusters under a head-final approach. It has been chosen here since it appears to be the most straightforward option. However, as we have seen in section 3.1.3, it is possible – under certain assumptions about particles – to derive the word-order patterns exclusively by phrasal movement in the head-final approach. Thus, Zwart's claim is not entirely correct. Furthermore, it should be noted that Zwart's own analysis crucially involves both head- and phrasal movement. Thus, it seems that this point of criticism is not justified.

23 Evers attributes this principle to a proposal made by Kuroda in an unpublished paper (cited in Ross 1986).

24 Both articles were subsequently republished. References below are to the newer versions.

25 Note, however, that this conclusion holds only under the particular assumptions stated in the text. One question of debate, for instance, is the claim that floating quantifiers mark the trace position of the subject (see Bobaljik 1998 and references therein for arguments against this position). Furthermore, excorporation could be dispensed with, assuming the relativized HMC approach suggested in Den Dikken and Hoekstra (1997).

26 The lists of references are selective and no claim is made that they exhaustively represent the works on restructuring. In many cases, only works that explicitly address the questions or issues under consideration will be mentioned. Roberts (1997b) is listed in both categories in table 75.13, since restructuring verbs are characterized as non-theta-assigners in his article; however, at the same time it is stated that this property is essentially a language-specific lexical property that does not necessarily correlate with the thematic and semantic properties of the verbs involved.

27 Von Stechow does not commit himself to any assumption about the initial structure of restructuring infinitives (i.e., whether they are base-generated VPs or reduced CPs). However, since he talks about potential deletion of PRO and sentential nodes, his reference is included here.

28 The rules yield Swiss-1 in two-verb clusters; see notes to table 75.2.

29 Again, the rules yield Swiss-1 in two-verb clusters; see notes to table 75.2.

30 The current formulation of the rule predicts that inversion with the higher AUX is subject to the [–TENSE] restriction. If this is empirically incorrect, the rules will have to be modified.

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76 Verb Particle Constructions

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1 Introduction

Verb particle constructions (also known as 'phrasal verbs' and 'serial verb constructions') are collocations of a verb and another element, like *call+up* in (1). These constructions are productive and well discussed in the Germanic languages. Recently, Hungarian has received increased attention. The theoretical challenge posed by verb particle constructions is rooted in the relation between the particle and other elements in the verb phrase. Ad Neeleman (p.c.) sketches the problem roughly as follows:

(i) Does the particle form an initial constituent with the verb or with a VP-internal DP/PP?
(ii) What determines the position of the particle with respect to the verb and VP-internal DPs/PPs? If the particle forms an initial constituent with the verb, does it separate by verb movement or movement of the particle? If it forms an initial constituent with a VP-internal DP/PP, does it combine with the verb through incorporation or reanalysis?

Verb particle constructions also pose a methodological problem. Following native speakers' intuitions, various V+X combinations have been called particle constructions in the literature. Incidentally, those constructions exhibit largely inconsistent patterns of behavior, especially from a comparative perspective, and a unified account of all such constructions is virtually impossible. Lüdeling (2001) calls this a 'delimitation problem'.

In the generative tradition, problems of this sort are solved in a theoretical, not an empirical way. An explanatory theory must determine class membership of an element or configuration on the basis of its properties, and not on pretheoretical, intuitive groupings. Thus, many authors have singled out a class of core V+P combinations as particle constructions (e.g., Emonds 1972a). This strategy will be adopted here too, with references to other approaches where there is significant disagreement.

1.1 Distributional properties

1.1.1 English-type particle movement

In English, particles may break up the otherwise obligatory adjacency of the verb and its NP object (Emonds 1972a; Fraser 1976; Stowell 1981; Kayne 1985; Johnson 1991; Den Dikken 1995c; Dehé 2001; Gries 2002; Neeleman 2002):

(1) a. He called his friend up.
b. He called up his friend.
c. *He called from Boston his friend.

The mobility of the particle, as illustrated in (1a) vs. (1b), is often referred to (especially in early generative literature) as 'particle movement'. This is the most salient property of the construction in the Germanic VO languages. Apart from English, it has been discussed in great detail for Norwegian (Taraldsen 1983; Åfarli 1985; Den Dikken 1995c), but also for Icelandic (Collins and Thráinsson 1996); see Svenonius (1996) for a comparative discussion:

(2) a. Vi slapp ut hunden. Norwegian
we let out the-dog
b. Vi slapp hunden ut.
we let the-dog out
'We let out the dog.'

Swedish (Toivonen 2001) and Danish (Herslund 1984) particles are considerably more restricted in their distribution. In Swedish, simple, unmodified particles precede an NP object; in Danish, the particle follows NP:

(3) a. Matts kastade in soporna. Swedish
Matts threw in the-garbage
'Matts threw in the garbage.'
b. *Matts kastade soporna in.
Matts threw the-garbage in

(4) a. *Han knugede sammen sine hænder. Danish
he clasped together his hands
b. Han knugede sine hænder sammen.
he clasped his hands together
'He clasped his hands together.'

1.1.2 Particles and V2

In the Germanic OV languages, particles (known also as 'separable prefixes') are always left-adjacent to the main verb in final position. No constituent other than a verb may follow the particle. This is illustrated with Dutch stranded prepositions

in (5) (see on Dutch: Koster 1975; Van Riemsdijk 1978a; Hoekstra et al. 1989; Booij 1990; Bennis 1991; Neeleman and Weerman 1993; Neeleman 1994a; Den Dikken 1995c; Koopman 2000a; on German: Stiebels 1996; Wurmbrand 1998b; McIntyre 2001; Zeller 1999; Müller 2002a; Lüdeling 2001; on Afrikaans: Le Roux 1988):

(5) a. de brief waar Jan zijn moeder in uit nodigt — Dutch
the letter that Jan his mother in prt. invites
b. *de brief waar Jan zijn moeder uit in nodigt
the letter that Jan his mother prt. in invites
'the letter in which Jan invites his mother'

When the verb occupies the clause-initial (V2) position, the adjacency of verb and particle is broken up: the particle must be stranded in final position (6). V2 also separates the verb from the particle in VO languages, as in Toivonen's (2002) Swedish example (7):

(6) a. Jan nodigt zijn moeder uit. — Dutch
Jan invites his mother prt.
b. *Jan uit nodigt zijn moeder.
Jan prt. invites his mother
'Jan invites his mother.'

(7) De gamla kyrkorna räckte inte till. — Swedish
the old churches-the reached not to
'The old churches were not enough.'

1.1.3 Particles and V raising

In V-raising contexts (see chapter 75), Dutch particles show up either left-adjacent to the verb they lexically depend on, or left-adjacent to the verbal complex (example adapted from Koster 1975):

(8) a. omdat hij mij probeert op te bellen
because he me tries up to call
b. omdat hij mij op probeert te bellen
because he me up tries to call
'because he tries to call me up'

1.1.4 Modification

English particles may be modified by PP-modifiers like *right*. Modified particles cannot break up the adjacency between verb and NP object (example adapted from Emonds 1972a):

(9) a. They brought the bottle right up.
b. *They brought right up the bottle.

A similar constraint holds for Norwegian: modified particles must follow NP (Åfarli 1985):

(10) a. *Jon sparka langt ut hunden.
Jon kicked far out the-dog
b. Jon sparka hunden langt ut.
Jon kicked the-dog far out
'Jon kicked the dog far out.'

In Dutch, simplex particle modifiers block incorporation of the particle into the verbal complex (example adapted from Den Dikken 1995c):

(11) a. dat Jan de bal pal over heeft geschoten
that Jan the ball right over has shot
'that Jan has shot the ball right over'
b. *dat Jan de bal pal heeft over geschoten
dat Jan the ball right has over shot
c. *dat Jan de bal heeft pal over geschoten
that Jan the ball has right over shot

1.2 Morphological properties

Morphologically, particle verbs exhibit a paradoxical behavior: they behave like a single, word-level unit with respect to certain rules of derivation and composition, while inflectional affixes always attach to the verb in exclusion of the particle (Bolinger 1971; Groos 1989; Booij 1990; Guéron 1990; Hoeksema 1991; Johnson 1991; Neeleman and Weerman 1993; Stiebels and Wunderlich 1994; Zeller 1999; Van Marle 2002; Müller 2002a; Lüdeling 2001).

1.2.1 Derivational morphology

Verb particle combinations allow the formation of both nouns and adjectives, as illustrated for English[1] and Dutch below. In English, morphological derivation usually requires adjacency of verb and particle:

(12) a. his dusting off of the table
b. *his dusting of the table off
c. the dusted off table

(13) a. op- merke- lijk Dutch
up notice able
'remarkable'
b. uit- sterv- ing
out die ing
'extinction'

At least in some cases, the resulting constructions show strong signs of being word-level entities, as evidenced by a heavily constrained operation like German *un*-prefixation (cf. section 3.3.4):

(14) a. das un- ab- geschickte Manuskript
the un off sent manuscript
'the unsent manuscript'

Particles are also, quite regularly, involved in the formation of verbs from non-verbal stems (Stiebels 1996; Booij 2002; McIntyre 2002):[2]

(15) a. tough out
dumb down
b. soldier on
horse around

1.2.2 Inflectional morphology

Inflectional affixes always attach to the verb, excluding the particle. This is true for both the V-particle and the particle-V languages:

(16) a. He look- ed up the information.
b. *He look- up- ed the information

(17) a. Er ist ein- ge- gangen. German
He is in pref gone
'He/It has died.'
b. *Er ist ge- ein- gangen.
he is pref in gone

1.3 Syntactic category

For the Germanic languages, there is some consensus in the literature that verbal particles are prepositional elements (Emonds 1972a; Van Riemsdijk 1978a; but see also Zeller 1999; Lüdeling 2001; and Toivonen 2001 on non-P particles, and Koopman and Szabolcsi 2000 on Hungarian).

According to Emonds (1972a), almost all postverbal particles in English, and most well-behaved particles in the other Germanic languages (cf. Åsdahl Holmberg 1976; Booij and Van Santen 1998; and Van Marle 2002 on some ill-behaved examples) have transitive preposition counterparts. Below, *over* is used as a transitive preposition with an NP object in (18a), as an intransitive (adverbial) preposition in (18b), and as a particle with alternating position in (18c) vs. (18d):

(18) a. They were flying over New York.
b. They came over for a moment.
c. He has taken over the government.
d. He took the government over.

Particles appear in a number of typical PP environments. First, verbs selecting for directional adverbials may take either a full PP or a particle (19a). Second, particles show up in the PP-*with*-NP construction (19b). And third, particles, like PPs, are allowed in locative inversion constructions (example adapted from Emonds 1972a):

(19) a. Why do you glance at Mary/down/in/away/up/back/etc.?
b. Off with his head.
c. Down rolled the carriage.

1.4 Particle functions

The grammatical function of particles is a matter of debate and strong disagreement in the literature. This is to a large extent due to what Lüdeling (2001) calls the 'delimitation problem': different theories give rise to a different delimitation of the data (see sections 2 and 3). Therefore the most salient sets of data, which have been used to support various competing theories, will be sketched in a pretheoretical way here: thematic structure, aspect, focus, and information structure. (For detailed discussion, see Bolinger 1971; Fraser 1976; Neeleman 1994a; Den Dikken 1995c; Olsen 1995, 1998; Stiebels 1996; McIntyre 2001; Zeller 1999; Müller 2002a; Dehé 2001; Koopman and Szabolcsi 2000; Lüdeling 2001; Toivonen 2001; Dehé et al. 2002.)

1.4.1 Thematic structure

Verbal particles can appear in a variety of thematic contexts. Some particles satisfy (often directional) selected positions. In this type of construction, the reference object of the corresponding preposition usually remains implicit, and varying degrees of idiomaticity may result, as in German example (20), adapted from Stiebels (1996):

(20) a. Sie stellt die Skulptur auf den Tisch. (full PP)
she puts the sculpture on the table
'She puts the sculpture on the table.'
b. Sie stellt die Skulptur auf. (particle)
she puts the sculpture on
'She erects the sculpture.'

Other particles correspond to unselected modifiers of the verbal predicate. Such particles tend to introduce additional arguments into the thematic structure of a sentence. In (21), a possessor relation and its arguments are introduced by the particle (cf. section 3.3.4; example adapted from Stiebels 1996):

(21) a. Sie liest (Bücher).
she reads books
'She reads (books).'

b. Sie las sich ein breites Wissen an.
she read refl. a broad knowledge at
'She learned a lot by reading.'

1.4.2 Aspect

In some contexts, particles may have an aspectual import. The best-known group of aspectual verb particle constructions introduces a resultative meaning, as in Swedish example (22), from Toivonen (2001):

(22) Hon drack upp mjölken på en timme.
she drank up the-milk on an hour
'She drank up the milk in an hour.'

In other contexts, particles are related to an imperfective, ongoing action reading (23a), an inchoative reading (23b), a partial action reading (23c), etc. (cf. Bennis 1991; Verkuyl and Zwarts 1992; Van Hout 1996; Stiebels 1996; Zeller 1999):

(23) a. Jan heeft/is door gelopen. Dutch
Jan has/is on walked
'Jan kept up a pace.'
b. Der Skin hat los- getreten. German
the skinhead has prt. kicked
'The skinhead started kicking.'
c. Er brät das Fleisch an. German
he fries the meat prt.
'He fries the meat lightly.'

1.4.3 Hungarian particles and aspect

In Hungarian, verbal particles show some very clear interactions with aspect. First, some particles are inherently perfective. Those prefer a preverbal position (Vörös 1980; Kiss 1987):

(24) János (épp) ette meg az ebédet amikor a postás csengetett.
János just ate up the lunch-acc when the postman rang
'János was just finishing lunch when the postman rang.'

Lexically unspecified particles acquire an aspectual reading related to their position, and to the information structural organization of the clause. On a neutral intonation, and with the focus field empty, a postverbal particle is related to progressive aspect (25a) white preverbal unfocused particles are related to perfective aspect (25b) (example from Kiss 1987):

(25) a. János ment fel a lépcsőn.
János went up the stairs-on
'János was going upstairs.'

b. János fel ment a lépcsőn.
János up went the stairs-on
'János went/has gone upstairs.'

1.4.4 Hungarian particles and focus

The position of Hungarian particles is also determined by focus. Focused constituents appear in the focus field, left-adjacent to the finite verb (see chapter 26). Unstressed particles occupying that position mark neutrality with respect to focus (Kiss 1987; Brody 1990b; Koopman and Szabolcsi 2000):

(26) a. Haza mentem.
home go-past-1sg
'I went home.'
b. ÉN mentem haza.
I go-past-1sg home
'It is me who went home.'

In the presence of auxiliaries, and in restructuring environments, the particle may appear to the left of the verbal complex. This option exists for neutral focus (27a, b). In the presence of a focused constituent (27c), the particle appears left-adjacent to the verb it depends on:

(27) a. Haza fogok menni.
home will-1sg go
'I will go home.'
b. Haza fogok akarni menni.
home will-1sg want go
'I will want to go home.'
c. ÉN fogok akarni haza menni.
I will-1sg want home go
'It is me who will want to go home.'

1.4.5 English particles and information structure

The topic-focus structure of a sentence has an influence on the position of particles in English too (Bolinger 1971; Fraser 1976; Dehé 2001). The neutral order with respect to focus is *particle > NP*. This order allows the projection of focus:

(i) to NP in an answer to (28a);
(ii) to VP in an answer to (28b); and
(iii) to the whole sentence in an answer to (28c) (example adapted from Dehé 2001):

(28) a. What did Durban turn off?
b. What did Durban do?
c. What happened?
He turned off the camera.

On the other hand, NP objects belonging to the background information of the sentence precede the particle. This generalization also captures the widely known fact that unstressed pronouns always precede the particle (29b):

(29) a. 'What did Durban do with the camera?'
Durban turned the camera/it off.
b. *Durban turned off it.

2 Lexicalist and semi-lexicalist accounts

The lexicalist position in its purest form holds that verb particle constructions are formed in the lexicon, and enter the syntactic derivation as a single projecting head. It has been pioneered by Chomsky (1975a: VII-444), who claims that "*called^up* is a *Verb* in *John^called^up^his^friends*, though perhaps not in *John^called^up^the^stairs*, etc."

Lexicalism is supported by two major classes of data. First, verb particle combinations may undergo morphological derivations (Johnson 1991; Neeleman and Weerman 1993; Stiebels and Wunderlich 1994). And second, the meaning and selectional properties of verb particle constructions are idiosynchratic to an extent that might not be expected from genuinely syntactic constructions.

The central problem faced by the lexicalist position is the separability of particle and verb. Given the Principle of Lexical Integrity, syntactic rules may not refer to subconstituents of words. In the case of verb particle constructions under lexicalism, this is exactly the case.

Proponents of the lexicalist position have therefore postulated:

(i) modifications to the strict version of Lexical Integrity; and
(ii) conditions under which violations of strict lexical integrity are indeed forced by independently motivated constraints.

Two families of assumptions can be found related to the weakening of Lexical Integrity. One class of theories postulates a level of morphologically maximal projection below the word level that is visible to the syntactic component. The other class of theories allows the formation of complex words in syntax. It must be stressed that especially the latter strategy is often applied by authors who would not consider themselves lexicalists. However, since syntactic word formation is certainly there to account for data supporting the lexicalist position, the technical device will be sketched under this heading.

The separation of the particle is usually related to constraints on verbs merging with inflectional affixes.

2.1 *Morphological maximality*

Although the assumption of lexically stored, complex-word verb particle constructions is widespread (see Zeller 1999; Lüdeling 2001; Dehé et al. 2002), for a

critical assessment of the literature), the morphosyntactic mechanisms allowing for their separation are not always discussed in much detail.

An elaborated proposal can be found in Stiebels and Wunderlich (1994) and Stiebels (1996). According to them, the lexicon is not just a list of words. It incorporates powerful generative mechanisms involved in the derivation of argument structure and morphology.

As for verb particle constructions, it is assumed that UG provides for a (parametrically activated) morphological template that generates syntactically transparent X-V compounds:

(30) $[Y^{+max}\ V]$

(30) expresses the intuition that some elements, if they occupy a position left-adjacent to a verb, are morphologically maximal. It is important to bear in mind that, according to this proposal, the properties of particles are not specified in individual lexical entries. They are derived as a consequence of the configuration (30).

The generative template (30) interacts with a Visibility Condition stating that morphologically maximal constituents must be visible. In other words, morphologically maximal constituents must remain at the periphery of the word they are part of, and the rules of syntax can freely refer to them.

Turning now to particle verbs in derivational morphology, Stiebels and Wunderlich's (1994) proposal derives a systematic bracketing paradox. Stiebels (1996: 48ff.) is completely explicit in her conclusion that, strictly speaking, there are no particle verbs in derivational morphology. She gives the following German example:

(31) a. [ein [[führ]$_V$ ung]$_N$]
b. *[[ein^{+max} [führ]$_V$] ung]$_N$
in lead suff
'introduction'

While (31b) would be expected semantically and, even more so, by the spirit of lexicalism, it is not well-formed in Stiebels and Wunderlich's theory. The reason is that the particle is forced to be morphologically maximal by (30), yet it would not be visible inside the nominalization. In (31a), on the other hand, the particle is attached to N, not V, as a non-maximal constituent of a regular compound.

Elegant as it is, notice that this account trades away one of the central arguments offered in favor of lexicalism: the existence of morphologically derived verb particle combinations does not show anything regarding their syntactic representation in verbal contexts.

2.2 *Syntactic word formation*

If the availability of verb particle combinations in derivational morphology does not imply that particle-verbs are morphological constructs in all contexts, the

lexical-semantic and morphological properties of the construction can still be considered evidence in favor of a quasi-lexicalist analysis. Such an analysis could be reconciled with Lexical Integrity by the assumption of a syntactic word-formation mechanism.

Syntactic word formation with respect to verb particle constructions has been proposed in the literature in various different ways. Some authors constrain it to the base component of phrasal projection. Groos (1989) suggests that particles are adjoined to V at D-structure; the approach can also be found in standard textbooks like Radford (1988). Toivonen's (2001) LFG account assumes the existence of non-projecting, zero-level categories too. Neeleman and Weerman (1993) and Neeleman (1994a) defend an intermediate position. Complex predicates (of which verb particle constructions are a subclass in their theory) are derived by adjunction to V, which may happen either in morphology or at D-structure.

Others attribute the formation of adjunction structures at the X^0 level to the transformational component. All approaches involving incorporation, be it overt or covert, can be counted in this group (e.g., Van Riemsdijk 1978a; Stowell 1981; Koopman 1995).

Finally, some authors reject any form of particle incorporation, yet see the need to capture the lexicalist intuition that particle and verb are, in some sense, one word. Those authors assume reanalysis as their mechanism of choice (Taraldsen 1983; Den Dikken 1995c; Zeller 1999).

2.2.1 *Adjunction to V^0 at D-structure*

The position that preverbal elements may be adjoined to the head V^0 in Dutch was elaborated for the first time by Groos (1989). According to this proposal, adjunction to V may happen either in morphology or in syntax.

If adjunction happens in morphology, then the result is a complex word which is opaque to the rules of syntax. This is typically the case where we are dealing with morphologically derived (32a) and compounded particle-verbs (32b) (notice that Groos's analysis does not face the bracketing paradox of Stiebels's proposal):

(32) a. [[aan-drijf-] ing]
prt.-drive suff
'drive'
[[uit-drijf-] ing]
prt.-drive suff
'exorcism'

b. [[in-schrijf-] formulier]
prt.-write form
'registration form'

If adjunction happens at D-structure, then the result is a syntactically transparent, separable particle-verb.

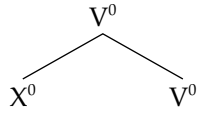
Neeleman and Weerman (1993) and Neeleman (1994a) generalize this proposal in order to account for both verb particle constructions and resultative secondary

predicates, which are realized, according to that thesis, in a configuration of adjunction to V^0. In Neeleman (1994a), it is assumed that particles project syntactically only if they must, in order to host a modifier. If they do not project, they are merged with V in morphology. However, a significant relaxation of the principle of Lexical Integrity makes these constructions transparent in syntax, thus assimilating them to D-structure adjunction as in Groos (1989).

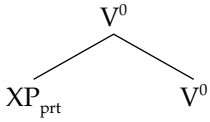
The lack of syntactic projection has a number of consequences for assimilating particles to affixes. Most importantly, they do not break up the adjacency between V and NP in English (section 1.1.1) or the adjacency of stranded P and V in Dutch (section 1.1.2, and see chapter 51), they may be morphologically derived together with the verb (section 1.2.1), and they may undergo V-raising together with V (section 1.1.3).

When the particle is modified, however, it must project syntactic structure. Consequently, it introduces a case-adjacency violation in English, and it must be stranded by V-raising in Dutch (cf. Neeleman 1994a, 2002 on some necessary auxiliary assumptions and modifications):

(33) a.



b.



2.2.2 Adjunction to V in LFG

An analysis very similar to the one proposed in Neeleman and Weerman (1993) is defended in the framework of LFG by Toivonen (2001).

Toivonen observes that the class of particles cannot be defined on the basis of grammatical functions: particles may serve several grammatical functions, and no grammatical function is served exclusively by particles (cf. section 1.4). Instead, she gives a purely distributional definition of particles.

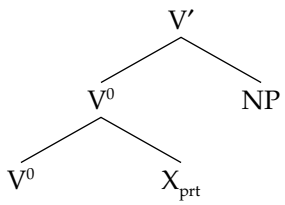
Capitalizing on the fact that full PPs in Swedish (34a) differ in distribution from particles with the same function (34b), (cf. also section 1.1.4), Toivonen claims that particles are non-projecting heads:

(34) a. Petra försöker sparka (*mot skogen) bollen (mot skogen).
Petra tries kick towards forest-the ball-the towards forest-the
'Petra tries to kick the ball towards the forest.'

b. Petra försöker sparka (bort) bollen (*bort).
Petra tries kick away ball-the away
'Petra tries to kick the ball away.'

The existence of non-projecting heads is restricted to head-adjoined positions. Thus, the configuration in (35) arises as the canonical one for particles:

(35)



2.2.3 *Particle incorporation*

Theories proposing versions of particle incorporation have a long history in the generative literature. An early version was proposed by Emonds (1972a), who classifies the 'particle movement transformation' as a 'minor movement rule' (1972a: 548, 560). Explicitly, a rule of P-incorporation was stated for the first time in Van Riemsdijk (1978a).

