Subordination

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SUBORDINATION

SONIA CRISTOFARO

Contents

List of Figures

List of Tables

List of Abbreviations

Abbreviations for grammatical morphemes and categories

The following abbreviations are used in interlinear glosses of language examples. They are generally the same as those used by the original source. For the conventions used in interlinear glosses, see Lehmann (1982). Language examples have generally been presented in standard orthography or in the orthography used by the source.

ABS	absolutive	DES	desiderative
AC	accomplished	DIST	distal
ACC	accusative	DO	direct object
ACT	actual	DS	different subject
ADEL	adelative	DUR	durative
ADJ	adjectival	DVBLZR	deverbalizer
ALL	allative	ERG	ergative
AOR	aorist	EVID	evidential
ART	article	EXCL	exclusive
ASP	aspect	F	feminine
AUX	auxiliary	FINAOR	finite aorist
COBL	complementizing oblique	FUT	future
		FUTPURP	future purpose
COLL	collective	G	gender
COM	comitative	G2	gender 2
COMP	complementizer	GEN	genitive
CONT	continuative	GER	gerund
CONTG	contingent	H	honorific
COP	copula	HM	human
CP	conjunctive participle	IMMED	immediate
		IMP	imperative
CRS	Currently Relevant State	IMPFR	imperfect
		IMPFV	imperfective
CTRFACT	counterfactual	INC	incompletive
D	destination	INCH	inchoative
DAT	dative	IND	indicative
DEF	definite	INESS	inessive
DEM	demonstrative	INF	infinitive

INSTR	instrumental	PTCL	particle
INTERJ	interjection	PTCP	participle
IP	intransitive prefix	PURP	purpose
IRREAL	irrealis	PURPV	purposive
LEST	'lest' clause	PVF	perfective aspect
LOC	locative	QUOTE	quotative
M	masculine	REAL	realis
MLOC	modal locative	REL	relative
MOT	motion	REFLX	reflexive
NARR	narrative	RPAST	recent past
NEG	negation	SG	singular
NOM	nominative	SRESS	superessive case
NOMLZR	nominalizer	SS	same subject
NONFINAOR	nonfinite aorist	STAT	stative
NT	neuter	SUB	subordinator
OBJ	object	SUBJ	subject
P	possessor	SUBJN	subjunctive
PAR	partitive	T/A	tense/aspect
PASS	passive		marker
PAST	past	TODP	today's past
PERF	perfect	TOP	topic
PERSART	personal article	TRANS	transitive
PL	plural	TRANST	transition
PRES	present	UNM	unmarked
PROGR	progressive	VBLZR	verbalizer
PROSP	prospective		

Abbreviations for subordination relations

These abbreviations are used in the tables concerning the various subordination relations taken into account.

Aft.	= After	Perc.	=	Perception
A r.	= A relativization	Phas.	=	Phasals
Bef.	= Before	Kn., Know.	=	Knowledge
Des.	= Desideratives	Pr.a., Prop.a.	=	Propositional attitude
Ind. o. r.	= Indirect object relativization	Purp.	=	Purpose
		R. c.	=	Reality condition
Man.	= Manipulatives	Reas.	=	Reason
Mod.	= Modals	S r.	=	S relativization
O r.	= O relativization	Utt.	=	Utterance
Obl. r.	= Oblique relativization	Wh.	=	When

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1 Theoretical Premises

1.1. Overview

This study aims to outline a typology of subordination systems across the world's languages. The goal is to uncover the mechanisms underlying the association between the morphosyntactic structures used to code subordination and the conceptual situations they express. The analysis follows the same lines as much recent work about particular aspects of subordination, such as Givón (1980, 1990), Noonan (1985), or Hengeveld (1998). It represents, however, the first systematic attempt to relate all types of subordination relation (complement, adverbial, and relative relations) to the same functional principles, and describe the cross-linguistic distribution of the structures used to code subordination in terms of overall implicational hierarchies (Givón 1980, 1990 and Hengeveld 1998 are restricted to complement and adverbial constructions respectively).

The notion of subordination that will be employed throughout the study is quite different from the traditional one. The concept of 'subordination' is usually defined on the grounds of morphosyntactic criteria such as clausal embedding. An embedded clause is a clause functioning as a constituent of another clause, as in the following English sentence:

(1.1) $_S$[I said $_S$[it was a man $_S$[I knew]$_S$]$_S$]$_S$ (Matthews 1982: 190)

Another morphosyntactic criterion that is traditionally invoked to define subordination is use of nonfinite verb forms such as infinitives, gerunds and the like:

(1.2)   While **staying** in Paris, we went to a couple of concerts

However, as repeatedly pointed out in typological literature (see for instance Keenan and Comrie 1977; Stassen 1985: 14–15; Croft 1990: 11–18, 2001), morphosyntactic criteria are of limited applicability in cross-linguistic comparison, because not all languages display the same morphosyntactic structures. For instance, not all languages use embedded clauses or nonfinite verb forms to express a particular relation between events. Therefore, morphosyntactic criteria are suitable as long as one wants to investigate a particular morphosyntactic structure, and possibly its functional correlates across languages—for instance, what semantic relations between events are expressed by gerunds, or embedded clauses. In that case, the languages that do not have the relevant structure will be discarded from the study.

On the other hand, however, one might want to investigate all the possible ways in which languages encode a particular notion or conceptual situation—for

example temporal relations between events, like the one expressed in (1.2) (this is the standard approach advocated by typologists, and will be discussed in more detail in Section 1.2.3 and Chapter 2). In that case, one cannot rest on morphosyntactic criteria, because this would mean leaving out all the languages in which a different formal way of encoding the relevant notion has been chosen. Therefore, the phenomenon under investigation should be defined in language-independent, that is, functional (= notional, cognitive, semantic/pragmatic) terms.

In keeping with the latter approach, the notion of subordination will be defined here exclusively in functional terms. Subordination will be regarded as a particular way to construe the cognitive relation between two events, such that one of them (which will be called the dependent event) lacks an autonomous profile, and is construed in the perspective of the other event (which will be called the main event). This definition is largely based on the one provided in Langacker (1991: 435–7). For instance, in Langacker's terms, the English sentence in (1.3),

(1.3)   After she drank the wine, she went to sleep

profiles the event of going to sleep, not the event of drinking the wine. This definition will be made more precise in Chapter 2, where the notion of profile will be discussed and a number of criteria to distinguish between main and dependent events will be presented. What matters here is that the definition pertains to cognitive relations between events, not any particular clause type. This means that the notion of subordination is independent of the way in which clause linkage is realized across languages. For instance, the English sentence in (1.3) involves a clause that would be identified as subordinate under most traditional criteria. However, the corresponding Mandarin Chinese sentence in (1.4) involves two morphosyntactically independent clauses:

Mandarin Chinese (Sino-Tibetan, Sinitic)
(1.4)   *tā   hē   le   jiǔ,   jiu   shuí   zháo   le*
         3SG   drink PVF   wine   then   sleep   succeed CRS
         'After s/he drank the wine, she went to sleep' (Li and Thompson 1981: 641)

Under the proposed functional definition of subordination, (1.3) and (1.4) would both be regarded as instances of subordination: they encode the same cognitive relation between events, as is shown by the English translation of (1.4), as well as the tests for subordination to be discussed in Chapter 2. Defining subordination in functional terms allows one to include all languages in the analysis, because the cognitive situation identified with subordination is presumably universal (more on this in Section 1.2.3 below).

Also, as will be shown in more detail in Chapters 5–7, the cognitive situation identified here as subordination underlies all of the sentence types that are regarded as instances of subordination under traditional criteria, namely complement,

adverbial, and relative sentences. In this respect, the instances of subordination that can be examined using the proposed definition are not that different from those that would be examined using a traditional definition. However, the proposed functional definition allows one to include within the analysis some other cases having a different morphosyntactic manifestation, but the same underlying cognitive structure.

The basic idea of the work is to define subordination in functional terms, and examine whatever construction is used to code this functional situation cross-linguistically. In particular, the investigation focuses on the constructions used to code the dependent event in various types of subordination relation (these will be described in Chapters 5–7). Any reference to morphosyntactic phenomena that are usually indicated as typical of subordination, such as embedding or backward anaphora (see, for instance, Haspelmath 1995), is deliberately avoided, because these phenomena are characteristic of particular clause types that do not necessarily exist in all languages. Instead, as is pointed out in Chapter 3, the constructions used to code dependent events are classified with respect to one basic parameter, whether or not they differ in structure from an independent declarative clause taken in isolation. All languages have independent declarative clauses occurring in isolation, so this parameter is universally applicable.

Deviation from the independent declarative clause standard is measured with respect to two major parameters. The first is verb form. Verbs coding dependent events may differ in structure to varying degrees in comparison to the corresponding forms used in independent declarative clauses. For instance, they may not display all of the categorial distinctions (tense, aspect, mood, person) allowed to verbs in the relevant language. Alternatively, categorial distinctions may be expressed by means of special forms not used in independent declarative clauses (this is the case with subjunctives, so-called dependent moods and the like). In addition, verb forms coding dependent events may display special morphology not allowed on verbs in independent declarative clauses, such as, for instance, case marking.

The second parameter is participant coding, for example whether or not the participants of the dependent event are expressed as in independent declarative clauses. For instance, participants may be not expressed overtly, or expressed as possessors or obliques.

The cross-linguistic distribution of the various phenomena related to verb form and participant coding turns out to obey ordered patterns of variation across different types of subordination relation. These patterns of variation can be described by means of a number of implicational hierarchies. These hierarchies are the major empirical result of this study. They differ from each other in a number of minor details, but obey the same basic pattern, manifested in the hierarchy in (1.5). For reasons that will become clear in Chapter 8, the latter will be called the Subordination Deranking Hierarchy.

(1.5)   The Subordination Deranking Hierarchy:
         Phasals, Modals > Desideratives, Manipulatives, Purpose >
         Perception > Before, After, When, A relativization, S relativization >
         Reality condition, Reason, O relativization > Knowledge, Propositional
         attitude, Utterance, Indirect object relativization, Oblique relativization

The Subordination Deranking Hierarchy should be read as follows: if any non-independent declarative clause-like construction is used to code the dependent event in a subordination relation at any point on the hierarchy, then it is used for all subordination relations to the left of the hierarchy.

The Subordination Deranking Hierarchy appears to be crucially related to the semantic features of the various types of subordination relation, in particular the degree of semantic integration between the linked events and predetermination of information concerning the dependent event. These features will be integrated into a comprehensive explanatory model for the cross-linguistic coding of subordination, to be discussed in Chapter 9. This model rests on a basic cognitive distinction, that between processes and things, as outlined (among others) by Langacker (1987*a*, 1987*b*, 1991). Events are usually conceptualized as processes, and prototypically coded by verbs. However, because they lack an autonomous profile, dependent events are not conceptualized as processes in their own right. This fact, along with semantic integration between events and predetermination of information about the dependent event, determines the distribution of nonindependent clause-like patterns across the various types of subordination relation, as manifested in the Subordination Deranking Hierarchy.

This model makes it possible to account for the distribution of a number of logically independent morphosyntactic phenomena manifested in the coding of dependent events, such as lack of inflectional distinctions on the verb, lack of overtly expressed arguments, coding of participants as possessors, and case marking/adpositions on the verb. The model receives further support from the co-occurrence and frequency patterns attested for these phenomena cross-linguistically, as described in Chapter 10.

The approach to subordination just outlined will be placed within the theoretical framework usually indicated as the functional-typological approach to the study of language (Croft 1990: 2).[1] The major distinctive assumptions of this framework are the emphasis placed on cross-linguistic comparison and cross-linguistic comparability, and the crucial role played by functional (rather than structural) factors at all levels of analysis. These assumptions are crucial to the analysis of subordination that will be proposed, especially as far as the definition of subordination and the explanation of the attested cross-linguistic

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[1] A discussion of the basic principles and the main results of the functional-typological approach can be found in textbooks such as Comrie (1981), Croft (1990), and Mallinson and Blake (1981).

patterns are concerned. Therefore, they will be outlined briefly in the next section.[2]

1.2. The functional-typological approach

1.2.1. Restrictions on possible language types and cross-linguistic comparison

The approach to subordination outlined in Section 1.1 assumes that the notion of subordination should be defined so as to have universal cross-linguistic applicability. This is a direct result of the emphasis on cross-linguistic comparison placed within the functional-typological approach. A major assumption underlying this approach is that the structural variation displayed by the world's languages is ordered, and can be described in terms of a set of constraints or restrictive principles having universal validity. The universal nature of these principles should be seen in two ways. On the one hand, there are constraints stating that all languages behave in the same way with respect to the distribution of single features, such as the presence or absence of vowels. These constraints state that the relevant feature is either universally present or universally absent in the world's languages, leaving no room for variation (for instance, all languages have vowels). On the other hand, there are constraints concerning the correlation between different features. These constraints state that all languages that exhibit a feature X also exhibit a feature Y. For instance, languages having nasal vowels also have corresponding oral vowels. Of course, since the relevant feature need not be present in a language, these constraints cannot be regarded as universal in the sense stated above: languages do not display uniformity with respect to the relevant features. For instance, there may be languages with both oral and nasal vowels, or languages with oral vowels only. However, the restrictive principle excludes the existence of languages with nasal vowels but no corresponding oral vowels. In this case, the restrictive principle describes a pattern of variation. Languages behave in different ways with respect to the distribution of the relevant features, but their variation has to obey the limits set by the restrictive principle. What is universal, then, is the fact that languages have to conform to the same pattern. The pattern itself allows however a certain amount of variation.

The two types of universal constraints described above are captured by two sets of propositions that go under the names of 'unrestricted universals' and 'implicational universals' respectively. The generalizations about subordination that will

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[2] The functional-typological approach is not a unitary one, and a number of theoretical and methodological divergences exist among its practitioners. This can be seen for instance in the debate concerning the nature of explanation (see, for instance, the papers collected in Hawkins 1988*a*, as well as accounts such as Croft 1995). Nevertheless, the assumptions discussed in Section 1.2 are shared by all scholars, and characterize the functional-typological approach as a whole with respect to other approaches (in particular formalist approaches).

be presented in this book take the form of implicational universals. Some further observations on the nature and the predictive value of implicational universals will be made in Chapter 4.

The essential feature of typological universals is that they involve cross-linguistic comparison. This is true both for implicational and unrestricted universals. Neither the patterns of variation described by implicational universals nor the patterns of uniformity described by unrestricted universals can be recognized as such by looking at just one language. Implicational universals state that languages will display a subset of the logically possible combinations of two (or more) distinct features. In order to find out which of the logically possible combinations of features are actually attested, a representative sample of the world's languages should be examined. Unrestricted universals state that all of the world's languages behave in the same way with respect to the presence or absence of some feature. Of course such a statement can only be made by looking at a representative sample of the world's languages.

The emphasis placed on cross-linguistic comparison is one of the major differences between the functional-typological approach and formalist approaches, in particular generative grammar. The latter have always been concerned with language universals too. In these theories, however, language universals are usually defined by means of in-depth investigation of individual languages rather than cross-linguistic comparison. Cross-linguistic comparison does play a role in the Principles and Parameters version of generative grammar. The Principles and Parameters approach assumes that there are universal constraints governing cross-linguistic variation, and linguistic theory should individuate possible and impossible language variants. However, as Hawkins (1988*b*) observes, this approach to cross-linguistic variation diverges quite considerably from the functional-typological one. The latter is an essentially empiricist approach: data are gathered by means of cross-linguistic comparison and explained by whatever theory seems appropriate. In the Principles and Parameters paradigm, on the other hand, emphasis lies on theory, so that first a theory is formulated, usually on the basis of a well-known language such as English, and then it is tested and refined on whatever languages seem appropriate. The functional-typological approach takes as its starting point the existence of cross-linguistic variation, and aims to find the patterns underlying it. The Principles and Parameters paradigm, on the other hand, develops its hypotheses independently of cross-linguistic variation, and then refines them in accordance with an (often limited) number of language variants. (For a detailed discussion of the implications of these two approaches, the reader is referred to Hawkins 1988*b*.)

1.2.2. *Functional explanations*

The explanatory model for the cross-linguistic coding of subordination that will be presented in this book assumes that functional factors have a major role in the occurrence and cross-linguistic distribution of language structures. This assumption is

the other distinctive feature of the functional-typological approach with respect to formalist approaches.

Formalist theories regard language as an autonomous and self-contained system. This means that there exists a set of non-semantic and non-discourse-derived grammatical properties whose principles of combination make no reference to system-external factors (for a detailed account of the autonomy hypothesis, see Newmeyer 1992 and 1998: ch. 2). In contrast to this position, the functional-typological approach seeks to account for language structure in terms of language function. In this perspective, at least certain aspects of language structure depend on, and can be explained in terms of language function. This is the strongest and most distinctive explanatory hypothesis of the functional-typological approach.[3]

In fact, this view involves a number of different assumptions, not all of which need be accepted as a whole by practitioners of the functional-typological approach. Also, the notion of function is itself a complex one, which has a different sense in different functional-typological accounts. A detailed discussion of the relevant issues is beyond the scope of the present discussion, but can be found in Croft (1995) (as well as Newmeyer 1992, 1998). The basic idea is, however, that a set of interconnections exists between morphosyntactic structures and their semiotic (semantic and pragmatic) function. Interconnections are also postulated between the grammar of individual speakers (intended as the individual's mental knowledge of the morphosyntactic and semiotic components of their language) and what is sometimes called external function, that is language external factors such as language use, language acquisition, and language processing. This view, which Croft (1995) labels integrative functionalism, is particularly evident in the work of scholars such as Bybee (1985), Du Bois (1985 and 1987), Givón (1990), Hopper (1987), and Croft (2000).

The relation between language structure and language function is usually stated in terms of motivation (see, for instance, Haiman 1985). Language function motivates language structure in that the form of the latter, though not directly derivable from the former, reflects it to some extent. For instance, in conditional sentences, the order protasis–apodosis is almost universal. This order is motivated by the relation between the linked events—the event coded by the protasis is the condition for the event coded by the apodosis. In this case, there is a straightforward connection between sentence structure and conceptual structure.

Language structure may be motivated by language function in other ways too. For example, Du Bois (1985) claims that ergative morphology results from the grammaticalization of statistically frequent discourse patterns. These patterns

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[3] It should be stressed that this hypothesis is not unique to the functional-typological approach. Linguistic functionalism has a long tradition prior to the rise of linguistic typology, and a number of functionalist analyses exist that do not rely on typological data (a description of these can be found in Bates and MacWhinney 1989 and Croft 1995). On the other hand, the functional-typological approach, as practised by Greenberg's followers, adopts a functional perspective to the study of language, but typological research in itself does not imply a functionalist perspective, as shown for instance by the morphological typology of the nineteenth century or the Leningrad/St Petersburg school (for which see Nedjalkov and Litvinov 1995).

reflect the distribution of given and new information. Transitive objects and intransitive subjects usually introduce new referents, while transitive subjects are usually topics, and topics are inherently given and definite. This motivates the alignment of transitive objects with intransitive subjects found in ergative languages. Also, since transitive objects and intransitive subjects introduce new referents, they need to be expressed by overt noun phrases. On the other hand, since transitive subjects usually correspond to given referents, they need no overt mention, and can simply be recalled by verbal agreement. In this way, there is no need to have more than one overt mention for each referent—full noun phrases for transitive objects and intransitive subjects, and verbal agreement for transitive subjects. This motivates the agreement pattern found in ergative languages, with zero agreement for transitive objects/intransitive subjects and overt agreement for transitive subjects.

Unlike clause order in conditional sentences, the alignment and agreement patterns found in ergative languages do not reflect directly the conceptual situation they express. There is nothing inherent in the conceptual substance of individual verb arguments that motivates their occurrence as given or new information. Rather, they tend to be used as given or new information due to certain features of information flow in discourse (the details are described in Du Bois 1985). This means that ergative alignment and agreement patterns reflect frequency patterns in discourse—individual verb arguments occur most frequently as given or new information—rather than any specific semiotic feature of the situation being described: as Du Bois (1985: 363) puts it, 'grammars code best what speakers do most'. In this case, language structure is motivated by external function, that is, the conditions of language use in discourse.

The two examples just discussed provide instances of the two major functional motivations that are recognized in typology, iconicity, and economy. Iconicity is the tendency to shape language structure in conformity with the structure of conceptual experience, that is, the structure of the world and the perspective imposed on the world by the speaker (Croft 1990: 164). This tendency involves different aspects, such as for instance 'isomorphism' or 'one-form-one-meaning principle', namely the one-to-one correspondence between parts of linguistic structure and parts of conceptual experience. What is most relevant to the present study is however so-called 'iconic motivation' (Haiman 1985: 11). Iconic motivation is a correspondence between linguistic structure and linguistic meaning, such that relations between parts in linguistic structure diagrammatically reflect relations between the concepts they encode. This is, for example, the case with the protasis–apodosis order: clause order reflects the logical relation between events.

The effects of iconic motivation have been investigated in a large array of domains. Formal distance between linguistic expressions (in terms of the number and type of morphemes occurring between them or in case they are contiguous, in terms of free vs. bound) corresponds to conceptual distance between the meanings they encode (in terms of shared semantic features, mutual relevance, or perception as a single conceptual unit). This principle is known as iconicity of distance

(Haiman 1983*a*, 1985; Croft 1990: 174–83; Newmeyer 1992, 1998: 114–18). For instance, in the expression of possession, the distance between morphemes signalling inalienable possession is never greater than that between morphemes signalling alienable possession. Lexical causatives, such as *kill*, normally convey a more direct causation than periphrastic causatives such as *cause to die* (Haiman 1985: 108–11). In the distribution of verbal affixes with respect to the verb stem, affixes whose meaning is more relevant to the general meaning of the verb occur closer to verb stem (Bybee 1985).

Another instance of iconic motivation is provided by Givón's Binding Principle: semantic integration between events is reflected by morphosyntactic integration between clauses (Givón 1980, 1990: ch. 13). Newmeyer (1992: 762–3) regards the Binding Principle as an instance of what he calls iconicity of independence: the less independent two concepts are, the less independent the expressions coding them (for some qualifications about this view, see Section 9.3). Iconicity of independence plays a major role in the explanatory model for subordination that will be proposed in Chapter 9.

In contrast to iconicity, which can be seen as a principle aiming at making linguistic structures as transparent as possible, economy represents a pressure towards minimal effort and maximal simplification of expression. Haiman (1985: 158) distinguishes between paradigmatic and syntagmatic economy. The former is the tendency to reduce as much as possible the inventory of signs in a linguistic system, and is for instance responsible for polysemy (recurrent association of related meanings with the same form). On the other hand, syntagmatic or discourse economy is the tendency to reduce the length or complexity of any utterance or message. The most frequent expressions tend to be reduced phonetically (the so-called Zipf's law). Information that is redundant and/or recoverable from the context tends to be omitted. This is the case with the ergative agreement patterns discussed above: each referent is recalled by not more than one overt mention. Another case is provided by Keenan and Comrie's (1977) analysis of the distribution of so-called −case strategies. Keenan and Comrie show that languages use two relativization strategies, which they call +case strategies and −case strategies. With −case strategies, no explicit indication about the syntactic role of the relativized item in the relative clause is provided; they tend to be used when this role is more easily recoverable, as is the case with subject relativization as opposed to object relativization, and object relativization as opposed to indirect object and oblique relativization. This principle will be invoked in Chapter 7 to account for the patterns attested cross-linguistically for the coding of relative clauses. Syntagmatic economy will also turn out to have a role in the cross-linguistic coding of subordination in general.

1.2.3. *Defining the phenomenon under investigation*

The hypothesis of a relation between language structure and language function has two important consequences for typological research. On the one hand, functional

factors can be invoked at the last stage of a typological analysis to account for the distributional patterns attested cross-linguistically for individual morphosyntactic constructions (and combinations thereof). Cross-linguistic comparison will typically reveal that individual morphosyntactic structures are consistently used across languages to encode particular concepts or discourse functions. A functionally oriented typologist will then assume that there are principled motivations underlying the connection between these concepts or discourse functions and the relevant morphosyntactic structures. The motivations may be related to the way in which the structures are mapped onto the corresponding concepts (iconicity), the frequency and degree of entrenchment of those structures in the speakers' mind (economy), the processing difficulty of individual combinations of structures and concepts, etc. This is the approach outlined in Section 1.2.2.

However, functional factors can also be invoked at the very beginning of a typological study, in defining the object of investigation. If there is a relation between language structure and language function, one may investigate either what structures are used cross-linguistically to encode a given function, or what functions are associated cross-linguistically with a given form.

It was shown in Section 1.2 that the major effort in the typological approach is the discovery of cross-linguistic patterns of variation and the explanation of these patterns in terms of form–function relationships. A basic requirement for cross-linguistic comparison is that one be able to consistently identify the phenomenon under investigation cross-linguistically. In principle, identification could be grounded either on functional criteria, for example the semiotic features of the relevant phenomenon, or on formal criteria, for example the morphosyntactic features of the constructions involved.

Depending on what criteria are selected, one might then discover form–function relationships by examining either what forms are used to express a given function or what functions are expressed by a given form. For instance, in a cross-linguistic investigation of complex sentences, one could define the object of investigation in terms of either the relations between events expressed by complex sentences (e.g. purpose, temporal overlap, and the like), or particular structural features of complex sentences, for example infinitival verb forms. In the former case, one will find out that the selected semantic relations between events are expressed by a variety of constructions, such as nonfinite verb forms, finite verb forms accompanied by special conjunctions, and the like. In the latter case, one will discover that particular constructions, for example infinitival constructions, are used cross-linguistically to express a variety of semantic relations between events, such as purpose, temporal anteriority, etc.

Typologists usually argue that the phenomena under investigation should be defined in functional, rather than formal terms (see for instance, Keenan and Comrie 1977; Stassen 1985: 14–15; Croft 1990: 11–18). Yet, cross-linguistic analyses exclusively based on functional definitions are rare (one is Stassen 1985, as well as Stassen 1997), and many studies rely on structural criteria,

or mixed functional-structural criteria, more or less heavily (see on this point Haspelmath 1997*b*: 9). The discussion in this section will show that both functional and structural definitions can lead to significant results, depending on one's research goals. A number of reasons will however be given why, by introducing structural criteria in the definition, one may miss important typological generalizations. This point is crucial to the present research, because, unlike what is done in a number of previous studies on the topic, the definition of subordination that is employed rests entirely on functional grounds.

Proponents of functionally based definitions usually invoke the argument of cross-linguistic comparability (see for instance Stassen 1985: 14–15, Croft 1990: 13–16, 2001: ch. 1). In fact, this was the argument invoked in Section 1.1 to justify the use of a functionally based definition of subordination. This argument basically consists of two distinct issues. First, languages need not display the same morphosyntactic structures. Therefore, if a particular morphosyntactic structure is selected as the object of investigation, a number of languages will have to be left out that do not display the relevant structure. For instance, if one decides that the subject is the noun phrase the verb agrees with, a cross-linguistic investigation of subject would have to leave out all the languages that have no verbal agreement, and nothing could be said about subject in those languages.[4] Second, the same morphosyntactic structures do not perform the same function cross-linguistically, and, conversely, the same function is not performed by the same structures. As a result, by comparing structures on the ground of formal similarity, one runs the risk of comparing completely different phenomena. For instance, if one decided that the subject should be identified as the phrase the verb agrees with (as is the case in English), the direct object should be counted as subject in some ergative languages, whereas the 'subject' of transitive verbs should be excluded from the analysis because it is not co-indexed by verbal agreement.

On the other hand, typologists assume that functional situations, as defined in semiotic terms, are universal across languages. As Bates and MacWhinney (1989: 6–7) put it, all human beings have essentially the same apparatus for perception, articulation, learning and memory, and share a common set of social concerns. Human cognition provides the basic meanings and communicative intentions that any natural language must encode, and there are certain basic categories of perception and thought any language must deal with, such as principles of motion, space, and time, and principles of human action and intention. Also, all languages have to develop ways to encode functions inherent in the communicative process itself,

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[4] This is a deliberate oversimplification of the facts. Categories such as subject are usually defined on the basis of a variety of criteria, such as verbal agreement, case marking, ability to undergo particular syntactic operations such as coordination reduction, etc. If one of these criteria, for example verbal agreement, is not applicable in a language, the relevant category is usually identified on the basis of the other criteria. However, as Croft (2001: 23–4) observes, this is not methodologically consistent. The same criteria are invoked or discarded at the researcher's convenience in identifying a category. Also, since the same criteria cannot be applied to all languages, there is no a priori reason why some particular criteria should be selected as relevant to identify a specific category.

such as identification of referents, establishment of a given referent as a discourse topic, shifting or subordinating topics, and creating cohesion across the discourse as a whole. Any definition in terms of these principles and functions should allow one to consistently identify the same phenomenon cross-linguistically.

Nevertheless, although structural criteria do not ensure cross-linguistic comparability, there may be principled reasons for introducing them in a cross-linguistic analysis. As Croft (1990: 13) observes, significant typological generalizations can be found by examining what forms are used to express a given function just as much as by examining what functions are expressed by a given form. In this second case, the problem of cross-linguistic comparability is not so relevant, and the definition of the phenomenon under investigation may be grounded on formal criteria. For instance, one might decide to investigate what functions are expressed by infinitival verb forms or verbal agreement cross-linguistically, no matter whether these functions are the same across languages. In this case, languages having no infinitives or no verbal agreement would be discarded. Nevertheless, one would probably still arrive at significant typological generalizations, for example infinitives are used cross-linguistically to express a variety of meanings related to irrealis, or there is a hierarchy of what argument roles can be co-indexed by verbal agreement.

Thus, the issue of cross-linguistic comparability in itself does not demonstrate that functional definitions are more suitable for cross-linguistic analyses than formal definitions: in fact, both can be theoretically fruitful. The issue of cross-linguistic comparability only demonstrates that if one is interested in a particular type of cross-linguistic study (examining how a given function is expressed cross-linguistically), then the phenomenon under investigation should be defined in functional terms.

Another major argument can however be brought about to demonstrate that the use of functional definitions involves some real advantages for cross-linguistic research, and that the theoretical value of the analysis is actually reduced if one uses formal definitions.

The functional-typological approach tends to state the relationship between language form and language function in terms of motivation, for instance iconicity or economy. In order to establish that the connection between a given form and a given function is not random, but responds to some underlying motivation, one should make sure that the underlying motivation holds for all languages. But if some languages are left out of the analysis because they don't display the required formal features, one cannot be sure that the postulated motivation holds for those languages. In this case, all that can be ascertained is that some languages display a connection between some particular form and some particular function, but nothing can be said about whether this connection is functionally motivated.

This can be illustrated by means of two examples that are directly relevant to the present research. First, suppose one is investigating the range of functions expressed by infinitives cross-linguistically (assuming that one can unambiguously identify infinitives across languages). Then one might find that if infinitives are

used for complements of knowledge predicates, then they are also used for purpose clauses. What could be the functional explanation for this? One might tentatively resort to Givón's Binding Principle (see Section 1.2.2). Infinitives determine a high degree of morphosyntactic integration between main and subordinate clause. Their use iconically reflects semantic integration between the linked events, and semantic integration is higher with purpose relations than with knowledge predicates. This would nicely account for the cross-linguistic distribution of infinitives. But now suppose that there are some languages where, in addition to infinitives, purpose clauses also display constructions involving a lower degree of morphosyntactic integration, and these constructions cannot be used for complements of knowledge predicates. This would represent a counterexample to the Binding Principle, because a form involving a lower degree of morphosyntactic integration is used for a relation type involving higher semantic integration between events. But one would never know about this counterexample, because only the distribution of infinitives is being investigated. This shows that, if a cross-linguistic analysis is based on formal criteria, no functional explanation for the observed facts can actually be proposed, because potential counterexamples are not covered.

Second, suppose that one finds the following language types: (i) languages using infinitives for both purpose clauses and complements of knowledge predicates; (ii) languages using infinitives for complements of knowledge predicates, but not for purpose clauses; (iii) languages using infinitives for purpose clauses, but not for complements of knowledge predicates. It is quite evident that the implicational generalization proposed above, 'if infinitival forms are used for complement of knowledge predicates, then they are also used for purpose clauses', does not hold here because of the existence of type (ii). But this does not mean that an explanation of the observed facts in terms of the Binding Principle could not be proposed. This explanation is suggested by the existence of type (iii), where infinitives are used for the relation type involving the higher degree of semantic integration. But then what should one do with type (ii), where infinitives are only used for the relation type involving lower semantic integration? In fact, in order to know whether type (ii) is a counterexample to the Binding Principle, one should look at how purpose clauses are coded in languages belonging to this type. It might happen that, although infinitives are not used, other forms are used involving the same or a higher degree of morphosyntactic integration. In this case, the Binding Principle would still hold. But one would never know this, because only the distribution of infinitives is being investigated. This shows that, if a cross-linguistic analysis is grounded on formal criteria, one may miss some important functional generalizations that could be provided by the observation of excluded language types.

The general conclusion to be drawn from these cases can be stated as follows. Typological generalizations concerning form–function relationships can be established both by defining the object of investigation in functional terms and by using formal criteria. But the generalizations that can be established through formal definitions are limited in number and less powerful. This holds regardless of one's

specific research interests, that is regardless of whether one is concerned about what forms are used to express a given function, or what functions are expressed by a given form. As a result, cross-linguistic research should not be grounded on formal definitions. This is a rather stronger claim than the ones usually made in typological literature, where it is generally assumed that formal criteria may be used, provided that functional criteria intervene at some point in the analysis (cf. Croft 1990: 11–17). In conformity to this claim, an exclusively functional definition of subordination will be used in this study.

1.3. Outline of the book

The book is organized as follows. In Chapter 2 previous approaches to the notion of subordination are discussed, and a cognitive definition of subordination is proposed. Chapter 3 describes the parameters that will be taken into account in examining the cross-linguistic coding of dependent events, with respect to verb form and participant coding. Chapter 4 is preliminary to the presentation of the data on subordination, and discusses methodological issues such as the type of implicational generalizations that will be used, the criteria with which to weight exceptions to the proposed generalizations, and language sampling.

In Chapters 5–8 the data concerning the cross-linguistic coding of subordination are presented and discussed. First, the semantic features of the various types of subordination relation taken into account are examined. Then data are provided about the cross-linguistic distribution of the constructions used to code the dependent event in the various subordination relation types. It is shown that this distribution obeys a number of implicational hierarchies, and a connection is established between these hierarchies and the semantic features of individual subordination relation types.

Chapter 9 aims to provide an explanatory model for this connection. Individual semiotic motivations such as syntagmatic economy and iconicity of independence are discussed, and it is argued that they should be integrated into a comprehensive model based on the cognitive distinction between processes and things (as outlined by Langacker and others). Chapter 10 provides further evidence for this model by discussing the cross-linguistic correlation and frequency patterns attested for the various morphosyntactic phenomena taken into account.

Chapter 11 summarizes the major findings of the research, and briefly discusses some further theoretical implications of these findings.

Four appendices present the data supporting the analysis. Appendices 1–3 provide information about the sources of information for the languages of the sample, their genetic affiliation, and geographic location. Appendix 4 is a complete list of the constructions taken into account in each language, as well as the subordination relation types for which they are used.

2 The Notion of Subordination

2.1. Background to the problem

2.1.1. Defining subordination: traditional criteria

Clause linkage strategies are traditionally divided into two basic types: subordination and coordination. Subordination is usually identified on the basis of a number of criteria such as dependency (impossibility for a subordinate clause to occur in isolation: see for instance Lyons (1968: 178) or Van Valin and LaPolla (1997: ch. 8)), clausal embedding (the subordinate clause is embedded into the main one as a constituent of it, and the two are linked by a part–whole relationship: see among others Haspelmath (1995)), and possibly the type of semantic relationship linking the two clauses (see Popjes and Popjes (1986: 139) for one such account of subordination in Canela-Crahô).

This view of subordination is essentially morphosyntactic in nature, and was developed mainly on the basis of Indo-European languages. It is used as a working postulate in a number of recent studies, such as, for instance, Roberts (1988) and Haspelmath (1995). Yet it turns out to be of quite limited applicability, both cross-linguistically and within individual languages. Some of the aforementioned criteria actually fail to define a distinct class of clauses. Other criteria, such as embedding, do define distinct classes of clauses, but these classes are not internally consistent, and the criteria themselves cannot always be applied cross-linguistically. In addition, some criteria conflict with each other.

To see what problems are involved, let us consider dependency first. Dependency is the impossibility of a clause occurring in isolation. Dependency is usually indicated by phenomena such as the presence of particular conjunctions such as English *that* or *because* (Lyons 1968: 178), or morphosyntactic reduction (e.g. elimination of tense, aspect, mood or agreement inflection from the dependent verb: Langacker (1991: 439–45), Harris and Campbell (1995: 304)). If dependency is taken as a distinctive criterion for subordination, clauses such as 'because it's raining' in

(2.1)   I am not going out [because it's raining]

and 'for her to do that' in

(2.2)   It's difficult [for her to do that]

should be regarded as subordinate, because they cannot stand on their own (this is indicated by the conjunction 'because' in (2.1) and by the infinitival construction 'for her to do' in (2.2)).

On the other hand, a clause such as

(2.3)   It's raining

would be regarded as non-subordinate, because it can stand on its own. Similarly, under traditional accounts, sentences like

(2.4)   It's raining, I am not going out

and

(2.5)   It's raining and I am not going out

do not involve subordination either, because the morphosyntactic structure of the two conjuncts is such that each of them could occur in isolation. However, as Haiman (1985: 216–17) observes, a sentence fragment like

(2.6)   It's raining and

also cannot stand on its own. Then it is hard to claim that there is a difference in terms of dependency between the clauses in (2.1) and (2.2) on the one hand and that in (2.5) on the other: in both cases, at least one of the conjuncts cannot stand on its own. The only difference that can be established in terms of dependency is between cases like (2.4), where there is no formal indication of clause linkage, and all the cases where clause linkage is explicitly signalled, such as (2.1), (2.2), and (2.5). In the former case, the conjuncts can occur in isolation; in the latter they cannot. But then all the dependency criterion can do is to set apart sentences like (2.4) from all the other clause linkage types, and this distinction is too broad and heterogeneous to be exploited for theoretical purposes.

Complement constructions provide an even more problematic case. In a sentence like

(2.7)   He thinks that she will arrive tomorrow

both 'that she will arrive tomorrow' and 'He thinks' cannot stand on their own. As far as the latter clause is concerned, inability to occur in isolation is not due to any morphosyntactic reason (as was the case in (2.1) and (2.2)), but to the fact that the semantic features of complement-taking predicates necessarily involve reference to another clause. Yet, no one would claim that 'I think' is a subordinate clause. Apart from a number of functional arguments that will be discussed in more detail in Section 2.4 below, other traditional subordination criteria (such as embedding) unambiguously identify 'that she will arrive tomorrow' as the subordinate clause, and 'He thinks' as the main one. Thus, this a case where dependency is in conflict with other subordination criteria.

The cases just described show that dependency cannot be used as a distinctive criterion for subordination. The other major traditional criterion for subordination, clausal embedding, seems to work better. There actually is a distinct class of clauses that can be defined in terms of embedding.

The notion of embedding was originally developed within generative grammar, and is now used as the leading criterion for subordination in a number of accounts, both generative and non-generative (see Green 1976; Foley and Van Valin 1984; Roberts 1988; Haspelmath 1995). An embedded clause is a clause functioning as a constituent of another clause, as was shown in Section 1.1 (example (1.1)).

Embedding can be ascertained by a number of syntactic tests, such as clause internal word order, clause extraposition, and cataphoric reference (Roberts 1988; Haspelmath 1995). These are illustrated by the following Amele sentences:

Amele (Indo-Pacific, Trans-New Guinea)

(2.8) a. *Dana [age ho   qo-qag-an]   nu-ho-ig-a*
           man   3PL pig hit-3PL-FUTPURP come-3PL-TODP
           'The men came to kill the pig' (Roberts 1988: 54)

       b. *[Ija ja   hud-ig-en   fi] uqa   sab   man-igi-an*
           1SG fire open-1SG-FUT if   3SG food roast-3SG-FUT
           'If I light the fire she will cook the food' (Roberts 1988: 55)

       c. *Uqa   sab   man-igi-an   [ija ja   hud-ig-en   fi]*
           3SG food roast-3SG-FUT 1SG fire open-1SG-FUT if
           'If I light the fire she will cook the food'

       d. *[(Uqa$_i$) sab   j-igi$_i$-an   nu] **Fred$_i$** ho-i$_i$-a*
           3SG   food eat-SG-FUT for Fred   come-3SG-TODP
           'Fred came to eat the food' (Roberts 1988: 56)

(2.9) a. *[Ho busale-ce-b]   dana age   qo-ig-a*
           pig run.out-DS-3SG man   3PL hit-3PL-TODP
           'The pig ran out and the men killed it' (Roberts 1988: 53)

       b. **Dana   age   [ho busale-ce-b]   qo-ig-a*
           man   3PL pig run.out-DS-3SG hit-3PL-TODP
           *'The pig ran out and the men killed it' (Roberts 1988: 55)

       c. **Dana   age   qo-ig-a   [ho busale-ce-b]*
           man   3PL hit-3PL-TODP pig run.out-DS-3SG
           * 'The pig ran out and the men killed it' (Roberts 1988: 56)

       d. *[*(Uqa$_i$) sab   j-igi$_i$-an   qa] **Fred$_i$** ho-i$_i$-a*
           3SG   food eat-SG-FUT for Fred   come-3SG-TODP
           * '*He$_i$* came but *Fred$_i$* did not eat the food' (Roberts 1988: 56)

The sentences in (2.8) provide instances of embedding. One of the linked clauses (the one in square brackets) can be inserted within the other, which becomes discontinuous ((2.8*a*)). It can be placed either before or after the other clause ((2.8*b–c*)). Besides, a noun phrase included in it can be cataphorically recalled by a pronoun in the other clause ((2.8*d*)). None of these syntactic operations is possible in the sentence in (2.9*a*), as is shown by the ungrammaticality of (2.9*b–d*).

If embedding is taken as the distinctive criterion for subordination, (2.8) is a case of subordination, while (2.9) is a case of non-subordination (as will be seen in Section 2.1.2 below, there are some reasons why one might not want to call (2.9) coordination).

Not all of the syntactic tests in (2.8) can be applied cross-linguistically. For instance, many languages have fixed clause order (at least for some clause types), and thus insertion of one clause into the other and clause extraposition cannot take place. The crucial point of the embedding argument is, however, that there exists a basic difference between embedded clauses (i.e. clauses with the structure exemplified in (1.1)) and non-embedded clauses, and this difference will be revealed syntactically, although not necessarily by the same tests in all languages.

Thus, unlike dependency, embedding actually allows one to make a significant distinction between clause types. There are however two major problems, that will be indicated as the Continuum Problem and the Mismatch Problem respectively.[1]

2.1.2. The Continuum Problem

The Continuum Problem can be stated as follows: even if one is able to individuate distinct subordinate clause types, for example, embedded vs. non-embedded clauses, (i) these clause types will not be internally consistent as far as their morphosyntactic structure is concerned, and (ii) the distinction will fail to account for all the clause linkage types found across the world's languages. For instance, embedding is usually used to distinguish between two clause-linkage types: subordination, as exemplified by (2.8), and non-subordination, as exemplified by (2.9). But these clause linkage types actually display a number of quite different subtypes. Sometimes, as is the case in (2.1), (2.7), or (1.1), subordinate (embedded) clauses include a fully inflected verb form that could stand independently—except that it lacks illocutionary force, as is showed by the ungrammaticality of (2.10) (tag questions being a standard means to test illocutionary force; see Section 2.4.1 below):

(2.10)   *He thinks that she will arrive tomorrow, won't she?

However, as was already mentioned in Sections 1.1 and 2.1.1, subordinate clauses may also display reduced (nonfinite) verb forms not marked for categories such as tense, aspect, mood, or person, in which case they depend on the main clause for the interpretation of these categories (this is the case in (2.2), as well as (1.2)). This type of dependency is different from the one exemplified in (2.1) or (2.7), where the subordinate clause cannot stand alone only because there is a conjunction signalling that it is linked to another clause. Van Valin and LaPolla (1997: 454) label these two dependency types operator dependency and structural dependency respectively.

The same holds for non-subordinate (non-embedded) clauses. In (2.4), both conjuncts are structurally equivalent, and independent of each other in terms of

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[1] I owe these definitions to Martin Haspelmath (personal communication).

parameters such as tense, aspect, mood, person, and illocutionary force. However, the world's languages display a number of constructions where the linked clauses are not independent of each other in terms of these parameters, and possibly not equivalent in structure. These constructions cannot be classified in structural terms in the same way as (2.4), for example as coordinate. Yet they involve no embedding, and thus cannot be classified as subordinate either. In fact, (2.9) is an instance of clause-chaining, a well-known clause linkage type whereby a possibly quite large number of juxtaposed verbs are joined together in a sequence (Longacre 1985; Foley 1986: 175–98; Myhill and Hibiya 1988). Usually, only the final verb in the sequence is fully inflected for the categories that are relevant to verbs in the language, and non-final (or, as they are often called, 'medial') verbs depend on the final verb for the expression of these categories (they may also carry switch-reference markers). Here is another example from Kobon:

Kobon (Indo-Pacific, Trans-New Guinea)
(2.11)　*Yad　ma　**rib-em**　　dokta　wös　uŋan　g-aŋ*
　　　　　1SG　foot　cut-SS:1SG　doctor　sore　parcel　do-IMP:3SG
　　　　　*a　　**g-em**　　ausik　**ar-bin***
　　　　　QUOTE　do-SS:1SG　aidpost　go-PERF:1SG
　　　　　'Because I cut my foot, I went to the aidpost so that the doctor could
　　　　　bandage the sore' (Davies 1981: 38)

It is quite evident that medial verbs in clause-chaining cannot stand on their own, because they are not marked for any verbal category but switch-reference. Yet, as the sentences in (2.9) show, they are not embedded either (see on this point Foley and Van Valin (1984: ch. 6) and Van Valin and LaPolla (1997: 448–54)). Thus, clause-chaining is a different clause linkage type with respect to both subordination and the coordination type exemplified in (2.4).

　　A similar case is provided by so-called verb serialization (Bisang 1995; Noonan 1985, 1992; Sebba 1987), as exemplified by the following Berbice Dutch Creole example:

Berbice Dutch Creole
(2.12)　*titijo　　**koma**　　nau　o　**reja**,　　**reja***
　　　　　time-3:SG　come-IMPFV　now　3:SG　ride-IMPFV　ride-IMPFV
　　　　　***koma**　　nau*
　　　　　come-IMPFV　now
　　　　　'When he comes, he rides, comes riding' (Kouwenberg 1994: 388)

Like clause-chaining, verb serialization involves a sequential arrangement of verbs, but each verb is fully inflected and could stand independently. There is no embedding, which excludes subordination (Foley and Van Valin 1984: ch. 6). However, tense, aspect, mood, person, and illocutionary force usually must be the same for all verbs, which shows once again that this is not the same clause linkage type as that exemplified in (2.4).

As was stressed in Chapter 1, languages vary to a large extent as far as their morphosyntactic structures are concerned. As a result, any parameter chosen to distinguish between subordination and non-subordination will combine with a number of other parameters, yielding a variety of possibly very different clause linkage (sub)types. In this respect, the distinction between subordination and non-subordination should not be regarded as a discrete one (as implied by the opposition between subordination and coordination), but rather as a syntactic continuum involving a number of different and quite freely combinable parameters. Thus, it is quite evident that any distinction drawn on the basis of a single parameter, such as embedding, will leave aside a number of significant features of the relevant clause linkage types.

2.1.3. The Mismatch Problem

The Mismatch Problem originates from the fact that, cross-linguistically, the same semantic and/or pragmatic relationships are not coded by the same construction types. Therefore, if one defines subordination on the basis of some formal parameter such as embedding, there might be languages that do not have subordinate clauses at all, or at least do not use them for all of the semantic and pragmatic functions associated with subordination in other languages.