Both Emonds (1972a) and Van Riemsdijk (1978a) supply exclusively distributional evidence (i.e., word orders) in support of their proposals. Nevertheless, Van Riemsdijk resorts to a lexical filter in order to constrain incorporation to particles and certain postpositions (cf. Stiebels's 1996 particle template). According to Van Riemsdijk (1978a: 107), incorporation is possible only if a target position has been created by the following morphological rule:

(36) $[_V\ X] \rightarrow [_V\ [_P\ Y]\ [_V\ X]]$

Particle incorporation is assumed also in most small-class accounts that otherwise reject lexicalist assumptions. The most explicit account of particle incorporation is given in Koopman (1995). According to that theory, all particles incorporate to V for lexical reasons, but V may then excorporate.

Technically, Koopman (1995) employs a two-stage theory of incorporation. First, a head X adjoins to a c-commanding head Y. Adjunction leaves the structure syntactically transparent and excorporation possible. As a second step, the adjoined head X may be substituted for an X-receptor in Y. The result of this is syntactic opacity and the impossibility of excorporation. Receptor binding comes close to bracket erasure in standard morphological theories.

Since particles only adjoin to V, but do not bind a receptor until LF, the verb may excorporate, according to Koopman (1995).

2.2.4 *Reanalysis*

As a final option, the particle may form a complex predicate together with V by means of reanalysis. This option has been defended by Taraldsen (1983), Den Dikken (1995c), and Zeller (1999).

In Taraldsen (1983), reanalysis is assumed to apply to particles just as it applies to causative constructions, because they are identical configurations in his theory: both require the formation of a complex predicate. But reanalysis also derives a

major consequence related to Taraldsen's (1983) analysis of particle movement (section 3.3.1): if the particle forms a complex predicate together with the verb, the specifier (i.e., subject) position of its projection is rendered non-thematic, and therefore becomes eligible as a host for movement.

Notice that overt incorporation (i.e., preverbal position) is constrained to passives in Norwegian, and even there it is not obligatory (example adapted from Åfarli 1985):

(37) a. Vi har (*ut) sparka (ut) hunden (ut).
we have out kicked out the-dog out
'We have kicked out the dog.'
b. Hunden vart (ut) sparka (ut).
dog-the was out kicked out
'The dog was kicked out.'

2.3 Excorporation triggers

Except for those theories where incorporation is optional, notably Emonds (1972a) and Van Riemsdijk (1978a), both purely lexicalist and incorporation accounts must allow for excorporation of the verb, at least in the context of V2.

The force that drives excorporation is usually related to constraints on the affixation of tense and agreement markers. Koster (1975: 129) claims that only the 'tensed part of a complex verb' is targeted by Verb Second. This statement has been refined technically, but not in its spirit, since; cf. Johnson (1991), Roberts (1991a), and Koopman (1995).

Stiebels and Wunderlich (1994) and Stiebels (1996) endorse considerations relating to inflection too. However, the constraints operating in their theory apply in the lexicon and morphology, not in syntax. To start with, we are confronted with two conflicting requirements:

(i) the inflectional affix must enter into a local relation with the verb; and
(ii) the particle (being morphologically maximal) must remain visible.

In other words, affixation must not touch the position of the particle at the periphery of the verb. Therefore, a rebracketing operation is postulated, which serves two purposes: the excorporation of the particle, and the incorporation of the affix. The full derivation, adapted from Stiebels (1996: 46), is as follows:

(38) rebracketing bracket erasure
[[prt [V]] aff] → [prt [[V] aff]] → [prt [V – aff]]

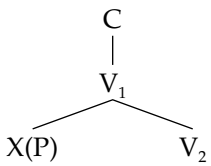
A different approach is taken by Neeleman and Weerman (1993) and Neeleman (1994a), who claim that a 'Complexity Constraint' holds for all syntactic heads (Neeleman and Weerman 1993: 460):

(39) **Complexity Constraint:**
X^0 should either be a lexical head or have a lexical head.

In other words, every X^0 must have an immediate non-branching, lexical head. Therefore the structure resulting from movement of a complex verb into an empty Comp is ill-formed, and the verb must strand the particle (Neeleman and Weerman 1993: 464):

(40) a.

b.*



3 Independent projection

Independent syntactic projection of particles is strongly supported by the mere fact that the particle and the verb can be separated. Therefore they must be visible to the movement rules of syntax, as indeed they are, even for a lexicalist. The most natural assumption, then, is that particles are also visible to phrasal projection.

3.1 Inconclusive data

Before turning to particular accounts, consider some inconclusive sets of data, which have nevertheless received considerable attention in the literature.

3.1.1 Listedness and lexical access

It is an uncontroversial fact about verb particle constructions that they exhibit varying degrees of idiomaticity. Therefore, it is a justified assumption that (at least clearly idiomatic) verb particle combinations are listed in the lexicon. But must they be listed as words?[3]

It has been established already by Emonds (1972a) (see Jackendoff 2002a on a recent rehearsal of arguments) that the idiomaticity of particle-verb combinations in no way implies that they had to be listed as words. Emonds (1972a: 549) quotes obligatorily non-contiguous phrasal idioms as evidence:

(41) a. John took his students to task.
*John took to task his students.

Furthermore, processing experiments seem to show that verb particle combinations (even idiomatic ones) have composite lexical entries: both the verb and the particle in idiomatic constructions prime their non-idiomatic counterparts (see Schreuder 1990, Hillert and Ackerman 2002, Lüdeling and De Jong 2002, and Urban 2002 for a summary and critical assessment).

3.1.2 Gapping

Fraser (1976) claims that gapping treats verb plus particle as a unit and gives examples like the following in support of this claim:

(42) a. He sped up the street and (full PP)
she ~~sped~~ up the hallway.
b. *He sped up the process and (particle)
she ~~sped~~ up the distribution.

In a review of Fraser (1976), Kroch (1979) points out systematic exceptions to this constraint, quoting particles which allow for polar oppositions (43a). In addition, Dixon (1982) observes that gapping is much less likely to be ungrammatical with the order <NP – particle>:

(43) a. Jones pulled the old tablecloth off and
Peters ~~pulled~~ the new one on.
b. *Jones pulled off the old tablecloth and
Peters ~~pulled~~ on the new one.

Gapping therefore does not show anything about the projectional status of particles (cf. Johnson 1991 and Zeller 1999 for discussion; see also chapter 29).

3.1.3 Fronting and stress

It is sometimes claimed (on the basis of Fraser 1976) that particles lack the full range of stress distinctions. However, this is true only for idiomatic verb particle combinations (44b). In transparent constructions (44a), the particle can be contrasted with another particle belonging to the same semantic class. This is most clearly the case in clefts (cf. Wurmbrand 1998b, 1999b; Lüdeling 2001; Capelle 2002; Müller 2002b; and see chapter 61):

(44) a. Where he should take the garbage is IN, not OUT.
b. *What/how . . . he should take them is over not out.

Similarly, topicalization of Dutch and German particles depends on semantic, not structural factors. If the particle has a certain degree of semantic independence, as Lüdeling (2001) puts it, it topicalizes just fine (45a). Idiomatic particles, on the other hand, resist topicalization (45b):

(45) a. Zurück werde ich mit Lufthansa fliegen. German
back will I with Lufthansa fly
'I will fly back with Lufthansa.'
b. *Ab handeln wir das Thema heute nicht mehr.
off deal we the issue today not more
intended: 'We will not exhaust this topic today.'

3.1.4 Particles and resultatives

Following an observation by Neeleman and Weerman (1993), it is sometimes claimed that particles and resultative predicates (see chapter 58) do not productively

co-occur, because they compete for a single structural slot. Where a particle and a resultative do seem to coincide, as below in (47), Neeleman and Weerman claim that the apparent secondary predicate is a modifier. Consider first a standard contrast from Neeleman (1994a):

(46) a. dat Jan het meisje op- belt
that Jan the girl up calls
'that Jan calls the girl up'
b. dat Jan het meisje gek belt
that Jan the girl crazy calls
'that Jan calls the girl crazy'
c. *dat Jan het meisje gek op belt
that Jan the girl crazy up calls

However, this is not the only option considered in the literature. Den Dikken (1995c) offers a book-length discussion of well-formed verb particle constructions involving an additional, predicate-like element in several languages (sections 3.3.2 and 3.3.3). For the moment, suffice it to give the following Dutch example from Den Dikken (1995c: 76). According to him, the poor grammaticality of *wh*-movement militates against an analysis of the AP *rood* 'red' as a modifier:

(47) a. dat ze de schuur rood over hebben geschildered
that they the barn red prt have painted
'that they painted the barn up red'
b. ??Hoe rood/Wat voor kleur hebben ze de schuur over geschildered?
how red/what for color have they the barn over painted

Ad Neeleman (p.c.) replies that predicates added to verb particle constructions do not have the transitivizing effect which is typical of resultatives: they consistently fail to introduce any argument in addition to the ones licensed by the verb particle unit. Furthermore (47b) does not support Den Dikken's (1995c) position without particular assumptions on the structural description of the construction at hand: in principle, resultatives can be questioned.

In sum, the question whether *rood* in (47a) is a resultative secondary predicate or a modifier, and, more generally, whether (46c) and (47a) are instances of the same configuration, is another manifestation of Lüdeling's (2001) delimitation problem and its standard solution. Neeleman's theory predicts that (47a) involves a modifier; Den Dikken's assumptions suggest an analysis as a resultative. Without particular assumptions on the theory of grammar, the contrast between (46c) and (47a) does not decide among the two options.

3.2 Dutch postpositions

A milestone in the analysis of verb particle constructions is Van Riemsdijk's (1978a) discussion of Dutch PPs. Although, building on Emonds (1972a), he

defined particles as intransitive prepositions, he nevertheless prepared the ground for the small-clause analysis.

The crucial set of data involves Dutch motional postpositions, which are identical to transitive particle constructions at the level of the phonetic string:

(48) NP > P > V

Van Riemsdijk (1978a) observes that, while motional postpositions can be argued without doubt to be complement-taking Ps, they share with particles their affinity to split from their complement and join the verbal complex. He explains the similarity with the claim that both particles and motional postpositions may incorporate to V.

The constituency of the postposition with its complement can most clearly be observed in extraposition structures (see chapter 25). The PP complement of the postposition (49a) cannot be extraposed without the postposition – (49b) vs. (49c):

(49) a. omdat hij [bij de tandarts vandaan] gebeld had
because he at the dentist's from called had
b. *omdat hij vandaan gebeld had bij de tandarts
because he from called had at the dentist's
c. omdat hij gebeld had [bij de tandarts vandaan]
because he called had at the dentist's from
'because he had called from (at) the dentist's'

P-incorporation can be observed in restructuring environments (50a) and where adverbial phrases separate the postposition from its NP complement (50b):

(50) a. omdat hij *de boom* [probeert] *in* te klimmen
because he the tree tries in to climb
'because he tries to climb the tree'
b. omdat zij *de boom* [op blote voeten] *in* klommen
because they the tree on bare feet in climbed
'because they climbed the tree barefoot'

In sum, it is possible for a P to take a complement, and to incorporate to the verb too. These two properties are the main ingredients of the small-clause analysis.

3.3 Small clauses

The small-clause analysis of verb particle constructions (see chapter 58) was first introduced by Taraldsen (1983) for Norwegian, and then applied to English by Kayne (1985). A thorough comparative discussion of verb particle constructions from the perspective of small clauses is Den Dikken (1995c).

3.3.1 Norwegian subject effects

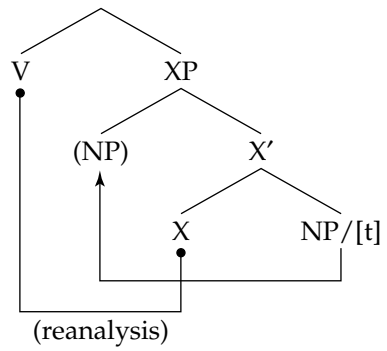
Norwegian (51) exhibits a positional alternation of particle and NP like English (1). Taraldsen (1983) observes that causative constructions (49) show the same alternation:

(51) a. Vi har sparka ut hunden.
we have kicked out the-dog
b. Vi har sparka hunden ut.
we have kicked the-dog out
'We have kicked out the dog.'

(52) a. Vi lot løslate fangene.
we let release the-prisoners
b. Vi lot fangene løslate.
we let the-prisoners release
'We made the prisoners be released.'

Taraldsen suggests that both constructions should be treated alike, and that they should be assigned the structure in (53):

(53)



This analysis is supported by the observation that the direct object NP acquires subject-properties when it precedes the particle.

Take first a construction containing a particle, an NP object, and a PP embedding a pronoun bound by the subject of the sentence, as in (54a). As expected, the bound pronoun introduces a violation of Principle B:

(54) a. ?*Vi viftet vekk myggen fra oss.
we waved away the-mosquitoes from us
b. Vi viftet myggen vekk fra oss.
we waved the-mosquitoes away from us
'We waved the mosquitoes away from us.'

The Principle B effect disappears when the NP object precedes the particle. This suggests that the object NP defines a binding domain as an accessible subject, once it has moved across the particle. It also supports the assumption that the direct object c-commands the pronoun.

Second, Norwegian has a class of purpose clauses which are obligatorily controlled by a subject. Again, NP objects may act as controllers if, and only if, they precede a particle:

(55) a. *Vi jaget ut ulven for å gjenfinne sin tapte frihet.
we chased out the-wolf to find again its lost freedom
b. Vi jaget ulven ut for å gjenfinne sin tapte frihet.
we chased the-wolf out to find again its lost freedom
'We chased out the wolf in order for it to find its lost freedom again.'

Taraldsen (1983: 242ff.) concludes that these effects follow from the structure of the construction: the NP object in transitive particle constructions indeed occupies a (non-thematic) subject position when it precedes the particle – the specifier of P.

Movement into that position is constrained to particles (and excluded for regular prepositions) because only particles undergo reanalysis with the verb, forming a complex predicate. As a consequence, the particle does not assign a subject theta-role to its specifier, and the Projection Principle no longer excludes it as a movement target.

3.3.2 Complex constructions

Kayne (1985), Guéron (1990), and, in great detail, Den Dikken (1995c) discuss constructions containing a particle plus another predicative constituent, like (56). These constructions are called complex particle constructions in Den Dikken (1995c):

(56) a. We made John out a liar.
b. John turned out intelligent.
c. They put the books down on the shelf.

First, Kayne (1985) adds to Taraldsen's observations the fact that the pre-particle position in simple particle constructions acts as a left branch, constraining A'-movement in English. Left-branch effects support a small-clause analysis, because they would be unexpected if the NP were a right-branch complement to V:[4]

(57) *What did they look [the information [about [t]] up]?

Guéron (1990) points out that this left-branch effect holds for the particle-final order only. If the particle precedes, then extraction from inside NP is grammatical (Guéron's bracketing):

(58) Who did you write [up [a paper [about [t]]]]?

Importantly, both Kayne (1985) and Guéron (1990) defend the claim that the particle forms a constituent with NP in transitive particle constructions.

Svenonius (1992) further supports this claim with an observation about ellipsis (see chapter 29). In English, no more than two constituents may be left behind by gapping (59). This constraint, however, does not 'see' the particle in transitive particle constructions (60) (example from Den Dikken; note that the gapping

examples are ungrammatical if the particle precedes the NP, which Den Dikken 1995c attributes to obligatory reanalysis of V+particle under that order):

(59) a. John eats with chopsticks and Mary ~~eats~~ with a fork.
b. John eats spaghetti and Mary ~~eats~~ chop suey.
c. *John eats spaghetti with chopsticks and Mary ~~eats~~ chop suey with a fork.

(60) Turn [the oxygen off] with your knee and ~~turn~~ [the acetylene on] with your elbow.

Now turn to complex constructions. PP predicates following the particle in complex constructions form a constituent with the particle: they can be pied-piped by *wh*-movement (cf. Stowell 1981; example from Den Dikken 1995c; notice that examples like (61) are rejected by some speakers for, it seems, stylistic reasons; cf. Den Dikken 1995c: 2):

(61) a. [Down on which shelf] did they put the book?
b. [Out to whom] did they send a schedule?

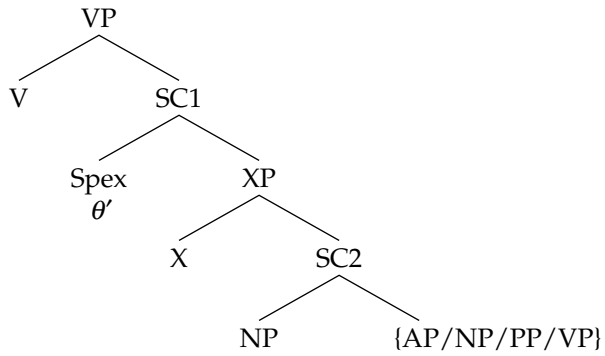
And this constituent may also include the NP object, as evidenced again by gapping (Svenonius 1992; example from Den Dikken 1995c):

(62) Send [the documents back to the CIA] by mail and ~~send~~ [the secret memos up to the White House] by courier.

3.3.3 The structure of predication

Den Dikken (1995c: 269) concludes his discussion by assigning the structure in (63) to complex particle constructions:

(63)



He then relates this structure to further predicative contexts, most notably to triadic, causative, and applicative constructions (see chapters 58, 21, and 6). According to Den Dikken (1995c), the structure in (63) is a central ingredient of predication structures in UG. It is left to parametric choice whether particles are overt, covert, or affixal. Recently, this type of approach has been taken up in the framework of VP shells; cf. Nicol (2002).

At this point, the small-clause analysis coincides in spirit with virtually all other analyses of verb particle constructions. Recall that Stiebels and Wunderlich (1994) and Stiebels (1996) posit their particle template (30) as a generative device of UG, and particles play a central role in the derivation of predicate-argument structures in their theory.

Particles are also related to resultative secondary predication in Neeleman and Weerman (1993) and Neeleman (1994a). Both constructions are considered manifestations of a single configuration underlying complex predicates (see chapter 58): adjunction to the head V (33a, b).

For recent discussion of this line of argument, see Wurmbrand (1999b), Zeller (1999), Koopman and Szabolcsi (2000), Lüdeling (2001), Nicol (2002), and Müller (2002a) for an HPSG account.

3.3.4 Argument licensing and morphology

The small-clause analysis of particles has been supported from a different perspective in Kratzer (1993). In the context of a discussion of adjectival passives (see chapter 2), she observes that certain verb particle combinations in German behave as if they were heads, and others as if they were phrases. As a test, she uses the negative prefix *un-*, which cannot attach to phrasal hosts. In the following example, the verb particle combinations have exactly the same meaning. Yet only one of them allows for *un*-prefixation. Kratzer (1993) claims that it is the necessarily phrasal status of the particle in (64b) which bans prefixation:

(64) a. das un- ab- geschickte Manuskript
the un off sent manuscript
'the manuscript that wasn't sent off'
b. *das un- weg- geschickte Manuskript
the un off sent manuscript
'the manuscript that wasn't sent off'

Now consider the particle *ab* in a little more detail. Even in combination with the same verb, *ab* can be fully transparent, or idiomatic:

(65) a. den Dreck vom Auto ab- waschen (transparent)
the dirt from-the car off wash
'to wash the dirt off the car'
b. das Geschirr ab- waschen (idiomatic)
the dishes off wash
'to do the dishes'

Lüdeling (2001) observes that *un*-prefixation to the participle of *abwaschen* is possible only on the idiomatic reading:

(66) a. der Teller ist un- ab- gewaschen
the plate is un off washed
'the plate is unwashed'

b. *das Auto ist un- ab- gewaschen
the car is un off washed
'the car is unwashed'

Similar considerations hold for topicalization (section 3.1.3): it is excluded for idiomatic particles. Both Kratzer (1993) and Lüdeling (2001) conclude that transparent verb particle combinations must be phrasal, even when they are embedded morphologically.

In a further step, Kratzer (1993) argues that idiomatic particles may head phrases and project syntactic argument positions, too. In the following example, the indirect object is licensed by the particle, as the contrast between (67b) and (67c) shows:

(67) a. weil sie die Antwort flüsterten
because they the answer whispered
'because they whispered the answer'
b. *weil sie ihm die Antwort flüsterten
because they him the answer whispered
c. weil sie ihm die Antwort zu- flüsterten
because they him the answer to whispered
'because they whispered the answer to him'

The particle-verb *zuflüstern* can form an immaculate adjectival passive, conserving the dative in (68a). But *un*-prefixation renders that construction ungrammatical (68b). This indicates that particle+V is a phrasal construct. Kratzer (1993) argues that it must be phrasal, because the particle projects an argument position:

(68) a. die Antwort war ihm zu- geflüstert
the answer was him to whispered
'the answer had been whispered to him'
b. *die Antwort war ihm un- zu- geflüstert
the answer was him un to whispered

Now notice that the same holds even for idiomatic/listed constructions: if the particle introduces an argument, it must project syntactic structure, and *un*-prefixation is banned:

(69) a. Das Lob schmeichelt ihm.
the praise flatters him
'The praise flatters him.'
b. Sie schmeichelt ihm das Land ab.
she flatters him the land off
'She wheedled the country out of him.'
c. Das Land war ihm ab- geschmeichelt.
the country was him off flattered
'The country has been wheedled out of him.'

d. *Das Land war ihm un- ab-geschmeichelt.
the country was him un off flattered

3.4 Particles and functional categories

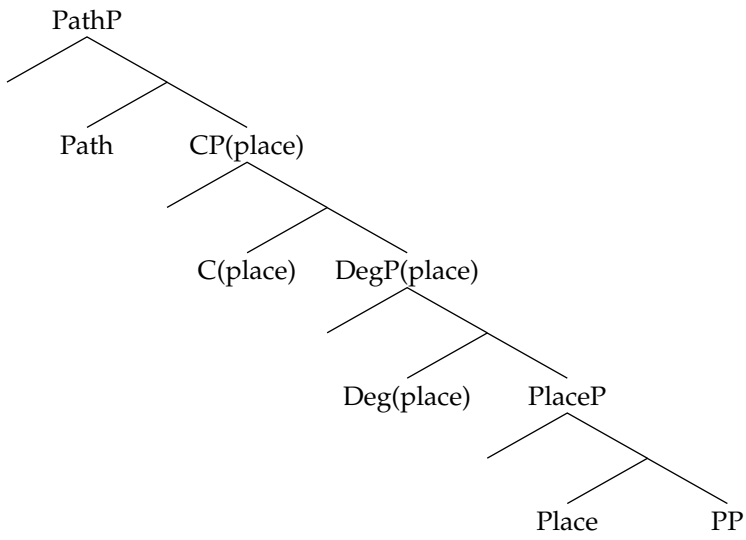
Starting with the introduction of functional prepositions in Van Riemsdijk (1990), the question about functional structure around particles has gained considerable importance. In particular, it has been asked whether particles are lexical or functional elements, and which functional elements can be found with particles, if any.

There seems to be some agreement that particles do not project the full functional structure of regular PPs. Indeed, the lack of functional structure has been claimed to explain data which were attributed to the lack of any syntactic projection in earlier proposals (Zeller 1999; Koopman 2000a). The main asset of such an approach is that it allows us to ascribe the morpholexical properties of verb particle constructions to structural deficiency (lack of functional projections), and yet maintain the autonomy of syntax (no weakening of Lexical Integrity).

3.4.1 Split PPs

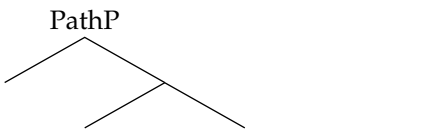
On the basis of the distributional patterns in Dutch PPs, and of the conceptual structures proposed by Jackendoff (1990b), Koopman (1993, 2000a) arrives at a universal template for the structure of prepositional phrases. According to her, local PPs incorporate (among others) a projection hosting material referring to places, a projection hosting degree expressions, and a maximal functional projection. Directional PPs are analyzed as projections of a directionality head which takes a local PP in its complement:

(70)

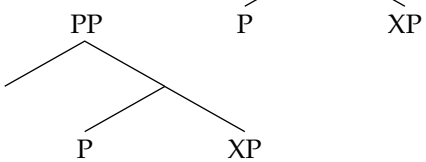


According to Koopman (1993, 2000a), particles differ from full prepositional phrases in that functional categories are absent from their projection. Thus, idiomatic particles are analyzed as bare PPs, and directional particles as PathPs embedding a bare PP:

(71) a.



b.



This analysis predicts, first, that particles may incorporate to V: no head intervenes between the particle and the verb. It also predicts that NP objects to particles are not assigned case (cf. Emonds 1972a on particles as intransitive prepositions). The absence of PlaceP predicts that particles do not license Dutch R-pronouns (see chapter 51; example from Koopman 2000a):

(72) a. *Ik heb *nergens* op-gepakt.
I have nothing+R up-picked
b. Ik heb *niets* op-gepakt.
I have nothing up-picked
'I picked up nothing.'

Furthermore, the absence of a DegP predicts that particles cannot be modified by degree expressions (example from Koopman 2000a):

(73) a. Hij heeft het *vlak/*pal op-gepakt.
He has it right up-picked
'He picked it right up.'

However, the latter constraint especially has been observed to give rise to rather significant exceptions (cf. Emonds 1972a for English; Den Dikken 1995c and Neeleman 1994a for Dutch; and see section 1.1.4). Most of the observable patterns are accounted for in Koopman's (2000a) rich structural architecture. However, they would not be called particle constructions if they involved the projection of functional prepositions.

3.4.2 Case and reference

The question about a functional layer above particles may also be addressed from the perspective of case and reference. This position is taken by Zeller (1999).

First, consider a regular local preposition like German *aus* 'from'. Semantically, the preposition denotes a relation between a reference argument and a location. Syntactically, the reference object is licensed by the verb (by which it is assigned accusative case), and the location by the preposition (which assigns dative):

(74) Peter trinkt das Bier aus dem Glas. (full PP)
Peter drinks the beer from the glass
'Peter drinks the beer from the glass.'

By contrast, particle *auf* does not support two arguments (see Stiebels 1996 for an exhaustive description, including many different patterns):

(75) a. Peter trinkt das Bier aus. (particle)
Peter drinks the beer from
'Peter drinks up the beer.'
b. Peter trinkt das Glas aus.
Peter drinks the glass from
'Peter drinks up the glass.'
c. Peter trinkt das Bier (*das Glas) aus (*das Glas).
Peter drinks the beer the glass from the glass
d. Peter trinkt das Bier aus dem Glas aus.
Peter drinks the beer from the glass from
'Peter drinks up the beer from the glass.'

This contrast can be explained on the assumption that prepositions, but not particles, project the functional structure necessary to license case. Thus, whether or not a particle assigns a thematic role to an argument, it might be claimed that all nominal arguments of a verb particle construction depend on the verbal domain to receive case. On the further assumption that the verb does not assign dative in the example above, the observed contrast follows (see Zeller 1999; Koopman 2000a; see also Emonds 1972a and Van Riemsdijk 1978a on the intransitivity of particles).

Incidentally again, particles show anything but consistent behavior in this respect. The term 'verb particle construction' covers too many distinct elements and configurations to allow for a single, consistent analysis. To give just one example, compare simple and (morphologically) complex directional particles in German, as discussed by McIntyre (2001) and Zeller (1999). Complex particles are formed of a regular particle, plus one of the deictic prefixes *hin-* (away from speaker), *her-* (toward/in proximity with speaker), and *da-* (here/there). It turns out that complex particles pattern with full PPs with respect to their referential properties. Zeller (1999) argues that, if reference is a property of the functional

domain, then complex particles must project functional categories. In contrast to simple particles (76b), they introduce reference to locations (76a):

(76) a. Hier strömt Gas heraus.
here streams gas HER-out
'Gas is escaping (out of some contextually salient entity).'
b. Hier strömt Gas aus.
here streams gas out
'Gas is escaping somewhere here.'

When simple particles do introduce reference to a location, it is usually a prototypical location specified in the lexical entry of the particle-verb, like the mailbox in (77a) below. Complex particles introduce specific local reference again, overriding the prototypical location (77b):

(77) a. Ich habe heute drei Briefe ein- geworfen.
I have today three letters in thrown
'I have posted three letters today.'
b. Ich habe heute drei Briefe hinein- geworfen.
I have today three letters HIN-in thrown
'I have thrown three letters into something today.

And finally, complex directional particles imply that a contextually relevant distance is traversed by the reference object. As a result, (78b) means that the ring is given away by the agent. Simple particles do not give rise to such an implication – the ring most naturally ends up on the agent's own finger (78a):

(78) a. den Ring an stecken
the ring at stick
'put on the ring'
b. den Ring dran stecken
the ring DA-at stick
'put the ring on something'

As for the presence of functional projections, then, particles exhibit strongly inconsistent behavior.

4 Conclusion

In retrospect, it might seem that firm conclusions about verb particle constructions have not been reached. This impression is caused to a large extent by what Lüdeling (2001) calls the 'delimitation problem', and which has recently been discussed also in Toivonen (2001) and Zeller (1999), among others: what native speakers perceive as a verb particle construction, a particle-verb, a phrasal

verb, etc., in a given language does not have consistent phrase structural or functional properties, and therefore does not have a single representation in an explanatory theory.

The strategy which has been followed, explicitly in some and implicitly in most accounts, is to single out consistently behaving subclasses of data. Those subclasses and their properties are then dealt with in independently established explanatory contexts, in line with the elimination of the notion of a 'construction' from grammatical theory in general.

More than establishing insights about an intuitive, yet inconsistent concept, this strategy has indeed been successful in devaluing 'verb particle constructions' as a notorious counter-example to the modular organization of the language faculty.

NOTES

I profited a lot from extended discussions of this topic with Jochen Zeller during the late 1990s. Helpful comments on various versions in different formats were made by Hilda Koopman, Katharina Köhler, Andrew McIntyre, Ad Neeleman, an anonymous reviewer, and the residents at NIAS during the fall of 1996. Special thanks to Henk van Riemsdijk, who made this chapter possible in the first place.

1 Ad Neeleman (p.c.) points out that the prenominal constituent *dusted off* is not necessarily an adjective. Verbal prenominal modifiers do exist in English, and the adjectival modifier *very* is excluded in (i). However, particles do exhibit an exceptional behavior, since other postverbal constituents are excluded in this configuration (ii):

   (i) *a very dusted off table

   (ii) *a thrown at him ball

2 These examples are sometimes analyzed as involving conversion of N or A to V, before the particle is attached (e.g., Booij 2002). For the position that particles and prefixes may indeed be verbalizing affixes, see Selkirk (1982).

3 See Di Sciullo and Williams (1987) on general considerations on listedness and wordhood.

4 Notice that the complex predicate analysis can account for the data too, yet at the price of invoking additional mechanisms, like movement operations in Johnson (1991); see also Neeleman and Weerman (1999: ch. 2). In principle, the same applies to Guéron's (1990) and Den Dikken's (1995c) analyses, which generate NP as a complement to the particle. Only under Kayne's (1985) assumptions are left-branch effects a very natural consequence.

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77 *Wh*-in-Situ

JOSEF BAYER

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1 Introduction

In most of the languages of Indo-European origin, constituent questions are formed by fronting an interrogative pronoun or a phrase which is headed by an interrogative determiner. Following common usage, we will refer to these as '*wh*-pronouns' and '*wh*-phrases', and to the transformational process of constituent question formation as '*wh*-movement'. In terms of more recent syntactic theorizing, a *wh*-element is assumed to land in a designated position which is provided by the functional vocabulary of the language. Clause structure involves at least the lexical layer of the V-system, on top of this the functional layer of the I(nflectional) system, and on top of that the functional layer of the C(omplementizer)

system. *Wh*-phrases are moved from the domain of the V-system, in which they function as arguments or adjuncts of any sort, to the specifier of CP (Spec, CP). This movement is shown in (1):

(1) $[_{CP}$ *wh*-phrase$_1$ $[_{C'}$ C $[_{IP}$ $[_{VP}$ . . . t_1 . . .]]]]

The *wh*-phrase leaves a trace (t). The chain which is formed by *wh*-movement has roughly the following characteristics: if the *wh*-phrase corresponds to an argument, the trace is in an A(rgument) position, while the *wh*-phrase itself is in a non-A- or A'-position. The *wh*-phrase is semantically an operator which binds the trace, which in turn is interpreted like a logical variable. In natural language, the operator is usually a phrase which consists of the operator proper, the pure *wh*-part, and a restrictive part. Thus, *who* is composed of the features [wh] and [person], *what* is composed of [wh] and [thing], *which student* is composed of [wh] and [student], etc. Once the operator is in Spec, CP, it has scope over the proposition expressed by IP. The proposition contains a trace, and is thus an 'open' proposition. As such it does not express a truth-value but rather a property. The sentence containing a trace corresponds to a lambda-abstracted formula, λx [. . . x . . .]. If a referring expression is inserted via lambda-conversion, a truth-value is yielded. According to standard semantic assumptions (cf. Karttunen 1977), a constituent question is taken to be the set of true propositions expressed by [. . . x . . .], where the variable x is restricted in the familiar ways. Strictly speaking, the feature [wh] is not itself an operator that could bind a variable. According to standard assumptions, the *wh*-phrase also involves an existential operator. This operator is actually responsible for variable binding. By involving existential quantification, the question makes a commitment to the existence of an entity which corresponds to the phrase which is missing from the clause. As Chomsky (1977b) has shown, *wh*-movement is only one manifestation of a larger class of movements which comprises topicalization, relativization, clefting, comparative formation, etc. Here we will confine ourselves to question formation by *wh*-movement and its immediate correspondents. These immediate correspondents are the actual topic of this chapter.

The point is that not all *wh*-phrases undergo movement, while at the same time their interpretation seems to remain the same as if the phrase had been moved. In the *wh*-moving languages this is shown in multiple questions. One *wh*-phrase moves to Spec, CP, while all the others remain 'in-situ', i.e., where we assume the corresponding arguments would have been inserted, as is seen in the parallelism between (2a) and (2b):

(2) a. Who bought **what** for **whom**?
    b. Who bought **flowers** for **his wife**?

The question in (2a) is interpreted as if it was composed of three questions: 'Who bought something for someone?', 'What was bought by someone for someone?', and 'For whom was something bought by someone?' The *wh*-phrases in situ

seem to also be operators which at some level of representation bind variables like the moved operator. The question is how syntactic theory can meet this semantic intuition.

Next to this phenomenon there are languages in which constituent questions are never formed by *wh*-movement. *Wh*-phrases rather remain in situ. This is shown by Cole and Hermon's (1994) Chinese example in (3):

(3) Meige ren dou maile shenme (-ne)?
everyone all buy what PARTICLE
'What did everyone buy?'

Shenme remains in situ, but there is the possibility of using the particle *ne*, which indicates that we are dealing with an interrogative. One can imagine that *shenme* may be allowed to stay in situ just because *ne* already does the job of marking the clause as a *+wh* clause.

Finally, there are languages in which both the in-situ and the movement strategy seem to be options which exist side by side. French is said to be a language in which a *wh*-phrase may remain in situ. However, the English and German examples in (4b, c) also seem to function as normal information-seeking questions under certain circumstances:

(4) a. Jean a vu qui?
Jean has seen whom
'Whom has Jean seen?'
b. John saw who?
c. Der Hans hat wen gesehen?
the Hans has whom seen

Apart from these cases, various languages are found in which the *wh*-operator moves only part of the way to the final scope position. The actual scope position is occupied by another and more neutral *wh*-element. This case, which has become more widely known as 'partial movement' through McDaniel (1989), is exemplified by the German sentence in (5):

(5) Was glaubst du, wann er kommt?
what believe you when he comes
'When do you believe that he will come?'

We observe that the attitude verb *glauben*, which does not tolerate a *wh*-complement at all, nevertheless tolerates one in this case. The reason seems to be that the interrogative force of the embedded *wh*-clause is neutralized by the presence of the higher *wh*-element *was*. This element, occasionally called a '*wh*-expletive', obviously directs the scope of the actual *wh*-operator *wann* to the matrix scope position. Partial *wh*-movement in the *wh*-moving languages constitutes a special

case because the lower *wh*-phrase is not in situ at all. It rather has undergone short movement (to the closest Spec, CP). We will briefly return to partial movement in section 5.4, in connection with data from Bengali in which it is *wh*-in-situ that seems to be involved in a similar process.

The chapter is organized as follows: section 2 presents a brief overview of the phenomena that have played a central role in the earlier theory of LF-movement within GB theory (Chomsky 1981). This theory has largely accepted the conclusion that *wh*-scope is achieved by covert Move α, but that this movement is special in being less constrained than overt movement. Section 3 turns to a first important critique of the classical LF theory, which has culminated in the proposal that certain constraints on movement may be invisible at LF because it is not the *wh*-phrase proper that undergoes movement but rather the whole island that contains this phrase. This has become known as LF 'pied-piping'. Section 4 introduces unselective binding in some detail, as it is an account that many researchers at present take to be able to replace the earlier movement account. Since unselective binding predicts island-free *wh*-scope, it is able to overcome the conceptual problem of the movement asymmetry found in GB. In section 5 we will turn in some detail to *wh*-in-situ in South Asian languages, in particular in Bengali. The *wh*-in-situ phenomenon in these languages has so far received less attention than the one in the more Eastern languages (Chinese, Japanese, Korean). It will be shown that the South Asian languages can shed new light on the phenomenon because they allow different strategies of *wh*-scoping, one of which seems to be covert movement, while there is also overt movement as well as something that resembles partial movement. The materials discussed in section 5 are mainly from Bayer (1996: ch. 7), but new data are frequently introduced, and the account also goes beyond what has been suggested in earlier work.

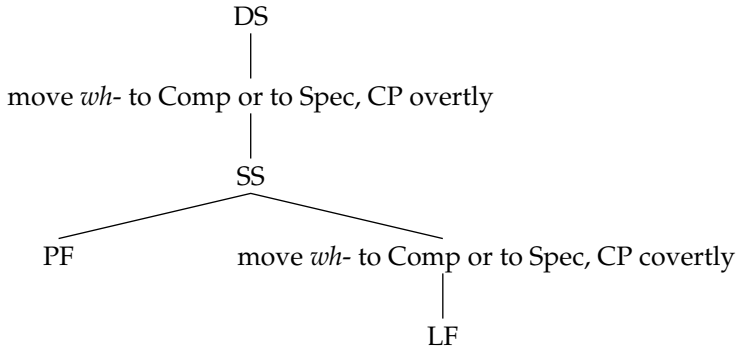
2 The phenomenon in the context of LF theory

Our goal in this section is to provide the basic facts and problems of *wh*-in-situ in both multiple interrogatives and *wh*-in-situ languages, and to recapitulate what the classical GB approach of LF-movement contributed toward an explanation. We will first turn to multiple interrogatives in *wh*-moving languages, and then turn to *wh*-in-situ languages.

2.1 Multiple interrogatives

The classical account of multiple interrogatives in the late 1970s and in the 1980s has been to assume a syntactic level of logical form (LF) which serves as the input to semantic interpretation. LF represents a structurally disambiguated syntactic form in which a *wh*-in-situ phrase may receive a proper interpretation by being moved to the domain in which the overtly moved constituent has already been located since S-structure:

(6) ***Wh*-movement in overt and in covert syntax in the GB model:**



A sentence like (7a), *Who bought what?*, is then analyzed as in (7b), where *who* has been moved either to Comp or in – later versions of the theory – to Spec, CP overtly, while the in-situ phrase *what* has been moved covertly. According to Aoun et al. (1981), *what* would adjoin to the phrase which is in scope position in overt syntax. This leads to an LF representation as in (7):

(7) a. Who bought what?
b. $[_{CP}$ what$_2$ who$_1$ $[_{IP}$ t_1 $[_{VP}$ bought $t_2]]]$
c. Jim . . . a book, Mary . . . flowers, and Clarissa . . . shoes.

In (7), Spec, CP is something like a 'super-operator' into which the in-situ *wh*-phrase has been absorbed, and which can bind also the traces that have been left by LF-movement. The semantics is roughly 'For which y and for which x is it the case that x bought y?' A felicitous answer that could satisfy this question would provide equally for both parts of the missing information; i.e., an answer like (7c) would semantically translate into two processes of λ-conversion.

The GB-inspired account of multiple interrogatives has very strongly been an account in terms of the Empty Category Principle (ECP). The ECP requires that a non-pronominal empty category be either lexically governed – i.e., governed by a lexical head – or antecedent-governed. Overt movement is under the control of the ECP and under the control of subjacency, the latter being a somewhat weaker constraint which requires that not more than a single cyclic node be crossed at a time. To see what is going on, one has to contrast cases of overt *wh*-movement with cases of *wh*-in-situ, where the relevant *wh*-phrases appear in boldface:

(8) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(9) a. ??**What** do you know where we bought?
b. Who knows where we bought **what**?

(10) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

(8), (9), and (10) show in the (a)-cases effects of the Complex-NP-Constraint (CNPC), the *Wh*-island Constraint, and the Condition on Extraction Domain (CED) respectively. It is a stable and remarkable observation that comparable effects of degradation are absent in the corresponding cases of *wh*-in-situ (the (b)-sentences). If we conceive of *wh*-in-situ as a covert version of the operation Move α, we are led to the conclusion that LF-movement is less constrained than overt movement.[1] Precisely this has been the message of the majority of work in the context of GB theory. On the other hand, much evidence was produced that LF-movement of the relevant sort is constrained by the ECP. Most prominent are the superiority facts. As the contrast between (11a) and (11b) shows, the subject *wh-* has to move overtly and the object *wh-* covertly, not the other way around:

(11) a. Who bought what?
b. *What did who buy?

If the LFs of these examples are as in (12), there is an explanation in terms of the ECP:

(12) a. $[_{CP}$ [what$_2$ [who]$_1$]$_1$ $[_{IP}$ t$_1$[$_{VP}$ bought t$_2$]]]
b. $[_{CP}$ [who$_1$ [what]$_2$]$_2$ $[_{IP}$ t$_1$[$_{VP}$ bought t$_2$]]]

In order to understand what is going on here, one has to recognize that the covert adjunction to the overtly moved phrase leaves the index of the latter unaffected; i.e., we don't get multiple indices, as we shall see has been suggested in another theory of multiple interrogatives. In (12a) *who* governs its trace locally. *What* has been moved to Spec, CP and has been adjoined to *who*. As a consequence of this, *what* is unable to antecedent-govern its trace. The trace is, however, lexically governed by the verb. Thus, no ECP violation can arise. In (12b), however, the lexically governed NP *what* has been moved to Spec, CP overtly, and the subject *wh*-phrase *who* has been adjoined to it at LF. In this case, the trace of *what* is licensed as usual, but the trace of *who* is not antecedent-governed. As one can see, by virtue of the indexing convention, *who* fails to c-command its trace. Since the subject is not the sister of a lexical head, its trace is in conflict with the ECP.

Let us next turn to *wh*-in-situ languages where the core results of the classical LF account in terms of an ECP-based explanation could be neatly replicated.

2.2 Wh-*in-situ languages vs.* wh-*moving languages*

The classical LF theory of *wh*-in-situ was inspired by Huang's (1982a) groundbreaking work on the Logical Form of Chinese. In Chinese as well as in many other languages, interrogative phrases remain where other arguments are. Nevertheless, the sentences are interpreted as constituent questions. ECP effects

could not be found in connection with *wh*-subjects. This was attributed to a difference between Chinese and English according to which the subject is lexically governed in Chinese but not in English. ECP effects could, however, be found in the possible scope positions of argument and adjunct *wh*-phrases. The celebrated case appears in (13a). (13b, c) are the two virtual LFs (which we represent here with English words) that could be derived when the *wh*-in-situ phrases are associated with either the embedded clause or the matrix clause:

(13) a. Ni xiang-zhidao [Lisi **zeme** mai-le **shenme**]?
you wonder Lisi how buy-ASP what
b. How$_1$ do you wonder [what$_2$ Lisi t_1 bought t_2]?
c. What$_2$ do you wonder [how$_1$ Lisi t_1 bought t_2]?

Given this state of affairs, (13a) should be ambiguous. As a matter of fact, however, (13a) is unambiguous. The only reading it can have is (13c). (13b) is ruled out by the ECP: the trace of *zeme* 'how' is not lexically governed. If it fails to be antecedent-governed, as is the case in (13c), it violates the ECP. On the other hand, subjacency seems to be violable. As the attested reading of (13a), (13c), indicates, the expectable *wh*-island effect (cf. ??*What do you wonder how we could repair?*) is absent. The conclusion that at LF the ECP is active but subjacency is not is corroborated by data like those in (14). (14a, b) show that LF *wh*-movement is also possible out of relative clauses and complex NPs:[2]

(14) a. Ni zui xihuan [piping shei de shu]?
you most like criticize who DE book
'Who do you like books that criticize?'
b. Ni renwei [shei de hua zui piaoliang]?
you think who DE picture most pretty
'Who do you think that pictures of are most pretty?'

Huang's findings about Chinese *wh*-in-situ were important motivation for a syntactic level of LF in general and for a specific view of LF in particular. This view, which forms the standard view of LF in GB theory, says that LF derivations are constrained by the ECP but not by subjacency. Together with May (1977, 1985) it formed the core of the LF theory of GB. It lead to the widely accepted conclusion that the LF of a sentence which involves a quantifier or a *wh*-in-situ element is transformationally derived from S-structure in the sense of Move α, but that the transition from S-structure to the level of LF, as shown in (6), is somehow less constrained than the transition from D-structure to S-structure.

3 Pied-piping

The classical explanation of *wh*-in-situ did not remain unanswered. Apart from independent attempts of showing that LF is fully under the control of subjacency

(cf. Bayer 1990a, 1996; Reinhart 1991a), Nishigauchi (1986, 1990), Choe (1987), and Pesetsky (1987a) have argued that LF subjacency is largely invisible due to large-scale pied-piping. The following Japanese sentence (from Pesetsky 1987a) should show a subjacency violation because *nani-o* appears in a relative clause, but it is well-formed:

(15) Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP John-DAT what-ACC gave man-DAT meet-Q
'For which thing x did Mary meet a man who gave x to John?'

The central fact that supported the idea that it is not the *wh*-item (*nani-o*) per se which is moved but rather the whole island that contains it is the way such a question must be answered. It turns out that a felicitous answer has to repeat the island in which the relevant operator occurs:

(16) a. */?? Konpyuutaa desu
computer COP
'It is a computer.'
b. [[konpyuutaa-o ageta] hito] desu
computer-ACC gave man COP
'It is the man who gave a computer (to him).'

This finding has inspired an analysis of *wh*-in-situ according to which it is not that the operator proper that is moved out of an island at LF, but rather that the entire island is moved. In (15) the phrase to be moved at LF would be the entire NP headed by *hito-ni*, as reflected in the answer (16b).[3] Nishigauchi (1990: ch. 3) proposes a pied-piping analysis according to which there is first CP-internal *wh*-movement which marks CP as *+wh*; then there is movement of the *+wh*-marked CP to the specifier of NP, which has the effect of assigning the feature *+wh* to the complex NP; in a final step, this complex *+wh*-marked NP moves to the specifier of the matrix CP.

The restriction on possible answers is also found with respect to the English multiple questions in (8b), (9b), and (10b), repeated here as (17–19):

(17) Who found [evidence that Jim has bought what]?
a. **Bill** (found) evidence that Jim has bought **a gun**.
b. ***Bill . . . a gun.**

(18) Who knows [where we bought what]?
a. **Bill** (knows) where we bought **a copy of Chomsky (1981)**.
b. ***Bill . . . a copy of Chomsky (1981).**

(19) Who got jealous [after I had spoken to who]?
a. **Bill** (got jealous) after I had spoken to **Madonna**.
b. ***Bill . . . Madonna.**

The obvious extension of Nishigauchi's theory would be to mark the islands in (17–19) analogously as *+wh* via the percolation convention. Moving them to Spec, CP at LF would then avoid the familiar subjacency problem. There are, however, at least three aspects which should shed a critical light on this analysis. First, as Huang (1982a), Nishigauchi (1990), and others have noticed, there are restrictions which disallow certain occurrences of *wh*-phrases in islands. In Japanese it is, for example, impossible to have the *wh*-element inside a definite NP; cf. (20a). Likewise it is impossible to have an adverbial *wh*-phrase like *naze* 'why' in a complex NP, as shown in (20b):

(20) a. *Kimi-wa [[dare-ga kai-ta] kono hon]-o yomi masi-ta ka?
you-TOP who-NOM write this book-ACC read -Q
'You read this book that who wrote?'
b. *Kimi-wa [[kare-ga naze kai-ta] hon]-o yomi masi-ta ka?
you-TOP he-NOM why write book-ACC read -Q
'You read book that he wrote why?'