For instance, embedded, morphosyntactically reduced structures are used in a number of languages to convey the same meaning that other languages code by means of coordinate structures like (2.4) or (2.5). In fact, if a coordinate-like structure can also be used in the language to convey the same meaning, the two are often felt to be perfectly equivalent (Haiman 1985: 200). This can be seen from the sentences in (2.13) and (2.14). In each of these, one of the linked clauses is embedded in the other; the verb is stripped of normal inflectional markers and bears an invariable affix instead (Turkish -*Ip*, Japanese -*te*). In both cases, however, the English translation involves a coordinate construction:

Turkish (Altaic, Altaic proper)
(2.13)   *Mehmet   [gel-**ip**]   git-ti-Ø*
        Mehmet   come-*Ip*   go-PAST-3SG
        'Mehmet came and went' (Underhill 1976: 379)

Japanese (Altaic, Korean-Japanese)
(2.14)   *John   wa,   Mary   ni,   [boosi   o   nui-**de**]   aisatusita*
        John   TOP   Mary   to   hat   OBJ   take.off-*te*   greeted
        'John took off his hat and greeted Mary' (Kuno 1973: 201)

Similar phenomena are attested in a number of languages such as Burushaski, Hindi, Hua, Hungarian, and Tamil (Haiman 1985: ch. 4; Croft 2001: 261).

Conversely, English embedded relative clauses correspond to non-embedded clauses in the Australian language Walbiri. In fact, the Walbiri sentence in (2.15)

may be interpreted as relative or adverbial depending on the context:

Walbiri (Australian)

(2.15)   *ŋatjulu-ḷu   ɸ-ṇa   yankiri   pantu-ṇu,   kutja-lpa   ŋapa*
         I-ERG   AUX   emu   spear-PAST   COMP-AUX   water

        ŋa-ṇu
        drink-PAST
        'I speared the emu which was/while it was drinking water'
        (Hale 1976: 78)

An extreme instance of the Mismatch Problem is provided by those languages where there is no specific, grammaticalized construction to express certain relations between events and these relations have to be contextually inferred from the juxtaposition of independent clauses. One such case is provided by relatives in a number of Australian languages. For instance, Gumbaynggir has no specific relative construction. There is only a sentence type involving the juxtaposition of two non-embedded clauses, and corresponding to either relative constructions or coordinate constructions in English, depending on the context:

Gumbaynggir (Australian)

(2.16)   *Ni:gar   yaraŋ   duluɲmiŋ   ŋayiŋgiŋ   wa:gaya*
        men-SUBJ   DEM   laugh-PAST   sit-PAST   fire-LOC
        'The men who were laughing were sitting around the fire' OR 'The men were laughing and sitting around the fire' (Eades 1979: 320)

The general consequences of the Mismatch Problem should be quite evident from the examples in (2.13)–(2.16). In fact, the Mismatch Problem is but one particular instance of the problems involved in using formal criteria for cross-linguistic comparison, as outlined in Section 1.2.3. Subordinate clauses, as defined on formal grounds such as embedding, display a wide variety of semantic/pragmatic functions cross-linguistically. In principle, one could draw a pattern of form–function relations in subordination by seeing what functions are performed by subordinate clauses cross-linguistically. However, a number of languages would have to be left aside where the same functions are not performed by subordinate clauses. For instance (2.15) and (2.16) would be discarded from the analysis, because they involve no embedding. Similarly, in a language sample including Turkish, Japanese and English, the English translations of (2.13) and (2.14) would not count as instances of subordination, because, once again, they involve no embedding.

   In fact, it might turn out that there are very few languages, or no languages at all, that do not have embedding, so it might be quite reasonable to take embedding as the distinctive criterion. But the real problem is, how extensively is embedding used in individual languages? That is, even if embedding is used in all, or most of the world's languages, there might be (and in fact there are) languages using it for a large number of clause types, and languages using it for only one, or few, clause types. For instance, many languages do not use embedded structures

for adverbial clauses (this is the case in languages using clause-chaining). So a significant discrepancy would be introduced in the analysis, because for some languages a large number of clause types would be taken into account, while for other languages only one or a few clause types could be examined. In this way, as was explained in Section 1.2.3, potential counterexamples to the proposed connections between form and function might be missed.

The discussion in this section and the previous ones has shown that some of the traditional morphosyntactic criteria used to distinguish between subordination and non-subordination (coordination) actually fail to individuate distinct clause types. Other criteria, namely embedding, do individuate distinct clause types, but these clause types are not morphosyntactically consistent (Continuum Problem). Also, they are not consistent in their semantic/pragmatic functions, and are not universally found cross-linguistically (Mismatch Problem).[2]

In the following sections, a number of proposals will be examined that deal with these problems. These proposals can be divided into two main groups, which will be designated the Continuum Approach and the Conceptual Approach.

2.2. The Continuum Approach

A number of proposals on subordination have suggested that clause linkage types should not be described in terms of the binary opposition between coordination and subordination. Rather, they should be defined in terms of a set of mutually independent and freely combinable features, which form a more or less articulated

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[2] A recent study should be mentioned here whose conclusions provide instances of both the Continuum and the Mismatch Problem. Culicover and Jackendoff (1997) examine English 'and' constructions of the type 'You drink another can of beer and I'm leaving', which they label $_L Sand$. They argue that these constructions are syntactically coordinate, because the order of the two clauses cannot be inverted (this is one of the standard formal criteria for subordination, as was seen in connection with (2.8) above), and the conjunction 'and' cannot occur clause-initially, as is usually the case for subordinating conjunctions in English. Yet, the meaning of these constructions corresponds to that of a standard conditional construction. This is of course an instance of the Mismatch Problem. Besides, $_L Sand$ constructions behave like embedded constructions, not coordinate constructions, with respect to phenomena such as cataphoric reference and across-the-boundary extraction. Unlike embedded sentences, however, they allow extraction from either conjunct. Faced with this contradictory evidence, Culicover and Jackendoff claim that $_L Sand$ constructions actually are coordinate constructions, and the properties that do not fit in with their being coordinate apply not at the syntactic, but at the semantic (or conceptual structure) level. However, as Culicover and Jackendoff (1997: 215) acknowledge, no independent evidence is available in support of this claim. In the perspective taken here, this is one further instance of the Continuum Problem. Whatever formal parameter is chosen to define subordination, this will always combine with a variety of other parameters, yielding quite inconsistent classes of clauses. In fact, the adoption of a binary coordination/subordination distinction forces Culicover and Jackendoff to find a way to dispose of the properties that do not match the distinction. They do so by locating these properties at a domain other than the syntactic one, but they have no independent evidence for doing so. The problem does not arise if one assumes (as the proposals considered in Section 2.2 do) that there is no binary coordination/subordination distinction, but that the parameters relevant to complex sentences are more or less freely combinable.

continuum. Each clause linkage type may be more or less coordinate-like or subordinate-like depending on the parameter taken into account.

The best known application of this approach is probably Foley and Van Valin's (1984) tripartite distinction between coordination, subordination, and cosubordination, which has recently been taken up by Van Valin and LaPolla (1997: ch. 8). This distinction is based on dependency and embedding. Coordination is characterized by the absence of both dependency and embedding; subordination, on the other hand, involves both. The third clause linkage type, cosubordination, partakes of both coordination and subordination. Like coordination, it involves no embedding; like subordination, it involves dependency. This type may actually be seen as occupying an intermediate position in a continuum having coordination and subordination as its extremes.

The notion of cosubordination is especially designed to account for clause linkage strategies such as clause-chaining (as illustrated by (2.9) or (2.11) above) or verb serialization (2.12). It is, however, interesting to observe that it also covers some constructions traditionally classified as coordinate, such as the English example in 2.17:

(2.17)   Max went to the store and bought some beer (Foley and Van Valin 1984: 259)

Dependency holds between the two clauses here insofar as they must have the same illocutionary force, similar to parameters such as tense or aspect (and illocutionary force) in verb serialization.

Classifications similar to that of Foley and Van Valin (1984) are proposed by Matthiessen and Thompson (1988) and Givón (1990: ch. 19). Based on Halliday and other systemic grammarians, Matthiessen and Thompson (1988) argue that adverbial clauses such as (2.1) are not embedded within the main clause, though they are dependent on it in some way. They reserve the term 'subordinate' for these clauses only (which they also call 'hypotactic'), and distinguish them from both embedded clauses, such as complements and relatives, and coordinate, or paratactic clauses, which involve neither embedding, nor dependency.[3] Givón (1990: ch. 19) also sets apart adverbial clauses from embedded clauses (complements and relatives) and coordinate clauses.

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[3] As is acknowledged by Matthiessen and Thompson (1988: 319), this classification, although basically similar to the one of Foley and Van Valin (1984), involves some substantial as well as terminological differences. Contrary to Foley and Van Valin, Matthiessen and Thompson (1988: 279–84) argue that the distinctive feature of subordination proper is lack of embedding. Lack of embedding is characteristic of adverbial clauses such as the English construction subordinating conjunction + indicative. In fact, their definition of subordination (interclausal dependency, but no embedding) corresponds to Foley and Van Valin's (1984: 241–2) cosubordination. Foley and Van Valin (1984: 249–50), on the other hand, argue that the adverbial clause types listed by Matthiessen and Thompson involve embedding, and therefore, under their criteria, should be considered subordinate.

Two further proposals within the Continuum Approach are Haiman and Thompson (1984) and Lehmann (1988). These proposals show a basic difference with respect to those considered so far. They do not isolate a certain number of clause linkage types, defined on the basis of a limited number of parameters, but list several freely combinable features. None of these features is actually necessary for subordination, but a clause may be more or less subordinate-like depending on how many subordinate-like features it displays.

Lehmann (1988) proposes a scale extending between two poles of maximal and minimal elaboration of the lexical and grammatical information conveyed by a clause. This scale is defined by a number of parallel continua referring to different parameters, such as hierarchical downgrading of the subordinate clause, the syntactic level at which the subordinate clause is embedded, desententialization, the degree of grammaticalization of the main predicate, interlacing between the two clauses, and the explicitness of the linking between the two clauses. Subordinate clauses located at the beginning of the scale do not differ in structure from corresponding main clauses, apart from the lack of illocutionary force. Clauses located toward the end of the scale are reduced in structure and possibly stripped away of all of their sentential features.

Similarly, Haiman and Thompson (1984) appeal to the notions of 'continuum' and 'prototype', and examine seven independent parameters, each of which contributes to forming the composite notion usually indicated as 'subordination': identity of subject, tense, or mood between the two clauses; reduction of one of the two clauses; grammatically signalled incorporation of one of the two clauses; inclusion of one of the two clauses within the scope of the other; absence of tense iconicity between the two clauses; identity of speech act perspective between the two clauses.

Insofar as it does not stick to a binary distinction between subordination and non-subordination (coordination), the Continuum Approach is in principle able to account for the wide variety of clause linkage types that is found cross-linguistically, and thus provides a solution to the Continuum Problem. It does not solve the Mismatch Problem, however. In order to investigate subordination cross-linguistically, one still has to make a decision as to what clause types one should look for. Whatever clause types (defined, in accordance with the Continuum Approach, in terms of sets of formal features) are selected, these need not be present in all languages. This forces one to leave aside a number of languages where the selected clause types are not present. Furthermore, while Foley and Van Valin (1984: ch. 6), Matthiessen and Thompson (1988), and Givón (1990: ch. 19) individuate distinct clause types, thus making it possible to concentrate the analysis on any one of them, Haiman and Thompson (1984) and Lehmann (1988) only provide a set of more or less freely combinable features. None of these features is distinctive for subordination. This means that, if one wants to select a cross-linguistically valid parameter for the analysis of subordination (whatever the sense given to this term), one has either to arbitrarily select individual features, which

need not be present in all languages, or deal with clusters of features that need not occur in exactly the same way cross-linguistically.

These problems can be avoided, as was pointed out in Section 1.2.3, if subordination is defined in functional rather than formal terms. Functional (semantic, pragmatic, cognitive) situations are presumably universal across languages. Hence one can define subordination in functional terms, and then see how this functional situation is expressed cross-linguistically. In this way, the notion of subordination is not tied to the specific way in which clause linkage is realized in any given language, and no language has to be left aside because it does not display the required formal features. The functional aspects of subordination are specifically dealt with by proponents of what will be called the Conceptual Approach.

2.3. The Conceptual Approach

The distinctive feature of the Conceptual Approach is the attempt to relate subordination not so much to the specific properties of individual clause linkage types, but the way in which the states of affairs expressed by linked clauses are perceived and conceptualized, and the status they have in the discourse context. By state of affairs, here, is meant the conception of something that can be the case in some world, and can be evaluated in terms of its existence. The notion of 'state of affairs' is taken from Functional Grammar (Siewierska 1991; Dik 1997*a*), and should be understood as a hyperonym for the entities usually indicated as 'events', 'states', 'situations', and the like. The term 'state of affairs' will henceforth replace that of 'event', although the latter is more common in linguistic usage. However, 'state of affairs' (henceforth, SoA) is preferred because, in its Functional Grammar sense, it is unambiguous, while 'event' is sometimes used to refer to just some particular type of states of affairs, namely dynamic states of affairs (on this point see Dik 1997*a*: 107–8).

In the Conceptual Approach, a sharp distinction is made between the conceptual (semantic, pragmatic, cognitive) level and the morphosyntactic level. Subordination is viewed as the result of particular conceptual situations rather than a morphosyntactic phenomenon. Conceptual features represent a cross-cutting parameter with respect to morphosyntactic features.

Exponents of the Conceptual Approach have related the notion of subordination mainly to two basic distinctions, foreground/background and figure-ground/complex figure.

The notions of foreground and background are extensively discussed in Hopper (1979) and Hopper and Thompson (1980), and their relation to subordination is examined in Reinhart (1984), Thompson (1987), and Tomlin (1985). Foreground and background are pragmatic notions related to the structure of narrative texts. Foregrounded material represents the backbone or skeleton of the text, while backgrounded material conveys supportive information. Foreground material always

has to be temporally ordered, while background material is typically out of the timeline. Foreground and background are reflected cross-linguistically by clusters of morphosyntactic phenomena, such as presence of special particles, particular word order, particular tense, aspect, and mood distinctions (for instance, completed action tends to be associated with foreground, uncompleted action with background). None of these phenomena, however, is exclusively characteristic of either foreground or background (Hopper 1979; Hopper and Thompson 1980). The correlation between subordination and the foreground/background distinction, as presented by the scholars who have investigated it (Reinhart 1984; Haiman 1985: section 2.1 and ch. 4; Tomlin 1985; Thompson 1987), can be stated as follows: subordinate clauses (i.e. clauses introduced by a subordinating conjunction, nonfinite clauses, relative clauses, including non-restrictive relatives: see Thompson 1987: 444) tend to code background information, main clauses are used for foreground information. This conclusion is supported by extensive analysis of English narrative texts.[4]

In this perspective, subordination (identified on traditional morphosyntactic grounds) is a means to fulfil a universal pragmatic need, distinguishing central versus accessory information in a text. Relating subordination to a universal pragmatic function provides one with a cross-linguistically valid parameter that makes it possible to compare formally different structures on the basis of identity in function. If morphosyntactically subordinate clauses (where by 'morphosyntactically subordinate' is meant subordinate according to a number of formal criteria) are used to convey background information, then, in languages that do not have morphosyntactic subordination, one may examine constructions used to convey background information. In this way functionally consistent clause linkage types will be included within the analysis, and a typology of form–function relations, based on the distinction between central vs. peripheral information, will be outlined.

There are, however, various problems with this conceptual definition. First, there are no consistent enough criteria to identify foreground and background. As was stated above, foreground and background are reflected cross-linguistically by clusters of variable features, none of which is exclusively used for this function. The result, as is observed by Myhill and Hibiya (1988: 362), is that it is not possible to come up with an objective and language-independent definition of either foreground or background. A second, and related problem is that, in default of objective criteria, foreground and background have to be identified on the basis of extensive textual analysis, which is essentially impossible in wide cross-linguistic

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[4] An analysis of the distribution of foreground and background information in other languages displaying different clause linkage strategies is provided by Myhill and Hibiya (1988), who concentrate on clause-chaining phenomena in Soddo and Japanese. They show that in these languages non-final (nonfinite) clauses in clause-chaining are used when a foregrounded clause follows. Thus, these clauses never code foreground information, but do not convey background information either. They rather occupy an intermediate position between main foregrounded clauses and other types of nonfinite clauses.

studies. Besides, the foreground–background distinction has been created and exploited mainly for adverbial clauses, but there are no comprehensive studies illustrating its effects within the domain of relatives and complements. Finally, as Myhill and Hibiya (1988) show, there are clauses that do not express either foreground or background information. Thus, the foreground–background distinction does not cover all of the clause types existing in complex sentences.

The distinction between figure-ground and complex figure is similar (and, in fact, as Reinhart (1984) argues, closely related) to that between foreground and background. The notions of figure and ground were originally introduced by Talmy (1978) with respect to adverbial constructions (see now Talmy 2000: chs 5–6), and have been recently applied by Croft (2001: ch. 9) to several complex construction types. These notions originate from Gestalt psychology, and pertain to the way SoAs are conceptualized.

Figure-ground relations are asymmetrical conceptual relations between SoAs. If one SoA is conceptualized as a cause, precondition, or reference point for another SoA, then the former has a ground status and the latter a figure status. This is exemplified in English temporal sentences introduced by subordinating conjunctions:

(2.18)   He dreamed while he slept
         (Talmy 2000: 324)

In (2.18), sleeping is the ground for dreaming, because the act of dreaming is contingent on the act of being asleep.

On the other hand, if no figure-ground relation holds between two linked SoAs,[5] and the two are perceived as a single conceptual entity, they are in a symmetrical relation, which Croft (2001: ch. 9) calls a complex figure relation. Complex figure relations are exemplified by English coordinate sentences such as

(2.19)   The sun was shining and the birds were singing
         (Croft 2001: 336, from Wierzbicka 1980: 254)

The distinction between figure-ground relations and complex figure relations between SoAs cross-cuts morphosyntactic distinctions between clause linkage types. Figure-ground relations between SoAs are prototypically coded by means of adverbial clauses, while complex figure relations are prototypically coded by means of coordinate clauses. However, other factors may intervene to alter this picture (Croft 2001: ch. 9). For instance, some complex-figure relations, such as complements, are usually coded by means of morphosyntactically subordinate structures, because of their high degree of internal semantic integration (in the sense

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[5] Here and in the rest of the chapter it is assumed that the relations taken into account involve no more than two SoAs at one time. Many languages display sentences where more than two SoAs are connected. In this case, however, each of the relevant SoAs is related to just one of the other SoAs at a single stroke. For a similar perspective, cf. Langacker (1991: 437–8).

described in Givón (1980, 1990)). The opposition between coordination and sub-ordination, then, is to be seen as consisting of two independent dimensions, the figure-ground/complex figure dimension and the morphosyntactic dimension.

As in the case of the foreground–background distinction, we are provided here with two parameters (figure and ground) pertaining to a presumably universal aspect of language, distinguishing between conceptually symmetrical and asymmetrical relations between SoAs. A typology of form–function relations in subordination could then be based on the morphosyntactic correlates of this distinction.

There are, however, a number of problems, some of which were already encountered with the foreground–background distinction. The notions of figure and ground, rather than being definable by means of sufficiently objective and consistent criteria, appear to be related to clusters of features that are often detectable only by means of textual analysis. Besides, the criteria that have been provided so far to distinguish between complex figure and figure-ground relations do not allow easy detection of these relations independently of the clause types in which they are manifested. This is particularly problematic from a cross-linguistic point of view. In a cross-linguistic analysis of subordination based on Gestalt criteria, one could decide to regard as instances of subordination all the cases of figure-ground relations between two linked SoAs. However, if some semantic relationships between two SoAs can be construed as either complex figure or figure-ground, how should one know in the first place how these relations are construed in individual languages (and consequently include or exclude the relevant languages)? One cannot rely on how these relations are expressed in the relevant languages, because figure-ground and complex figure relations need not be expressed by the same clause types cross-linguistically, and in fact they are not (as is shown by the data in Talmy 2000: chs 5–6 and Croft 2001: ch. 9).

The proposals within the Conceptual Approach, then, correctly point out the necessity of individuating a number of functional parameters underlying, or cross-cutting the variety of morphosyntactic structures involved in clause linkage cross-linguistically. However, they fail to individuate a consistent basis on which to define these parameters.

In what follows, it will be argued that a functional definition of subordination can actually be provided. This functional definition rests on a property that is distinctive for most of the clause types that are considered subordinate under traditional morphosyntactic criteria. However, this property is independent of these clause types. Besides, it can be detected by means of consistent and cross-linguistically applicable criteria. The relevant property is lack of assertiveness. In order to see how it can be exploited to provide a functional definition of subordination, we need to examine another proposal falling within the Conceptual Approach, the definition of subordination provided by Langacker (1991: 435–7).

According to Langacker (1987*a*: 183–9), any semantic structure has two fundamental components, the base and the profile. The base, or scope of predication,

corresponds to the aspects of a scene (or a subset thereof) that are specifically included in a particular predication. The profile is a substructure within the base that is selected for designation. The profile is the part of a scene that is obligatorily accessed, and accorded special cognitive prominence. For instance, the base for a predication like *circle* is the basic domain of two-dimensional space, while the profile is a set of points within this domain. On the other hand, a predication like *arc* has as its base the two-dimentional configuration designated by *circle* (in that the conception of an arc presupposes that of a circle), and profiles a segment of that configuration.

Langacker (1991: 436) argues that a subordinate clause is describable as one whose profile is overridden by that of a main clause. For instance, a typical complement construction like *I know she left* designates the process of knowing, not of leaving. Likewise, *Alarms ringing, the burglar fled* profiles the act of fleeing, and *The skirt she bought was too tight* designates the skirt. On the other hand, in a coordinate structure like *The Cubs won and the Padres lost* neither clausal profile overrides the other.

This definition crucially refers to the conceptual relationship between two linked SoAs (or, in Langacker's terms, processes: see Langacker 1987*a*: ch. 7). A subordinate SoA lacks an independent profile, while the main SoA imposes its own profile over the whole sentence.

Langacker's approach is not meant for cross-linguistic investigation. He takes into account particular clause types, specifically particular English clause types, and describes their cognitive properties. However, he provides no criteria to identify these properties independently of the clause types in which they are manifested.

In the next section, it will, however, be argued that Langacker's definition of subordination can actually be exploited for cross-linguistic purposes, provided that one relates it to lack of assertiveness. This proposal will be named the Asymmetry Assumption.

2.4. Towards a functional definition of subordination

2.4.1. The Asymmetry Assumption

Langacker's definition of subordination uncovers a fundamental aspect of the cognitive organization of relations between SoAs. When construing the connection between two SoAs, a speaker has two basic choices. On the one hand, the two SoAs can be construed as perfectly symmetrical from the cognitive point of view, that is both have an autonomous profile. This is what Langacker means when he says that in a sentence like 'The Cubs won and the Padres lost' neither clausal profile overrides the other. On the other hand, the two SoAs can be construed as cognitively asymmetrical, that is one of the two lacks an autonomous profile, and is construed in the perspective of the other SoA. This is what Langacker means when

he says that a sentence like 'I know she left' designates the process of knowing, not of leaving, and one like 'Alarms ringing, the burglar fled' profiles the act of fleeing.

The assumption underlying this approach is that the function of a sentence is to designate some SoA(s) (or process(es)), and the designated SoA is the one that imposes its profile (that is, has cognitive prominence) over the whole sentence. In coordination, neither of the linked SoAs imposes its profile over the other, and the result is that the whole sentence designates two processes. In subordination, only one process is profiled, and the sentence designates just one process.

The distinction between subordination and non-subordination, as outlined by Langacker, is parallelled by a pragmatic distinction, that between non-assertion and assertion. Assertion, and the contrasted notion of presupposition, are quite controversial notions, and ones that have given rise to a huge debate we will not go into here (comprehensive accounts are provided in Levinson 1983: ch. 4; McCawley 1981: ch. 10). In particular, however, a logical-semantic sense and a pragmatic sense of 'assertion' and 'presupposition' are distinguished. The logical-semantic sense has to do with semantic relations between sentences and truth-conditions. The presupposed part of a sentence is that part of the sentence that must be true in order for the rest of the sentence (the asserted part) to be either true or false (McCawley 1981: 326–30). The pragmatic sense, on the other hand, crucially refers to the speakers' assumptions concerning the information status of the sentences they utter (for an illustration of the differences between the two, see Lambrecht (1994: 61–5) and Levinson (1983: 199–225)). Only the pragmatic sense will be taken into account here. Following Lambrecht (1994: 51–65), by (pragmatic) assertion will be meant what the hearer is expected to know or take for granted as a result of hearing the sentence uttered. For instance, by uttering the sentence

(2.20)   I finally met the woman who moved in downstairs (Lambrecht 1994: 51)

the speaker assumes that the addressee already knows that someone moved in downstairs, and wishes to inform the addressee that s/he finally met this person. Hence the speaker's meeting the woman is the assertional part of the sentence, while the woman's moving in downstairs is the non-assertional part.

Subordination and non-subordination, as defined by Langacker, can be equated with (pragmatic) non-assertion and (pragmatic) assertion respectively. This view is also implicit in Langacker's own discussion of assertion (Langacker 1991: 498–501), though Langacker does not pursue this line of reasoning systematically. Langacker's definition of subordination assumes an asymmetrical cognitive relation between SoAs, such that one SoA imposes its own profile over the whole sentence, while the other SoA lacks an autonomous pro-file. The distinction between assertion and non-assertion assumes an asymmetrical communicative organization of the sentence, such that part of the sentence corresponds to what the speaker means to communicate, while the rest is introduced in

the sentence for other purposes (for instance, in order to help the addressee activate asserted information by relating it to some already given piece of knowledge: see Lambrecht 1994: 51–2).[6] It seems reasonable to assume that the SoA imposing its profile over the whole sentence corresponds to what the sentence is meant to communicate, that is the assertional part of the sentence. On the other hand, the SoA lacking an autonomous profile corresponds to the non-assertional part of the sentence, which is construed in the perspective of the assertional part (as should be clear from the discussion of example (2.20) above). Hence, an SoA having an autonomous profile is an asserted SoA, while an SoA lacking an autonomous profile is a non-asserted SoA. If all of the SoAs referred to in a sentence are asserted, or profiled, that sentence is an instance of non-subordination. If just one of them is asserted, or profiled, the sentence is an instance of subordination.

Equating the lack of an autonomous profile and non-assertiveness provides us with some consistent criteria to identify subordination cross-linguistically. The discussion so far should have made it clear that a cross-linguistically applicable definition of subordination should satisfy two requirements. The first is that the definition in itself should not be dependent on the structural properties of any specific clause type in any given language. Proposals based on individual formal criteria, as well as proposals within the Continuum Approach, fail to satisfy this requirement, as was seen in Sections 2.2 and 2.3. The second requirement is that, if subordination is identified as a particular functional situation (thus meeting the first requirement), consistent criteria should be available to identify this situation cross-linguistically. Proposals within the Conceptual Approach fail to meet this requirement, as was seen in Section 2.3.

Lack of an autonomous profile provides a criterion to define subordination regardless of the specific clause types in which it is manifested. A subordinate SoA is an SoA whose profile is overriden by that of another SoA.

Equating the lack of an autonomous profile with non-assertiveness provides a consistent criterion to identify the lack of an autonomous profile cross-linguistically. In the functional-typological approach, pragmatic situations are assumed to be universal (see Section 1.2.3). It is then reasonable to assume that all

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[6] Lambrecht (1994: 51–65) distinguishes between assertion and presupposition, not between an assertional part of the sentence and a non-assertional part. He defines presupposition as the proposition expressed by a sentence which the hearer is expected to already know or take for granted at the time the sentence is uttered. However, there are cases where some part of the sentence is not asserted, but it is not presupposed either. For instance, a sentence like *She thought the situation was different* would normally be uttered to inform the addressee that somebody thought the situation was different, not that the situation was different. Thus, the sentence does not assert that the situation was different. However, the situation's being different is not supposed to be known to the addressee either. Thus, the sentence does not presuppose that the situation was different.

This means that the non-assertional part of a sentence may be presupposed or non-presupposed. Therefore, the notion of assertion is contrasted in this study not with the notion of presupposition, but with the notion of non-assertion, which applies both to the presupposed part of a sentence and to the non-asserted and non-presupposed part.

languages make a distinction (albeit not necessarily a formal one, and not necessarily through the same means) between asserted and non-asserted information. This distinction will then be revealed by assertiveness tests. Subsequently, if the lack of an autonomous profile is equated with non-assertiveness, assertiveness tests can reveal the lack of an autonomous profile in all languages.

Available assertiveness tests are basically of two types. Some of them may test for which part of the sentence is open to challenge by explicitly denying it. This is the case of sentential negation, as illustrated by

(2.21)   It is not the case that, alarms ringing, the burglar fled

What is denied in this sentence is that the burglar fled, not that alarms were ringing. It is quite clear why only the asserted part of a sentence is open to challenge. An assertion is what the speaker wishes to communicate, or wants the hearer to know or take for granted, by uttering the sentence. Therefore, it may be relevant for the hearer to challenge it. On the other hand, it would make no sense for the hearer to challenge that part of the sentence that the speaker does not wish to communicate.

The second type of assertiveness tests change the illocutionary force of the sentence. This is the case of sentential questioning and tag-questions, as illustrated by

(2.22)   Is it the case that, alarms ringing, the burglar fled?

(2.23)   Alarms ringing, the burglar fled, didn't he?

Once again, what is being questioned in these examples is that the burglar fled, not that alarms were ringing. The relation between assertion (or autonomous profile) and illocutionary force is also quite clear. By making an assertion, or designating a process, a speaker performs a particular kind of speech act, one aiming at making the addressee know or take for granted some part of the sentence. Illocutionary force is the property whereby a sentence can function as a speech act (Dik 1997*a*: 299–307). If some part of the sentence lacks illocutionary force, it cannot represent a speech act. Therefore, it is not asserted, and has no autonomous profile.

A major point to be stressed is that the assertiveness tests just discussed work for all languages, regardless of the specific clause types existing in any particular language. These tests do not concern specific clause types, but the pragmatic/cognitive status of different parts of the sentence (see Section 2.4.1). They test for which part of the sentence is open to challenge, and which is not. Hence they are independent of the structural features of any given sentence in the relevant language. All that matters is that there are contexts in which it is pragmatically relevant to challenge some part of the sentence, regardless of the structural features of the sentence itself.

This also means that it is not strictly necessary that a language have some exact equivalent of tag-questions or any specific assertiveness test existing in some other language. Any device allowing one to challenge some part of the sentence will do. For instance, Italian has no direct equivalent of tag-questions, that is there is no

way to question a sentence by changing verb-polarity. Instead, the adjective *vero* 'true' or the negative particle *no* are used:

Italian (Indo-Hittite, Indo-European)

(2.24) *Quando   sei   usc-ito   stamattina*
      when   AUX:PRES:IND:2SG   go.out-PAST:PTCP   this.morning

      ha-i   compr-ato   il   giornale,
      AUX:PRES-IND:2SG   buy-PAST:PTCP   ART   newspaper

      vero/no*?*
      true/no

      'When you went out this morning you bought the newspaper,
      didn't you?'

Vero and *no* are not structurally equivalent to English tag-questions, as exemplified in (2.23). Nevertheless, they perform the same pragmatic function, namely challenging the propositional content of part of the sentence (the fact that the addressee bought the newspaper). They can therefore be taken as assertiveness indicators (for a similar point of view, see Dik 1997*b*: 248). All that is required by the Asymmetry Assumption is that a language have some means to challenge the content of the sentence. These means need not be structurally the same cross-linguistically.

We are now in a position to propose a functionally based definition of subordination, resting on cross-linguistically applicable and consistent criteria. By subordination will be meant a situation whereby a cognitive asymmetry is established between linked SoAs, such that the profile of one of the two (henceforth, the main SoA) overrides that of the other (henceforth, the dependent SoA). This is equivalent to saying that the dependent SoA is (pragmatically) non-asserted, while the main one is (pragmatically) asserted. This situation exists in all languages, and there are consistent criteria allowing us to identify the dependent SoA cross-linguistically. These criteria are those for distinguishing assertions from non-assertions, such as sentential negation, sentential questioning, and tag-questions. The part of the sentence that is not sensitive to the application of these tests contains the dependent SoA. A cross-linguistic investigation of subordination can then examine all the possible ways in which the dependent SoA is expressed cross-linguistically.

This approach to subordination will be indicated as the Asymmetry Assumption.

It should be stressed that the Asymmetry Assumption is not entirely novel. Some previous and more formal approaches to subordination, such as Haiman (1985: section 2.1), Haiman and Thompson (1984), Matthiessen and Thompson (1988), or Foley and Van Valin (1984), also assume that subordination involves functional asymmetry between linked SoAs. This is, for instance, the sense of the notion of dependency, used in Foley and Van Valin (1984) and Matthiessen and Thompson (1988). Among their subordination criteria, Haiman and Thompson (1984) list inclusion of one of the linked clauses within the scope of the other, and identity of speech act perspective between the linked clauses. This clearly has

to do with lack of autonomous profile on the part of the dependent SoA. Finally, Lehmann (1988) mentions as a distinguishing property of subordinate clauses a lack of illocutionary force, and this is clearly related to non-assertiveness.

However, these studies take into account the functional properties of particular clause types (in most cases, adverbial clauses), not functional relationships between SoAs as such. This means that the relevant functional properties are not defined independently of the clause types in which they are manifested. Here, on the other hand, the reverse approach is taken. First functional relations between SoAs are defined independently of any particular clause linkage type, and then all of the morphosyntactic correlates of these relations are examined cross-linguistically.

Lack of assertiveness is also commonly recognized as a distinguishing property of traditional subordinate clauses, namely complement, relative, and adverbial clauses. It is usually claimed that these clauses are presupposed, or at least non-asserted (see, among others, Harris and Campbell 1995: ch. 9). This claim is based on the results of some of the assertiveness tests discussed above, for instance sentential negation, sentential questioning, or tag-questions. Once again, however, focus is placed on a particular property of specific clause types, and this property is not considered independently of the clause types in which it is manifested.

It should be observed in this connection that there are some cases where traditional subordinate clauses (specifically, embedded clauses), such as complement and adverbial clauses, have been claimed to express assertions (Hooper and Thompson 1975). These cases have been indicated as 'Main Clause Phenomena in Subordinate Clauses' (MCP). MCP involve a variety of phenomena such as topicalization, preposing of particular constituents (negative adverbs, directional adverbs and phrases, adjective phrases, negative phrases), truncation, tag-questions, use of adverbs modifying the illocutionary force of the sentence such as 'indeed' or 'frankly' (Hooper and Thompson 1975; Green 1976; Bolinger 1977; Lakoff 1984; Ogle 1981). The question may then arise whether these phenomena are relevant to the Asymmetry Assumption, and, if yes, in what way.

The Asymmetry Assumption is completely independent of the structural properties of any particular clause type. Thus, if MCP show that some particular clause type expresses an assertion, that clause type should be simply eliminated from the analysis, regardless of any of its structural properties (e.g. embedding). In this respect, MCP do not affect the substance of the Asymmetry Assumption.

The problem is rather whether or not MCP really are assertional phenomena. Ogle (1981) has demonstrated that the occurrence of topicalization and constituent preposing is strictly related to the distribution of foreground and background information in the sentence, regardless of embedding or the assertional nature of the relevant clauses. Therefore, topicalization and constituent preposing are irrelevant to the Asymmetry Assumption. Other MCP, such as tag-questions and use of illocutionary adverbs, are true assertional phenomena. They concern illocutionary force, and there is a direct connection between illocutionary force and assertiveness, as

was shown above. Then any clause to which tag-questions or illocutionary adverbs can be applied should be regarded as an assertion, and eliminated from the analysis. For instance, in the sentence

(2.25)   I decided to buy it, because it has such a big memory (Chafe 1984: 439)

a tag-question may be formed on the 'because' clause, yielding

(2.26)   I decided to buy it, because it has such a big memory, hasn't it?

This shows that the 'because' clause expresses an assertion. On the other hand, if the comma is eliminated in (2.26) the result is

(2.27)   *I decided to buy it because it has such a big memory, hasn't it?

which shows that the content of the 'because' clause cannot be challenged, and thus is non-asserted. What is asserted here is that the speaker bought something for some particular reason, not the SoA corresponding to that reason.

 Similarly, turning to illocutionary adverbs, in a sentence like

(2.28)   I am afraid that frankly, he hasn't a chance (Green 1976: 385)

the adverb 'frankly' refers to the clause 'he hasn't a chance', which shows that this clause conveys asserted information. In fact, both of the linked SoAs in (2.28) are asserted, as is shown by the corresponding tag-question:

(2.29)   I am afraid that frankly, he hasn't a chance, has he?

However, consider

(2.30)   John likes apples because, for the tenth time, they taste good (Green 1976: 392)

The adverb 'for the tenth time' functions here as an illocutionary adverb, in that it indicates that the speech act is being performed for the tenth time. This sentence can be paraphrased as

(2.31)   I say for the tenth time that John likes apples because they taste good

This shows that what is being said for the tenth time is that John likes apples because they taste good, not that apples taste good. The fact that apples taste good represents non-asserted information. The situation is analogous to the one in (2.27) (for a similar point of view, see Bolinger 1977).

 Thus, sentences like (2.27) and (2.30), but not ones like (2.25) and (2.28), should be included within the analysis.

2.4.2. *Theoretical implications of the Asymmetry Assumption*

The Asymmetry Assumption needs some qualifications. Just like the figure-ground/complex figure distinction and the foreground/background distinction,

it assumes an asymmetrical relation between SoAs. This relation is, however, quite different from those assumed by the figure-ground/complex figure distinction and the foreground/background distinction. In figure-ground relations, one of the linked SoAs (the ground) is perceived as a scene-setting device for the other (the figure). In the Asymmetry Assumption, on the other hand, one of the two SoAs lacks an autonomous profile, but does not necessarily function as a scene-setting device. For instance, in relations established by complement-taking predicates, such as the one exemplified in (2.7), one of the two SoAs is non-asserted (as is proved by tag-questions), but does not function as a scene-setting device. In the figure-ground/complex figure distinction, on the other hand, complement relations count as instances of complex figures, that is symmetrical relations.

Also, the Asymmetry Assumption is quite different from the foreground/background distinction. Non-asserted SoAs do not necessarily represent background information. This is proved, once again, by complement relations such as the one in (2.10), where the dependent SoA does not correspond to either background or foreground information—much like the SoAs coded by non-final clauses in clause-chaining investigated in Myhill and Hibiya (1988).

In fact, the Asymmetry Assumption involves no a priori hypothesis about why one of the linked SoAs is non-asserted. This need not be because this SoA represents less important information, or because it corresponds to a particular conceptual situation. In fact, in many complement relations, it is the dependent SoA, not the main one, that represents the most important information. For instance, a sentence like

(2.32)   He said it's raining

would normally be used to convey information about what the weather is like, not the fact that somebody said something. This is proved by application of what Erteshik-Shir and Lappin (1979, 1983) call the 'lie-test'. The lie-test is a device for testing what parts of a sentence are dominant, that is can become the subject of further conversation. The lie-test consists in placing the sentence in a context of direct discourse, and then denying or assigning a probabilility or truth value to the various part of the sentence, by means of expressions such as '. . . is not true', '. . . is probable', '. . . is amusing', etc. Application of the lie-test to (2.32) would yield

(2.33)   A: He said it's raining
              B: That's not true [= It's not true that he said that/It's not true that it's raining]

This shows that the sentence in (2.32) can (and would normally) be used when the speaker thinks the hearer is interested in the weather, rather than in the fact that somebody said something. This does not mean that the SoA of raining is asserted, however. As Green (1976: 39) observes, a speaker would normally use (2.32) when s/he wants to communicate that all s/he knows about the weather is that somebody else claimed it's raining, but s/he doesn't want to be held responsible for that claim.

So what's asserted by the speaker (or, in Langacker's terms, profiled) in (2.32) is that somebody said it's raining, not that it's raining (for a similar perspective, see Langacker 1991: 501). This is confirmed by the application of assertiveness tests to (2.32):

(2.34)   (a) It's not the case that he said it's raining [= He didn't say it's raining/* It's not raining]

          (b) * He said it's raining, isn't it?

          (c) Is it the case that he said it's raining? [= Did he say it's raining?/* Is it raining?]

The contrast between the results of the lie-test and those of assertiveness tests shows that an SoA may be non-asserted (and hence dependent) and yet correspond to important information in the discourse context. Lack of assertiveness (and hence subordination) reflects a particular way to construe the cognitive relation between SoAs, such that the profile of one SoA overrides that of the other. However, the reasons why the cognitive relation between the linked SoAs is construed in that way are in principle independent of the discourse relevance of these SoAs (and go beyond the scope of the present research). For instance, the sentence in (2.32) profiles somebody's saying that it's raining, not the SoA of raining. The reason why the SoA of raining is not in profile is that the speaker doesn't want to be held responsible for the claim that it's raining.[7] However, the rain may be the crucial discourse topic. In fact, Erteshik-Shir and Lappin (1979: 47, 1983: 421) explicitly point out that the lie-test is not a test for assertiveness, but only for identifying dominant material, and dominant material may or may not be asserted.[8]

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[7] Hooper and Thompson (1975) and Hooper (1976) claim that in sentences such as 'He said it's raining' (example (2.32)) both SoAs are asserted, although the complement clause is what they call an 'indirect assertion', that is, a reported assertion. Their evidence for claiming that is that these sentences are semantically synonymous with complement preposing sentences such as 'It's raining, he said'. They claim that since complement preposing sentences involve assertion of both the complement clause and the utterance predicate, then sentences like (2.32) also involve assertion of both of the linked SoAs. However, this argument only shows that sentences like (2.32) can be turned into two distinct assertions, not that they assert both of the linked SoAs in themselves. Hooper (1976: 97–8) also claims that application of assertiveness tests such as sentential questioning to sentences like (2.32) shows that both SoAs are asserted. Her ground for claiming that is that sentences like 'Did he say it's raining?' can be used when the questioner is actually interested in whether it's raining or not. However, this only shows that the SoA of raining is dominant in the discourse context (in the sense of Erteshik-Shir and Lappin (1979, 1983)), not that it is asserted. In fact, 'Did he say it's raining?' doesn't mean 'Is it raining?', although it may be used in order to get information about the weather. Similarly, Hooper (1976: 97–8) claims that sentences like 'The boss didn't say he wanted to hire a woman, he said he *had* to hire a woman' demonstrate that the complement clause is asserted, because a negative element in the main clause can affect it. However, in this case the effect of the negative element in the main clause is to modify the content of the boss's claim, not the SoA of wanting to hire a woman as such.

[8] Lambrecht (1994: 52) uses the lie-test as the crucial test to identify pragmatic assertions, and distinguish them from pragmatic presuppositions. However, since Erteshik-Shir and Lappin (1979, 1983) stress that the lie-test is not an assertiveness test, other assertiveness tests (such as tag-questions, sentential negation, and sentential questioning) were used here. These tests are fully compatible with Lambrecht's notion of assertion, as should be clear from the discussion of examples (2.21)–(2.23).

A further qualification about the Asymmetry Assumption is that conceptual asymmetry between linked SoAs is quite independent of the specific semantic relationship holding between these SoAs. The same semantic relation may involve different situations in which the linked SoAs have different cognitive status. Consider the following English sentences:

(2.35)   He can use her computer because she is not there

(2.36)   She is not there, and so he can use her computer

The semantics of these two sentences is the same. Assertiveness tests show, however, that they have a different conceptual organization:

(2.37)   It is not the case that he can use her computer because she is not there
[= He can use her computer, but the reason is not that she is not there/ Although she is not there, he cannot use her computer/* It is not true that she is not there]

(2.38)   It is not the case that she is not there and so he can use her computer
[= She is there and so he cannot use her computer]

In (2.35) sentential negation applies to only one of the linked SoAs (the person's using the computer), and possibly to this SoA and the reason for it. This means that only one SoA is asserted. In (2.36), on the other hand, sentential negation applies to both of the linked SoAs, which means that they are both asserted.

In principle, then, semantic relations between SoAs can be construed as either conceptually symmetrical (i.e. both SoAs are asserted and have an autonomous profile) or conceptually asymmetrical (i.e. one SoA is non-asserted, and has no autonomous profile).

It should finally be stressed that the proposed definition of subordination encompasses all of the relation types underlying the clauses traditionally identified as subordinate, namely complements, adverbials and relatives. This can be verified by applying assertiveness tests to any of these construction types (with the caveats discussed in Section 2.4.1). In fact, any specific relation holding between SoAs in a subordination relation can be reduced to those underlying complement, adverbial, and relative constructions. That is, given any semantic relation between SoAs, the following cases are possible:

(i)   The semantics of one of the linked SoAs entails that another SoA is referred to. This is the situation type underlying complement constructions (discussed further in Chapter 5).

(ii) One of the linked SoAs corresponds to the circumstances under which the other one takes place. This is the situation type underlying adverbial constructions (discussed further in Chapter 6).

This also means that Lambrecht's definition of assertion is not affected by the fact that it cannot be tested by means of the lie-test.

(iii) A participant of the main SoA is identified within a set of possible referents by mentioning some other SoA in which s/he takes part. This is the situation type underlying relative constructions (discussed further in Chapter 7).

There is however a crucial difference between the Asymmetry Assumption and traditional descriptions of complement, adverbial, and relative constructions. The latter refer to particular relations between SoAs, but these relations are considered with respect to the particular constructions in which they are manifested, namely complement, adverbial, and relative constructions (identified on the basis of formal criteria such as embedding, presence of specific conjunctions, etc.). The Asymmetry Assumption takes into account exactly the same relations, but regardless of the construction types in which they are manifested. In this way, all the cases corresponding to traditional complement, adverbial, and complement constructions are covered. In addition, languages where the same relations are expressed by different construction types can also be taken into account. For instance, there might be languages expressing reason relations by means of constructions such as (2.5) and (2.4). Another instance (for relative relations) is provided by (2.15) and (2.16). In fact, when speaking of the relations in (i)–(iii), the traditional labels 'complement', 'adverbial', and 'relative' will be maintained. However, I will speak of complement, adverbial, and relative relations, not complement, adverbial or relative clauses, or constructions, and it should be borne in mind that reference is made to semantic relations between SoAs, not any particular clause type coding these relations in any given language. Henceforth, the clause coding the dependent SoA will be indicated in square brackets in the examples (if the dependent clause is discontinuous, as in (3.37) and (5.30), all of the material belonging to it will be indicated in square brackets). This notation refers to the cognitive status of the SoA coded by the clause, not any particular structural feature (e.g. embedding) of the clause itself.

The main theoretical points of the Asymmetry Assumption can now be recast as follows:

  (i) By subordination is meant a situation of functional asymmetry whereby the profile of one of two linked SoAs is overriden by that of the other.

 (ii) This situation exists in all languages, and can be identified by means of assertiveness tests such as sentential negation, sentential questioning, and tag-questions.

(iii) The relations between SoAs considered by the Asymmetry Assumption are the same underlying the construction types traditionally identified as subordinate, namely complements, adverbials, and relatives. Nevertheless, the Asymmetry Assumption disregards the specific construction types in which these relations are manifested. In this way, any language can be included within the analysis, regardless of the clause linkage types it displays.

Two major questions arise at this point. The first one concerns the actual identification of subordination cross-linguistically. If the functional situation identified here as subordination is universal, then one should be able to identify it unambiguously across languages. According to the Asymmetry Assumption, this can be done by means of assertiveness tests. But how can one actually apply these tests cross-linguistically? This is the topic of the next section.

The second question concerns the pros and cons of the Asymmetry Assumption. The basic argument invoked in support of a functionally based definition of subordination was that one such definition ensures cross-linguistic comparability, and means that no language has to be left out of the analysis (Sections 1.2.3 and 2.2). However, one may wonder whether using a functional definition of subordination has any drawbacks. This issue will be dealt with in Section 2.4.4.