These cases need extra restrictions which do not follow from the general approach. (20a) could be taken care of by the name constraint (cf. Fiengo and Higginbotham 1981), according to which a definite NP (a 'name') must not contain a variable; (20b) could be ruled out by extra assumptions relating to the ECP, but if *naze* is replaced by *dooiu riyuu de* 'what reason for', the sentence becomes acceptable. Thus, it cannot be the adjunct nature of the *wh*-constituent which is responsible for the restriction. Second, as Von Stechow (1996) has pointed out, it is not obvious how the LFs produced by LF pied-piping could be interpreted semantically. (15), for instance, asks for the identity of thing such that a man gave it to John, not for the identity of some man. Nishigauchi (1990: 52) argues that such questions ask in fact for the entity referred to by the island, here . . . *hito-ni*, "by making crucial use of" the thing(s) which the entity gave to John. As he nevertheless admits in his note 24, an answer simply identifying a person would not be appropriate. Thus, the island must somehow be left by the in-situ operator at some level of representation which serves as input to the semantic component. A third point is that the LF component is predicted to have extra power which is unattested in (most cases of) overt movement. Thus, as Webelhuth (1989) observes, a phrase whose head is not overtly marked as *+wh* can hardly serve as an identifier of a *+wh* clause (cf. 21a, b). Witness in this context also examples of *wh*-infinitive pied-piping in German (21c) or the lack of it (21d, e), which have been discussed in Van Riemsdijk (1985):

(21) a. I wonder [$_{+wh}$ [$_{+wh}$ whose books] we should read].
b. *I wonder [$_{-wh}$ [$_{-wh}$ books by whom] we should read].
c. Ich frage mich [$_{+wh}$ [$_{+wh}$ [$_{+wh}$ mit wem]$_1$ [es t_1 aufzunehmen]]$_2$ dir t_2
I wonder REF with who it up-to-take for-you
ein Bedürfnis wäre].
a need would-be
'I wonder with who to enter into a competition would be a need for you.'

d. *Ich frage mich [$_{-wh}$ [$_{-wh}$ [es mit wem aufzunehmen]]$_2$ dir t_2
I wonder REF it with who up-to-take for-you
ein Bedürfnis wäre].
a need would-be

e. *Ich frage mich [$_{-wh}$ [dir [es mit wem aufzunehmen] ein
I wonder REF for-you it with who up-to-take a
Bedürfnis wäre]].
need would-be

Examples in which the left edge of the *wh*-phrase is not overtly ocupied by a *+wh* expression seem to be only possible where no overt movement could occur.[4]

There have been attempts to come to grips with the semantic problem while retaining the essential insights of the pied-piping analysis. With respect to (9b) one could, for instance, argue that the analysis proceeds in two steps. First, the entire *wh*-CP headed by *where* is moved to an A'-position, then the operator proper (*what*) is moved out of the island. It has in fact been suggested that A'-movement of a phrase XP causes XP to lose its status as a barrier (cf. Fiengo et al. 1988).[5] As a matter of fact, however, this way of coping with the subjacency problem at LF turns out to be problematic. First of all, adjunction or movement to Spec, CP would be a wild card for getting rid of barrierhood that seems far too unconstrained to cope with the data. Second, there is strong evidence that something like the exact opposite must be the case. Movement of XP to Spec, CP usually bleeds subextraction from XP. Since Ross (1986), this has been known as the 'freezing effect'. German V-second clauses give direct evidence that neither overt movement nor covert movement can proceed from phrases that have been moved to Spec, CP. (22a) shows a grammatical case in which movement proceeds from a phrase in A-position. (22b) shows that once the *was-für* phrase has been moved to Spec, CP, this turns out to be impossible. (22c) shows the same is true for covert movement, assuming for the moment that the *wh*-element in Spec, CP would be 'absorbed' by the matrix *wh*-element:

(22) a. Was$_1$ glaubst du [daß der Hans [t_1 für Leute] kennengelernt hat?
what think you that the Hans for people come-to-know has
'What kind of people do you think that Hans has come to know?'

b. *Was$_1$ glaubst du [[t_1 für Leute]$_2$ (daß) der Hans t_2 kennengelernt hat?

c. *Wer glaubt [[was für Leute]$_2$ (daß) der Hans t_2 kennengelernt hat?
who believes what for people that the Hans come-to-know has

Thus, debarrierization-by-A'-movement seems to be unfeasible.

The above criticism of the pied-piping solution of the *wh*-in-situ problem does not undermine the insights that it has contributed to further theorizing. Although various aspects of pied-piping are still obscure, the approach has been successful in shaping our understanding of *wh*-movement, *wh*-in-situ, and related constructions in the area of quantification, negation, etc. Criticism may focus on two

aspects that have played a role in the discussion. The first is that the morphosyntactic operations underlying the pied-piping mechanism must be more severely constrained. It is, for instance, unclear by which operations the NP *evidence that Jim has bought what* in (17) could ever acquire the *+wh* feature. The process seems to be very much restricted to those cases in which we find the relevant (*wh-*) feature either in the specifier – say, in Spec, DP (*whose mother*) – or in the complement of a functional or semi-functional head such as P. In the latter case, features of the complement of P may raise to P, essentially marking the whole PP with whatever operator features are in the complement. Thus, a PP like *about who* is simply a *+wh* phrase, as various analyses have independently suggested. This would rule out a number of cases for which Nishigauchi has nevertheless assumed pied-piping. This criticism is directly related to a second point, namely that pied-piping is not called for and should therefore not be used if *wh*-scope is already overtly determined. For instance, if the particle *-ne* in (3) or *was* in (5) or *-no* in (15) all mark the structure of which they are the head as *+wh*, then it is unnecessary and should therefore not be possible to move the purported 'real' *wh*-phrase to the specifier of this Q-particle. In the cases considered so far, Q-scope is already overtly marked. Thus, there could only be two reasons for moving an in-situ *wh*-phrase to its specifier: (i) the formation of an operator-variable chain; (ii) feature checking. However, neither reason seems very strong. As we shall see shortly, the *wh*-phrase needs to be decomposed into various parts among which one assumes an existential operator of which there is no evidence that it has to be put exactly into Spec, CP. Thus, the formation of an operator-variable chain could well be an independent issue that does not enforce movement of the *wh*-in-situ phrase (including islands) to Spec, CP. Second, it is far from clear that the feature structure of a *wh*-element in situ is exactly the same as the feature structure of a *wh*-element in Spec, CP or of the CP's head C which is marked *+wh*. It cannot be an accident that many languages use *wh*-words not only in interrogatives but also in relatives and for the expression of indefinites.[6] Thus, a scoped *wh*-phrase or a Q-particle in sentence-peripheral scope position can have an extra feature that might be missing from a *wh*-in-situ element. If that is the case, however, there is no reason for the *wh*-in-situ element to undergo movement to the scope position in order to get its *wh*-feature checked. Viewed from the perspective of the moved *wh*-phrase, it would rather seem that the *wh*-phrase in Spec, CP needs to reconstruct into its underlying position, in order to associate its non-interrogative feature complex with licensing heads that are independent of question formation proper.[7] If this is correct, movement of the *wh*-in-situ element to the specifier of the Q-scope marker is an unnecessary and therefore undesirable operation, a consequence of principles of economy by which movement is to be avoided if constraints can be satisfied without it. The proposal that *wh*-in-situ does not involve any movement at all is, of course, much older. The process in which the scoped element associates with one or more in-situ elements in its c-command domain has become known as 'unselective binding'. This is the phenomenon as well as a class of approaches that will be considered next.

4 Unselective binding

It is a trademark of many head-final languages to have a suffixal morpheme at the right edge of a phrase that counts as an interrogative. In Japanese, for instance, the morpheme *-ka* appears at the end of an interrogative sentence.[8] However, as example (23) from Nishigauchi (1990: 10) shows, it appears both in yes/no questions and in constituent questions:

(23) Tanaka-kun -wa [dare-ga nani-o tabe-ta -**ka**] oboe-te- i-masu -**ka**?
Tanaka -TOP who-NOM what-ACC eat -Q remember is -Q
'Does Tanaka know who ate what?'

The sentence-final Q-morpheme *-ka* turns the matrix clause into a yes/no question, but we see that once *-ka* minimally heads a structure in which *dare*, *nani*, etc., appear, these are interpreted like *wh*-phrases. As Nishigauchi (1990: ch. 4) says, referring to Kuroda (1965), *dare*, *nani*, etc., do not themselves have an interrogative feature. They are rather 'indeterminate' pronouns. They are interpreted as non-interrogative in combination with other particles (among which *-ka* again), once *-ka* is missing as a clause-final head:[9]

(24) Dare-mo-ga nani-ka o tabe-te-iru
everyone-NOM something ACC eating is
'Everyone is eating something'

Thus, one may argue that the actual interrogative feature must head the clause, if an interrogative meaning should be generated. In (24), *dare* combines with the conjunctive particle *-mo* to form a universal quantifier, while *nani* combines with the disjunctive particle *-ka* to form an existential quantifier. One could argue that in (23) it is pure pronominal forms that mimic a *wh*-phrase by being c-commanded and bound by the peripheral element *-ka*.[10] The *wh*-phrases and *wh*-pronouns of the European languages would – according to this picture – be simply blends of heterogeneous features just like negative indefinite quantifiers, which are standardly taken to be fusions of a feature of negation and an indefinite of some sort.[11] *Wh*-in-situ languages of the kind we have been looking at show in a sense more clearly than the *wh*-moving languages how questions are built up semantically: there is a disjunctive operator, typically residing in the final head of the clause, which carries the interrogative (+*wh*) force. If there is a saturated proposition in its scope, the operator ranges over the truth-values 1 and 0.[12] Assuming now that indeterminate pronominals correspond to information gaps whose range is restricted by features such as PERSON, THING, TIME, PLACE, etc., or whatever is added via an NP with restrictive qualities, then the disjunctive operator will range over 'open' propositions. A constituent question is then composed of the disjunctive operator ranging over the set of propositions defined by the possible values the variable(s) can take. In that case, the formats

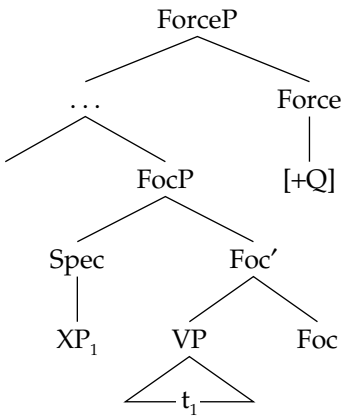
for yes/no questions and for constituent questions are roughly as in (25a) and in (25b) respectively:

(25) a. $\lambda p\ [p \vee \neg p]$
b. $\lambda p\ \exists x, [p = [\ldots x \ldots] \vee p = \neg [\ldots x \ldots]]$

The set of propositions in (25b) is a function of the number of the individuals in the discourse universe that may replace the variable(s) while yielding a true proposition.[13] For example, in a universe with the three individuals Mary, Susan, and Fred (besides John), a question like *Who did John see?* would translate into the set of disjunctions {[john saw mary] ∨ ¬[john saw mary], [john saw susan] ∨ ¬[john saw susan], [john saw fred] ∨ ¬[john saw fred]}.

Following Rizzi (1997), Jayaseelan (2001b) proposes a structure for interrogatives in which the actual *wh*-operator resides in a clause-peripheral phrase, the ForceP, which hosts the illocutionary force feature of the sentence. Unlike in older approaches, which assume *wh*-in-situ more literally, the variable and its restrictor are put in – or in Jayaseelan's implementation moved into – the focus projection that is in head-final languages usually found to the left of the verb. Simplifying Jayaseelan's proposal, the structure is as in (26):

(26)



As the embedded clause in (23) shows, there can be multiple occurrences of pronominals which may associate with the operator in the head of the ForceP. If it can be maintained that indefinites and indeterminates are pure variables which are existentially bound by a default operation, as Heim (1982) has suggested, then it is perhaps not necessary to move anything to the clause-peripheral position. The familiar subjacency problem of LF-theory as exemplified in (8–10) as well as in (15) – all repeated here as (27–30) for convenience – would disappear, because in all these cases there is a *+wh* operator in either the left- or the right-peripheral position, which (i) has scope over the in-situ elements that need to be bound, and (ii) identifies the clause as a *+wh* type in the sense of Cheng's (1997) typing hypothesis:[14]

(27) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(28) a. ??**What** did you know where we bought?
b. Who knows where we bought **what**?

(29) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

(30) Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP John-DAT what-ACC gave man-DAT meet-Q
'For which thing x did Mary meet a man who gave x to John?'

If movement is a last-resort operation to guarantee convergence at the interfaces of grammar, unselective binding would be preferred over movement. Movement would not be required for feature checking (especially if the 'in-situ' element has no relevant *wh*-feature), and thus movement would be punished. In spite of this, however, and for independent reasons, LF-movement has still been assumed in certain cases in which *+wh* scope is indicated overtly. We will turn now to a review of the arguments in favor of such movement.

4.1 Adjuncts

It was shown in (20b), which is repeated below as (31), that despite the occurrence of the Q-particle *ka* in clause-final position, the structure is ill-formed. The adjunct *naze* is obviously bound by *ka*, but nevertheless fails to associate with it in such a way as is necessary to form a normal constituent question:

(31) *Kimi-wa [[kare-ga naze kai-ta] hon]-o yomi masi-ta ka?
you-TOP he-NOM why write book-ACC read -Q
'You read book that he wrote why?'

As is widely known, similar restrictions have been reported time and again in various languages. French, which tolerates *wh*-in-situ questions, is said to have a ban against *pourquoi* 'why' in situ:[15]

(32) a. Tu as vu qui?
you have seen whom
b. (*)Tu es venu pourquoi?
you have come why

Does this suggest that the ECP is at work? Both *naze* and *pourquoi* would be ungoverned and could be subject to a constraint that requires the identification of a trace at LF.[16] As a matter of fact, however, things are less straightforward. We have already said that (20b) improves if *naze* is replaced by *dooiu riyuu de*

'what reason for', which is certainly not more governed than *naze*. Similarly, as Aoun (1985: 24f.) points out, the restriction on *pourquoi* in situ in French is more subtle than the ECP would allow us to predict. Aoun reports that in (32b) *pourquoi* may in fact remain in situ but only if it is interpreted as "purposive." This is the reason for putting the asterisk in brackets. Thus, should (32b) count as grammatical, a felicitous answer would be as in (33a) but not as in (33b):

(33) a. pour étudier la géométrie
to study geometry
b. parce que je suis malade
because I am sick

Similarly, quoting Dominique Sportiche's judgments, Aoun reports that *comment* 'how' may remain in situ, but only at the cost of a restricted interpretation according to which the answer may refer to an instrument but not to a manner:

(34) a. Tu as ouvert la porte comment?
you have opened the door how
b. avec une clef
with a key
c. *lentement
slowly

The facts that are reported from English *wh*-in-situ suggest that manner *how* is also excluded, or at least not favored. The following are from Reinhart (1998: 44f.):

(35) a. ?Who spoke how?
b. *Who fainted when you behaved how?

While (35a) could be interpreted with an 'instrumental' *how*, (35b) cannot. Whatever the subtleties are exactly which may be involved here, two things are clear: (i) if *how* and *why* are changed to *which/what way* and *for which reason* respectively, the sentences improve dramatically; and (ii) *wh*-in-situ is always tolerated in case the *wh*-element is 'referential'. To see this, consider the following examples, of which (36a) is Reinhart's:

(36) a. Who fainted when you behaved what way?
b. Who got excited when/because you went where?
c. Who told you about sea-gulls that can be observed when?

What way, *where*, and *when* are clearly no more governed in these examples than *pourquoi*, *how*, and *naze* in the ill-formed questions above. Thus, the ECP in its standard formulation seems to be an unlikely candidate to explain the differences. What could be an alternative? Reinhart (1998: 45), referring to Szabolcsi

and Zwarts (1993), says that *wh*-adverbials differ from *wh*-NPs because they do not have an 'N-set' and therefore no 'N-role' or variable; *wh*-adverbials rather denote functions ranging over higher-order entities. There is an implicit requirement that *wh*-in-situ in multiple questions must meet the formation of pairs, triplets, etc., of entities. It is unclear, however, how Reinhart's suggestion would be able to integrate time and place adverbials.

This returns us to something quite elementary that is reminiscent of Rizzi's (1990b) notion of a 'referential theta-role'. It seems rather easy to pair up persons with time points or places, while it is much harder to think about manners or reasons in similar ways so as to come up with pairs of persons and manners or persons and reasons. This can be achieved, however, with the help of a *which*-phrase. According to Pesetsky (1987a), *which*-phrases denote operators which are discourse-linked ('D-linked') in the sense that speaker and hearer have a fixed set of entities in mind which matter in the discourse.[17] If a number of reasons or manners are under debate, these are represented as a set of individuals from which subsets can be drawn. This suggests that the relevant difference does not rest on the argument/adjunct distinction but is rather a matter of individuation. Applying *which* presupposes a set denoted by the common noun. In purely logical terms, the difference can hardly be captured, as there seems to be no essential difference between the restrictive parts of *who* (*wh* **person**), *when* (*wh* **time**), *where* (*wh* **place**), *how* (*wh* **manner**), and *why* (*wh* **reason**). The difference is conceptual in the sense that we think about a (finite) countable set of individuals (persons, moments of time, and places) in connection with *who*, *when*, and *where*, but perhaps not in connection with *how* and *why*. The latter need to be transformed into a syntactic form which enforces the formation of a set of individuals. Thus, although there might well be a variable that can in principle correspond to *how* and *why*, extra work needs to be done in order to invoke the idea that it should.

It follows that the difference in grammaticality of acceptability is in all likelihood not as clear cut as we were sometimes led to believe. The fact that judgments usually oscillate between ?, ??, ?*, and * shows exactly this. This explains why the pairing of individuals is easier in (35a) than in (35b): assume a set of persons and a set of modes in which these persons speak. It would be easiest to postulate an instrumental reading, as reflected in answers like *John spoke by using a microphone, Mary by using a megaphone, and Olivia simply by shouting at the top of her voice*. It seems to be harder to invoke a similar pairing for (35b): first of all, the set itself must be formed on the somehow less straightforward basis of a fixed set of manners of behavior, and second, this set must be computed as a function of intervals of time in which the behavior took place. Why should this be totally impossible? Perhaps it is just difficult. Replacing *how* by *what way* obviously reduces the set-formation problem by ostensively presupposing a fixed set. Once *wh*-in-situ in *wh*-moving languages is understood better, this reasoning may help explain the contrast between the two answers in (33) in relation to the (grammatical version of the) question *Tu es venu pourquoi?* For the time being, however, it remains unclear why it should be easier to invoke a set of purposes than a set of causes.

The status of *wh*-movement vs. *wh*-in-situ in French has been investigated in much detail in Obenauer (1994). According to Obenauer, overt *wh*-movement to Spec, CP is obligatory in French only where the speaker fails to have a set of elements in mind which could function as appropriate values for the variable left behind. This is the case if the *wh*-operator is not 'D-linked'. Whenever a *wh*-phrase remains in situ (although the language permits movement to Spec, CP, as is the case in French), an appropriate value must be associated with the variable, which belongs to a certain domain (cf. Obenauer's (51), 1994: 314). The difference can be made clear by the contrast between the function of *comment* 'how' in a formulaic question such as *Bonjour! Comment tu vas?* 'Hello! How are you?', and an information-seeking question such as a doctor's inquiry about the health of a patient, *Alors, comment tu vas aujourd'hui?* 'Well, how is it going today?'. As Obenauer points out (1994: 321f.), *wh*-in-situ is an option in the last case, but not in the first: *Alors, tu vas comment aujourd'hui?* vs. **Bonjour! Tu vas comment?* The speaker clearly has a set of options in mind when asking an information-seeking question, but this is hardly the case in the usual ritual exchanges, as has repeatedly been observed and described in research on linguistic pragmatics.[18] The constraints on adjuncts mentioned in connection with (34c) and similar examples may well be derived in a theory that makes crucial reference to the set of alternatives that can readily be invoked in discourse. The asymmetry between the instrumental and the manner interpretation would then be reduced to the fact that alternative instruments for the opening of doors are more readily invoked by the speaker than alternative manners of door-opening.

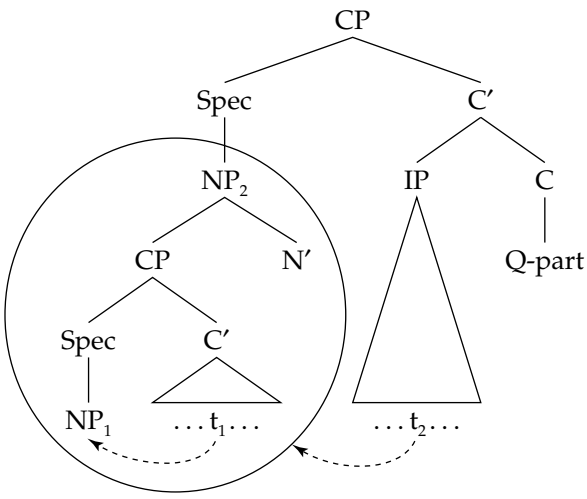
Returning to *wh*-in-situ in Japanese for a moment, what could be the reason for the deviance of (20b)? Why should there be problems in computing a relation between the Q-particle *ka* and the adjunct *naze* 'why'? There is no problem in doing so in sentences where *naze* is not in an island. A simple explanation in terms of the ECP cannot be given, because (37) is grammatical (see Nishigauchi 1990: 101):[19]

(37) Kimi-wa [[kare-ga dooiu riyuu-de kai-ta] hon]-o yomi masi-ta ka?
you-TOP he-NOM what reason for write book-ACC read -Q
'You read (a) book that he wrote why?'

If *why*, *how*, and *naze* may induce a set-formation problem that *who*, *what*, *nani*, etc., as well as *for which reason*, *what way*, *dooiu riyuu-de*, etc., do not, we might find an explanation in Nishigauchi's theory. Recall that he suggested that neither (20b) nor (37) is directly a request for a reason, but rather a request for a reason in terms of a book that someone has written for this reason. This requires a proper set of reasons such that it can be computed as a function of the book(s) that have been written for these reasons. If the present suggestion is tenable, we predict that such a function can be computed on the basis of a countable set of reasons as expressed by an NP, but not or hardly so on the basis of an expression that does not readily permit set formation via individuation, such as the adverb *naze*.

This explanation is rather different from the one that has been suggested by Nishigauchi himself. According to Nishigauchi, the unselective binding account of *wh*-in-situ requires LF-movement to the specifier of the Q-particle *ka* (or *no*). The idea is that the element in situ does not only have to be bound by *ka* but must also be governed by it. This is achieved by covert movement, as shown in (38). Islands are normally not seen because of large-scale pied-piping. In a complex NP such as [[*kare-ga dooiu riyuu-de kai-ta*] *hon*] 'book(s) that he wrote for what reason', Nishigauchi claims that the NP *dooiu riyuu* can have a *+wh* feature by virtue of having a +N feature. If the NP headed by this N moves to the specifier of the relative clause, and the relative clause itself is in the specifier of the nominal headed by *hon*, the entire complex NP ends up as a *+wh* phrase. This phrase is said to undergo covert movement to the specifier of the Q-particle, which is in the position of a clause-final complementizer:

(38)



The reason why *naze* is out if it occurs in the complex NP (NP_2) should be that it lacks a +N feature and that, as a consequence, it cannot derive the *+wh* feature that is needed for NP_2 to count as a *+wh* phrase. Translated into later stages of the theory of movement, Nishigauchi's theory requires feature percolation within islands such that islands can be attracted by the Q-particle. From what is known about feature migration (e.g., within Grimshaw's 1991 theory of projection extension), however, neither one of the movements shown in (38) seems to be obvious without strong assumptions about phrase structure, in particular about the availability of specifier positions which are never activated in overt syntax.[20]

Summarizing, accounts of *wh*-in-situ have tried to overcome certain difficulties in connection with subjacency and the ECP. The subjacency problem is that violations appear to be missing where we expect them under a theory of movement. The ECP problem is that the constraints on adjuncts appear too heterogeneous to

make the classical ECP account feasible. There seem to be promising alternatives which avoid these problems. Unselective binding without any movement, if defensible, would account for the discrepancy between overt and covert movement with respect to subjacency. A semantic theory which draws the proper distinction between 'referential' and 'non-referential' adjuncts could be capable of taking care of certain residues of the ECP account that cannot be maintained in a grammar that has ceased to employ the notion 'government'.[21] The above suggestions remain vague, but it seems to be clear enough in which direction the right solutions can be expected to be found. The restrictions on *wh*-in-situ adjuncts seem to be linked to the availability of proper sets of discourse entities. By this question we are naturally led to questions about the role of discourse in the formation of questions and in the licensing of *wh*-in-situ in general. We will therefore now turn to the phenomenon of D(iscourse)-linking.