2.4.3. Practical implications of the Asymmetry Assumption

One of the crucial points of the Asymmetry Assumption is that all languages make a distinction between assertion and non-assertion, and subordination obtains when one of two linked SoAs is non-asserted. It follows that in order to identify subordination cross-linguistically one has to apply some assertiveness test. There is however a practical problem. As was pointed out in Section 2.4.1, languages may not have the same means of distinguishing between assertions and non-assertions, and therefore exactly the same assertiveness tests need not be applicable in the various languages. Then how should one distinguish between assertions and non-assertions in any given language in the first place?

Different scenarios are possible here. In the optimal situation, one may be able to obtain explicit information about the assertional value of individual sentence types. In this case, one may safely conclude that the relevant sentence type is actually used, or not used in the language to express subordination. For instance, Lango has two complementation strategies. One consists of the paratactic juxtaposition of two clauses (2.39*a*), while the other involves clausal embedding by means of a complementizer (2.39*b*).

Lango (Nilo-Saharan)

(2.39) *a. àtîn   ànénò   lócɔ́ ɔ̀ɲàɲò   pàlà*
           child   3:SG-see-PERF   man   3:SG-blunt-PERF   knife
           'The child saw the man, he blunted the knife' (Noonan 1992: 203)

      *b. àtîn   ɔ̀nénò   [**nî**   lócɔ́ ɔ̀ɲàɲò   pàlà]*
           child   3:SG-see-PERF   COMP   man   3:SG-blunt-PERF   knife
           'The child saw that the man blunted the knife' (Noonan 1992: 203)

Noonan (1992: 203–5) explicitly says that these two constructions do not have the same assertional value. Example (2.39*a*) involves two separate assertions, which means, among other things, that this strategy can only be used when both of the linked clauses have factual meaning. In (2.39*b*), on the other hand, only one clause is asserted. In this case, only (2.39*b*) should be taken into account.

However, grammars do not usually provide information about the assertional value of individual sentence types. Then how should one ascertain whether the sentence types under investigation actually express subordination? For instance, in a construction expressing a reason relationship, this relationship might be either of the type of example (2.35) or of example (2.36), that is to say the SoAs involved might or might not be all asserted.

The solution in such cases is to assume that the translation used preserves the conceptual organization of the linked SoAs in the original sentence. If the relevant construction is translated by means of a construction involving non-assertiveness, for instance by means of a 'because' construction (of the type in (2.35), not the type in (2.25)), and not, say, an 'and so' construction, it should count as an instance of subordination.

Of course this means that in this case identification of subordination is indirect, that is, it is not based on the direct application of assertiveness tests to the relevant constructions, but on the translation of these constructions. One might object to relying on translations (and reference grammars in general), in that one can never be entirely sure that the information they provide is correct (for a discussion of this kind of objection, see Lehmann 1984: 14–15). Of course translations may not be accurate, but they are as reliable as any other kind of information provided by reference grammars, for example information on the categorial distinctions marked on verbs. Hence one may assume that, if a certain construction is translated, for instance, by means of a 'because' construction, it is really equivalent in function to a 'because' construction, and not (or not only) to an 'and so' construction. In other words, one may assume that translations preserve not only the semantic content, but also the communicative organization of a sentence. Of course it should be borne in mind that the ground for comparing the two constructions is identity in function, not identity or similarity in structure (which need not be the case). That is, it is not the case that the English 'because' construction is being taken as the starting point. Rather, the meaning and the cognitive function of the English 'because' construction are first defined in terms independent of any given language. Then it is assumed that the translational equivalents of this construction have the same semantic and cognitive function.

For instance, Supyire has two constructions to express temporal relations, exemplified in (2.40*a*) and (2.40*b*) respectively:

Supyire (Niger-Kordofanian, Niger Congo)
(2.40)   *a.* *[U   à   kwùùlò   tèni   ndé-mù   ì   gè],   kà*
              he   PERF   shout   time.DEF   DEM-REL   at   REL   and
              pi   ì   wá   na   u   cyàhà-lì
              they   NARR   be.there PROGR   him   laugh-IMPFV
              'At the time that he shouted, (freely: When he shouted), they laughed at him' (Carlson 1994: 551)

b. *Mpi u   màha ŋ-kare sòròlashí í,   mà   sà   nɔ̀*
   hare he PAST IP-go   soldier   in   and.SS go arrive

   zhyɛ̀n-cìgè   nà
   baobab-tree   at
   'Once Hare went to join the army, and arrived at a baobab tree'
   (Carlson 1994: 598)

These two constructions are not translated in the same way, as can be easily verified by applying assertiveness tests to the English sentences corresponding to (2.40*a*) and (2.40*b*). The translation of (2.40*a*) involves assertion of just one of the linked SoAs. The translation of (2.40*b*), on the other hand, involves assertion of both SoAs. In this case only (2.40*a*) should be counted as an instance of subordination.

On the other hand, Kobon has two constructions to express reason relations. One is clause-chaining, as exemplified in (2.11). The other is juxtaposition of clauses with indicative verb forms, as in

Kobon (Indo-Pacific, Trans-New Guinea)
(2.41)   *[Mab lö   naböcög yad   pak-öp]   ilön-göp*
     tree   branch head   1SG   strike-PERF.3SG pain-PERF.3SG
     'My heads hurts because a branch hit it' (Davies 1981: 38)

The only distributional difference between the two constructions is that, if the subjects of the linked clauses are coreferential, clause-chaining must be used (Davies 1981: 38). As can be seen by comparing (2.11) and (2.41), however, the translation is the same in both cases, and is one in which one of the linked SoAs is non-asserted. Then both constructions should be regarded as instances of subordination, regardless of their structural features (and regardless of their structural differences or similarities with respect to the English 'because' construction).

Similarly, Tzutujil has two types of adverbial time constructions. One (exemplified in (2.42*a*)) is introduced by the conjunction *toq* 'when', and translated by means of a 'when' clause. This construction should be regarded as an instance of subordination, because its translation involves assertion of just one of the linked SoAs. The other construction (exemplified in (2.42*b*)) involves simple clause juxtaposition. Dayley (1985: 367) observes that this second construction is structurally equivalent to coordinate sentences, but translationally equivalent to 'when' clauses and participial temporal clauses in Spanish and English. In this case too, the construction should be regarded as an instance of subordination, independently of

its structural features, because its translation involves assertion of just one of the linked SoAs.

Tzutujil (Northern Amerindian, Penutian)
(2.42) a. *[Toq   nok   q'ojoom   pan   armiita],*
           when ABS:3SG-begin marimba in   brotherhood-house
           neeq'ab'ari
           ABS:3PL-get-drunk
           'When the marimba begins in the brotherhood house, they get drunk'
           (Dayley 1985: 366)

        b. *Kongáana   q'ab'arik nb'ajni   [k'o   q'ojoom]*
           tremendous drinking is-done   exist   marimba
           'Tremendous drinking is done on there being a marimba (when there
           is a marimba)' (Dayley 1985: 367)

Sometimes the construction under investigation has more than one translation, and one of the translations involves assertion of all of the linked SoAs. For instance, in West Makian, clause juxtaposition may be translated either as in (2.43*a*) or as in (2.43*b*):

West Makian (Indo-Pacific, West Papuan)
(2.43) a. *ni-i   ta pasar   no-poli   namu   de   esi*
           you-go to the.market you-buy chicken eggs and
           lo   ifa
           canarium   nuts
           'Go to the market and buy eggs and canarium nuts' (Voorhoeve 1982:
           32)

        b. *de   ti-i   [to-tobo]*
           I   I-go   I-bathe
           'I go bathing' (Voorhoeve 1982: 32)

This construction should be regarded as an instance of subordination. Other things being equal, the fact that it has more than one translation is irrelevant to the Asymmetry Assumption. If at least one of the translations involves non-assertion of one of the linked SoAs (as is the case in (2.43*b*), which expresses a motion–purpose relation between the linked SoAs), the construction should be taken into account.

   The situation just described for West Makian is not as as unusual as it might seem across the world's languages. For instance, converbal constructions in Burushaski may have different readings depending on the context. Sometimes all the linked SoAs are asserted; sometimes the SoA expressed by the converb is presupposed

(Tikkanen 1995: 506–15). Consider (2.44):

Burushaski (Isolate)

(2.44)   *a. Má-a   gutḁaš-o   d-ú-čú-n   já-a*
             you-ERG   corpse-PL   D-3HM:PL:DO-bring-CP   1-GEN
             díš-ulo   bése   yáar-e
             place-INESS   why   down-LOC
             ó-čá-an?
             3HM:PL:DO-do(DUR)-AUX-HM:PL:SUBJ
             'Why do you bring your corpses and bury them on my
             land?'(Tikkanen 1995: 509, quoting from Lorimer 1935: 112)

        b. [Má-a   gutḁaš-o   d-ú-čú-n]   já-a
             you-ERG   corpse-PL   D-3HPL:DO-bring-CP   1-GEN
             díš-ulo   bése   yáar-e
             place-INESS   why   down-LOC
             ó-čá-an?
             3HM:PL:DO-do(DUR)-AUX-HM:PL:SUBJ
             'Why do you bury your corpses on my land, after bringing them?'
             (Tikkanen 1995: 509, quoting from Lorimer 1935: 112)

In (2.44*a*), both SoAs are challenged, which means that they are both asserted.
In (2.44*b*), on the other hand, the SoA expressed by the converb is presupposed.
Tikkanen (1995: 512) observes that the likelihood of either reading of converbal
sentences must be established on pragmatic grounds. For instance, the reading in
(2.45*a*) is definitely more likely than that in (2.45*b*), although in principle both
would be possible:

Burushaski (Isolate)

(2.45)   *a. ['Un-e   čái   n-ét-an]   ité-er   bayú*
             thou-ERG   tea   CP-do-CP   it-DAT   rock.salt
             e-é-waš-č-á-a?
             NEG-3MSG:DO-throw-DUR-AUX-2SG:SUBJ
             'After making tea, do you not put rock salt into it?' (Tikkanen 1995:
             512)

        b. 'Un-e   čái   n-ét-an   ité-er   bayú
             thou-ERG   tea   CP-do-CP   it-DAT   rock.salt
             e-é-waš-č-á-a?
             NEG-3MSG:DO-throw-DUR-AUX-2SG:SUBJ
             *'Do you not make tea and put rock salt into it?'
             (Tikkanen 1995: 512)

Similarly, in Mandarin Chinese the so-called serial verb construction may have different readings depending on the context:

Mandarin Chinese (Sino-Tibetan, Sinitic)

(2.46)　*a. Nǐ　　guì-xialai　[qiú　Zháng-san]*
　　　　　you　kneel.down　beg　Zhang-san
　　　　　'You knelt down in order to beg Zhang-san' (Li and Thompson 1973: 98)

　　　　b. Nǐ　　guì-xialai　　qiú　Zháng-san
　　　　　you　kneel.down　beg　Zhang-san
　　　　　'You knelt down and begged Zhang-san' (Li and Thompson 1973: 98)

Li and Thompson (1973: 99) explicitly say that it is 'knowledge of the world', not linguistic knowledge, that it is responsible for suppressing or encouraging a particular meaning for a serial verb sentence. They also provide syntactic evidence showing that serial verb sentences have different readings depending on the context. For instance, Mandarin Chinese has two distinct negative morphemes: *bù*, with single-predicate scope, and *búshi*, whose scope may be more than one predicate. Both may be applied to serial verb sentences, but *bù* may only be applied if the reading is that in (2.46*a*), yielding (2.47*a*), while *búshi* only applies to the reading in (2.46*b*), yielding (2.47*b*):

Mandarin Chinese (Sino-Tibetan, Sinitic)

(2.47)　*a. Wǒ　**bù**　guì-xialai　[qiú　Zháng-san]*
　　　　　I　　not　kneel.down　beg　Zhang-san
　　　　　'I do not kneel down to beg Zhang-san' (Li and Thompson 1973: 101)

　　　　*b. Wǒ　**búshi**　guì-xialai　　qiú　Zháng-san*
　　　　　I　　not　　kneel.down　beg　Zhang-san
　　　　　'It is not the case that I kneel down and beg Zhang-san' (Li and Thompson 1973: 101)

What these examples show is that it is pragmatic context, rather than formal structure, that determines the cognitive status of the different parts of the sentence. That is, the same construction may express both subordination (in the sense defined in Section 2.4.1) and non-subordination depending on the context. The Asymmetry Assumption can easily account for these cases. Its basic requirement is that, in order for subordination to obtain, only one of the linked SoAs must be asserted. If there is evidence that this situation is expressed by some particular construction, that construction should be taken into account, regardless of whether it can also be used to assert both of the linked SoAs.

The Burushaski and Mandarin Chinese examples also evidence another important point about the Asymmetry Assumption. In order for a construction to express a semantic relation between SoAs, and the corresponding subordination relation, that construction need not be specifically devoted to the expression of the relevant

semantic relation. In (2.45) and (2.46*b*), the temporal and purpose reading are inferred on contextual grounds. That is, a particular semantic relation between SoAs may not be expressed by a specific construction, but simply inferred from the association of two SoAs in discourse.

In fact, languages seem to rely on contextual inference much more than one would expect, and this not only as far as subordination is concerned. For instance, in listing the possible ways in which comparison is expressed cross-linguistically, Stassen (1985: 38; 44–5) mentions what he calls the conjoined comparative. In this construction, comparison is typically effected by establishing an adversative relation between two clauses:

Sikka (Austric, Austronesian)
(2.48) *Dzarang tica gahar, dzarang rei kesik*
       horse   that big   horse   this small
       'That horse is bigger than this horse' (Stassen 1985: 44)

Hixkaryana (Amerindian, Ge-Pano-Carib)
(2.49) *Kaw-ohra naha Waraka, kaw naha Kaywerye*
       tall-not   he-is Waraka tall   he-is Kaywerye
       'Kaywerye is taller than Waraka' (Stassen 1985: 44)

In these examples, one of the two clauses contains the comparee, and the other the standard. The two clauses can either contain antonymous predicates, as in (2.48), or predicates expressing a positive–negative polarity, as in (2.49). Stassen (1985: 38; 44) explicitly says that in this case the relation of comparison is not directly expressed, but inferred from the fact that the objects involved are contrasted in an adversative construction. Yet he considers the conjoined comparative as perfectly equivalent to other comparative types where comparison is expressed by means of specific devices such as comparative particles (in fact, about one out of five languages in Stassen's sample present the conjoined comparative).

It should finally be observed that a logical consequence of the Asymmetry Assumption is that there may be cases where one has to regard a particular construction as an instance of subordination independently of how it is translated. This is the case when a particular construction is the only means available in a language to express a particular semantic relation between SoAs. In this case, one has to assume that the relevant construction can express all of the cognitive correlates of that semantic relation, including subordination. If this were not the case, one would have to conclude that the language has no means to express some cognitive situations, which is contrary to the basic assumptions of the functional-typological approach.

For instance, some languages have no equivalent of indirect report, but only use direct report to convey reported statements, and possibly also reported beliefs and commands (in the sample used here, this is the case in Arapesh, Ancient

Egyptian, Hixkaryana, Ho, Kobon, Kolokumi, Maŋarayi, Maori, Huallaga (Huánuco) Quechua, Ute, Wayãpi, and Yoruba). There are some crucial differences between direct and indirect report. Indirect report describes the content of somebody's utterance, and hence makes reference to the SoA described by that utterance. Thus, there are two distinct SoAs involved, the one described by the reported utterance (the dependent SoA) and the fact that somebody says something (the main SoA). Direct report, on the other hand, is used to mention the sounds uttered by somebody, regardless of their semantic content. As is demonstrated by Haiman (1985: 222–8), the objects of direct report are just mentioned sounds, not sounds used to make reference to any entity. This is shown, for instance, by the fact that these sounds need not be in the same language of the sentence nor do they even need to be language at all. Thus, direct report just involves a single SoA (somebody's saying something), and in principle is not relevant to subordination. However, if direct report is the only means available in a language to express the content of somebody's utterance (or thoughts, or commands), one should assume that the direct report construction covers the whole of the conceptual space divided between direct and indirect report in other languages. If this were not the case, it should be concluded that there is no means for the language to cover a part of that conceptual space (the part covered by indirect report). In fact, there are principled semantic grounds on which direct report can come to be used in some languages to convey the semantic and pragmatic/cognitive implications associated with indirect report in other languages, and these are discussed in Section 5.2.9. Of course, if a language has both direct and indirect report, only indirect report should be taken into account.

The main points about identifying subordination cross-linguistically (i.e. the practical implications of the Asymmetry Assumption) can now be recast as follows. Under the Asymmetry Assumption, subordination is a cognitive situation corresponding to non-assertion of one of the linked SoAs. Therefore, it can be detected by identifying non-assertions cross-linguistically. Non-assertions can be identified by means of any device available in the language to challenge the linked SoAs. If one of the linked SoAs is not open to challenge, that construction should count as an instance of subordination. This holds even if the construction can also express the situation in which all of the linked SoAs are open to challenge (examples (2.43), (2.44), (2.45), (2.46), and (2.47) above).

In some cases, explicit information is available about the assertional value of individual sentence types in the language under investigation (examples (2.39), (2.44), (2.45), (2.46), and (2.47) above). If this is not the case, one may rely on translations, and take those constructions whose translations involve non-assertion of one of the linked SoAs. If a construction is the only one available in a language to express a particular semantic relation between SoAs, it should be assumed that that construction can express subordination, regardless of how it is translated.

2.4.4. Is the Asymmetry Assumption really advantageous for the research?

The Asymmetry Assumption differs from most previous accounts of subordination in that it completely disregards clause structure. The basic principle is to define subordination in functional terms, and then take whatever structure is used to express it cross-linguistically. In this respect, the Asymmetry Assumption is to be placed within the Conceptual Approach described in Section 2.3. However, there are two basic differences with respect to other proposals within the Conceptual Approach.

First, the starting point is not the functional features of particular clause types, such as, for instance, adverbial clauses. Rather, it is assumed that subordination is a functional situation that can be defined independently of any particular clause type or semantic relation between SoAs. Under the proposed definition of subordination, a 'subordinate' clause may display any morphosyntactic or semantic feature, providing that one can prove that this clause is used in the language to express non-asserted SoAs.

Second, the criteria used to test for subordination are also independent of the specific features of any construction type, and can in principle be applied to any construction type in any language. It is assumed that subordination can be detected in a language even if there is no information about the assertional value of the relevant constructions. In this case, one has to rely on the translation of those constructions.

One may then wonder whether there are any drawbacks to the Asymmetry Assumption with respect to other approaches to subordination. A major objection that can be raised against the Asymmetry Assumption is that it treats in the same way clauses having a different morphosyntactic structure, such as for example (2.20) (a relative construction with an embedded clause) and (2.16) (a construction with two non-embedded clauses, that may be interpreted as relative, but only at the discourse level). As was shown in Section 2.1.1, some of the traditional formal criteria for subordination, namely embedding, individuate consistent sentence types cross-linguistically. These sentence types are characterized by specific syntactic phenomena such as sentence internal word order, clause extraposition and cataphoric reference. These phenomena are disregarded in the approach taken here, or rather they are not regarded as distinctive for subordination. Treating equally sentence types that display different morphosyntactic features may be a problem in traditionally oriented approaches to subordination, but is not a problem for the Asymmetry Assumption. On the contrary, under the definition of subordination proposed within the Asymmetry Assumption, a 'subordinate' clause may display any morphosyntactic feature, provided that one can prove that this clause is used in the language to express non-asserted SoAs. The question is then whether this approach to subordination is more theoretically fertile than traditional approaches based on morphosyntactic criteria. An answer to this question has already been provided in Sections 1.2.3 and 2.1.1—by adopting formal criteria, one may miss

some counterexamples to the candidate generalizations that could be provided by the observation of excluded language types.

Another objection that can be raised against the Asymmetry Assumption is that it leads one to consider on an equal footing both constructions specifically devoted to the expression of a particular cognitive situation, and cases where the relevant relation is only inferred from the context (see (2.16), as well as (2.43), (2.44), (2.45), and (2.46)). This follows from the basic premises of the investigation, according to which all languages are able to express any cognitive situation, and all the ways in which a particular cognitive situation is expressed should be taken into account. From this perspective, there is no reason to exclude the cases in which the relevant situation is only inferred from the context, if that is the standard means to express that situation in the language.[9]

One might object here that these cases should not be taken into account, because they do not actually express the relevant cognitive situation. However, it is worth considering what the consequences would be if the contextual association of SoAs could not express subordination. First, it should be concluded that a language may only express a particular cognitive situation when it has a construction specifically devoted to that. This would mean that not all languages can express the same cognitive situations.

Second, there are languages that, at a certain stage in their history, do not have any specific construction for the expression of particular cognitive relations between SoAs. The relevant relation is simply inferred from the contextual association of SoAs in discourse, very much in the same way as the notion of comparison between two objects is inferred from their association in an adversative construction in (2.48) and (2.49). At a later stage, these languages develop (usually through grammaticalization) some more specific construction expressing the relevant relation (some relevant examples are provided in Section 5.1). If the contextual association of SoAs in discourse could not express subordination, it should be concluded that these languages cannot express the same cognitive situations at different stages in their history, and that the range of cognitive situations that a language can express may vary through time.

We are now in a position to conclude that, compared to other possible approaches to subordination, the Asymmetry Assumption is truly beneficial for the research. It was shown in Section 1.2.3 that cross-linguistic comparison should be grounded

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[9] Comrie (1981: ch. 7) argues that cases like (2.15) or (2.16) are not instances of relative clauses, if by relative clause is meant a construction specifically devoted to the expression of relativization. Therefore, these cases are not relevant to the generalizations concerning languages having proper relative clauses, and they are not counterexamples to those generalizations. This perspective is quite different from the one taken here. Comrie aims to provide generalizations about clauses that are specifically devoted to the expression of a particular function, namely that of relativization. Here, on the other hand, the focus of the investigation is on how the function of relativization is expressed cross-linguistically, rather than on particular clause types expressing this function (the reasons for adopting this perspective were explained in Section 1.2.3). Then cases like (2.15) and (2.16) are relevant, because, as explained in Section 1.2.3, they might provide counterexamples to the proposed generalizations.

on functional, rather than formal criteria, because otherwise a number of languages should be left out, and some counterexamples, or even some supporting evidence to the proposed generalizations would be missed. Being exclusively grounded on functional criteria, the Asymmetry Assumption allows one not to leave any language out, not even those where the relevant situation is not expressed by a specific construction, but inferred from the discourse context.

In addition, the Asymmetry Assumption allows one to avoid some conclusions that would be incompatible with the functional-typological approach (and probably rather implausible in general), namely that not all languages can express the same cognitive situations and that a language cannot express the same cognitive situation at different stages in its history.

3 The Coding of Subordination: Parameters for Cross-linguistic Research

3.1. Introduction

In the last chapter, subordination was defined as an asymmetrical conceptual/pragmatic relation between linked SoAs, and different types of subordination relations (complement, adverbial, relative) were described.

The next step towards a typology of subordination in the world's languages is to identify some parameters that may be fruitfully used to investigate and classify the ways in which dependent SoAs are coded cross-linguistically. Henceforth, clauses coding dependent SoAs will be indicated as dependent clauses, and clauses coding independent SoAs as independent, or main clauses. Similarly, the verb and the verb arguments in the clause coding the dependent SoA will be indicated as dependent verb and dependent arguments, as opposed to main (or independent) verb and main (or independent) arguments. It should be borne in mind that the sense in which these terms are used here is quite different from the traditional one, in that they are used to refer to functional relations between SoAs rather than any formal feature of specific clauses. Also, the label 'independent clause' will be used to refer to clauses coding independent SoAs both in subordination relations and in isolation (as is the case with standard declarative clauses of the type exemplified in (2.3)).

Dependent clauses will be examined with respect to two major parameters, the form of the verb and the coding of participants.[1] Some brief remarks are in order on these parameters. Given the amount of variation displayed by the world's languages at the morphosyntactic level, parameters such as 'verb form' or 'participant coding' cannot be examined cross-linguistically with respect to language-specific constructions, for example particular verb forms such as infinitives, subjunctives, participles, gerunds, and so on. These constructions may not

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[1] A further possible parameter, variation in word order, will not be taken into account, because it has been empirically proven to have little relevance for clause linkage strategies used within the domain of subordination. One notable exception is the well-known case of German, for which see, among others, Dunbar (1985). Another case in point is provided by Barasano. Barasano is an OVS language. If the clauses involved in a subordination relation have the same subject, this is not expressed in the dependent clause. However, if the subject is different, it is obligatorily expressed in the dependent clause, and immediately precedes the verb, yielding an OSV order (Jones and Jones 1991: 113).

be present in all languages, nor consistently identifiable cross-linguistically. For instance, not all languages have infinitives or participles that may or may not be present in dependent clauses. Also, infinitives or participles need not have exactly the same structural features cross-linguistically (this is discussed further in Section 3.2.1 below).

As a result, if language-specific constructions are compared, this will yield an endless proliferation of categories not displaying the same structural features. Rather, the constructions used in dependent clauses should be reduced to a common standard of comparison. This standard is provided by independent declarative clauses taken in isolation. (The reasons why one might want to consider independent declarative clauses taken in isolation, rather than any type of independent declarative clause, will be explained in Section 3.2.2.) All languages have independent declarative clauses taken in isolation. Hence, for any construction attested in dependent clauses, just two cases are possible: either it is structurally identical to the constructions used in independent declarative clauses in the language, or it is not. Thus, in looking at verb forms and participant coding in dependent clauses, attention should be placed on whether or not these are structurally identical to verb forms and participant coding in independent declarative clauses, rather than on the specific structural features they display in the various languages. For instance, in considering tense, aspect, or mood distinctions, one should not examine whether the relevant verb form is (or looks like) an infinitive, a participle, a gerund, etc. Rather, one should find out whether or not the verb form can express the same categorial distinctions expressed in independent declarative clauses. For instance, some distinctions might be eliminated, or not expressed in the same way as in independent declarative clauses (e.g. special affixes might be used, as is often the case with subjunctives). This is the only way to make sure that the chosen parameters have the required cross-linguistic generality.

The approach outlined in this chapter may then be stated as follows: (i) take the independent declarative clause considered in isolation as the standard of comparison, and (ii) examine whether the constructions used to code dependent SoAs cross-linguistically deviate from this standard, and in what ways. This approach is very similar to that underlying Lehmann's (1988) continuum. In fact, as will be seen throughout the exposition, many of the parameters considered here (such as reduction or lack of verb categorial distinctions, or omission of shared material between the linked clauses) are the same, or almost the same as those defining Lehmann's continuum. The crucial difference is, however, that Lehmann proposes a self-contained continuum, with no regard to the conceptual correlates of the constructions taken into account. The parameters considered here, on the other hand, are examined in view of their possible correlation with particular conceptual situations.

In what follows, the two main parameters mentioned in this section, verb form and participant coding, will be discussed and exemplified in detail.

3.2. The form of the verb

3.2.1. A traditional distinction: finite vs. nonfinite

According to a traditional distinction, verb forms may be either finite or nonfinite. Finite verb forms are 'limited' by parameters such as tense, aspect, mood, number, and person, while nonfinite forms are not marked for these parameters. Furthermore, nonfinite verb forms cannot usually occur in independent clauses (Joseph 1983: 10; Koptjevskaja-Tamm 1993*a*: 1245).

This distinction, which is based on morphosyntactic criteria and refers primarily to the verbal systems of European languages, turns out to be of limited cross-linguistic applicability. A number of problems arise when one tries to define finiteness and nonfiniteness in a way such that only consistent types are included within the scope of the definition, and all verb forms found in the world's languages can be accounted for.

First, languages vary considerably with respect to the number and type of parameters that might be relevant to define the opposition between finiteness and nonfiniteness. Some languages (for instance Gulf Arabic) display verb forms that are not marked for any of the parameters normally relevant to verbs, such as tense, aspect, mood, or person. In other languages, on the other hand, certain verb forms are marked for just some of these parameters, which however vary from one language to another. For instance, Huallaga (Huánuco) Quechua has forms displaying aspect markers only, while Tümpisa (Panamint) Shoshone has forms displaying both tense and aspect markers. Person marking is found on forms displaying no tense, aspect, or mood distinctions in Maricopa and Maŋarayi, but is generally absent in equivalent forms elsewhere. In addition to displaying a reduced set of verbal features, some verb forms may be marked with nonverbal morphology such as case, number, or gender markers (one such case is represented by participles in Ancient Greek).

These examples show that there are no morphological parameters that can be said to be essential in defining the notions of finiteness and nonfiniteness.

Distribution is not a good criterion either. Some verb forms not marked for a number of verbal categories only occur in independent clauses, albeit usually in a limited number of contexts. A well-known case is represented by imperatives. Other cases in point are subjunctives and optatives, which often occur in independent clauses expressing commands and wishes, as well as the so-called conditional forms used sometimes to express the consequent in conditional sentences (for instance in Japanese: Hinds 1988: 310–11).

Conversely, verb forms explicitly marked as occurring only in dependent clauses may be marked for the same categories as independent forms: this is the case with the so-called dependent moods that occur in Abkhaz (Hewitt 1987) and West Greenlandic. Besides, the opposition between finiteness and nonfiniteness makes no sense in isolating languages such as Mandarin Chinese or Nung, where verbs

are either not marked for any parameter at all, or always marked for the same single parameter, for instance aspect.

The distinction between finiteness and nonfiniteness involves the same problems as the one between coordination and subordination. Being grounded on morphological criteria, it is of quite restricted applicability in cross-linguistic comparison. In the case of coordination and subordination, the solution was to abandon the distinction altogether, and classify clause types on the basis of functional criteria, that is whether or not they express dependent SoAs (regardless of the specific morphosyntactic features of individual clause types). The same can be done in the case of verb forms. There actually is a cross-linguistically applicable parameter that can be used to classify verb forms. Verb forms may be distinguished on the basis of the clause types in which they can occur. That is, a verb form may be used in two ways only: either it can occur in independent declarative clauses, or it cannot. As a result, there may be verb forms occurring both in dependent clauses and in independent declarative clauses, verb forms occurring in dependent clauses only, and verb forms occurring in independent declarative clauses only. (This latter case, although logically possible, is very seldom found cross-linguistically. It involves languages keeping a very sharp boundary between verb forms used in declarative independent clauses and those used in dependent clauses. Some languages such as Abkhaz appear to be very close to this pattern, but even there some verb forms may be used both in independent declarative clauses and in some types of dependent clauses, such as complements of utterance predicates.)

The distinction between verb forms occurring in independent declarative clauses and verb forms not doing so is basically functional, in that it defines verb forms on the grounds of which clause types (and SoA types) they can express, regardless of the specific structural features of these forms. As such, this distinction is cross-linguistically applicable, because all languages have independent declarative clauses (as well as dependent clauses, that is clauses expressing dependent SoAs).

If all languages have independent declarative clauses, it can be assumed that all languages will indicate in some way whether or not individual verb forms can occur in these clauses. This assumption is the ground for a basic distinction introduced by Stassen (1985), that between balancing and deranking.

3.2.2. Balancing and deranking

According to Stassen (1985: 76–83), in order to code two linked SoAs occurring in a fixed temporal order, a language may resort to two basic strategies. On the one hand, it may code both SoAs by means of structurally equivalent verb forms, such that each could occur in an independent clause. This strategy is called balancing, and may lead to two structural realizations. Either the two clauses are simply juxtaposed, as in (3.1), or they are linked by means of a conjunction, as in (3.2).

Canela-Krahô (Amerindian, Ge-Pano-Carib)

(3.1) *[pê   wa   i-pỳm]   pê   inxê   ty*
PART   1   1-fall   PAST   mother   die
'My mother died when I was born' (Popjes and Popjes 1986: 139)

Banda Linda (Niger-Kordofanian, North-Central Niger Congo)

(3.2) *ʔà   wɨsɔ́   nɔ́   wɨ   [ɔ́pā   āmùnjú   sɔ́*
we   know:AC   it   know:NEG   that   white:PL   be:AC

jèkòcí   nē]
on the other side   NEG
'We didn't know that the white men lived on the other side'
(Cloarec-Heiss 1986: 500)

It is important to point out that these two schemes, which in traditional terms would be considered as opposite to each other ((3.2) being a case of embedding), are in fact two sides of the same strategy, one in which the structure of both the linked clauses is kept intact with respect to that of a corresponding independent clause.

On the other hand, one of the linked SoAs may be expressed by means of a verb form that cannot be used in independent clauses. This strategy is called deranking. The difference between a deranked verb form and verb forms that can be used in independent clauses (balanced verb forms) basically involves two aspects:

(i) Total or partial lack of the categorial distinctions normally relevant to verbs in the language, such as tense, aspect, mood, or person distinctions. In the Finnish example in (3.3), the past participle indicates completed action in the past, thus tense and aspect, but no mood or person agreement (Sulkala and Karjalainen 1992: 326–7):

Finnish (Uralik-Yukagir)

(3.3) *Huomaan   pojan   **osanneen**   suomea*
realize-1SG   boy-GEN   know-PAST.PTCP-ACC   Finnish-PAR
'I realized that the boy knew Finnish' (Sulkala and Karjalainen 1992: 38)

(ii) Use of special marking not allowed in independent clauses, which includes nominal or adjectival markers such as case or gender (not person) agreement markers, or special tense, aspect, mood, or person markers not occurring in independent clauses. For instance, in Tamil, different case markers may be used on the dependent verb depending on the type of subordination relation linking the relevant SoAs. Reason relations require instrumental

case marking:

Tamil (Elamo-Dravidian)

(3.4) *[ava* **vizzuntatunaal***e]*   *aʐutaa*
       she   fall-PAST-NOMLZR-INSTR   weep-PAST-3FSG
       'Because she fell, she cried.' (Asher 1985: 21)

In Ancient Greek, participial forms agree with the head noun in gender, number and case, and the affixes signalling agreement are the same as used for adjectives. Thus, in (3.5), the same affix *-es* indicates nominative masculine plural both on the participle *pefeugótes* and on the adjective *pántes*:

Ancient Greek (Indo-Hittite, Indo-European)

(3.5) *hénth'* *áll-oi*   *mén* *pánt-***es**   *[...]*
       then   other-M:NOM:PL   PTCL   all-M:NOM:PL

       oíkoi   *ésan* *[...], [pólemo-n*   *té*
       home:LOC   were   war-ACC:SG   PTCL

       *pefeug-ót-***es***]*
       escape:PERF-PTCP-M:NOM:PL
       'All the others were home, having escaped from the war'
       (Homer, Odyssey, 1.11–12)

In Canela-Krahô, verbs coding the dependent SoA may take the nominalizer *xá*, as is exemplified in (3.6*a*). This nominalizer is normally used to derive nouns from verbs, as can be seen from the contrast between (3.6*b*) and (3.6*c*):

Canela-Krahô (Amerindian, Ge-Pano-Carib)

(3.6) *a. [cu-te*   *a-mõr* **xá**   *na]* *a-mãn*
           3-PAST   2-go   NOMLZR   SUB   2-command
           'He commanded you to go' (Popjes and Popjes 1986: 166)

       b. wa   *apu*   *tep*   *pro*
           I   CONT   fish   catch
           'I am catching fish' (Popjes and Popjes 1986: 172)

       c. tep   *pro*   **xá**
           fish   catch   NOMLZR
           'fish net, or fishing place' (Popjes and Popjes 1986: 172)

An instance of special marking used in deranked verb forms is provided by the aforementioned dependent moods. These are verb conjugational forms that cannot be used in independent clauses, but often display the same inflectional distinctions as verb forms used in independent clauses. However, at least some of these distinctions are expressed by special affixes that are not found in independent clauses. Abkhaz provides a particularly clear example. Within the tense system, each distinction can be expressed by two different affixes (the finite and nonfinite affixes) depending on whether the relevant verb form is used in independent or in dependent clauses (Hewitt 1987: 10–11). Thus, in the following example, both main and dependent clause are in the aorist, but the dependent verb has zero marking, while

the main verb has the affix *yt'*:

Abkhaz (Caucasian)
(3.7) *[**d-aná-y-ba***]   à-šta-[a-a]x'   **də-cá-yt'**
       her-when-he-see.NONFINAOR   it-after   he-go-FINAOR
       'After he saw her, he went' (Hewitt 1987: 151)

It should be observed in this connection that the way in which the notions of balancing and deranking are used here is probably slightly different from Stassen's one. In Stassen's theory (Stassen 1985: 76–83), deranking is a composite notion consisting of two aspects. From the distributional point of view, a deranked verb form cannot occur in independent clauses. From the structural point of view, a deranked form is explicitly marked as non-equal in rank with respect to a corresponding one used in an independent clause, that is, as Stassen (1985: 76) says, the two are not 'embedded at the same level of clause structure'. Interaction between these two aspects leads to uncertainty about the status of forms such as dependent moods. These cannot occur in independent clauses, but display, in many cases, the same inflectional oppositions of corresponding independent forms, and cannot therefore be regarded as structurally different from them. According to Stassen (1985: 338–9) no general solution can be applied in these cases, and the status of these forms should be decided upon for each individual case. In this work, on the other hand, the impossibility of a verb form occurring in independent declarative clauses taken in isolation is regarded as the primary distinctive feature of deranking. The fact that a verb form cannot occur in independent declarative clauses taken in isolation will therefore be regarded as a sufficient condition for deranking, regardless of how this is indicated. Thus, for instance, dependent moods, even when they do not differ in structure from independent ones, will be regarded as an instance of deranking, because they cannot be used in independent declarative clauses. In this sense, the distinction between balancing and deranking, as is viewed here, is quite similar to that established by Haspelmath (1995: 26) between dependent and independent verb forms.

Cases like the Abkhaz one, where verb forms not occurring in independent clauses display exactly the same range of inflectional distinctions found in independent clause verbs, are in fact quite rare. More often, verb forms occurring only (or mostly) in dependent clauses are either not inflected for the same categories (tense, aspect, mood, person) found in independent clause verbs, or, if they are inflected for the same categories, they display a reduced set of internal distinctions. This is the case of subjunctives in many languages. In Latin and Italian, for instance, subjunctives are characterized by special endings signalling tense, aspect, mood, and person (just like the corresponding indicative affixes). However, unlike indicatives, they have no future forms.

Subjunctives, as well as other forms such as the so-called basic form in Tagalog (Schachter and Otanes 1972: 65–9), or the purposive mood in many Australian languages (such as Gumbaynggir: Eades 1979: 298–303), are not exclusively used to code dependent SoAs. They can be also found in non-declarative clauses

expressing commands and wishes. This leads Hengeveld (1998) to classify them as balanced. However, non-declarative clauses are less frequent than declarative ones, and display a reduced behavioural potential (i.e. the ability to occur in a number of different grammatical contexts, and to display a number of distinct inflectional forms). This shows that non-declarative clauses are marked with respect to declarative ones (in the typological sense of markedness defined in Croft 1990: ch. 4). For this reason, declarative clauses were taken as the standard of comparison. Therefore, the fact that subjunctives and other verb forms can occur in non-declarative clauses will be ignored, and these verb forms will be considered deranked.

Another problematic case for the balancing/deranking distinction is provided by the languages where clause linkage involves the use of clitic particles or affixed conjunctions. These may be attached to verbs due to one of the following reasons: (i) they can be attached to any constituent in the clause, and so may happen to be attached to verbs; (ii) they are usually placed close to verbs because of word order rules; and (iii) there is a rule in the language stating that they have to be attached to verbs. An example from Basque follows:

Basque (Isolate)

(3.8) *[etxe-ra   irits-i   n-in-tz-**enean**]*,
       house-ALL:SG   arrive-PERF   1SG:ABS-PAST-AUX-(PAST)-when

       kontura-tu   n-in-tz-en   gatza
       realize-PERF 1SG:ABS-PAST-AUX-(PAST)-COMP   salt(ABS:SG)

       eros-te-a   ahaz-tu
       buy-NOMLZR-ABS:SG   forget-PERF

       z-i-tza-ida-la
       3ABS-PAST-AUX-1DAT:SG-(PAST)-COMP

       'When I arrived home, I realized that I had forgotten to buy salt'
       (Saltarelli 1988: 43)

In these cases, one might be tempted to see the complex verb + clitic/affixed conjunction as distinct with respect to simple verb forms used in independent declarative clauses, and thus to consider the verb deranked. The basic principle underlying the notion of deranking, however, is that a deranked form has to be structurally different from a corresponding one that may be used in independent clauses. Structural difference may be due to lack of verbal categorial distinctions and/or use of special markers altering the categorial status of the dependent verb (nominal marking such as case endings, adjectival marking such as gender markers) or coding of verbal categorial distinctions not in the same way as in independent clauses. Clitics and affixed conjunctions as such do not alter the structure of the dependent verb: the complex verb + clitic/affixed conjunction is perfectly equivalent to the one subordinating conjunction + verb exemplified in (3.2). A verb accompanied by a clitic/affixed conjunction should therefore be viewed as balanced, unless some additional deranking strategy is at work.

It is important to point out that the distinction between balancing and deranking, as outlined here, is based on independent clauses taken in isolation. This is probably in the spirit, but not in the letter of Stassen's original formulation. Stassen (1985: 76–8) describes balanced verb forms as forms that could function as main predicates, or occur in independent clauses, and deranked forms as forms that could not do so. Unlike what is done here, he seems to take the notion of independent clause in a fairly traditional sense (finite, non-embedded), but this is not a problem, in that all of his examples of independent clauses also turn out to be independent on the criteria adopted here.

However, the structure of conjoined clauses is sometimes subject to a number of phenomena that make it different from that of clauses occurring in isolation, even if all of the linked clauses code independent SoAs (or, in traditional terms, are non-embedded). A case in point is that of Italian gerunds. These are reduced verb forms not marked for tense, mood, and person, and displaying a reduced set of aspect distinctions. They may be used in a number of different contexts, such as the ones in (3.9*a*) and (3.9*b*):

Italian (Indo-Hittite, Indo-European)
(3.9) *a. Pens-av-a*   *all'*   *accaduto*   **[and-ando**
        think-IMPFR-3SG   to-ART   what.had.happened   go-GER

        a-l   *lavoro]*
        to-ART   work
        'While going to work, s/he was thinking to what had happened'

    b. E'   *usc-ita*   *da*   *casa,*
        AUX:PRES:IND:3SG   go.out-PAST:PTCP:F   from   home

        prend-endo   *poi*   *l'*   *autobus*
        take-GER   then   ART   bus
        'She left home and then took the bus'

Application of the assertiveness tests described in Chapter 2 shows that in (3.9*a*) the SoA coded by the gerund is dependent, while in (3.9*b*) both of the linked SoAs are asserted, and thus independent. (In fact, application of embedding tests such as those described in Haspelmath (1995) shows that (3.9*a*), but not (3.9*b*), involves embedding.)

This example shows that a conjoined clause may be different in structure from a corresponding clause taken in isolation, regardless of whether it codes dependent or independent SoAs, and also regardless of whether or not it involves syntactic embedding. Other cases in point are represented by the Turkish and Japanese examples in (2.13) and (2.14) respectively. Since the basic principle underlying the notion of balancing is that the linked verbs must be equivalent in structure, the reference construction cannot be one in which one of the two linked clauses is reduced, even though this clause might be regarded as independent on either syntactic criteria (lack of embedding) or functional ones (coding of an independent SoA).

The examples discussed so far show that the opposition between balancing and deranking is achieved through a variety of means (lack of verbal categorial distinctions and/or use of special marking), so that balancing and deranking may be seen as global parameters defined by a number of individual and self-consistent factors. Each of these will be examined in detail in the following sections.

3.2.3. Tense, aspect, and mood distinctions

3.2.3.1. Overview

Tense, aspect, and mood distinctions (henceforth, TAM distinctions) specify, or characterize SoAs with respect to both their internal constituency and their relation to an external world. Aspect distinctions (henceforth, A distinctions) pertain to the internal temporal constituency of SoAs. Tense distinctions (henceforth, T distinctions) locate SoAs in time as points in a linear sequence.

Finally, mood distinctions (henceforth, M distinctions) describe SoAs in terms of actuality, that is factuality (actually occurring, or realized SoAs) vs. non-factuality (non-occurring SoAs). There are at least two distinct ways to define the actuality value of an SoA. On the one hand, the SoAs can be presented as factual, or non-factual, with no further qualification. This is usually the case with verbal moods such as the indicative.[2] On the other hand, the sentence may display some explicit indication about the reasons why the dependent SoA is presented as factual or non-factual. This is an extremely rich and complex realm, that goes under the name of modality. As is widely recognized, there are two types of modality distinctions. On the one hand, modality distinctions may refer to a number of external circumstances that make the actuation of SoAs necessary or allowed (root and deontic modality, also called dynamic and agent-oriented modality). On the other hand, modality distinctions may refer to the likelihood of SoAs occurring, or the degree of commitment expressed by the speaker towards the truth of the proposition describing the SoA itself (epistemic modality).[3]

Aspect and mood interact with tense in complex ways. As Chung and Timberlake (1985: 256–7) point out, aspect and mood are crucially related to the temporal dimension. Aspect characterizes the internal constituency of the SoA with respect to a point or interval in time. Mood characterizes the SoA with respect to alternative

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[2] The term 'mood' is often used in the literature to refer to particular verb inflectional forms used to express M distinctions, such as indicatives, subjunctives, etc. Here, on the other hand, 'mood' will be used in semantic sense, that is, as a realm pertaining to the actuality value of an SoA. Actuality value may be expressed by verb inflectional forms as well as by other devices such as adverbs and sentence particles. The label 'verbal mood' will be reserved for verb inflectional forms expressing M distinctions.

[3] The literature concerning tense, aspect, mood, and modality is huge. The general theoretical distinctions outlined here are based on Lyons (1977), Comrie (1976*a*, 1985), Chung and Timberlake (1985), Palmer (1986), and Bybee, Perkins, and Pagliuca (1994), as well as the general treatments of the notions of tense, aspect, mood, and modality within Functional Grammar, as can be found for instance in Dik (1989, 1997*a*) and Siewierska (1991).

worlds that might exist at a point in time. As a result, the aspect and mood value of individual SoAs are crucially related to the temporal collocation of these SoAs. For instance, a sentence like 'At 5 o'clock they were still discussing' implies that the relevant SoA (somebody's discussing) was on-going at a particular point in time (anterior to the time of the speech act), but there is no implication as to whether this SoA is still on-going at the time of the speech act. Similarly, a sentence like 'At that time, that would have solved the problem' implies that the described SoA (something's solving the problem) did not take place at some particular time point, but there is no implication about whether or not this SoA takes place at some other time point (for instance, the time of the speech act).

The temporal collocation of individual SoAs can be defined with respect to various reference points. When just one SoA is being described, the selected reference point is usually the time of the speech act. However, when more than one SoA is described, as is the case with subordination relations, both the time of the speech act and one of the linked SoAs may be selected as the reference point. For instance, relations of temporal anteriority between SoAs, as in

(3.10)   I will work on that paper [after finishing the book]

imply that the linked SoAs are in a temporal succession. The temporal location of each SoA is then defined with respect to the other SoA. In addition to that, each SoA may be located in time with respect to the time of the speech act. In (3.10), use of the future tense locates working on the paper at a time point later than the time of the speech act, while finishing the paper is not located with respect to the time of the speech act (but only with respect to working on the paper).

Languages may use various devices to signal whether the time of the speech act or one of the linked SoAs is being selected as the reference frame. Within the domain of tense, one usually speaks of absolute time reference when the reference frame is the time of the speech act, and relative time reference when the reference frame is one of the linked SoAs (Chung and Timberlake 1985: 209–13; Comrie 1985).