4.2 D-linked and non-D-linked wh*-phrases*

In an influential article (Pesetsky 1987a), David Pesetsky has argued that both the LF-movement theory and the theory of unselective binding are correct, and that they take care of different sets of constructions. Pesetsky refers to the LF-movement theory as "Chomsky-style" and to the unselective binding theory as "Baker-style." We have already seen what the former is like. The latter, going back to Baker (1970), essentially says that there is one super-operator in a scope position which binds multiple occurrences of phrases which share its feature. In the case of *wh*-in-situ, either a head like Japanese *ka* is in C, which c-commands multiple *wh*-phrases in situ, or one *wh*-phrase is in Spec, CP, from where it c-commands an arbitrary number of *wh*-phrases in situ. In each case, the *+wh* operator has the capability of binding all occurrences of the relevant phrases in situ. This is usually expressed by indices. Thus, a Baker-style representation of *Who read what?* would be as in (39a); a more up-to-date version would be an LF as in (39b), where there is a distinction between the head C, the specifier of CP, and where a copy of the phrase in Spec, CP is retained in subject position:

(39) a. $[[_{\text{Comp}}\ Q_{i,j}\ \text{who}_i]\ t_i\ \text{read}\ \text{what}_j]$
b. $[_{\text{CP}}\ \text{who}\ [_{\text{C}'}\ [_{\text{C}^\circ}\ +wh]_{i,j}\ [\text{who}_i\ \text{read}\ \text{what}_j]]]$

According to (39), *what* never actually moves. It is rather 'absorbed'.[22] The reason why both Chomsky-style movement and Baker-style non-movement are needed is that there are empirical differences which, according to Pesetsky, culminate in the notion of D(iscourse)-linking. Certain *wh*-phrases stay in situ and get bound in the sense of (39), in case they are not novel in the discourse but rather make reference to a set which is already activated in the minds of the interlocutors. *Wh*-phrases for which this is not true have to undergo Chomsky-style LF-movement. Only in the second case should we see constraints on movement, including subjacency effects. How does one know whether some *wh*-phrase is D-linked or not? The standard cases Pesetsky suggests are *which* phrases, whereas *wh*-pronouns

such as *who*, *what*, *where*, etc., tend to belong to the non-D-linked camp (although he also provides examples for which this is not true; cf. (42) below).

The theory is mainly developed with an eye on superiority. The Superiority Condition (cf. Chomsky 1973) requires that in a structure . . . X . . . [. . . Y . . . Z . . .], the relation between X and Z is blocked if there can also be a relation between X and Y, and Y is superior to (i.e., 'higher' in the tree than) Z. Given that Y and Z are of the same syntactic type (e.g., *wh*-phrases), superiority falls under Relativized Minimality (cf. Rizzi 1990b) or the Minimal Link Condition (cf. Chomsky 1995c: section 4.5.5). Pesetsky derives it from a ban on crossing (vs. nested) dependencies. Superiority accounts for the contrast in (40):

(40) a. Who read what?
b. *What did who read?

Since, due to the asymmetry between subject and object which clearly holds in English, *who* is 'superior' to *what*, if *what* moves while *who* stays, the Superiority Condition is violated. However, the constraint violation seems to be absent or at least ameliorated in (41b), where *who* and *what* are replaced by overtly D-linked material:

(41) a. Which child read which book?
b. (?)Which book did which child read?

In the following example from Pesetsky (1987a: 109) there is no overt mark of D-linking, but the context makes it clear that both the set of transistors and the set of holes is fixed:

(42) I know that we need to install transistor A, transistor B, and transistor C, and I know that these three holes are for transistors, but I'll be damned if I can figure out from the instructions *where what* goes!

The expected order would be *what goes where*. Thus, there can also be D-linking without a visible morphosyntactic reflex. According to Pesetsky, D-linked *wh*-phrases are not quantifiers and get licensed by Baker-style unselective binding. Non-D-linked *wh*-phrases, however, are quantifiers. They must adjoin to CP (formerly S'). (40b) would be ruled out by the Superiority Condition itself, or by some other more abstract constraint that entails superiority. Given cases like (42), it may be difficult to decide in each case what the stage of the discourse is in which such interrogatives may be uttered. Pesetsky suggests, however, that there are *wh*-phrases which can never be D-linked. They are "aggressively non-D-linked." According to Pesetsky, aggressive non-D-linking can be forced by attaching an intensifier like *the hell* or *on earth* to the *wh*-phrase, or *ittai* in Japanese.[23] Superiority effects seem to arise in Japanese as soon as *ittai* is used; an example appears in (43b), where the *ittai* phrase is hierarchically not the closest to the C-node marked by *no*. Similarly, subjacency

effects resulting from the CNPC show up – as in (44b) – which are otherwise notoriously absent in Japanese:

(43) a. [Ittai dare-ga] nani-o tukamaeta -no?
the-hell who-NOM what-ACC caught -Q
b. ??Dare-ga [ittai nani-o] tukamaeta-no?

(44) a. Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP John-DAT what-ACC gave man-DAT met-Q
b. *Mary-wa [[John-ni ittai nani-o ageta] hito-ni] atta-no?
Mary-TOP John-DAT the-hell what-ACC gave man-DAT met-Q

It is suggested that intensifiers also constrain pied-piping in English. It is implied that in (45) the containing NP or PP turns out to be islands:

(45) a. Pictures of whom cost the most at the sale?
b. *Pictures of whom the hell cost the most at the sale?

(46) a. I wonder what the hell he is talking about.
b. *I wonder about what the hell he is talking.

If these tests show what they are supposed to show, either grammatical sentences in which *wh*-in-situ appears in an island must be relegated to D-linking, or it must be assumed that the entire island undergoes LF pied-piping. The evidence that intensifiers show something interesting about island effects at LF is unfortunately rather weak. The impression is that in English, French, and German the use of intensifiers is a root phenomenon or can be linked to the root by virtue of logophoricity (*I don't know what the hell I should do here*). There are in addition phrase-structural reasons which in English block attachment to constituents larger than a simplex *wh*-pronoun. Phrases like *which book the hell* are, for instance, impossible for most speakers of English. Pesetsky himself notices problems with *wh*-in-situ:

(47) a. Who the hell caught what?
b. *Who caught what the hell?

(48) a. Où (diable) est-il allé?
where the-devil is-he gone
b. Il est allé ou (*diable)?

There is no obvious reason why LF raising of the *wh*-phrase in situ should be blocked in (47b) and (48b). There are no familiar problems with movement involved. Notice also that slight changes in Pesetsky's example in (46a) remove its acceptability, a fact which suggests that we are dealing with a root or at least root-related phenomenon; the same is true in German, as the examples in (50) show:

(49) a. ??The president wonders what the hell we were talking about.
b. *It is unclear what the hell he should talk about next.

(50) a. Ich möchte wissen, was zum Teufel er hier zu suchen hat.
I want (to) know what to-the devil he here to search has
'I want to know what the hell he has to do here.'
b. *Der Präsident möchte wissen, was zum Teufel wir hier zu suchen haben.
the president wants (to) know what to-the devil we here to search have
c. *Es ist unklar, was zum Teufel er hier zu suchen hat.
it is unclear what to-the devil he here to search has

Obviously the intensifiers *the hell* or *zum Teufel* can appear in an embedded *wh*-clause only under the special conditions of direct discourse and certain embedding predicates that guarantee direct discourse transparency. If the intensifier has to be in the left periphery in order to activate a specific phrase (ForceP?) which signals a certain illocutionary act, its ill-formedness in situ or its non-appearance in an island, as in **Who bought a book that fascinated who the hell?*, may not be related to constraints on LF-movement at all.[24] Constraints like those underlying the data in (49) and (50) are also discussed in Obenauer (1994: 313). Obernauer observes that while the predicates *savoir* and *trouver* permit *wh*-complements, they fail to license *wh-diable* clauses, as in **Je sais tres bien où diable elle a mis les clés* '*I know very well where the hell she has put the keys' or **J'ai trouvé où diable elle a mis les clés* '*I have found out where the hell she has put the keys.' According to Obenauer, by using *où diable*, the speaker commits himself to the view that there is no clear value or no value at all for the variable related to *où*. This is in conflict with the selectional requirements of the matrix predicate in question. Pesetsky's account has revealed interesting properties of *wh*-in-situ, in particular about D-linking, but it has not really excluded alternatives to the LF-movement analysis. This leaves us with 'Baker-style' unselective binding throughout, but then we still wonder how the superiority effects should be derived.

An important insight about multiple interrogatives emerges from Erteschik-Shir (1990), where it is claimed that multiple questions always ask for a pairing of individuals. Thus, in (51) *who* and *what* are never interpreted independently but rather as a set of people who have eaten a set of foods:

(51) Who ate what?

Building on Chierchia (1991), this has led Hornstein (1995) to a syntactic account of multiple interrogatives in which superiority violations are reduced to cross-over violations. The dependent or 'functional' interpretation of a *wh*-pronoun is expressed by Hornstein as an NP of the form [pro N], in which pro and N may carry different indices: N carries its own referential index, while pro carries the

index of another NP which functions as the 'generator' of a set of individuals restricted by N. This can be seen in the familiar *wh*/QP-interactions:

(52) a. What did everyone say?
b. Who said everything?

(52a) yields a pair-list interpretation, as reflected in an answer like *John said he will travel to Italy, Mary said that she will help her father, and Susan said that she will prepare for her exam*. (52b), however, does not. An answer to (52b) could only be something like *John (said everything)*. Hornstein represents the LFs of these examples as follows:

(53) a. $[_{CP}$ what$_1$ $[_{IP}$ everyone$_2$ $[_{IP}$ t_2 say $[$pro$_2$ $t_1]]]]$
b. $[_{CP}$ who$_1$ $[_{IP}$ everything$_2$ $[_{IP}$ $[$pro$_2$ $t_1]$ say $t_2]]]$

The LF in (53a) asks for a set of things that have been said, but with the requirement that this set of things is a function of having been said by x. Now x is bound by a universal quantifier. The assumption is that the universal quantifier acts as a 'generator'.[25] This gives rise to the pair-list interpretation. The same could be true of (53b), where *everything* would be the generator for the relevant set of people corresponding to *who*. As one can see, however, this interpretation would give rise to a weak crossover (WCO) effect: being co-indexed with pro$_2$, the trace t_2 is not A-free. Of course, this is dependent on the configuration that is assumed for [pro t], an issue that has to be left aside here. Therefore the pair-list interpretation is not available.

Returning now to multiple questions and the superiority effect observed, we notice that the same account can be used. According to Chierchia (1991), *wh*-pronouns like *who* and *what* can function as generators. Let us then consider the examples in (54) and their respective LFs in (55):

(54) a. Who bought what?
b. *What did who buy?

(55) a. $[_{CP}$ who$_1$ $[_{IP}$ t_1 bought $[$pro$_1$ what$]]]$
b. $[_{CP}$ what$_2$ $[_{IP}$ $[$pro$_2$ who$]$ bought $t_2]]$

Again, (54a/55a) attains the functional reading which Erteschik-Shir has claimed to be obligatory in multiple interrogatives, while (54b/55b) is excluded under this interpretation due to a WCO-violation. What, then, about *which*-questions and their property of not showing the superiority effect? Hornstein suggests that *which*-phrases are inherently D-linked and can generate the relevant set by themselves and without first moving to an operator position (Spec, CP). According to his theory, (56) is well-formed because it does not involve a binding problem:

(56) Which book did which man review?

Since speaker and hearer have a certain set of books and a certain set of men in mind (Pesetsky 1987a: 107f.), no extra linking mechanism as instantiated by the binding of pro has to be invoked. Thus, the construction escapes the WCO problem.

An advantage of the WCO theory of *wh*-in-situ is that it allows an explanation for the problem of cross-linguistic variation that has troubled comparative research for quite some time. It has been assumed in earlier GB-oriented work that German as well as Japanese and other languages are 'non-configurational', in the sense that they fail to show a verbal projection distinct from the sentence itself. The widely accepted present view is that these languages are configurational but have in addition the scrambling property. There are still debates as to what drives scrambling, but it seems that scrambling exploits a projection option of the grammar for reasons of information packaging in discourse organization. Languages of this type generally do not show superiority effects, or at least not in the way English and other strict-word-order languages do. Consider the Japanese example (57b) and the German example (58b), both of which lack the superiority effect:

(57) a. Dare-ga nani-o tabeta no?
who-NOM what-ACC ate Q
b. Nani-o dare-ga tabeta-no?

(58) a. Wer hat was gegessen?
who has what eaten
b. Was hat wer gegessen?

Assume now that scrambling can move the object across the subject to an A-position or to some other position which is distinct from an operator position. Then the position targeted by scrambling would be the one which counts for variable binding. According to the WCO theory, this would leave the variable A-free, as the little pro which is used to establish the functional reading would not be crossed by the overt movement that establishes the operator/variable chain. Consider the LF of (58b) in (59):

(59) $[_{CP}\ Was_2\ [_{C'}\ hat\ [_{IP}\ t_2\ [[pro_2\ wer_1]\ [t_2\ gegessen]]]]]$

This account of the lack of German superiority in terms of WCO is corroborated by the fact that, due to scrambling, WCO effects are generally less often visible in German than in English. To see this, consider the examples in (60). (60a) shows that WCO is clearly active in German. The lack of WCO in (60b) is then obviously connected to the fact that scrambling bleeds the forbidden binding configuration. Notice that German does not permit scrambling from a finite CP (although there are grammatical cases of scrambling from infinitival complements).[26] Thus, cross-over cannot be avoided in (60a). It can be avoided in (60b), however, because the scrambling operation that precedes *wh*-movement is confined to the simplex clause:

(60) a. *[$_{CP}$ Wen$_2$ [$_{C'}$ glaubt [$_{IP}$ seine$_2$ Mutter [$_{CP}$ (t_2) [$_{C'}$ daß [$_{IP}$ niemand t_2
who(m) thinks his mother that nobody
ausstehen kann?
stand can
'Who(m) does his mother think that nobody can stand?'
b. [$_{CP}$ Wen$_2$ [$_{C'}$ hat [$_{IP}$ t_2 [seine$_2$ Mutter [t_2 angerufen]]]]]?
who(m) has his mother called

German obviously does not show the lexical D-linking effect between pure w-pronouns and *welch*-phrases (*which*-phrases) one would expect in Pesetsky's theory. According to Wiltschko (1997a), there is another *wh*-construction in German which, so she argues, is incompatible with D-linking: the *was-für* construction. *Was-für* questions ask for the kind or nature of something. They are usually infelicitous in a context where a delimited set of individuals is already under debate. Consider the pair of examples in (61):

(61) a. Was für eine Oper möchstest du hören?
what for an opera want you hear
'What kind of an opera do you want to hear?'
b. Welche Oper möchtest du hören?
which opera want you hear
'Which opera do you want to hear?'

(61a) can hardly be asked in a context where the choice is only between *Cosi fan tutte*, *Lohengrin*, and *Tosca*. In such a situation the D-linked question (61b) is appropriate. If a *was-für* question should be used here at all, it would have to involve a partitive construction, as in *Was für eine von diesen Opern möchtest du hören?* (61a) is appropriate if the choice is between kinds of operas; say opera seria, German romantic opera, Italian verismo, etc. In order to demonstrate superiority effects as resulting from non-D-linking, Wiltschko uses among others the examples in (62). According to her judgments both sentences are deviant and have the mark *?:[27]

(62) a. (*?)Was für Opern mögen denn was für Menschen?
what for operas like PRT what for people
b. (*?)Was für Futter fressen denn was für Tiere?
what for food eat PRT what for animals

An example of Wiltschko's which is indeed deviant appears in (63):

(63) *Was für einen Jungen$_1$ wird sein$_1$ Bruder besuchen?
what for a boy-ACC will his brother-NOM visit

The question is whether its ill-formedness can be attributed to a WCO violation. It could be the case that it is simply semantically odd because it asks for a kind

of boy in connection with the definite NP *sein Bruder*. It needs little stretching to find examples in which the functional interpretation of the subject NP becomes prominent. In such a case, the ill-formedness disappears, with respect to both binding and superiority:

(64) a. Was für eine (Art) $Oper_1$ sollte ihr_1 Komponist mindestens zwei
what for a (kind) opera should its composer at-least two
Wochen vor der Uraufführung fertiggestellt haben?
weeks before the premiere completed have
'What kind of opera should have better been completed by its composer two weeks before the premiere?'

b. Was für eine (Art) $Oper_1$ könnte welcher Komponist geschrieben
what for a (kind) opera could which composer written
haben?
have
'What kind of opera could have been written by which composer?'

This repeats the negative result for a clear test of a morpholexical distinction in D-linking.

For the WCO theory to work, it is necessary that the *wh*-in-situ phrase leaves the VP by short scrambling. Various authors (e.g., Müller and Sternefeld 1993) have argued that *wh*-phrases cannot undergo scrambling. One must distinguish, however, between intermediate positions and terminal landing sites: if the scrambled phrase lands in pre-VP position, the acceptability is generally degraded, for the plausible reason that *wh*-phrases in situ must occupy a potential focus position. The net effect of scrambling is, however, to move material out of such a position. Using scrambling for targeting an intermediate position before the occurrence of operator movement is quite a different issue. One should not exclude the possibility that D-linking effects can be revealed by *wh*-scrambling, as Wiltschko (1997a) has suggested. For the time being, however, it seems impossible to show how the status of *was-für* and *welch*-questions could be distinguished beyond the purely theoretical assumptions underlying the *wh*-scrambling analysis. Notice that when the particle *denn* is used as an overt sign of the VP boundary, as suggested by Diesing (1992b), the landing of the *wh*-phrase in the scrambling position leads to a bad result in each of the cases under consideration:

(65) a. Wer hat denn welche/was für Opern geschrieben?
who has PRT which/what for operas written

b. *Wer hat welche/was für Opern denn geschrieben?

The requirement seems to be in each case that the unmoved *wh*-phrase remains in VP, which roughly means that it remains in the focus projection.

To conclude this section, no forceful argument in favor of LF-movement of the *wh*-in-situ element has appeared so far. In each of the cases considered, there was either a Q-particle in scope position, in whose c-command domain the in-situ

element could be interpreted as an existentially bound variable, or there was one *wh*-phrase in Spec, CP, which identifies the clause as a *+wh* clause, say, by spec–head agreement. In that case, there is again a *+wh* head which would c-command all occurrences of *wh*-in-situ. There were still examples of *wh*-in-situ like the French example (32a), *Tu as vu qui?* 'You have seen whom?' Since these are restricted to root contexts, we can assume that they involve a silent Q-particle that binds the *wh*-phrase in situ.[28] We have seen that for those cases for which Pesetsky claimed LF-movement because they are aggressively non-D-linked, other mechanisms can be motivated. We have considered in some detail an analysis by which superiority violations, as in **What did who say?*, can be reduced to WCO violations.[29] The considerations so far have reached a point in favor of unselective binding. This squares with much current research on *wh*-constructions, e.g., Aoun and Li (1993c), Cole and Hermon (1994, 1998b), and Sabel (1998), as well as with conclusions that are necessitated by the adoption of the Minimalist Program as formulated in Chomsky (1995c). Nevertheless, the unselective binding solution of the *wh*-in-situ problem has also received criticism. The next section is devoted to an evaluation of this criticism.

4.3 Is unselective binding affected by a semantic problem?

The received story of unselective binding is strongly influenced by one central proposal of Discourse Representation Theory (DRT) and closely related models (Kamp 1981a; Heim 1982; Kamp and Reyle 1993), according to which indefinites are not themselves generalized quantifiers, as in earlier semantic theories and in the earlier approaches in terms of quantifier raising (QR), but rather variables which get bound by the default operation of existential closure. The DRT-approach squares with the standard semantic analyses of interrogatives, such as Karttunen (1977), where *wh*-phrases are essentially seen as indefinites. A sentence like (66a) – taken from Reinhart (1997) – translates into the semantic representation (66b), which designates the class of propositions such that there is at least one European country of which the property of having a queen can be truly asserted:

(66) a. Which European country has a queen?
b. λP (∃x (European country (x) & P = ^(x has a queen) & true (P)))

True answers to (66a) are *England (has a queen)* and *The Netherlands (has a queen)*. Consider now multiple questions. As is known from examples (8–10), which are repeated below as (67–89), multiple questions can be formed such that the unmoved *wh*-phrases can be left in a syntactic island:

(67) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(68) a. ??**What** did you know where we bought?
b. Who knows where we bought **what**?

(69) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

If the indefinite NPs corresponding to the *wh*-in-situ elements have to undergo regular *wh*-movement, the grammar has the undesirable property that was broadly accepted in the GB framework, namely that the derivation of LF from S-structure is somehow less constrained than the derivation of S-structure from D-structure. However, the situation is troubled by various additional aspects that have to be taken into account for the classical LF theory and the QR analysis to work. While quantifiers such as [*every* . . .] generally observe syntactic islands, indefinites such as [*a* . . .], [*some* . . .], and also [*two* . . .], [*three* . . .], etc., seem to be able to escape from any island.[30] In classical LF theory, they would have to undergo 'island-free QR', as Reinhart (1997) calls this process. As we have seen already, unselective binding seems to be an attractive possibility for avoiding the derivational complications GB and earlier versions of syntactic theory were troubled with. *Wh*-in-situ questions would then generally be analyzed such that the phrase in situ stays exactly where it is born, and is simply co-indexed with the Q-particle or *+wh* marked C-position that c-commands it. This amounts to Baker-style representations, as we have already seen in (39), and which we repeat here as (70) for convenience.

(70) a. $[[_{Comp}\ Q_{i,j}\ who_{\ i}]\ t_i$ read $what_j]$
b. $[[_{CP}$ who $[_{C'}\ [_{C^\circ}$ *+wh*$]_{i,j}$ $[who_i$ read $what_j]$

As Reinhart (1997) shows, representations which make use of unselective binding can be connected with Karttunen's semantics in the same way as representations which make use of covert *wh*-movement of the earlier analyses we have already discussed. Assuming unselective binding, the example on which (39) rests – (71a) – would come out as (71b):

(71) a. Who read what?
b. λP (∃xy (person (x) & P = ^(x read y & thing (y)) & true (P)))

Here the existential operator associated with the feature structure of the initial (overtly moved) *wh*-item may have as many indices (x, y, . . .) as there are *wh*-phrases in the clause. Crucially, the restrictive clause remains in situ. Abstracting away from the subject for the moment, this squares with Chomsky's suggestion in the Minimalist Program that the only thing that actually moves to or retains a scope position at the C-I-interface ('conceptual-intentional interface') of the grammar is the operator proper, i.e., the operator feature rather than the restrictive part.[31]

However, Reinhart (1992, 1997, 1998) has argued that this analysis, although attractive from a syntactic point of view, cannot be maintained because it yields

wrong entailments. Let us therefore take a look at those arguments of Reinhart's which pertain to *wh*-in-situ. The multiple question in (72) and its informal and formal LF representations in (73) and (74) are taken from Reinhart (1997: 359):

(72) Who will be offended if we invite which philosopher?

(73) **The unselective binding analysis:**
   a. For which <x,y>, if we invite y and y is a philosopher, then x will be offended.
   b. λP (∃<x,y> (P = ^((we invite y & philosopher (y)) → (x will be offended)) & true (P)))

(74) **The QR analysis:**
   a. For which <x,y>, y is a philosopher, and if we invite y, then x will be offended.
   b. λP (∃<x,y> (philosopher (y) & P = ^((we invite y) → (x will be offended)) & true (P)))

(73) gives the unselective binding analysis according to which the restrictive clause ('y is a philosopher') appears inside the antecedent of the conditional. According to Reinhart, this analysis is too permissive, as it yields the wrong entailment that we can invite anybody – including non-philosophers – and still make the conditional true. (74), on the other hand, gives the QR analysis according to which the restrictive clause appears outside the antecedent clause of the conditional. Here it is a prerequisite for the conditional to come out as true that the invitee is indeed a philosopher. This squares with our semantic intuitions. What exactly goes wrong in (73)? Reinhart says that according to the unselective binding analysis in (73) an appropriate answer could well be *Lucie will be offended, if we invite Donald Duck*, although we all understand that Donald Duck is not a philosopher. This means that whatever truth-value is ascribed to the restrictive clause, the conditional will come out as true. This consequence can be checked by the truth-table of propositional logic, of which (75) mentions the relevant parts for convenience:

(75)

p	**q**	**p & q**	**p → q**
1	1	1	1
1	0	0	0
0	1	0	1
0	0	0	1

Assume that the conditional's antecedent is composed of the conjunction of the true proposition that we invite Donald Duck and the false proposition that Donald Duck is a philosopher. By the conjunction rule in the third column, this makes the antecedent false. But this will now suffice to make the conditional true, as one can see by inspecting the last two lines of the implication column under p → q.

If the argumentation based on the semantic analysis of interrogatives is correct, there is now a dilemma. Our intuitions about the meaning of multiple questions and their acceptable answers require a movement analysis of the indefinite in the sense of QR; on the other hand, a movement analysis is undesirable for well-motivated syntactic reasons. In the case at hand, the indefinite would have to be lifted out of the conditional's antecedent. This antecedent has the status of an adjunct, and – as expected – overt movement gives a bad result:

(76) *Who$_1$ will Lucie be offended, if we invite t_1?

In the best of all worlds, the indefinite attains wide scope without movement. Thus, an operation other than QR must be available. Reinhart proposes choice functions (CF) as such a possibility. The idea is that the existential closure operation that has been suggested by DRT, in order to bind the variable corresponding to an indefinite NP, does not bind an individual variable, but rather a function that selects an entity of such and such a kind from a (non-empty) set. Recall that the unselective binding analysis in (73) was such that ∃ can bind any occurrence of a variable (i.e., the indefinite) co-indexed with it. If, however, ∃ is restricted to binding only a function that selects such and such, the restriction of the variable can be captured without moving the entire existential NP out of the clause, as the QR analysis would require. Under Reinhart's proposal, the LF of (72), *Who will be offended if we invite which philosopher?*, turns into (77), of which (77a) is again the informal and (77b) the Karttunen-style formal LF:

(77) **The CF analysis:**
   a. For which <x,f>, if we invite f(philosopher), then x will be offended.
   b. λP (∃<x,f> (CH(f) & P = ^((we invite f(philosopher)) → (x will be offended)) & true (P)))

This LF expresses that we are looking for a person x and a function f which selects only philosophers such that if we invite anyone selected by f, x will be offended. One can see that by this move, the proper scope of the existential operator outside the antecedent of the conditional (i.e., the syntactically offended island) can be captured without actually moving the relevant NP out. If the relevant model is such that Donald Duck is not a philosopher, an answer like *Lucie will be offended, if we invite Donald Duck* will not be appropriate, because it cannot make the conditional true.

This leads to the delicate part of Reinhart's theory: is the conditional false or is it simply undefined? Recall that the unselective binding approach was criticized because it was said to be overly permissive. If the restrictive clause is part of the conditional's antecedent clause, any value for the proposition 'y is a philosopher', not only the intuitively favored value 1 but unfortunately also value 0, will make the conditional come out true. By the conjunction rule (p&q), the CF approach will convert any conditional that yields the value 1 into 0, if the

existentially quantified part ∃f . . . CH(f) fails to attain the value 1. This much is straightforward. The question is whether the unselective binding approach is really doomed to failure unless CFs are admitted. One should note that the adoption of CFs supplies the semantic language with extra power, a step which needs motivation beyond the solution of the scope of indefinites. The immediate worry about LFs such as (73b) – λP (∃<x,y> (P = ^((we invite y & philosopher (y)) → (x will be offended)) & true (P))) – is that they fail to reflect the assertion/presupposition division of the corresponding natural-language expression. The proposition that y is a philosopher is at no point under debate. So it seems to be wrong to use this presupposed information on a par with the asserted information for the computation of the truth-value of the whole sentence. Assuming that we do not use this background information in computing the meaning of the conditional, the information of the restrictive clause would have to appear in the discourse context. If the truth of it is denied, as is the case when we allow Donald Duck into the relevant set of individuals the question in (72) is about, we witness a presupposition failure. But presupposition failure is essentially a pragmatic problem, and it seems to be undesirable to pack presuppositions in such a way into LF that they cannot be distinguished from the asserted material. Reinhart (1997: fn. 19) refers to this problem. Although it seems to be acknowledged there that *wh*-expressions are presuppositional, and that presuppositions belong to pragmatics, she nevertheless rejects accounts along the lines which have been sketched above, because "associating presuppositions with existentially quantified NPs is highly problematic within any of the familiar semantic systems, as it disables basic entailments" (1997: 360). Unfortunately, an evaluation of this claim would go beyond the scope of the present chapter. So the issue has to be left unresolved.[32]

The positive result that has emerged from the preceding discussion is that *wh*-in-situ in multiple questions does not force a QR-analysis and its consequences of violating syntactic constraints on movement. In principle, unselective binding can deal with all sorts of cases of *wh*-in-situ, not just with the D-linked ones that Pesetsky had in mind. The discrepancy we saw between the (a)- and (b)-cases of examples (8–10) ceases to be a problem, once we can maintain that the LF of *wh*-in-situ is not necessarily established by movement. The question of this section, namely 'Is unselective binding struck by a semantic problem?', can in principle be answered negatively, at least if it can be maintained that variable binding is not per se syntactic. The semantics of unselective binding may, however, have to be modified in the direction suggested by Reinhart's introduction of CFs, if it turns out that the simpler approach of existential closure of individual variables is not sufficient.

So far it seems that for the purposes of *wh*-in-situ, the LF-movement approach can be abandoned entirely. We have seen that in the languages considered up to this point there is either overt movement of a *wh*-phrase to Spec, CP, which can then license occurrences of other *wh*-elements in situ, or there is a functional Q-particle from the outset, which binds *wh*-elements in situ. Both kinds of binding can be characterized as unselective and 'island-free'; i.e., in none of the cases can

we observe subjacency restrictions, although there are – as we have seen – other restrictions that could, however, be reduced to conditions on well-formedness that lie outside bounding theory. We will in the next section take a look at *wh*-in-situ languages for which the simple picture developed so far does not seem to hold, i.e., for which we may nevertheless want to maintain derivations of *wh*-scope in terms of covert movement.

5 *Wh*-scope in Bengali: a case study

Most of the material in this section is from Bengali and has been discussed in Bayer (1995, 1996: ch. 7; 1999b). Much pertains to other languages from the South Asian linguistic area. Bengali, together with Assamese, Oriya, Southern Hindi (Dakkini Hindi), and Marathi, is particularly interesting, however, as it shows a mixture of types of sentential complementation. While the Dravidian languages are strictly head-final and consequently have clausal complements (with a final complementizer) to the left of the matrix verb, Bengali and the other Eastern Indo-Aryan languages mentioned in the set have in addition complements (with an initial complementizer) to the right of the matrix verb, like *ki*-clauses in Hindi and various other languages from Northern India. This duality in complement types interacts in interesting ways with the scope of *wh*-in-situ. The questions that emerge from this situation are of general importance for the present theorizing about *wh*-in-situ.

5.1 Simplex interrogatives and the lack of a Q-morpheme in constituent questions

Bengali has a clitic-like sentence-internal or sentence-final element *ki* that serves as an interrogative marker to form yes/no-questions, but this *ki* (meaning 'what') is optional and seems to be confined to the root clause. An example appears in (78a). As happens with the interrogative morpheme in other languages such as Japanese, this *ki* can be missing in root clauses. Obviously question intonation can make up for the use of a Q-morpheme. Alternatively, the clause can be followed by the tag *ki na* (literally 'what not'). This tag is able to type the clause in such a way that it can be used in a context that requires a *+wh* complement. This is shown in (78c). (78d) shows that in a context where a *+wh* complement is required, neither the naked IP *ram ca khabe*, nor the IP (which contains the internal Q-particle *ki*), is sufficient:

(78) a. Tumi (ki) ca kinecho?
you Q tea bought
'Did you buy tea?'

b. Tumi ca kinecho(ki na)?
you tea bought Q NEG
'Did you buy tea or not?'

c. Se jiggeS korche [ram ca khabe ki na].
(s)he question makes Ram tea drinks Q NEG
'(S)he is asking whether Ram will take tea.'
d. *Se jiggeS korche [ram (ki)ca khabe].
(s)he question makes Ram Q tea drinks
'(S)he is asking whether Ram will take tea.'

These data suggest that non-root interrogative clauses must be overtly typed as *+wh*, and that neither the internal *ki* nor a zero Q-morpheme would be able to do this job.

Constituent questions never appear with an interrogative marker that may overtly type the clause as *+wh* or indicate the scope position of the *wh*-item. The examples in (79) show nothing but the *wh*-words (actually 'k-words') *ke*, *ka-ke*, etc. The appearance of the interrogative particle *ki* as in (80) makes the sentences ungrammatical:

(79) a. Ke eSeche?
who come-has
'Who has come?'
b. Tumi kake dekhecho?
you whom saw
'Who did you see?'
c. Tomar bondhu kEno aSe ni?
Your friend why came NEG
'Why did your friend not come?'

(80) a. *Ke eSeche ki?/*Ke ki eSeche?
b. *Tumi kake dekhecho ki?/*Tumi kake ki dekhecho?
c. *Tomar bondhu kEno aSe ni ki?/*Tomar bondhu kEno ki aSe ni?

The *wh*-words are uniquely used for the formation of constituent questions. As is the case in Hindi and other related languages, relative operators are morphologically distinct. Thus, *wh*-words in Bengali and related languages obviously do not rely on a separate typing element. As in many other languages, various members of the *wh*-series can be turned into *–wh* indefinites by attaching extra morphemes.[33]

There are three possibilities for *wh*-phrases in situ to reach a scope position: (i) adjunction in the sense of QR, given that there is no obvious Spec, CP landing site as in the Western languages; (ii) feature attraction by an element in scope position, which, however, in Bengali would have to feature a zero morpheme; (iii) covert *wh*-movement as initially suggested by Huang (1982a) for Chinese.[34] Option (i) has been argued for by Mahajan (1990) with respect to Hindi. Mahajan suggested, however, that the *wh*-phrase has to adjoin such that it will be governed by a *+wh* complementizer, an assumption that had also been made in Nishigauchi (1990). But neither in Hindi nor in Bengali do we ever see a

morphological realization of such a complementizer (unlike in Japanese). Thus, we would have to postulate a zero morpheme as under option (ii). As our earlier discussion in section 4 has shown, the presence of a Q-particle or some other *+wh* occurrence normally allows unselective binding. As a consequence, it is unclear why there should in addition be movement, provided that the indefinite's restrictive part can stay in situ, and the actual process of variable binding is independent as suggested by DRT. Assuming that in the presence of an unselective binder there is no movement, subjacency effects are not expected. If we see subjacency effects, this would be evidence in favor of option (iii), i.e., covert movement of the *wh*-element to scope position. Let us see what kind of evidence Bengali offers.

5.2 Subjacency

Consider first the adjunct clause introduced by *karon* 'because' in (81):

(81) a. Amar mon kharap [karon ram durga pujay aSbe na].
my mind bad because Ram Durga-Puja-atcome-will NEG
'I am annoyed because Ram will not show up for (the festival of) Durga Puja.'
b. *Tomar mon kharap [karon ke durga pujay aSbe na]?
your mind bad because who Durga-Puja-atcome-will NEG
'You are annoyed because who will not show up for Durga Puja?'

As the ill-formedness of (81b) shows, *ke* does not seem to obtain scope over the matrix clause.[35]

Let us next consider relative clauses. Here one should notice that there are two types of relative clauses: correlative relatives, which appear obligatorily to the left and are followed by the main clause in which the relativization operator is picked up by a demonstrative pronoun or NP;[36] and right-hand relatives, which can form a complex NP together with a 'head' NP. Examples of correlatives appear in (82) and (83):

(82) a. Je behala-y thake Sey lokTa kal phon koreche.
who Behala-in lives this man yesterday phone did
'The man who lives in Behala rang up yesterday.'
b. *Je kothay thake Sey lokTa kal phon koreche?
who where lives this man yesterday phone did
'The man who lives where rang up yesterday?'

(83) a. Jake ram Taka diyeche take ami nemontonno korechi.
whom Ram money gave him I invitation did
'I invited the one that Ram gave money to.'
b. *Jake ram koto Taka diyeche take tumi nemontonno korecho?
whom Ram how-much money gave him you invitation did
'You invited the one that Ram gave how much money to?'

From a correlative relative clause, a *wh*-in-situ phrase can obviously not obtain scope. This restriction cannot be reduced to a restriction such as the name constraint, because changing the verb *korechi* in (83) to the habitual form *kori* 'I (usually) do' leads to a non-specific interpretation of the NP on which the relative depends: 'I invited whoever Ram gave money to.' Nevertheless, a *wh*-phrase would not be allowed in such a relative either. This impression is supported by the next examples, which show that questioning out of right-hand relatives which are part of complex NPs and are clearly indefinite is likewise impossible:

(84) a. Ekjon lok je behalay thake kal phon koreche.
a man who Behala-in lives yesterday phone did
'A man who lives in Behala rang up yesterday.'
b. *Ekjon lok je kothay thake kal phon koreche?
a man who where lives yesterday phone did
'A man who lives where rang up yesterday?'

(85) a. Ami Ekjon lokTake jake ram Taka diyeche nemontonno korechi.
I a man whom Ram money gave invitation did
'I invited a man who Ram has given money to.'
b. *Tumi Ekjon lokTake jake ram koto Taka diyeche
you a man whom Ram how-much money gave
nemontonno korecho?
invitation did
'You invited a man who Ram has given how much money to?'

These data contrast with data from Malayalam, discussed in Jayaseelan (2001b), where Japanese-style relative clauses can be formed in which the *wh*-element occupies the left edge of the phrase:

(86) Aarə ezhuti-(y)-a kawita waayicaa kuTTi karaññu?
who wrote REL poem read child cried
'The child that read the poem that who wrote, cried?'

It seems that the phrase headed by *waayicaa* is in the specifier of *kuTTi*, the phrase headed by *kawita* is in the specifier of *waayicaa*, and the phrase headed by *ezhutiya* is in the specifier of *kawita*. If *aarə* types [*aarə*] as +*wh*, the recursive embedding will lead to +*wh*-marking of the big phrase headed by *kuTTi*. The situation is analogous to English *whose mother's dog's flea collar*, which is also +*wh* specifier recursion. There is no need for extraction, and in fact overt extraction is blocked in any such case. The same situation holds in Bengali prenominal gerunds like in *hindi jana lok* (Hindi knowing man, 'man who knows Hindi'). Overt extraction of *hindi* by scrambling is impossible, but it can be replaced by a *wh*-phrase as in (87):

(87) Tumi [[kon bhaSa jana] lok -ke] nemontonno korecho?
you which language knowing man-ACC invitation did
'You invited a man who knows which language?'

Most plausibly, the entire phrase headed by *lok-ke* is *+wh* and can access sentential scope. No extra devices like a Q-particle seem to be needed. This impression is corroborated by the syntax of PPs. PPs are postpositional, and overt movement of the NP is impossible. Thus, the *wh*-element *kar* in (88b) or (88c) must gain scope without leaving the PP:

(88) a. *Kar$_1$ ram [t$_1$ Satte] kotha bolte cae?
who Ram with talk say wants
b. Ram [kar Satte] kotha bolte cae?
Ram who with talk say wants
'Who does Ram want to talk to?'
c. [Kar Satte]$_1$ ram t$_1$ kotha bolte cae?
who with Ram talk talk say wants

If one follows the idea that covert movement affects nothing but the *wh*-phrase proper or even nothing but the *wh*-feature (cf. Chomsky 1995c), there is a massive problem for the movement account. Covert movement would ignore a constraint that is absolute in comparison with the known gradual loss of acceptability observed in typical subjacency violations (in English). The postulation of a silent Q-morpheme that could serve as a licenser of *wh*-in-situ offers no alternative, as it would be far too unrestrictive (cf. (81) and (82–85)). If Bengali does not have a *wh*-scope marker, the conclusion must be that the island itself acquires the feature *+wh* and is subsequently moved to scope position; i.e., there is covert pied-piping. As already indicated by (88c), overt movement shows exactly this.

Bengali has a number of infinitival adjuncts which prefer to stay in clause-internal or topicalized position. Extraposition seems to be tolerable, but leads to marked constructions. These adjuncts may contain *wh*-phrases. The answers to such questions preferably repeat the island, which we have seen is a typical sign of pied-piping. Consider the examples in (89–91), where (b) is the question and (c) the answer:

(89) **Past participial (PPT) adjunct:**
a. [Bhat kheye] ronjit ghumote jabe.
rice eat-PPT Ranjit to-sleep go-will
'Having eaten rice, Ranjit will go to sleep.'
b. [Ki kheye] ronjit ghumote jabe?
what eat-PPT Ranjit to-sleep go-will
'Ranjit will go to sleep having eaten what?'
c. bhat ??(kheye).
rice eat-PPT
'(Having eaten) rice.'

(90) **Imperfective participial (IMP) adjunct:**
a. [KagojTa poRte poRte] ronjit kotha bolchilo.
paper read-IMP read-IMP Ranjit talk said
'Ranjit talked while reading the newspaper.'

b. [Ki poRte poRte] ronjit kotha bolchilo?
what read-IMP read-IMP Ranjit talk said
'Ranjit talked while reading what?'
c. KagojTa ??(poRte poRte)
paper read-IMP read-IMP
'(While reading) the newspaper.'

(91) **Conditional (COND) adjunct:**
a. [Tumi kolkatay gele] tomar ma khuSi hobe.
you Calcutta-to go-COND your mother happy become-will
'If you go to Calcutta, your mother will be happy.'
b. [Tumi kothay gele] tomar ma khuSi hobe?
you where go-COND your mother happy become-will
'If you go where, your mother will be happy?'
c. Kolkatay ??(gele).
Calcutta-to go-COND
'(If I go) to Calcutta.'

In (89b) and (90b), the *wh*-word *ki* may reside in the specifier of the adjunct; by virtue of this, the *+wh* adjunct can access a scope position. It is not so clear how this reasoning would carry over to (91b), where the *wh*-word *kothay* is not the leftmost category.

The same situation holds in (92), which involves a reason clause. It shows that *wh*-in-situ may be licensed not only in non-finite adjuncts but also in finite ones. (92) involves the final head *bole*, which here has the meaning of 'because':

(92) [[Ram kobe aSbe na] bole] tomar mon kharap]?
Ram when come-will NEG because your mind bad
'You are annoyed because Ram will when not show up?'

As we shall shortly see, the head *bole*, which can also head an argumental clause, is compatible with the interrogative force of an operator. Therefore one can assume that after local raising of the *wh*-word *kobe*, the entire *bole*-adjunct will be marked *+wh*. Thus, *kobe* does not obtain *wh*-scope by island-violating LF-movement, but rather by pied-piping the entire adjunct.[37] How it is possible that the *bole*-clause is 'recognized' as *+wh* although its complement contains a non-peripheral *wh*-word is not quite clear. It looks as if this *wh*-word can access the projection of *bole* by virtue of covert movement.

Before presenting more evidence to this effect, let us pause here and ask which form covert *wh*-movement could take, given the evidence presented so far.

5.3 What is covert wh-*movement?*

Wh-in-situ languages like Japanese have taught syntacticians a lesson that semanticists have learned from investigating the composition of generalized

quantifiers.[38] Languages which employ a Q-scope marker show explicitly what the *wh*-moving languages (mainly) hide, namely the partition between the *wh*-feature and the 'rest', which is again composed of something like an existential quantifier and a semantic restriction. In terms of Kamp's DRT and Heim's (1982) contribution to semantic theory, a *wh*-phrase being an indefinite NP would not itself carry an existential quantifier; it would rather be a variable which gets bound by some default operation such as existential closure. Ignoring this for the moment, *wh*-phrases like *where*, *which student*, or *which student of linguistics* decompose as in (93):

(93)

***Wh*-feature**	**Quantifier**	**Restrictive clause**
+wh	∃	λx time (x)
+wh	∃	λx student (x)
+wh	∃	λx student of linguistics (x)

In LF representations, these atoms of meaning have to be systematically separated. Languages which employ a Q-scope marker or *+wh*-typing morpheme have already done half the work in their visible representation by overt separation of the interrogative *wh*-feature from the rest. Languages which employ *wh*-phrases have to move them to a functional position. In the Minimalist Program (Chomsky 1995c), it is suggested that the C-head of CP may bear a feature *+wh* which attracts a *wh*-phrase whose *+wh* feature gets checked and is subsequently deleted. Movement is such that the trace left behind is actually a full but inaudible copy of the moved phrase. If what happens to the moved part also happens to the copy, checking off the *wh*-feature will lead as well to checking off the *wh*-feature in the copy. This leads to the structure in (94), where RC is short for 'restrictive clause':

(94) $[_{CP}$ ~~*+wh*~~ ∃ RC $[_{C'}$ *+wh* $[_{IP} \ldots$ ~~*+wh*~~ ∃ RC $\ldots]]]$

Assuming with Chomsky (1995c) that deletion may apply to this structure in such a way that the RC does not belong to the operator position, but rather stays in situ or elsewhere (i.e., the RC is essentially 'reconstructed'), the resulting structure is as in (95):

(95) $[_{CP}$ ~~*+wh*~~ ∃ ~~RC~~ $[_{C'}$ *+wh* $[_{IP} \ldots$ ~~*+wh*~~ ∃ RC $\ldots]]]$

Were it not for the quantifier, we would have almost the surface structure of a Japanese constituent question. If we now assume with DRT that the *wh*-phrase does not literally contain ∃, but that ∃ gets introduced by a default operation, it will disappear from both Spec, CP and the material in situ, and it will rather appear in a scope position immediately below the *wh*-operator.[39] Since indefinites are in this theory restricted variables, the ∃ in situ would be replaced by the variable x, and an existential quantifier would be inserted. Following Heim (1982: 138ff.), ∃ is adjoined to the nuclear scope of quantifiers, which we can for

concreteness take to be IP (although the nuclear scope may in various cases be smaller than that). Assume that *wh*-operator, existential operator, and restricted variable are connected by a selection index. These changes lead to the LF in (96):

(96) $[_{CP}$ ~~+*wh* RC (x)~~ $[_{C'}$ +*wh* $[_{IP}$ $\exists_1$ $[_{IP}$ . . . ~~+*wh*~~ RC (x_1) . . .]]]]

So much for the simplest kind of constituent questions formed by movement. What about *wh*-in-situ in those cases where there is no overt *wh*-scope marker? In this case the derivation starts with nothing but the *wh*-phrase. Crucially, this phrase will not be attracted by anything. But since it involves a *wh*-feature, which has been identified in section 4 as involving a disjunctive operator, this operator feature has to move to a scopal position. If it does not, the disjunctive operator will appear at the C-I interface as a meaningful but uninterpreted part. Thus, movement of this kind takes the form of 'semantically driven' movement, an option that Chomsky (1995c) tried to discard entirely. Let us here adopt the view that semantically driven movement exists nevertheless.

The next question is how the *wh*-operator proper can access a scope position. In the simplest case, the features of some lexical item could just split up, and the *wh*-feature could raise and adjoin to IP, IP being the syntactic form of the proposition and the proposition being the required scope domain. If we do not wish to introduce feature movement (Move-F) as an island-free operation, something slightly fancier must happen, at least in those cases in which we have seen a discrepancy between overt and covert movement. This brings considerations close to Nishigauchi's theory of LF pied-piping. Move-F or raising to Spec, XP within a potential island will have the effect of turning the entire island into a +*wh* phrase. This phrase, for example a Bengali PP, will undergo covert movement, again in contradiction to the Minimalist stipulation that covert movement cannot be phrasal movement, but it is now obvious why it makes sense to accept this consequence. The *wh*-phrase – and certainly an island in which it may arise – will have to fission into proper parts that allow the *wh*-feature to take scope and to type the clause in the sense of Cheng (1997). The residue, namely the restricted variable (which perhaps is inside an island), has to split off and reconstruct into its base position. This can be achieved by the copy-and-deletion mechanism Chomsky (1993, 1995c) has suggested for overt movement. The fissioning of features is not an issue in languages that employ a separate Q-morpheme in scope position and make use of unselective binding, because the *wh*-feature is already represented by an autonomous lexical element. For overt *wh*-movement, the Minimalist account proposes a *wh*-attractor in C which checks off the *wh*-feature of the attractee. Covert *wh*-movement cannot escape the prerequisites of the standard account of interrogative semantics. This can only mean that after being adjoined to IP, the moved phrase has to fission accordingly.