The possibility for a linked SoA to be temporally located with respect to different reference points has some significant consequences for aspect and mood. The aspect and mood value of individual SoAs may also be defined with respect to other SoAs rather than the time of the speech act. For instance, perception complement relations, as in

(3.11)   I heard him [playing the piano]

imply that the perceived SoA is on-going at the time the act of perception takes place. This means that not only the time reference, but the aspect and mood value of the perceived SoA are defined with respect to the time point at which the perception act is located. Similarly, let us consider purpose relations and temporal posteriority

relations, as exemplified in (3.12) and (3.13) respectively:

(3.12)   He went to the market [to buy fish]

(3.13)   He will phone her [before leaving]

These relations imply that the dependent SoA (buying fish, leaving) is unrealized, but only at the time the main SoA is located. The dependent SoA may take place at a subsequent time point, though the purpose and temporal posteriority relations as such have no implication about whether or not it actually takes place. In fact, languages sometimes use various devices to disambiguate the mood value of the dependent SoA with respect to the time of the speech act. Consider the contrast between (3.14*a*), (3.14*b*), and (3.14*c*):

(3.14)   *a.* Mozart died [before finishing his Requiem Mass]

         b. Mahler composed his early symphonies [before returning to Vienna in 1897]

         c. [Before going back to my book], I have to turn in this paper

In (3.14*a*) the dependent SoA (finishing the Requiem Mass) never takes place, while in (3.14*b*) the dependent SoA (returning to Vienna) actually takes place after the main one, and has already taken place at the time of the speech act. Finally, unlike (3.14*a*), (3.14*c*) does not exclude the possibility that the dependent SoA (going back to the book) may take place at some point in time. However, unlike (3.14*b*), it assumes that it has not taken place yet at the time of the speech act.

Ancient Greek has three different constructions for 'before' relations. In cases like (3.14*a*), where it is assumed that the dependent SoA never takes place, the infinitive is used ((3.15*a*)). In cases like (3.14*b*), where the dependent SoA actually takes place at a time prior to that of the time of the speech act, the indicative is used ((3.15*b*)). Finally, in cases like (3.14*c*), where the dependent SoA may take place at some time after the speech act event, the subjunctive or the optative are used ((3.15*c*)).

Ancient Greek (Indo-Hittite, Indo-European)

(3.15)   *a.* *diébē-sa-n*   *[prìn   toùs*
         pass.through.PAST-AOR:IND-3PL   before   ART:ACC:M:PL
         áll-ous   **apokrín-a-sthai***]
         other-ACC:M:PL   answer-AOR-INF
         'They crossed (the river) before the others could answer' (Xenophon, *Anabasis*, 1.4)

         b. *toút-ou*   *toũ*   *épe-os*
         this-GEN.M.SG   ART:GEN:M:SG   prophecy-GEN:SG
         Lud-oì   *(...) lóg-on*   *oudén-a*
         Lydian:M:PL   account-ACC:SG   no.one-ACC:M:SG

e-poieŭ-nto,   [prìn   dḕ
PAST-make-3PL   before   PTCL

epetelé-sthē*]*
accomplish:PAST-AOR:IND:PASS:3SG

'Before this prophecy came true, the Lydians did not take it into
account' (Herodotus, 1.13)

  c. oúpot' (...) tód'   egṑ   katamēnú-s-ō,
     never   this:ACC:NT   I:NOM   reveal-FUT-IND:1SG

     *[prín   àn   ek   agrí-ōn   desm-ôn
     before   PTCL   from   cruel-GEN:PL   bond-GEN:PL

     chalá-s-ēi*]*
     untie-FUT-IND:3SG

     'I will never reveal this (secret) before he sets me free from these
     cruel bonds' (Æschylus, *Prometheus*, 175)

Similar phenomena are attested in Japanese. Japanese has two conjunctions
meaning 'before', *uti ni* and *mae ni*. When future time is referred to, that is the
dependent SoA hasn't taken place yet at the time of the speech act (as is the case in
(3.14*c*) and (3.15*c*)) the two are interchangeable (though with subtle differences in
meaning). When past time is referred to, *mae ni* can be used for some definite SoA
which is known to have occurred (as in (3.14*b*) and (3.15*b*)), while *uti ni* cannot.
However, if the past SoA might not have taken place, *uti ni* is grammatical (Kuno
1973: 153–8).

TAM distinctions in dependent clauses may refer to either the time of the speech
act, or the time point at which the main SoA is located. Within the domain of
tense, distinctions referring to the time of the speech act or the time point of
some particular SoA are usually indicated as absolute and relative tense respect-
ively (Chung and Timberlake 1985: 209–13; Comrie 1985). Some languages have
special devices to signal relative tense: this is, for example, the case in Yidiɲ,
where a special verbal inflection, which Dixon (1977: 322–7) calls dative sub-
ordinate, signals simultaneity between the main and dependent SoAs. In other
languages, however, the same tense forms may be used to provide absolute or
relative reference depending on the context. One such case is provided by Russian
(Chung and Timberlake 1985: 210–12), where, for instance, present tense mor-
phology may be used for past dependent SoAs that are simultaneous with the main
SoA, also located in the past. There also are verb forms that express both relative
and absolute tense at the same time. This is true of the English pluperfect, whose
meaning is that there is a reference point in the past, and that the situation in
question is located prior to that reference point (Comrie 1985: 65).

Aspect may also refer either to the time of the speech act, or the time point
at which some particular SoA is located. For instance, participles and gerunds in
Italian and Ancient Greek (see (3.5) and (3.9) above) distinguish between com-
pleted and on-going action, but the reference point is some particular SoA, not the

time of the speech act. For instance, in (3.9), the present gerund *andando* defines the described SoA as on-going, but only with reference to the other SoA described in the sentence. The present gerund has no implication concerning the aspect value of the relevant SoA at the time of the speech act, and in fact cannot be used to express on-going action in independent clauses taken in isolation.

As will be shown in Chapters 5 and 6, the distinction between reference to the time of the speech act and reference to a particular SoA turns out to be crucial to defining the semantics of a number of subordination relations. Yet, as far as TAM distinctions are concerned, no distinction will be made in the rest of the book between TAM distinctions taking the time of the speech act as the reference point and TAM distinctions taking some particular SoA as the reference point. As will be seen in the following chapters, the mechanisms governing the coding of TAM distinctions in dependent SoAs turn out to be related to whether the time reference, aspect, and mood value of the dependent SoA are predetermined by semantic features of the relation linking the two SoAs, or irrelevant in the discourse context. For instance, as was mentioned above, perception predicates such as 'see' or 'hear' entail that the dependent SoA is factual and on-going, and takes place at the same time as the main SoA (discussed further in Section 5.2.6). When the time reference, aspect, and mood value of the dependent SoA are predetermined, the dependent verb often displays no TAM distinctions. Since the information provided by TAM distinctions is predetermined, lack of these distinctions does not lead to any loss in the communicative value of the sentence. But this holds regardless of the reference point with respect to which the relevant information is predetermined. That is, what matters is that the information is predetermined, and can therefore be recovered, not whether it has to be recovered by making reference to the time of the speech act or the time of the main SoA. In principle, then, the coding of tense, aspect, and mood in dependent clauses is not sensitive to the reference point selected.

Coding of TAM distinctions in dependent clauses basically falls into three categories: (i) TAM distinctions are expressed as in independent clauses; (ii) TAM distinctions are expressed differently from independent clauses; (iii) TAM distinctions are not expressed at all. These three categories will be examined in detail in the following sections.

3.2.3.2. TAM distinctions are expressed as in independent clauses

TAM distinctions in dependent clauses may be expressed in the same way as in independent clauses. By definition, this is the case of balancing. The same situation, however, may occur with deranking, provided that some other strategy is at work to distinguish the verb form from those used in independent clauses. This is, for instance, the case of complement relations established by utterance predicates in Resigaro. Deranking is realized here by a reduplication of the final vowel of the dependent verb, with the addition of a rising tone (*-á*), glossed as a

'nominalizer' in the grammar; TAM distinctions are coded in the same way as in independent clauses.

Resigaro (Amerindian, Equatorial-Tucanoan, Equatorial)
(3.16)   *do-má-mí*   *[teéʔí-kóo-má   do-ʔpína-**á**]*
         she-say-RPAST   river-to-DES   she-go-NOMLZR
         'She said that she wanted to go to the river' (Allin 1976: 323)

It should be noted that TAM distinctions may actually be reduced in number with respect to independent clauses. One reason for this may be semantic incompatibility. A number of subordination relations entail that the dependent SoA has fixed time, aspect, or mood characteristics, and thus only a subset of TAM distinctions may be expressed. Complement relations established by perception predicates entail that the linked SoAs take place at the same time, and that the dependent one is factual and on-going. From a logical point of view, then, it should be extremely unlikely to find forms indicating non-factuality, perfectivity, or futurity in the clauses coding these SoAs. In fact, these forms are usually not found. The problem is, however, that grammars very seldom give information about what semantic restrictions really hold in such cases, so that one cannot be sure whether the attested forms are the only possible ones, or whether other possibilities are also allowed.

On the other hand, reduction of TAM distinctions may take place regardless of any direct semantic correlates. This is, for example, the case in Kayardild, where some dependent clauses, despite coding tense, aspect, and mood in the same way as main clauses, show a reduced system. In main clauses there is a basic division between actual, which covers past, present, and immediate future, and potential. Two additional and more precise forms, a specific past and immediate, are also available (though they are not very frequent). Dependent clauses, on the other hand, only show an opposition between past, immediate (covering present and immediate past), and potential. The immediate suffix (*-Thi*), though being the same in main and in dependent clauses, in the latter covers a different, and less specific semantic area. Furthermore, time reference in dependent clauses tends to be relative rather than absolute. This system applies both when the tense, aspect, and mood characteristics of the dependent SoA are predetermined, as is the case with perception predicates, and when they are not, as is the case with utterance predicates (Evans 1995: 511–16: in example (3.17), *-tha* and *-thurkk* on the main and dependent verbs are forms of the suffix *-Thi*):

Kayardild (Australian)
(3.17)   *yatha-a*   *dangka-a*   *duruma-**tha*** *niwan-ji,*   *[maraka*
         other-NOM   man-NOM   lie-ACT   3:SG-MLOC   CTRFACT
         *malawarriyala-**thurkk***]
         (sea) be.shallow-IMMED:COBL
         'The other fellow lied to him that the water was shallow'
         (Evans 1995: 516)

3.2.3.3. TAM distinctions are not expressed in the dependent clause

TAM distinctions may be not expressed in the dependent clause, that is the dependent verb may be not marked at all for tense, aspect, or mood. By definition, this situation entails deranking.

The type and number of distinctions that may be missing at one time deserves special investigation in itself. For instance, in complement relations established by modal predicates in Punjabi, the dependent verb is reduced to its stem, and lacks any indication of tense, aspect, mood, or person (subject and object) agreement:

Punjabi (Indo-Hittite, Indo-European)
(3.18) *Māi [**Tur**] sakdaa   āā*
        I   walk   able-PRES:M   am
        'I can walk' (Bhatia 1993: 263)

On the other hand, in the following example from Huallaga (Huánuco) Quechua, the verb in the dependent clause is not inflected for tense, mood, and person, but inflects for aspect:

Huallaga (Huánuco) Quechua (Amerindian, Andean)
(3.19) *[Aywa-**yka**-q-ta]   rika-shka-:*
        go-IMPFV-SUB-OBJ   see-PERF-1
        'I saw him going' (Weber 1989: 116)

Once again, it should be noted that lack of TAM distinctions need not be related to any semantic features of the relation linking the SoAs. In the examples in (3.18) and (3.19) the relation between the linked SoAs entails that the dependent one has fixed tense, aspect, mood, and participant features, and therefore lack of information about these features does not affect the intelligibility of the sentence. As will be seen in the following chapters, this is the most frequent case when TAM distinctions are not expressed.

However, TAM distinctions may be not expressed on dependent verbs even when the value of the corresponding categories is not fixed by the nature of the relation linking the SoAs. This is the case of complement relations introduced by utterance predicates in Maricopa. TAM distinctions are not marked on the dependent verb, although information about tense, aspect, or mood cannot be inferred from the context:

Maricopa (Northern Amerindian, Hokan)
(3.20) *[nyaa **m-mii-k**]   'ii-m*
        I   2-cry-SUB   say-REAL
        'I said you cried' (Gordon 1986: 247)

3.2.3.4. TAM distinctions are expressed in the dependent clause,
but differently from independent clauses

It may be the case that TAM distinctions are expressed in the dependent clause, but not in the same way as in independent clauses. Again, this is a case of deranking. It encompasses forms such as those of dependent moods and subjunctives. The same range of distinctions expressed in independent clauses may be found (see (3.7) above), or these distinctions may be reduced in number, as is often the case with subjunctives. In this case too, reduction in the number of distinctions need not be directly related to any specific semantic feature of the dependent SoA.

Needless to say, the situations described so far can coexist within a single verb form. This gives rise to a wide variety of combinations. The situations leading to balancing are limited in number: TAM distinctions must be expressed, and in the same way as in independent clauses (though they may be reduced in number). On the other hand, deranking encompasses a much wider range of cases. In order for deranking to take place, it is sufficient that any of the distinctions examined (T, A, or M) is either not expressed at all, or not in the same way as in independent clauses. Any of the remaining distinctions, however, may be not expressed, expressed in the same way as in independent clauses, or expressed not in the same way as in independent clauses.

This wide amount of variation is not easy to capture in the descriptions provided by reference grammars. In particular, it is usually quite difficult to find detailed information about what distinctions are not expressed. That is, grammars will usually (though not always) tell whether TAM distinctions are not expressed at all in a verb form, or not in the same way as in independent clauses. If TAM distinctions are reduced in number, however, it is quite difficult to ascertain what distinctions are expressed exactly, and in what cases. Therefore, the analysis carried on in the following chapters will be limited to two parameters only: (i) whether or not TAM distinctions are expressed at all on the dependent verb and (ii) if they are expressed, whether or not they are expressed in the same way as in independent clauses.

3.2.3.5. Person agreement distinctions

Person agreement distinctions are used to cross-reference verbal arguments, that is participants of the SoA, on the verb. Typological research (see Givón 1976; Moravcsik 1978; Dryer 1986; Croft 1988, 1990: chs 5–6) has shown that the organization of person agreement distinctions obeys well recognized hierarchical patterns. In accusative languages, agreement with the direct objects implies agreement with subjects, and in ergative languages, agreement with ergatives implies agreement with absolutives. In languages showing a distinction between primary object (transitive direct objects and ditransitive indirect objects) and secondary object (ditransitive direct object), agreement with the secondary object implies agreement with the primary object. These patterns are grounded on general principles such as animacy and definiteness: most animate and most definite

entities are the most likely to trigger agreement. These principles also account for some less common patterns found across the world's languages. In some languages such as Tangut (DeLancey 1981), the entities triggering verbal agreement are those that are higher on the animacy hierarchy, regardless of whether they are syntactic subjects or objects. Some other languages (Amharic, Swahili, see Givón 1976) display verbal agreement with definite objects, but not with indefinite ones.

In accordance with the principles outlined in Section 3.1, person agreement distinctions will be examined in the following chapters with respect to a single parameter, namely whether or not they are expressed in the same way in independent and dependent clauses. The syntactic roles triggering agreement will not be dealt with specifically.

The coding of person agreement distinctions in dependent clauses encompasses basically the same cases described for TAM distinctions. Agreement may be expressed in the same way as in independent clauses, not expressed at all, or expressed by means of special devices not allowed in independent clauses. These three situations will now be considered in detail.

3.2.3.6. Person agreement distinctions are expressed as in independent clauses

The same person agreement distinctions found in main clauses may be found in dependent clauses, and expressed in the same way. This is the situation found in balancing, but the reverse does not hold. That is, if person agreement distinctions are expressed in the same way as in independent clauses, the relevant verb form may still be a deranked one, for instance because it displays nominal or adjectival marking, or because TAM distinctions are not expressed. In Retuarã, for instance, the dependent verb in complement relations established by desiderative predicates shows no TAM markers. However, if main and dependent clause have different subjects, subject agreement is expressed in the same way as in independent clauses (for instance, *yi-* for first person singular):

Retuarã (Amerindian, Equatorial-Tucanoan, Macro-Tucanoan)
(3.21) *[waʔa* **yi**-*eʔe-ri-ka]*   *ko-yapa-nu*
         fish   1SG-get-DVBLZR-NT   3F:SG-want-PRES
         'She wants me to get fish' (Strom 1992: 160)

3.2.3.7. Person agreement distinctions are not expressed in the dependent clause

Person agreement may be not expressed at all on the dependent verb. By definition, this situation entails deranking. It should, however, be noted that lack of agreement *per se* is not normally the only deranking phenomenon. The languages in the sample show no cases of forms that are deranked because of lack of agreement only. Lack of agreement always co-occurs with some other deranking factor, usually lack

of TAM distinctions. The theoretical implications of this phenomenon will be discussed in Chapter 10.

Lack of agreement may have semantic grounds. For instance, as was said above, Retuarã displays agreement markers in constructions such as the one in (3.21), where the linked clauses have different subjects. However, agreement is not expressed when the subject of the two clauses is the same:

Retuarã (Amerindian, Equatorial-Tucanoan, Macro-Tucanoan)
(3.22) *waʔa* **eʔe-ri-ka**   *ko-yapa-nu*
        fish   get-DVBLZR-NT   3F:SG-want-PRES
        'She wants to get fish' (Strom 1992: 160)

On the other hand, lack of agreement may be independent of sameness/difference of subject (or any other co-indexed argument, for that matter). In Tamil, for instance, the dependent verb in complement relations established by utterance predicates has no subject agreement markers, regardless of whether or not main and dependent SoA share their subject. As a result, unlike what happens in independent clauses, the subject must always be indicated by means of nouns or pronouns:

Tamil (Elamo-Dravidian)
(3.23) *raaman [***nii*** amerikkaav-ukku poora-t-aa]*
        Raman   you   America-DAT   go-PRES-NOMLZR-SUB
        con-naa-ru
        say-PAST-3H:SG
        'Raman said that you are going to America' (Asher 1985: 22)

3.2.3.8. Person agreement distinctions are expressed in the dependent clause, but differently from independent clauses

Person agreement distinctions may be expressed in the dependent clause, but differently from independent clauses. This situation entails deranking, and is found with dependent moods and subjunctives in a number of languages. In this case, the dependent verb expresses exactly the same person agreement distinctions found in independent clauses, except that these are coded by means of special forms. Some languages express person agreement distinctions in the dependent clause by means of possessive affixes. This is, for instance, the case in Huallaga (Huánuco) Quechua (see also the West Greenlandic example in (3.43) below):

 Huallaga (Huánuco) Quechua (Amerindian, Andean)
(3.24) *[allaapa-ta miku-shpa-***yiki***]   wira ka-nki-paq*
        much-OBJ   eat-TRANST-2P   fat   be-2FUT-FUT
        'If you eat much/many, you will be fat' (Weber 1989: 119)

Just like TAM distinctions, person agreement distinctions, though being expressed in the dependent clause, may be reduced in number. In Wayãpi, for example, the verb forms used in dependent clauses are the same as those used in independent

clauses, except for those used to code the dependent SoA in purpose relations. Here the system of agreement prefixes found in independent clauses (opposing first, second, and third person, singular, plural, and, within first person, dual) is greatly simplified, and consists of only two prefixes, opposing first person plural vs. all other persons:

Wayãpi (Amerindian, Equatorial-Tucanoan, Equatorial)
(3.25)   **ya**-*tuwɛ,   [***si***-*u]*
         1PL-go   1PL-eat
         'Let's go eat!' (Grenand 1980: 87)

Reduction in the number of person agreeement distinctions is, however, attested in the languages of the sample much less frequently than reduction in the number of TAM distinctions (in fact, Wayãpi is the only case). The tendency is apparently for person agreement distinctions to be either fully maintained, or not expressed at all. The reason is probably that, while there may be a number of semantic reasons for not expressing certain TAM distinctions, there is no subordination relation entailing any restriction about the person of the participants of the dependent SoA. As a result, there is no ground for not expressing specific person agreement distinctions rather than others.

The effects of person agreement should be kept distinct from those of a related phenomenon, switch-reference. As is well-known, a number of languages, especially in New Guinea, Australia, Northern Asia, and the Americas, display verbal affixing systems indicating whether or not the subject of the affixed verb is co-referential with the subject of some other verb. This phenomenon is known as switch-reference (Austin 1981; Foley and Van Valin 1984: ch. 7; Haiman and Munro 1983; Reesink 1983; Van Valin and LaPolla 1997: ch. 6). What switch-reference and agreement have in common is that both cross-reference verb arguments. Person agreement, however, is a clause internal phenomenon, to the extent that it indexes verb arguments with reference to their person, while switch-reference is an interclausal phenomenon, to the extent that it also indexes verb arguments, but with reference to other clauses. In fact, both person agreement and switch-reference may operate independently of each other within the same verb form, as can be seen from the following Maricopa example:

Maricopa (Northern Amerindian, Hokan)
(3.26)   *[pan   nya-***m***-chew-***m]   '-maa-uum*
         bread   when-2-make-DS   1-eat-INC
         'When you bake the bread, I will eat it' (Gordon 1986: 266)

On the other hand, switch-reference and person agreement systems may interact in a number of ways. Person agreement may be used as a switch-reference signalling device. The two Retuarã examples in (3.21) and (3.22) show that, in this language, lack of person agreement monitors sameness of subject between two linked clauses, while presence of person agreement signals difference of

subject. A slightly different case is provided by the person systems found in many Algonquian languages and, for the languages of the sample, in West Greenlandic. Here the third person is split in two—third person proper and so-called fourth person—according to whether or not the referred item is topical, near to the speaker's point of view, already known, or earlier spoken of. An example from West Greenlandic follows:

West Greenlandic (Eskimo-Aleut)

(3.27) *isumaqar-put   [taku-niqa-ssa-***natik***]*
        think-3PL:IND   see-PASS-FUT-4PL:NEG:CONTG
        'They thought that they would not be seen' (Fortescue 1984: 36)

The use of fourth person, which characterizes the whole range of dependent moods used for clause linkage in West Greenlandic, indicates here that main and dependent clause share their subject. In this case too, then, person agreement also signals switch-reference. The difference with respect to Retuarã is that switch-reference is indicated by means of a specialized verbal inflection, rather than by lack or presence of an inflection specialized for a different function.

   While presence or lack of person agreement distinctions is a feature character-izing the verbal system of a given language as a whole, regardless of the clause type taken into account, switch-reference is directly linked to clause type, in the sense that it cannot occur in independent clauses taken in isolation. Therefore, the effects of these two phenomena should be considered separately. Person agreement may in itself represent a parameter for evaluating to what extent the structure of a clause coding a dependent SoA differs from that of a corresponding independent clause. Switch-reference, on the other hand, should not count as an autonomous parameter, but rather be evaluated with respect to its contribution to the definition or explanation of other parameters. Thus, in the Retuarã examples in (3.21) and (3.22), signalling of switch-reference should not be considered as an independent phenomenon, but rather as an explanation of why person agreement distinctions are present under certain conditions, and absent under others (thus triggering deranking). In cases such as the Maricopa example in (3.26), morphemes indicat-ing switch-reference should be considered as direct deranking devices. Similarly, when there is a specialized verbal inflection signalling both person agreement and switch-reference, as is the case in West Greenlandic, signalling of switch-reference should be understood as the reason why person agreement is not indicated in the same way as in independent clauses, that is, once again, as an explanation (though not an ultimate one) for deranking.

3.2.3.9. Case marking and adpositions

The cases of deranking considered so far share a distinctive feature. They are all cases where the dependent verb totally or partially lacks some typical verbal properties such as TAM or person distinctions. In addition to lacking typ-ical verbal properties, however, a dependent verb may display some nominal or

adjectival properties. This process is well-known, and involves a variety of forms generally described as infinitives, participles, verbal nouns, masdars, action nominals, nominalizations (Koptjevskaja-Tamm 1993*b*). The remainder of this section will be devoted to examining the aspects of this phenomenon that turn out to be most relevant to deranking.