Let us suggest that this can be achieved by what Rizzi (1990b, 1991b) has called 'dynamic agreement' in his 'criterion approach'. The relevant part is this: if an operator-headed phrase is moved to an operator position, it must agree with a

corresponding head position. If no such head position is there, the phrase in XP-position will have to identify it. This amounts to claiming that semantically driven XP-adjunction can *create* a spec–head configuration as shown in (97), where +F stands for the relevant feature of XP that defines the dynamically created F-projection:

(97) $XP_{+F}\ [_{YP} \ldots t \ldots] \Rightarrow [_{FP}\ XP_{+F}\ [_{F'}\ F^0\ [_{YP} \ldots t \ldots]]]$

Semantically complex phrases, such as *kar Satte* 'with whom' in (88b) or *kon bhaSa jana lok* 'man who knows which language' in (87), which carry the *+wh* feature, can then adjoin to a scope domain (here YP) and identify a *+wh* projection by dynamically agreeing with a functional head. The moved phrase can fission into the *wh*-part and the 'rest', which will reconstruct in the same way as under overt movement. Also the existential closure procedure (which is a covert operation anyway) can apply in analogy to derivations with overt movement.

This implementation of covert movement is extremely close to what is believed to hold in overt movement. It is crucially free of the subjacency problem that has haunted LF theory up to Chomsky's theory of feature movement.[40] An important aspect is that this account also avoids the problems of Nishigauchi's (1990) LF pied-piping theory, which has been criticized by Von Stechow (1996) for its "non-transparent" LF. As Von Stechow pointed out, Nishigauchi's theory would have to be supplemented with additional mechanisms to arrive at what he calls a "transparent" LF. The present proposal is in fact quite close to Von Stechow's. There is an important difference, however. Von Stechow suggests pied-piping as an overt though invisible operation in the sense of Watanabe (1992b). Once the pied-piped material is in Spec, CP, the *wh*-part proper is extracted from the pied-piped island. This step, whose sole motivation rests in the desire to derive a transparent (i.e., interpretable) LF, is admittedly in violation of subjacency.[41] The conflict with subjacency does not arise for the present proposal, the crucial difference being that the *wh*-phrase proper is isolated not by movement but rather by the combination of spec–head agreement and the copy-and-delete mechanism: the pied-piped phrase must carry a *+wh* feature in order to identify a *+wh* head. This head will ultimately bind into the island which at LF appears in reconstructed position. Subjacency remains untouched.[42]

In the next subsection, data about transclausal *wh*-scope in Bengali will be presented which can be explained by covert *wh*-movement but hardly by the overly powerful device of a zero Q-scope marker.

5.4 Complement types, directionality, and wh*-scope*

Bengali is a typologically well-behaved head-final language with respect to one type of its sentential complements, but it appears to be not quite well-behaved with respect to another type. Consider the pair of examples in (98), where it is indicated that complementizers (or complementizer-like elements) can be

involved in these constructions or not, depending on certain conditions which are not central to the present discussion:

(98) a. Ora [[ram aSbe] (bole)] Suneche.
they Ram come-will (C) heard-have
'They have heard that Ram will come.'
b. Ora Suneche [(je) [ram aSbe]].
they heard-have (C) Ram come-will
'They have heard that Ram will come.'

The apparently optional C-elements are unrelated in status as well as origin: *bole* is the past participle of the verb *bola* 'to say'. Its sentence-final appearance is a natural consequence of the fact that it is a verb that has been grammaticalized into a functional subordinating head. Verba dicendi as complementizers, traditionally called 'quotatives', are an areal phenomenon and appear in all Dravidian and Eastern Indo-Aryan languages, and languages that have close contact with them. *Je*, on the other hand, is formally identical with the relativization operator *je*. There is a tendency in the languages under consideration to move such operators ('j-words') overtly to clause-initial position.[43] The two types of complements are in almost perfectly complementary distribution. While the extraposition of *bole*-complements is highly marked (and for some speakers impossible), topicalization of *je*-initial complements invariably leads to ungrammaticality.[44]

As may be expected, the two construction types are subject to different constraints. Most prominently, they differ with respect to the scope of in-situ operators contained in these complements. This is demonstrated by the scope of *wh*-in-situ. Consider first the example in (99):

(99) Ora [ke aSbe] Suneche. (Ambiguous)
they who come-will heard-have
i. 'They have heard who will come.'
ii. 'Who have they heard will come?'

As indicated by the translations in (i) and (ii), (99) can be understood either as a declarative – i.e., with the *wh*-expression having narrower scope than the matrix clause – or as a direct question – i.e., with the *wh*-expression having scope over the matrix clause. The structural ambiguity can be resolved by prosodic means. If *ke* does not carry a main accent, and there is a falling contour on *Suneche*, the declarative reading in (i) will result. If *ke* does carry a main accent, and there is a rising contour on *Suneche*, the direct-question reading results. Apart from intonation, there is no morphological sign of a surface scope marker that could guide the interpretation. Assuming that the clauses have to be typed clause-peripherally, the *wh*-item by itself could have targeted either Spec, CP of the embedded clause or Spec, CP of the matrix clause. The two readings in (99i) and (99ii) are assigned the disambiguated LF-representations in (100a) and (100b) respectively:

(100) a. Ora [$_{VP}$ [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ e$_i$ aS-be]]] Sune]-che.
b. [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ Ora [$_{VP}$ [$_{CP}$ e$_i$ [$_{C'}$ [$_{IP}$ e$_i$ aS-be]]] Sune]-che]]].

The same scope ambiguity is achieved when the final complementizer *bole* is present. Thus, (101) shows the same ambiguity as (99):

(101) Ora [[ke aSbe] bole] Suneche. (Ambiguous)
they who come-will C heard-have

Consider next the scope of a *wh*-operator in an embedded clause that appears to the right of the matrix verb. Only one reading is possible, namely the narrow-scope reading:

(102) Ora Suneche [ke aSbe]. (Unambiguous)
they heard-have who come-will
i. 'They have heard who will come.'
ii. NOT: 'Who have they heard will come?'

In contrast with the examples in (99) and (102), there is no way of achieving a wide-scope interpretation of *ke* by prosodic means. Even if *ke* receives the main accent and there is a rising contour, no interrogative interpretation will result.[45] There must be a strong syntactic factor that prevents a sentence such as (102) from being associated with the LF given in (103b):

(103) a. Ora Suneche [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ t$_i$ aSbe]]].
they heard-have who come-will
b. *[$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ Ora Suneche [$_{CP}$ t$_i$ [$_{C'}$ [$_{IP}$ t$_i$ aSbe]]]]].
who they heard-have come-will

As (104) shows, the presence of *je* is always incompatible with a *wh*-element in IP:

(104) *Ora Suneche [je [ke aSbe]].

One could argue that *je* prevents the *wh*-element from raising to Spec, CP because it disallows feature sharing with *+wh*. But under this explanation it would still be an open question why the *wh*-phrase cannot take scope in a clause further up.

The scope contrast between the two clause types can also be observed in cases where the semantic selection of the matrix verb disallows interpretive ambiguity. Take *bhab-* 'think' as the matrix verb. Its subcategorization is roughly the same as for English *think*, *believe*, or for German *denken*, *meinen*, *glauben*. These verbs select a *–wh* complement, as shown by the ill-formedness of **You thought who will build a house.* Notice now the difference between (105a) and (105b):

(105) a. Tumi [[ke baRi korbe] (bole)] bhabcho?
you who house make-will (C) think
'Who do you think (that) will build a house?'

b. *Tumi bhabcho [ke baRi korbe].
you think who house build-will
*You think who will build a house.

The complement type which fits into the pattern of head-finality allows the *wh*-in-situ item to scope out of the scope of the domain of the verb *bhab-*. This is the only way of getting the sentence grammatical. Nothing of this sort seems to be possible in (105b); i.e., the 'deviant' complement forces the *wh*-in-situ element to take narrow scope. This makes the semantic selection violation unavoidable. Thus, the earlier intuitions about ambiguity are now corroborated by intuitions about grammaticality.

How can this be explained? Within the GB framework, a natural conclusion could have been that the (*je-*) clause in the position to the right of the verb is extraposed, and that as a consequence it is in an A'-position from which no extraction can take place.[46] However, there are reasons to believe that the post-verbal complement has never been anywhere else, and that it cannot have been adjoined to IP by an extraposition rule. (106) demonstrates that the 'extraposed' clause is c-commanded by NPs in the matrix clause. Otherwise the pronoun *take* could not get the attested bound variable interpretation:

(106) Tumi prottekTa cheleke$_i$ bolecho [$_{CP}$ ke take$_i$ durga pujo-Y notun
you each boy say who him Durga Puja-at new
jama kapoR debe].
clothes give-will
'You told each boy who will give him new clothes at (the festival of) Durga Puja.'

Similar data are reported from Hindi in Dayal (2000). The same must be true for (107), where the focused NP – indicated by capital letters – must be c-commanded by the focus particle *Sudhu* 'only':

(107) Ami Sudhu bolechi [$_{CP}$ je RAM aSbe na].
I only said that Ram come-will not
'I only said that it is RAM who will not come.'

Having established that the postverbal (*je-*) complement appears in its underlying position and is in all likelihood directly selected by the matrix verb, as seems to be the case in a Dutch or German *dat-/daß*-CP, let us now return to the scope of *wh*-in-situ as exemplified in (99–105). Free insertion of a zero Q-scope marker appears to be consistent with the intuitions about *wh*-scope in (99), (101), and (105a), which are repeated here as (108–110) without glosses:

(108) Ora [ke aSbe] Suneche. (Ambiguous)
i. 'They have heard who will come.'
ii. 'Who have they heard will come?'

(109) Ora [[ke aSbe] bole] Suneche. (Ambiguous)
i. 'They have heard who will come.'
ii. 'Who have they heard will come?'

(110) a. Tumi [[ke baRi korbe] (bole)] bhabcho?
'Who do you think will build a house?'

A silent typing particle or scope marker could be inserted either at the edge of the embedded (*bole-*) clause or at the edge of the matrix clause. In (108/109) we get scope ambiguity, due to the fact that the verb *Sona-* 'hear' is semantically consistent with both *+wh* and *–wh*. Insertion in the embedded clause in (110a) would, of course, lead to a clash with semantic selection by the attitude verb *bhab-*. Thus, we observe only the wide-scope reading.

The problem is how to prevent the same mechanism from applying to the constructions in (102) and in (105b), repeated here as (111–112):

(111) Ora Suneche [ke aSbe]. (Unambiguous)
i. 'They have heard who will come.'
ii. NOT: 'Who have they heard will come?'

(112) b. *Tumi bhabcho [ke baRi korbe].
'*You think who will build a house.'

There is no reason why a silent typing particle or scope marker could not be inserted in the matrix clause. This would give us the unattested wide-scope reading in (111ii) and predict grammaticality for (112b). One can be sure that such a device would give the grammar far too much expressive power. In fact, a scope 'marker' that never marks anything visibly or audibly seems to be a very odd construct to begin with.

Our suspicion would be strengthened if there still were something like a lexical reflex of *wh*-scope available in the language, and if the presence of such an item would trigger wide scope from postverbal CPs. Evidence that points in this direction is indeed available in Bengali. To see this, consider the minimal expansions of (102) and (105), seen in (113) and (114) respectively:

(113) Ora **ki** Suneche [ke aSbe]?
they Q heard-have who come-will
'Who have they heard will come?'

(114) Tumi **ki** bhabcho [ke baRi korbe]?
you Q think who house make-will
'Who do you think will build a house?'

In these examples, *ki* 'what' has been inserted in the matrix clause. Section 5.1 has already identified this element as a clause-internal optional marker for disjunctive scope.

There is a controversy over whether the *ki* in (113) and (114) and the corresponding element *kyaa* in Hindi would be properly characterized as a scope marker.[47] Both examples obviously fall under what Van Riemsdijk (1983b) has called the Correspondence Effect and McDaniel (1989) the Partial Movement construction. Dayal (1994, 2000) has argued that in Hindi – and therefore certainly in Bengali, etc., too – *ki* is in an argument position. It is a nominal that occupies the A-position that otherwise is reserved for the complement-CP. This CP, which contains the *wh*-element to obtain wide scope, is adjoined but co-indexed with *ki*. In Dayal's theory, the *wh*-in-situ item *ke* in (113) and (114) would not covertly move toward *ki*, nor would *ki* unselectively bind *ke*. Dayal rather argues that *ke* obtains wide scope by virtue of being in the CP that is co-indexed with *ki*, and by the fact that *ki* takes (local) scope over the clause in which it appears. Thus, (114) does not directly ask 'for which person x do you think that x will build a house'; this reading is rather a consequence of the semantic composition of the question (i) 'For which proposition y did you think that y is true?' and (ii) 'For which person x is it true that x will build a house?', where y equals (ii). The details of Dayal's theory are not central to the present discussion about *wh*-in-situ. For the issues at hand it is important to see, however, that once Q-scope is indicated overtly, the positioning of the complement postverbally ceases to be an obstacle to wide *wh*-scope from such clauses. This point is quite elementary, and one can remain neutral with respect to the theoretical particulars of a direct scope-marking approach or the indirect dependency approach.

Given that we find partial movement in the South Asian *wh*-in-situ languages under discussion, it is not surprising to also find overt movement. Although Bengali is in its core properties a typical *wh*-in-situ language, many speakers accept sentences with an overt displacement of a phrase into the matrix clause. The following example from Bayer (1996) is broadly accepted by native speakers:

(115) Tumi [ki oSukhe]$_i$ bhabcho [$_{CP}$ je ram t_i mara gEche]?
you which illness-of think that Ram die went
'Of which illness do you think that Ram died?'

Such movement is never possible from adjoined clauses, i.e., from CPs with an expletive correlate (*e kotha* 'this news' or 'this story') or from pure adjuncts. This is shown in (116a) and (116b):

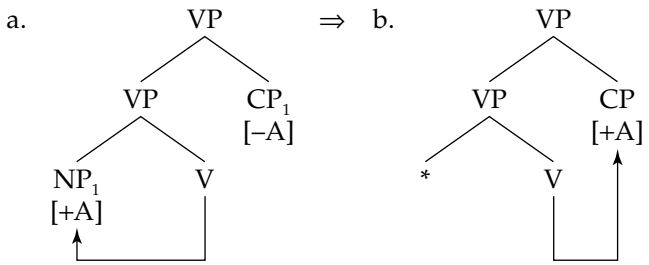
(116) a. *Tumi [ki oSukhe]$_i$ [e kotha]$_j$ bhabcho [$_{CPj}$ je ram t_i mara gEche]?
b. *Ke$_i$ tumi k:adcho [karon t_i mara gEche]?
who you weep because die went
*'Who are you weeping because died?'

Overt movement in (115) shows that the postverbal complements from which we have seen *wh*-in-situ elements cannot attain wide scope are truly arguments and must be L-marked by the matrix predicate, although they appear in an atypical

position. The ban on wide scope of *wh*-in-situ in (111) and (112) thus cannot be attributed to the purported adjunct status of the complement CP.

Bayer (1996, 1997) argues that the constraint on *wh*-scope follows from the fact that the CP in right-hand position is exceptionally selected by virtue of deletion of the expletive nominal that seems to be responsible for the appearance of such clauses in the first place. Once the licensing element is deleted, the adjoined CP acquires argument status by now being directly L-marked by the matrix predicate. This process, which amounts to the shifting of the argument position, seems to be highly motivated and diachronically rooted not only in Indo-Aryan but also in West Germanic. The transition is as in (117), where A stands for 'argument', * for the deletion site, and the arrow for L-marking:

(117) **A-Shift:**



Given the assumption that head-final order is a possible word-order choice and is not necessarily derived from head-initial order, as suggested by Kayne (1994), the VP in (117b) that results from A-shift can be argued to constitute a barrier for movement in head-final languages. The verb in head-final languages L-marks its object to the left. L-marking to the right as in (117b) is exceptional.[48] If, as a result of this, VP becomes a barrier, the ban against wide scope of the *wh*-in-situ element in (111) and (112) follows. Self-driven movement will target the closest available scope position, a position which may be a specifier created in the derivation, as in (97). Under this view, wide scope can only be made possible if the numeration involves an attractor.

This is the case in overt movement, as in (115). Assume that (115) involves some feature +F in a functional position associated with the matrix VP, not necessarily a *+wh*, since *–wh* phrases may also move in this fashion. This position, which has the qualities of an A-position, must be lexicalized, and it can be lexicalized if it overtly attracts a +F phrase. The CP from which the *wh*-phrase moves is L-marked, thus not an island. Transclausal movement in languages of that type appears to be different from movement into clause-peripheral positions, such as Spec, CP. The landing site is clause-internal (although scrambling operations may apply in addition). Thus, transclausal movement leads into an 'in-situ' position, and not to a typical *wh*-operator position, which would automatically type the clause as a *+wh* CP.[49] If this is correct, actual scoping must still follow this process of overt displacement. (115) would end up with the LF in (118), where overt movement is indicated with a solid and covert movement with a broken line:

(118) $[_{CP}$[ki oSukhe]$_1$ $[_{C'}$ +*wh* $[_{IP}$ tumi $[_{FP}$ $t_1$$[_{F'}$ +F $[_{VP}$ bhabcho $[_{CP}$ je ram t_1

mara gEche]]]]]]]

By assumption, the matrix clause of (111) does not contain an appropriate feature. Self-driven LF-movement would have to target Spec, CP of the matrix clause without first going through FP. This is, however, made impossible due to the barrier status of the matrix VP. In (119), the VP barrier is set up by the verb's exceptional L-marking, which blocks wide scope of *ke*:

(119) $[_{CP}$ [ke]$_1$ $[_{C'}$ +*wh* $[_{IP}$ tumi $[_{VP}$ bhabcho $[_{CP}$ je t_1 baRi korbe]]]]]

The so-far-established view of SOV word order and *wh*-in-situ has been challenged by Simpson and Bhattacharya (2000, 2003). Following Kayne's (1994) proposal of a universal spec–head–complement order, Simpson and Bhattacharya suggest that the position which hosts the *wh*-phrase in Bengali is in fact "high in the C-domain as in other languages" (2003: 140). *Wh*-phrases move into this focus-related Spec, CP. Thus, no further (covert) movement is required. But why does it still look as if the *wh*-phrase were in situ? The reason is that, according to Simpson and Bhattacharya, the true nature of the *wh*-phrase is "heavily disguised" by remnant material moving still higher than the *wh*-phrase. The wide-scope interpretation of *ke* in (108) – i.e., reading ii – would be derived as follows:

(120) a. [ke aSbe] Raise *ke* to Spec, CP →
who come-will

b. $[_{CP}$ ke_1 $[t_1$ aSbe]] Merge *Suneche* →
who come-will

c. Suneche $[_{CP}$ ke_1 $[t_1$ aSbe]] Merge subject →
heard-have who come-will

d. ora Suneche $[_{CP}$ ke_1 $[t_1$ aSbe]] Raise CP to Spec, CP →
they heard-have who come-will

e. $[_{CP}[_{CP}$ ke_1 $[t_1$ aSbe]]$_2$ [ora Suneche t_2]] Raise subject →
who come-will they heard-have

f. $[ora_3$ $[_{CP}[_{CP}$ ke_1 $[t_1$ aSbe]]$_2$ $[t_3$ Suneche t_2]]]
they who come-will heard-have

As one can verify in this derivation, the CP in (120b) is +*wh*, and *ke* is in a proper scope position. Pied-piping the entire +*wh* CP into the specifier of the dominating CP, as in (120e), will turn this CP into a +*wh* CP. The word order observed in (108) is achieved by raising the subject (which may be +topic) to some higher position. Thus, wide-scope *wh* is achieved without movement of the *wh*-word proper but rather by clausal pied-piping. The narrow scope of *ke* that has been observed in (111) and (112) is the result of the +*wh* CP not undergoing raising to Spec, CP of

the dominating CP. For wide scope to be blocked in (108) (i.e., reading i), the agreement mechanism in Spec, CP has to be interrupted by prosodic means, which have already been mentioned in the text following (99).

Simpson and Bhattacharya's proposal is interesting because it seems to rest on more parsimonious assumptions than previous accounts: there is no word-order parameter. Bengali is underlyingly like English. There is no covert movement of *wh*-phrases or -features, there is only overt movement (cf. Kayne 1998). On the other hand, various new questions arise:

(i) How can one speak of clause-peripheral typing in the sense of Cheng (1997) if the *wh*-phrase is linearly next to the verb and can be preceded by any amount of residual material in the clause which seems in no obvious way displaced?

(ii) If the *wh*-element must be in a focus position (which is assumed to be associated with Spec, CP) in order to gain scope, how can it still undergo scrambling or even be base-generated in a position which is remote from the verb, as is often the case?

(iii) Given that *wh*-phrases in Spec, CP have reached a scope position and can therefore not be 'absorbed' (cf. Baker 1970), how is it possible that (121) is grammatical and therefore must allow a multiple question reading?

(121) Ke bhabchilo [je ronjit ka -ke bhalobaSe]?
who thought C Ranjit who-ACC loves
'Who thought that Ranjit loves whom?'

Kayne (1998: 173) realized that multiple *wh*-questions may pose a problem for his overt-movement account. He suggests that the scope of the 'in-situ' *wh*-phrase is reached by overt movement of an empty operator which is associated with this phrase. One prediction that Kayne makes is that scoping by empty operator movement, which in his system is overt movement, should be possible only from domains from which PF-visible overt movement can take place. As (115) shows, the *je*-CP is exactly such a domain. The device which is suggested will then predict that the *wh*-phrase in (111) can take wide scope. This prediction is wrong. So the problem of how to account for multiple questions as in (121) remains.

(iv) From languages like English and German, it is clear that material in Spec, CP disallows subextraction. As shown in Bayer (1999b), however, this is possible from the purported Spec, CP position in Bengali.

(v) It is largely unclear what the trigger could be for the remnant material which has to move, often recreating what has been identified as the unmarked SOV order.

(vi) Related to the last point are questions about learning and parsing, because the predicted structures involve far more movements than assumed so far. If the proposed movements have any relation to the parser, there will be predictions about linguistic performance (acquisition, on-line comprehension, aphasic language, etc.), according to which *wh*-in-situ is tougher than overt

wh-movement without disguising remnant movement. Such predictions do not in all likelihood conform to empirical findings.

It looks as if Simpson and Bhattacharya's proposal is the beginning of an interesting new alternative to covert *wh*-movement. At the moment, however, it suffers from certain problems, which may well be overcome once the nature of SOV languages and especially the spec–head relation are better understood.

5.5 Summary

Where does this leave us? Our earlier discussion about multiple questions in *wh*-moving languages as well as *wh*-in-situ languages has shown that much of the burden of former LF-movement and its problematic status in syntactic theory can be shifted to unselective binding, i.e., to a mechanism that does not require movement. The discussion of *wh*-in-situ in Bengali, a language that is representative for relevant aspects of grammar that are found in various other South Asian languages as well, has shown that the world might be a bit more complex. The scope of *wh*-in-situ elements is not as free as could be expected under island-free scope. In fact, *wh*-scope seems to be under the control of subjacency. We have in addition seen that the language does not have any overt *wh*-scope marker or typing particle like Japanese. If these two facts allow us to draw conclusions, the conclusion should be that Bengali *wh*-in-situ reaches scope by covert movement.

A proposal has been made as to how scoping may take place. The proposal was more concrete in the details of *wh*-head identification and reconstruction than in the aspects of movement proper, intermediate landing sites, etc. What has been arrived at is a proposal that keeps overt and covert movement together as closely as possible. The LF representations that are achieved by both types of movement and the copy-and-deletion mechanism, which are assumed to apply uniformly, resemble the LFs achieved by unselective *wh*-binding in all the relevant details. At LF the different scoping strategies collapse into a single form that consists of a *+wh* head which types the clause and marks the scope of the interrogative, a restricted variable, and an existential operator that binds this variable.

Although Bengali and closely related languages are said to be *wh*-in-situ languages, the language seems to freely make use of other scoping strategies too. Bengali employs some version of partial movement as well as overt movement. Interestingly, both strategies enter the picture exactly where covert *wh*-movement is inhibited. Scoping by partial movement or overt movement is not used in those complements which are typologically 'well-behaved', i.e., in (*bole*-) clauses in canonical preverbal position, although scrambling from *bole*-clauses is certainly possible.[50] *Wh*-scope from these complements seems to rest entirely on covert movement. If Simpson and Bhattacharya are right, *wh*-elements in preverbal position have taken scope exactly where we see them, and no further process is necessary.

A mixed picture of *wh*-scoping is not unusual at all. Wahba (1991) has shown that Iraqi Arabic can use overt movement, covert movement, and partial movement

side by side. Cole and Hermon (1994) discuss evidence from a variety of languages which suggests that the scoping strategies are much less homogeneous across closely related languages and even within a single language than syntacticians working in GB theory have assumed. They observe that Imbabura Quechua has overt *wh*-movement, while Ancash Quechua has either overt or covert *wh*-movement. In Ancash Quechua both (122a) and (122b) are possible:

(122) a. May-man-taq$_i$ [José munan [María t_i aywanan -ta]]?
where-to-Q José wants María will-go -ACC
'Where does José want María to go?'
b. [José munan [María may-man$_i$ aywanan -ta]]?
José wants María where-to will-go -ACC
'Where does José want Maria to go?'

In (122a), the Q-morpheme *taq* seems to be responsible for the attraction of the *wh*-phrase *may-man*. In (122b), no such morpheme appears. Cole and Hermon observe both subjacency and ECP effects in Ancash overt movement, but no such effects in the in-situ cases. Their conclusion is that the latter involve a silent Q-particle which is located in C(OMP) and unselective binding. Following Aoun and Li (1993c), they assume a null *wh*-operator in Spec, CP which binds the in-situ phrase in the sense of variable binding. Nevertheless, internally headed relatives in Ancash Quechua do show island effects. Cole and Hermon argue that for interrogatives the language has a zero *wh*-operator which allows '*wh*-indexing', essentially making movement superfluous, while it lacks a corresponding operator for internally headed relatives. Thus, scope must be achieved in relatives by covert movement.

The discussion of *wh*-movement, partial *wh*-movement, and *wh*-in-situ in Cole and Hermon (1998b) focuses on Malay, a language where all three types seem to coexist peacefully. According to their analysis, *wh*-in-situ is licensed by a visible or invisible operator which serves as an unselective binder. But why should the language make use of the other two options – full as well as partial movement – in addition? Cole and Hermon suggest that the variation reduces to certain lexical options which exist in Malay but not in pure in-situ languages, such as Chinese, or in pure movement languages, such as English. Pure movement languages have *wh*-words of the form [OP+Var] – i.e., lexical combinations of operator and variable features – whereas pure in-situ languages have only [Var] type pronouns – i.e., pronouns which lack the operator feature. This would explain why they do not undergo movement but have to rely on an external operator. Malay is said to involve both options: the feature OP either stems from the lexicon as part of the relevant pronoun, or is generated separately in Spec, CP, in which case the pronoun is a variable that gets bound by OP. This leaves the third option, partial movement. Here one can observe island effects not only between the trace and the spelled-out operator, but also between the spelled-out operator and its ultimate scope position.[51] The partial movement chain is island-sensitive by definition. The covert chain results, according to Cole and Hermon,

from the fact that there is an expletive which must be replaced by covertly moving the OP-feature of the head of the overt chain upwards. They also consider the possibility that OP-movement is forced by the Proper Binding Condition. In any of these cases, island sensitivity is predicted.

The discussion of *wh*-in-situ in South Asian languages suggests three things. First, languages are unlikely to always fall into the simple +/− *wh*-movement parameter that the linguistic theory of the 1980s had suggested. Mixed strategies seem to exist, for some of which one might want to explore to what extent they interact with variations in word order. Second, a uniform account of *wh*-in-situ in terms of unselective binding by a Q-particle runs the risk of importing too much permissivity. Especially where one cannot observe an overt sentence-peripheral Q-morpheme that could function as an unselective binder, one may want to take a close look at the morphosyntax of the variables that are supposed to get bound. In various cases there might be good reasons for them to still undergo movement, although this movement would be abstract or, for that matter, overt but disguised by other factors. Third, at least in those cases where subjacency effects can be observed, movement operations seem to be involved. It is likely that for the grammar of *wh*-in-situ, licensing by unselective binding and licensing by covert movement may not be very different. The difference seems to largely reduce to the morpholexical inventory of the language.

6 Conclusion

The present survey of *wh*-in-situ has taken its start from ideas which were central to GB theory and which still have an influence on current theorizing. The main points were that there is a parameterization that splits languages into *wh*-moving and *wh*-in-situ languages, that *wh*-scope is always reached by movement which may be either overt or covert, and that the latter is not under the control of subjacency. It has later been shown that it is far from obvious that in all cases of *wh*-in-situ, the *wh*-phrase in situ has to move. The innovation came from two sides: (i) from the idea that more than the *wh*-phrase proper may undergo movement – i.e., the pied-piping which can be observed in overt movement could as well be assumed for LF-movement; and (ii) from the insight that a *wh*-phrase is composed of elements that may not be co-represented in one and the same phrase across languages. According to this line of thought, the interrogative force may rest in a clause-peripheral functional position, while the element in situ is not an interrogative operator at all, but rather a kind of variable that is in construction with the peripheral interrogativizer. Another option could be that the element in situ is indeed a *wh*-phrase, whose interrogative potential can, however, not be activated unless it moves to a scope position where it can also identify an interrogative head. The shift from GB syntax to Minimalism introduced the concept of derivational economy, which takes movement to be a last-resort operation that is needed for convergence in core syntax. Movement is

reduced to feature movement, unless (PF-)convergence forces generalize Pied-Piping. In order to explore the space between *wh*-in-situ and alternative possibilities of *wh*-scoping, the Indo-Aryan language Bengali was chosen. Languages like Bengali are interesting for a number of reasons:

(i) They normally do not have an overt clause-peripheral Q-particle (comparable to Japanese *ka* or *no*).
(ii) Although they are strictly head-final languages, they show postverbal CPs in certain types of relatives and clausal complements. Together with certain kinds of adjuncts, these are strict islands for *wh*-in-situ, a fact which can hardly be explained under the assumption of a generally available mechanism of unselective binding by an ever invisible Q-particle or by overt movement of an empty operator.
(iii) They allow – to some extent – for both overt and partial movement. Typically such movement is seen where abstract scoping is blocked. On the basis of this evidence, it was suggested that there may be different kinds of movement in one and the same language.

Revived interest in word order, which has received an important impulse through Richard Kayne's work, is likely to uncover much about *wh*-scope and *wh*-in-situ which has so far escaped proper understanding. The variation around the syntax of *wh* will certainly stay with linguistic research for a long time.

NOTES

1 The discrepancy between overt and covert movement with respect to subjacency is not the only unattractive aspect of the classical LF-theory. If covert *wh*-movement could move the entire *wh*-phrase to COMP, we would expect a repair of the Principle C violation that exists in sentences in which a pronoun c-commands a co-indexed name. This is not the case, however, as (i) shows. Only overt movement as in (ii) will repair the defect (see Comorovski 1996: ch. 4 for discussion):

(i) *Who said that he_1 liked [how many pictures that $John_1$ took]?

(ii) [How many pictures that $John_1$ took] did you say that he_1 liked?

2 *De* is roughly speaking a functional element that turns the phrase to its left into a modifier of the phrase to its right.
3 Due to the fact that Japanese is a pro-drop language, the dative can be missing.
4 Notice, however, that there are also examples like Ross's (1986) widely known:

(i) the report [[the height of the lettering on the covers of which]$_1$ the government prescribes t_1]

for which it is unclear why it would not be blocked by:

(ii) the report [[which]$_1$ the government prescribes the height of the lettering on the covers of t_1].

5 Something similar is proposed by Von Stechow (1996). The difference is that – partially following Watanabe (1992b) – Von Stechow suggests that there is pied-piping but that it is still an operation of overt movement, 'invisible overt movement', so to say. At LF, the operator proper is moved out of the pied-piped phrase. For instance, the operator *nani-o* of (15) would have to appear in the specifier of the Q-operator ('interrogativizer') *no*.

6 Examples abound in the Germanic languages. In English we find *which*-relatives next to *that*-relatives. The same is true for German w-relatives vs. d-relatives. Consider also *was*/*wos* in the relatives of Southern German dialects as well as in Yiddish (cf. Lowenstamm 1977) or *pu* 'where' in modern Greek. *Wh*-words which are not in the scope of an interrogative head usually adopt extra morphemes in order to count as indefinite pronouns. Consider here German, which is in this respect more consistent and richer than English:

(i)	a.	wer	'who'	irgendwer	'someone'
	b.	was	'what'	irgendwas	'something'
	c.	wann	'when'	irgendwann	'sometime'
	d.	wo	'where'	irgendwo	'somewhere'
	e.	wohin	'where-to'	irgendwohin	'somewhere-to'
	f.	woher	'where-from'	irgendwoher	'somewhere-from', etc.

Interestingly, many of the pure w-words (from the left-hand column) can be colloquially used as indefinites even though the disambiguating morpheme *irgend* is missing. Examples are given in (ii):

(ii) a. Ich habe schon **wen** gesehen, der den neuen Roman von Grass hatte.
'I have already seen someone who had the latest novel by Grass.'
b. Wenn **wer** anruft, sag ihm, ich sei nicht zuhause.
'If someone calls, tell him that I am not at home.'
c. Vielleicht sind sie **wohin** gefahren, um einzukaufen.
'Perhaps they went somewhere to go shopping.'

This phenomenon, to which we will return, seems to be extremely wide-spread. Cf. Haspelmath (1997) for a typological investigation.

7 Cf. Jayaseelan (2001b).

8 In (15), *-no* has a similar function.

9 We have already seen similar examples from German; cf. note 6.

10 Almost the same is found in Malayalam, a genetically unrelated Dravidian language. As Jayaseelan (2001b) and Hany Babu (1999) point out, *-um* as in *John-um Bill-um* 'John and Bill', resembles Japanese *-mo* and is conjunctive, while *-oo*, as in *John-oo Bill-oo* 'John or Bill', resembles Japanese *-ka* and is disjunctive.

11 Consider German *nichts*, which derives from OHG *niwiht*, which decomposes into NEG+(some)thing.

12 Many languages form yes/no questions with disjunctive tags such as 'or not', 'did(n't) XP', etc. Swiss-German simply uses the tag *oder* 'or', which seems to be an elliptic and grammaticalized form of *oder nicht* 'or not'. Highly suggestive is also the

English *wh*-operator *whether*, which stems from *wh+either*. Cf. Higginbotham (1993: 217ff.) for discussion of the semantics of disjunctive questions with *whether* as decomposing into *wh*, *either*, and *or*. One should note that the application of a tag imposes a bias toward an affirmative answer in certain languages but not in all.

13 The semantics sketched here is compatible with the standard analyses in Hamblin (1973) and Karttunen (1977), but especially with the partition approach initiated by Groenendijk and Stokhof (1982); see also Higginbotham (1993), as well as Bayer (2004), where new evidence for the appropriateness of this approach is discussed.

14 Cheng's clausal typing hypothesis implies that all languages are alike in requiring a morphology-based assignment of a clause to the *+wh* type, if the clause should count as a *+wh* clause. Either the clause is typed by a *+wh* head (as is the case in Japanese) or it is identified as *+wh* by virtue of *wh*-movement to Spec, CP. Typing by covert movement is excluded. Where we see no relevant morphology, there must be a zero *+wh* head. We shall return to the latter proposal.

15 Similar restrictions seem to hold for German *warum* 'why'. German allows, under certain discourse conditions (D-linking; see below), in-situ questions. In this case, (i) sounds more awkward than (ii):

(i) ??Du bist warum nach Patmos gefahren?
you have why to Patmos gone

(ii) Du bist aus welchem Grund nach Patmos gefahren?
you are for which reason to Patmos gone

Notice on the other hand that German readily allows *warum* in situ in multiple questions. The following stretch of text about the role of Goethe institutes appeared in *Die Zeit* (19 August 1999):

(iii) Was ist überhaupt deutsche Kultur? Wem will die Bundesregierung sie
what is actually German culture whom wants the central-government it
warum nahebringen?
why near-bring
'What is German culture actually? Who does the government want to familiarize with it why?'

According to published judgments on English, *why* in situ should always be excluded. For a discussion of the largely unclear behavior of *why*, see Hornstein (1995).

16 That the ECP is not precisely the right instrument is suggested by the fact that *pourquoi* could be moved locally and therefore antecedent-govern its trace.

17 We will introduce D-linking in more detail below.

18 The same holds at least for English and German, where non-echo *wh*-in-situ is possible under certain circumstances:

(i) a. How are you?
b. *You are how?

(ii) a. Wie geht es dir?
b. *Dir geht es wie?

In German it would be absolutely natural to use a *wh*-in-situ question with *wie*, as in (iii), in a context in which the health of a person is already under debate:

(iii) (having spoken about the interlocutor's health or possible influences on it, say, by taking a certain drug)
. . . und danach ist es dir wie gegangen?
. . . and then it went with you how?

19 Notice that German, which we have seen allows *warum* in situ, behaves exactly the same. *Warum* cannot appear in an island, while *aus welchem Grund* can:

(i) Wer kennt Leute, die aus welchem Grund/*warum kriminell wurden?
who knows people who for which reason/why criminal became

20 In the discussion of Japanese syntax, further motivations for movement have been brought up on the basis of visible subjacency effects. These have been relegated to the overt movement of a zero operator rather than to covert movement; cf. Watanabe (1992b).

21 Doubts about the appropriateness of an ECP account with respect to adjunct movement were already uttered in Nishigauchi (1990: 97), in connection with the observation that *naze* turns out to be acceptable in certain complex-NP environments (which are not introduced here), and that this is unexpected under the ECP theory.

22 Cf. Higginbotham and May (1981) and the shorter outline in May (1985: ch. 1). As Von Stechow (1996) emphasizes, *wh*-binding alone is not sufficient. The indefinite that corresponds to the *wh*-in-situ element must be turned into a variable at LF. This is standardly done via binding by an existential quantifier, an operation that seems to be independent. The question is whether it should be characterized as syntactic movement or not. We will return to this question.

23 In French it would be *diable*, in German *zum Teufel*.

24 Largely the same constraints can be observed in German clauses with modal particles (PRT) such as *denn*, *doch*, *halt*, *ja*. These words can only appear in root clauses or in embedded clauses that may represent reported speech. In all other contexts they are extremely awkward. The following examples may serve as an illustration:

(i) a. Wo habt ihr **denn** übernachtet?
where have you PRT spent-the-night
b. Du bist **ja** verrückt!
You are PRT crazy

(ii) a. Sie wollten wissen, wo wir **denn** übernachtet hätten.
they wanted (to)know where we PRT spent-the-night had_{SUBJ}
b. Sie sagten, daß ich **ja** verrückt sei, wenn ich sie heiraten würde.
they said that I PRT crazy be, if I her marry would

(iii) a. *Es ist unklar, wo sie **denn** übernachtet haben.
it is unclear where they PRT spent-the-night have
b. *Sie bedauerten, daß ich **ja** verrückt bin, wenn ich sie heirate.
they regretted that I PRT crazy am, if I her marry

The relevant point here is that it is unclear how the cases in (ii) should be analyzed in terms of PRT-raising in any clear sense of operator movement. Since the intensifier

construction rests on the same constraints, the simplest conclusion should be that it does not involve raising either, and that the problem is actually orthogonal to the establishment of an operator-variable chain.

25 One should notice here that not all quantifiers can act as generators. No pair-list answer is possible in response to (i):

(i) What did many/most/no people bring?

26 Cf. Grewendorf and Sabel (1994), as well as Bayer and Kornfilt (1994), among others, for details.

27 Since I disagree with her judgments, I put them in brackets.

28 How this Q-operator is syntactically represented is a matter of debate. Koopman (2000a) adopts an idea of Dominique Sportiche's, according to which there is a silent Q-head which gets identified by moving the IP it selects to its specifier. One could also think about an analysis in which interrogative intonation is directly responsible for the possibility of *wh*-in-situ in languages that usually move their *wh*-elements.

29 This can in no way mean that the WCO account is free of problems, of course; cf. Haider (2000d) for critical discussion of the fact that superiority and binding violations do not always go hand in hand. Discussion of this would go beyond the scope of this chapter.

30 Consider the following examples, the second of which is from Farkas (1981):

(i) *We showed [an architect [who built [*every house in this area*]$_1$]] its$_1$ basement.

(ii) Each student has to come up with [three arguments [which show [that [*some condition proposed by Chomsky*] is wrong]]].

The universally quantified NP in (i) is unable to bind the pronoun *its* for the obvious reason that it cannot be raised from the complex NP in which it occurs. The indefinite NP in (ii) can obviously be raised out of a similar island. The case at hand is particularly interesting, as it has a natural reading according to which the indefinite is not specific: for each student there can easily be a different condition by Chomsky for which he or she has to find three arguments which show that it is wrong. This shows that the island-free scope of indefinites cannot be reduced to their name-like behavior (specificity). For further discussion of the scope of indefinites see chapter 74.

Reinhart (1997: 336) suggests that a universally quantified NP can be QRed out of its CP, but not out of a complex NP. Her examples are:

(iii) A doctor will make sure [that we give every new patient a tranquilizer].

(iv) A doctor will examine [the possibility [that we give every new patient a tranquilizer]].

If the universally quantified NP can take the indefinite of the matrix clause in its scope, the question remains, however, why a bound variable interpretation, as indicated in (v), is still unavailable or at least very hard to get:

(v) ?*His$_1$ doctor will make sure [that we give [every new patient]$_1$ a tranquilizer].

See in this connection also the examples in note 1.

31 As is widely known, any theory has to cope with the reconstruction problem that is visible in examples like:

(i) [Which picture of himself$_2$]$_1$ does John$_2$ really like t$_1$?

where it must be guaranteed that the anaphor is bound by *John* although it appears outside its c-command domain. Chomsky (1995c) gets rid of reconstruction by allowing the moved phrase to remain as a copy in situ. Different deletions apply to the copy representation at the two interfaces respectively. At the A-P ('articulatory-perceptual') interface, the in-situ copy is deleted, while at the C-I interface everything but the *+wh* operator feature is deleted, whereas the operator part is deleted from the copy. Thus, the restrictive phrase is automatically in situ and the anaphor can be standardly bound. This is shown in (ii), a representation which appears to be extremely close to what we have seen as the standard format for interrogatives in *wh*-in-situ languages like Japanese, which employ a Q-scope marker:

(ii) [Which ~~picture of himself$_2$~~] does John$_2$ really like [~~which~~ picture of himself$_2$]?

32 For independent remarks on Reinhart's argument against the in-situ interpretation of the restrictive term, see Pesetsky (2000: 110f.).

33 Examples are given in (i) and (ii); they can, however, appear only in the scope of negation:

(i) ke ('who') + o ⇒ keu ('someone', nom.)

(ii) ka + o + ke ⇒ kauke ('someone', obj.)

See also note 6.

34 A subcase of this would be 'overt' movement of a zero operator, as Watanabe (1992b) has suggested. We will briefly turn to this possibility in section 5.4.

35 (81b) should improve if the matrix clause contains another *wh*-element not in an island. In that case we get a multiple question, as shown in (i):

(i) Kar mon kharap [karon ke durga pujay aSbe na]?
whose mind bad because who Durga-Puja-at come-will NEG
'Who is annoyed because who will not show up for Durga Puja?'

There is, in fact, an improvement, indicating that *kar* can scope-license the *ke* in its island.

36 For details, consider the treatment of correlatives in Hindi in Srivastav (1991b).

37 That non-arguments allow for the percolation of a *wh*-feature is attested in adjoined PPs, but also in predicates, as the following rather puzzling German example from Trissler and Lutz (1992) shows, in which a *wh*-adverb pied-pipes the past participle along:

(i) [Wie schön geschrieben]$_1$ muß man t$_1$ haben, um eine Eins zu bekommen?
how beautifully written must one have to a one to get
'How beautifully does one have to have written in order to get an A?'

38 To be fair, with respect to negative quantifiers the point was seen at least as early as Jespersen (1924) and Bech (1955), i.e., long before the advent of contemporary linguistic semantics.

39 For both the moved *wh*-phrase and *wh*-in-situ items, we must assume that the position of the existential quantifier is identified by the *+wh* complementizer. As Jayaseelan (2001b) argues, the *wh*-operator (in his case the Malayalam interrogativizer *-oo*) must take the highest position, which he identifies as the head of ForceP, because the clause has to be identified as a question. More semantically motivated reasons for the same ordering effect come to mind readily.

40 It is conceptually more attractive than implementations that divorce overt and covert movement by attributing only overlapping but not isomorphic constraints to them. Since the pied-piping phenomenon is so ubiquitous in language, it can hardly be circumvented in the grammar of covert movement unless the discrepancy between overt and covert movement is taken to be axiomatic.

41 Cf. Von Stechow (1996: 84f.) as well as note 5; recall also that a similar proposal has already been made by Fiengo et al. (1988). See the comments in section 3 above.

42 For independent motivation concerning the syntax of focusing particles and negation, see Bayer (1996).

43 Various native speakers find fronted relative operators better than in-situ operators, but basically also tolerate the latter. Bal (1990: ch. 3.4) reports that in Oriya, which is closely related to Bengali, fronting of j-operators is obligatory as soon as the relative appears in extraposed position:

(i) a. [Jadu jaahaaku maarithilaa] se aaji aasiba. (Unextraposed (correlative))
Jadu whom had-beaten he today will-come
'He whom Jadu had beaten will come today.'
b. *Se aaji aasiba [jadu jaahaaku maarithilaa]. (Extraposed)
c. Se aaji aasiba [jaahaaku jadu maarithilaa]. (Extraposed)

Srivastav (1991c: 199) gives examples from Hindi in which the j-operator has moved to the left of the complementizer *ki*, a position which is readily analyzed as Spec, CP. Her example (26b) appears in (ii):

(ii) ek laRkii [jis-ko [ki sab pasand karte hai]]
one girl who-ACC that all like AUX
'a girl whom everybody likes'

Chung et al. (1995) analyze cases of sluicing such as *Someone called but I don't know who* as *wh*-movement plus copying of the antecedent IP (including the indefinite, which they take to be a DRT-type variable). If they are right, Bengali must allow overt *wh*-movement in its postverbal complements. Notice that the language allows sluicing, as shown by the examples in (iii):

(iii) a. Kono Ek-jon aSbe, kintu ami jani na ke.
some one-person come-will but I know NEG who
'Someone will come but I don't know who.'
b. Amake Ek-jon-er Satte kotha bolte hobe, kintu ami jani na
me one-person-GEN with talk speak be-will but I know NEG
ka-r Satte.
who-GEN with
'I will have to talk to someone, but I don't know to who.'

See Merchant (2000) for a proposal that would allow cases of PP pied-piping as in (iiib) to be covered in the Chung et al. account.

44 See Bayer (1999b) and references therein for various details which cannot be provided here.

45 This effect seems to be without exception in all South Asian languages which show postverbal CPs.

46 See Mahajan (1990) for argumentation along these lines with respect to Hindi *ki*-clauses, where the scope of *wh*-phrases is constrained accordingly. Mahajan argued that the *ki*-complement originates as a left sister of V, and that overt extraction is possible from there. After the complement is (obligatorily) extraposed, it is in an A′-position. The S-structure that has been reached would then disallow LF-movement from the extraposed CP.

47 The interested reader is referred to individual contributions in Lutz et al. (2000); see also Sabel (1998: ch. 4).

48 It is not exceptional in head-initial languages, of course, with serious consequences. See Bayer (1996) for cross-linguistic evidence with respect to transclausal scope.

49 Sabel (1998) suggests a feature-based parameterization according to which languages can choose between a ±strong *wh*-feature and a ±strong focus feature. According to Sabel, an in-situ language like Bengali, which shows *wh*-movement to a quasi 'in-situ' position, would have a +strong focus feature but a –strong (weak) *wh*-feature. According to conventional assumptions, some movement to a *wh*-scope position would in this case still be required.

50 Relevant data – not only from Bengali – can be found in Bayer (1999b).

51 Consider the following contrast between overt, covert, and partial movement types of scope from a relative clause, where the intended reading should be a direct question:

(i) *Di mana$_i$ [kamu fikir [Ali suka [perempuan yang tinggal t$_i$]]]?
at where you think Ali like woman who lives
'You think Ali likes the woman who lives where?'

(ii) Kamu fikir [Ali suka [perempuan yang tinggal di mana]]]?

(iii) *Kamu sayang [perempuan yang Ali fikir [apa$_i$ yang telah makan t$_i$]]?
you love woman that Ali thinks what that already eat
'You love the woman who Ali thinks ate what?'

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