The clearest evidence that a verb form has nonverbal features is when it carries case markers or adpositions. The following three examples instantiate the use of case markers for complement, relative and adverbial relations:

Krongo (Niger-Kordofanian, Kordofanian)

(3.28) *n-átàasà*   *à?àŋ* [*ù?ùŋ* **k**-*áaláaná*   *à?àŋ*
        1/2-IMPFV:want   I   you   LOC-INF:teach   I

        kí-nìinò]
        LOC-language
        'I want you to teach me Krongo' (Reh 1985: 337)

Tümpisa (Panamint) Shoshone (Central Amerindian)

(3.29) [*Pün*   *tukkwa*   *nümmin*   *nuunaahappüh***a**]   *nüü*   *u*
        its   own   under   our:EXCL-sit:PL-SUB-OBJ   I   it

        punikka
        see
        'I see what we are sitting under' (Dayley 1989: 371)

Djapu (Australian)

(3.30) *ŋarra*   *yurru*   *ḏälku-m*   *yukurra*   [*ŋäṉdi-w*
        1:SG:NOM   FUT   keep-UNM   lie:UNM   mother-DAT

        *weka-nhara-***w***]*
        give-NOMLZR-DAT
        'I'll be keeping (it) in order to give (it) to mother' (Morphy 1983: 134)

The following example illustrates the use of adpositions:

Supyire (Niger-Kordofanian, North-Central Niger-Congo)

(3.31) *U*   *a*   *kàrè*   [*lwɔhɔ*   *tá-cya-ge*   ***e***]
        she   PERF   go   water   LOC-seek-G2:SG   to
        'She went to fetch water' (Carlson 1994: 588)

Languages vary to a great extent with respect to the number and type of case markers and adpositions allowed on the dependent verb. In general, there seems to be a more or less direct connection between the function performed by the selected case marker or adposition when it is applied to nouns and the nature of the relation linking the main and dependent SoAs. In complement relations, the dependent clause usually functions as a direct argument of the main verb (see Chapter 5), and the dependent verb usually carries direct case markers. In adverbial relations, the dependent clause functions as a satellite, or adjunct, and the dependent verb usually carries adpositions and oblique case markers. Finally, in

relative relations, the dependent verb usually carries the case marker corresponding to the role performed by the relativized item in the main clause.

As a result, it is generally quite rare to find a language allowing the whole range of available case markers or adpositions on the dependent verb. This situation occurs in the sample almost exclusively in relative relations, when all syntactic positions are accessible to relativization and the dependent verb takes the case marker corresponding to the role of the relativized item either in the dependent or in the main clause (this happens for instance in Ancient Greek, West Greenlandic, Retuarã, and Tümpisa (Panamint) Shoshone).

It should be stressed, however, that the correlation between the function usually performed by the selected case marker or adposition and the semantic relation linking the relevant clauses is not always straightforward. This is demonstrated by at least two different phenomena. First, the semantic processes leading to the selection of a given case marker or adposition for a dependent verb are in principle not predictable. In general, for instance, verbs coding the dependent SoA in complement relations tend to carry direct case markers, but in some complement relations they may carry oblique case markers, possibly the same used for adverbial relations. One such case is provided by Djapu, where the same case suffix used in the purpose construction in (3.30) is used on the dependent verb of complement constructions introduced by desiderative predicates:

Djapu (Australian)
(3.32) *ŋarra   djäl   [nhuŋu   guŋga'yu-nhara-**w***]*
       1SG:NOM   want   2SG:DAT   help-NOMLZR-DAT
       'I want to help you' OR 'I want you to help' (Morphy 1983: 134)

Second, the situation just described for relative relations (all available case markers or adpositions allowed) is found, albeit rarely, with other relation types providing no semantic justification for it. In Krongo, for instance, so-called nominalized clauses of the type exemplified in (3.28) consist of an infinitive that can take all case markers available in the language, both direct and oblique. The choice of the appropriate case marker is determined to a limited extent by the case required by the main verb when occurring with nominal arguments. In general, however, as Reh (1985: 337–8) observes, it is not clear whether the alternation of different case markers is linked to difference in meaning.

A deranked verb form can also acquire nominal features in consequence of the application of special morphemes, possibly nominal in origin and variously indicated as nominalizers, infinitive markers, etc. One such case was exemplified in (3.6) above. Usually, these morphemes replace TAM and/or person agreement inflection. Since they only apply to verbs, and not to nouns, the fact that the verb has acquired nominal features is revealed by the behaviour of other elements. In the Canela-Krahô example in (3.6*a*), for instance, the relevant morpheme is a standard device for deriving nouns from verbs, as is shown by (3.6*c*). In other cases, verb modifiers may take adjectival rather than adverbial form, and articles may

be used. For instance, in the following Maori example, the verb in the dependent clause is reduced to its stem and takes the suffix *-(C)anga*. It is accompanied by an introductory preposition and the definite article, and the manner adverbial *paakaha* takes the nominalizing suffix *tanga*:

Maori (Austric, Austro-Tai, Austronesian)

(3.33)　*E*　　*maumahara*　*ana*　*au*　*[ki*　**te**　　　*whiu.***nga**
　　　　T/A　remember　　T/A　1:SG　to　　ART:DEF　punish.NOMLZR

　　　　paakaha.tanga　　*i*　　*a*　　　　*koe]*
　　　　severe.NOMLZR　　DO　PERSART　2SG

　　　　'I remember your being severely punished' (Bauer 1993: 48)

The classification of 'nominalizing' morphemes encounters a major problem, namely that reference grammars do not always provide satisfactory information about the concomitant phenomena exemplified in (3.6*c*) and (3.33): for instance, use of articles is usually recorded, but the form of modifiers is very rarely taken into account. Under such circumstances, it may be quite difficult to establish whether or not a given morpheme really has a 'nominalizing' effect. If this is not possible, the relevant affix cannot be regarded as changing the categorial status of the verb. It might function just like clitics or affixed conjunctions in cases like (3.8). Therefore the relevant verb form should be classified as a balanced one, unless some other deranking phenomenon occurs. Of course, if there is positive evidence that phenomena such as use of articles or of adjectival modifiers occur, the relevant morpheme should be classified as a deranking one.

We are now ready to sum up all the phenomena contributing to balancing and deranking. These are schematized in Table 3.1. If TAM and person agreement distinctions are expressed on the dependent verb, and they are expressed in the same way as in independent clauses, the relevant verb form should count as a balanced one. If any of these distinctions is not expressed, or is expressed not in the same way as in independent clauses, the relevant verb focus should be regarded as deranked. An additional factor involved in deranking is the use of nominal or adjectival marking on the dependent verb, such as adpositions or case markers.

TABLE 3.1. *The form of the verb: parameters involved in balancing and deranking*

Parameters	Balancing	Deranking
TAM/ person agreement distinctions:		
not expressed	–	✓
expressed differently from independent clauses	–	✓
Nominal/adjectival marking on dependent verb	–	✓

3.3. The coding of participants

3.3.1. Overview

The world's languages display wide variety in the coding of the participants of dependent SoAs. Individual participants are expressed by verb arguments. As is well-known, the single argument of intransitive verbs (S, in Dixon's (1994) terms) and the two arguments of transitive verbs (A and O, in Dixon's (1994) terms) may be ranged according to three major alignment patterns, nominative–accusative, ergative–absolutive, and active–stative (with possible splits in different grammatical domains within the same language).

   These patterns may be altered in dependent clauses in more or less significant ways. Arguments corresponding to participants shared by the main and dependent SoAs, may be not expressed, and rules concerning the role of these arguments, which vary from one language to another, do not necessarily follow the pattern governing the coding of verb arguments at the intraclausal level. For instance, nouns in Yidiɲ are inflected according to an ergative pattern, while first and second person pronoun inflection follows an accusative pattern. In relative and purpose relations, shared arguments in the dependent clause have no overt expression, and this phenomenon works on an ergative basis: the missing argument must be S or O in both the main and the dependent clause (Dixon 1994: 388–92; 323–7; 334–7). This phenomenon goes under the name of 'syntactic ergativity'. Using the data presented in Croft (1991: 30–1), Kazenin (1994: 95) establishes the following hierarchy for syntactic ergativity (see also Croft 2001: 155):

(3.34)   Case marking > Verb agreement > Relativization > Purposive >
         Conjunction reduction

If any construction on the hierarchy patterns ergatively, then so do all constructions to the left of it.

   The coding of participants in dependent clauses may also be radically different from the pattern found in independent clauses, and involve for instance possessor or oblique marking. This phenomenon is typical of the nominalization processes discussed in Section 3.2.3.9, and is exemplified in (3.35):

Hixkaryana (Amerindian, Ge-Pano-Carib)
(3.35)   *[Waraka   wya   honyko   wonɨr]   xe   wehxaha*
         Waraka   by   peccary   shooting-of   desire   I-am
         ' I want Waraka to shoot peccary' (Derbyshire 1979: 92)

Here the dependent clause O argument (peccary) is marked as a possessor, while the A argument receives oblique marking, as is witnessed by the postposition *wya* 'to, by'. For extensive treatment of this topic, see Koptjevskaja-Tamm (1993*b*).

   It is important to point out that the criteria that will be used to examine participant coding in the dependent clause are independent of the alignment patterns

displayed by the relevant language. Also, they are independent of whether or not the language has consistently identifiable subjects or objects. There has been considerable debate in the last two decades about whether grammatical relations such as subject and object can be consistently identified both cross-linguistically and intra-linguistically (see, among others, Anderson 1976; Comrie 1981: ch. 5; Croft 1991: chs 4–5, 2001: ch. 4; Dixon 1994: ch. 5; Foley and Van Valin 1984: chs 2, 4; Keenan 1976; Li 1976; Schachter 1976). Traditional criteria for indentifying subjects and objects, such as case marking, person agreement, and the ability to undergo certain syntactic operations such as passivization, coordination reduction, and relativization, give conflicting results both cross-linguistically and within individual languages. As a result, there is an increasingly widespread tendency among typologists to regard categories such as subject and object as language-specific (Dryer 1997), and possibly construction-specific (Croft 1991: ch. 1, 2001: ch. 4; Van Valin and LaPolla 1997: ch. 6). This means that these categories need not be definable by the same criteria across languages, and languages may possibly lack them altogether (as has been claimed for Acehnese: see Durie 1985, 1987; Van Valin and LaPolla 1997: 255–60). Also, grammatical relations are construction-specific, that is different constructions may identify different elements as the pivot for grammatical relations in the same language. For instance, in Tongan, case marking follows an ergative pattern, so that S and P arguments are marked in the same way. However, coreferential arguments in dependent infinitival clauses are not expressed. This phenomenon follows an accusative pattern, so that the missing arguments must be in S or A role (Anderson 1976).

We will not be concerned here about whether or not a given argument in the dependent clause can be identified as subject or object, nor about what alignment patterns can be detected in the language. All we will be concerned about is whether or not participants are coded in the same way in independent and dependent clauses, with regard to the following issues: (i) whether or not the same aligment patterns are followed in independent and dependent clauses; (ii) whether or not verb arguments are overtly expressed in the dependent clause; (iii) whether participants are coded as possessors or obliques. These issues will be examined in detail in the following sections.

3.3.1.1. Alignment patterns

Languages may display splits in the alignment patterns followed in independent and dependent clauses. A split means here a reorganization in argument grouping such that, for instance, otherwise accusative languages follow, in a particular domain, an ergative pattern, or vice versa.

These splits are quite common in the world's languages, and are linked to a number of factors such as the semantic nature of noun phrases (pronouns vs. nouns), tense (past vs. nonpast), and aspect (perfective vs. imperfective) distinctions (DeLancey 1981; Dixon 1994: ch. 4). Splits related to the distinction between dependent and independent clause are less common (Dixon 1994: 101–4), but

the languages in the sample provide a few examples. For instance, Jacaltec is morphologically ergative, so S and O arguments receive absolutive marking, and A arguments receive ergative marking. In complement relations, however, ergative marking may be used in the dependent clause not only for A, but also for S (while O still receives absolutive marking), so that an accusative pattern obtains:

Jacaltec (Northern Amerindian, Penutian)

(3.36) *x-Ø-tzala*   *naj*   **[haw-**ul*   y-atut]*
        ASP-ABS:3-rejoice   CLASS:he   ERG:2-come   ERG:3-house
        'He is happy that you came to his house' (Craig 1977: 237)

A different case is provided by the well known accusative + infinitive construction found in Latin and Ancient Greek. The dependent clause shows an infinitival verb form, and both A and S are marked in the same way as O (while alignment in independent clauses is consistently accusative).

Ancient Greek (Indo-Hittite, Indo-European)

(3.37) *[ekeîn-o]*   *deî*   *[math-eîn*
        that-ACC:SG   be.necessary:PRES:IND.3SG   learn:AOR-INF
        humâs*]*
        you-ACC:PL
        'It is necessary that you learn that' (Isochrates, *Antidosis*, 40.5)

3.3.1.2. Arguments are not expressed

Verb arguments may be not expressed in the dependent clause. This is usually the case when main and dependent SoA share a participant corresponding to the missing argument, or when the information pertaining to the missing argument is easily recoverable or irrelevant in the discourse context. Sharing of participants may be logically entailed by the nature of the relation linking the two SoAs. This is the case in (3.38), where the entity that is able to bring about a certain SoA (in this case, bearing the shame) is obviously the same entity that possibly brings about that SoA:

Lezgian (Caucasian)

(3.38) *Za-waj*   *[Ø*   *a*   *bejaburčiwal   ex-iz*
        I-ADEL   Ø(ERG)   that   shame   bear-INF
        že-zwa-č-ir]
        can-IMPFV-NEG-PAST
        'I could not bear that shame' (Haspelmath 1993: 357)

Otherwise, the linked SoAs may or may not share participants, and arguments are not expressed when the corresponding participants are shared. This is shown by the contrast between (3.39*a*) and (3.39*b*). In (3.39*a*) the main and dependent SoAs share a participant, and there is no reference to this participant in the dependent

clause. In (3.39*b*), the main and dependent SoAs share no participants, and all the arguments of the dependent verb are fully specified:

Guugu Yimidhirr (Australian)

(3.39) *a. Ngayu   wawu-dgirr   [mayi   buda-nhu]*
          1SG:NOM   want-COM.ABS   food:ABS   eat-PURPV
          'I want to eat food' (Haviland 1979: 135)

       *b. Ngayu   wawu-dhirr-gu   [**nyundu**   dhada-nu]*
          1SG:NOM   want-COM-*gu*   2SG:NOM   go-PURPV
          'I want you to go' (Haviland 1979: 135)

Many languages (for instance, Italian and Retuarã) are like Guugu Yimidhirr in that arguments are not expressed under the sharing of participants, but they are expressed overtly otherwise. This means that in these languages arguments are not expressed under the same circumstances—sharing of participants—in all types of subordination relation. This makes it impossible to rank different subordination relations with respect to whether or not arguments are overtly expressed. In order to avoid this problem, only the cases where arguments cannot be expressed at all (i.e. there is no circumstance under which arguments can be expressed) were taken into account. These cases are of two types. On the one hand, there may be constructions not allowing arguments to be expressed, regardless of whether or not the linked SoAs share any participant. For instance, infinitives in Lango do not allow overt mention of participants (and they are used when the main and dependent SoAs share their participants). This is illustrated in (3.40):

Lango (Nilo-Saharan)

(3.40) *àmìttò   [cwὲ   kàttò   rwòt]*
          1SG-want-PROGR   fat-INF   exceed-INF   king
          'I want to be fatter than the king' (Noonan 1992: 212)

On the other hand, there may be constructions where arguments are not expressed when the linked SoAs share their participants, but they are expressed when no participants are shared. This is the case of the Guugu Yimidhirr purposive construction exemplified in (3.39). Another case in point is provided by the juxtaposition of verb phrases in Mandarin Chinese. In this construction, arguments are not expressed when the main and dependent SoAs share their participants, but they are expressed otherwise. This is is shown by the contrast between (3.41*a*) and (3.41*b*). This construction may also be used for relation types entailing the sharing of participants, such as, for example, complement relations established by phasal predicates. This

is the case in (3.41*c*):

Mandarin Chinese (Sino-Tibetan, Sinitic)
(3.41)   *a. wǒ   yào   [shàng jiē]*
              I   want   ascend   street
              'I want to go out' (Li and Thompson 1981: 598)

         b. wǒ   yào   [tā   guò   lai]
              I   want   3SG   cross   come
              'I want him/her to come over here' (Li and Thompson 1981: 598)

         c. wǒmen   jìxù   [gōngzuò]
              we   continue   work
              'We continue to work' (Li and Thompson 1981: 178)

In cases like (3.41*c*), even if in principle the construction allows arguments to be expressed, arguments are obligatorily missing, because the subordination relation entails the sharing of participants between the main and dependent SoAs.

   Thus, the cases that will count as real cases where arguments are not expressed in the dependent clause are: (i) constructions not allowing overt expression of arguments under any circumstances, and (ii) constructions not allowing overt expression of arguments under the sharing of participants between the main and dependent SoAs, when these constructions are used for relation types entailing the sharing of participants between the main and dependent SoAs. All other cases where arguments are missing will be disregarded. In this way, a distinction is established between the different circumstances under which arguments have no overt expression, and it becomes possible to rank the various subordination relations with respect to this phenomenon.

   Languages vary as to the number and type of arguments that are not expressed under referential identity. In languages with accusative case marking, these are generally A and S. In languages with ergative case marking, on the other hand, the missing arguments may be either A and S, or S and O, as is manifested in the hierarchy in (3.34) above. This is particularly evident, for instance, in relativization strategies involving the gapping of the relativized item in the dependent clause (in relative relations, as will be seen in more detail in Chapter 7, the relativized item always corresponds to a participant shared by the main and dependent SoAs). In some ergative languages such as Limbu, and in other languages displaying split ergative systems such as Djapu and Guugu Yimidhirr, the missing item must be in either A or S role in both the main and the dependent clause. In other ergative languages such as Yidiɲ, on the other hand, the missing item must be in S or O role.

   Lack of overtly expressed arguments in the dependent clause may also be due to factors other than the sharing of participants between the linked SoAs. In so-called raising constructions, an argument of the dependent verb is construed as an argument of the main verb, and receives no overt expression in the dependent clause. This is exemplified in (3.42), where the agent of the dependent SoA, *ngijin-ji*, is

expressed as the syntactic object of the main verb:

Kayardild (Australian)

(3.42) *ki-l-da   kurri-ja   ngijin-ji,   [murruku-rrka*
     2-PL-NOM   see-ACT   1SG-MLOC   woomera-MLOC:COBL

  *kala − thurrk]*cobl
  cut-IMMED:COBL
  'You see/saw me cut a woomera' (Evans 1995: 513)

Lack of overtly expressed arguments under raising resembles the lack of overtly expressed arguments under the sharing of participants in that in both cases the reference of the missing arguments can be recovered from the main clause. The difference between the two phenomena is that raising has no obvious semantic correlate, in that the linked SoAs share no participants. However, as is shown in Langacker's (1995) comprehensive analysis of raising phenomena, raising can be accounted for in cognitive terms, more specifically, in terms of the cognitive prominence attributed to the participant corresponding to the raised argument.

3.3.1.3. Arguments are coded as possessors or obliques

Arguments of the dependent SoA may be coded as possessors or obliques. This situation has been extensively investigated by Koptjevskaja-Tamm (1993*b*), and is exemplified here in the following West Greenlandic example. In this example, the dependent clause A is cross-referenced by a possessive affix on the dependent verb (-*a*), while O receives instrumental case marking (-*niq*):

West Greenlandic (Eskimo-Aleut)

(3.43) *[ikninn-gum-mi-**niq**   tuqut-si-nir-**a**]*
     friend-his:REFLX-INSTR   kill-1/2:TRANS-NOMLZR-his

  tusar-para
  hear-1:SG-3:SG-IND
  'I heard of his killing his friend' (Fortescue 1984: 45)

Coding of both A and O as possessors or obliques is in fact quite rare, because it represents a potential source of ambiguity. More often, only one argument is allowed to receive possessor or oblique coding. In this case, the second argument is either coded in the same way as in independent clauses, or not expressed. The latter case usually takes place when the affected argument needs not be specified, either because it is coreferential with an argument in the main clause (3.44), or because it has no referential value ((3.45), where the object of the killing action is irrelevant):

Hixkaryana (Amerindian, Ge-Pano-Carib, Macro-Carib)

(3.44) *Kaywana   komo   tinyahtxe,   [kana   yanɨmrɨ*
     Kaywana   COLL   let-us-send-them   fish   lifting-of

  hoko   ∅-exe-xe]
  occupied-with   GEN-be-MOT:PURP

'Let us send Kaywana's group to be occupied with catching fish'
(Derbyshire 1979: 29)

Tümpisa (Panamint) Shoshone (Central Amerindian)
(3.45)   *[Utummin   tüpakkanna]   kee   tsawinnuh*
       those's   kill-SUB   NEG   be.good
       'For them to kill is not good' (Dayley 1989: 375)

In general, either of the two arguments of a transitive verb can be coded as possessor or oblique, or not expressed. The languages of the sample, however, show no cases in which the affected argument is O, while A is coded as an independent clause. If O is not coded in the same way as in independent clauses, then neither is A (either of the two may be not expressed, or may be coded as possessor or oblique). As for S, if an accusative pattern is followed, it is coded like A. Thus the coding of O as possessor or oblique entails the coding of both A and S in the same way. If an ergative pattern is followed, S is coded like O. Thus, if O is coded as possessor or oblique, both A and S are coded in the same way. Then, special coding or no overt expression of O entails special coding or no overt expression of both A and S.

(3.46)   O possessor/oblique coding $\rightarrow$ S/A possessor/oblique coding

This corresponds to part of the Deverbalization Hierarchy presented in Croft (1991: 83). This hierarchy states that, if a verb form takes a subject dependent like a predicated verb, then it will take an object dependent like a predicated verb. Lack of overtly expressed O arguments and coding of O arguments as possessors are however very rare in the languages of the sample. Coding of A and S as obliques is also very rare. Therefore, only lack of overtly expressed A and S arguments, and coding of A and S arguments as possessors will be taken into account.

3.4. Concluding remarks

In this chapter a method was outlined for examining the structural variation displayed by clauses coding dependent SoAs (= dependent clauses) cross-linguistically. Two main parameters for evaluating the degree of structural difference between independent and dependent clauses, verb form and participant coding, were described.

   It is important to stress that these parameters, as well as their possible realizations, are logically independent of each other, and thus may combine in possibly a very wide variety of ways. It is the aim of the following chapters to consider some of the constraints on such variation, with respect to both the different subordination relation types and the attested correlations among the various realizations of the different parameters. The analysis will focus on the

following issues:

  (i) Balancing vs. deranking in general.

  (ii) Individual aspects of balancing/deranking, namely: lack of TAM distinctions and coding of TAM distinctions in a way different to their coding in independent clauses (tense, aspect, and mood will be considered separately); lack of person agreement distinctions and coding of person agreement distinctions in a way different to their coding in independent clauses; use of nominal morphology, specifically, adpositions and case marking on the verb. Other nominal or adjectival morphology, such as gender markers or nominalizers (as exemplified in (3.5) and (3.33) respectively), will not be considered separately from deranking in general, because the data provided by the sample languages is too sparse to allow any principled generalization across different types of subordination relation.

  (iii) No overt expression of verb arguments (S, A).

  (iv) Coding of verb arguments in a way different to the coding in independent clauses, with respect to both alignment patterns and possessor marking.

These issues will be investigated for each of the subordination relations described in Chapter 2, namely complement, adverbial, and relative relations. For instance, the occurrence of deranked verb forms in individual types of complement relations will be examined with respect to the occurrence of deranked forms in other types of complement relations, as well as in individual types of adverbial and relative relations. These investigations form the subject of Chapters 5–7. The complete list of the constructions taken into account in each language, as well as the relation types for which they are used, is reported in Appendix 4. Some remarks about the organization of this appendix can be found in Section 10.1.

Also, possible correlations in the realization of individual parameters will be examined. Thus, for instance, lack of T distinctions will be examined with respect to lack of A, M, and person agreement distinctions, case marking on the dependent verb etc. This forms the topic of Chapter 10.

4 The Cross-linguistic Coding of Subordination: Methodological Premises

4.1. Introduction

This chapter is preliminary to the presentation and discussion of the cross-linguistic data on subordination in Chapters 5–8. It deals with a number of methodological issues that are crucial to any typological study, namely the nature of the generalizations that will be presented, the evidence for these generalizations, and language sampling.

Though they show substantial agreement about the centrality of these steps, typological analyses are not always homogeneous nor explicit in regard to the criteria that should be adopted in dealing with them.

The generalizations that will be proposed in the next chapters are of the implicational type (Section 1.2.1). The use of implicational generalizations is a relatively uncontroversial issue. Since Greenberg (1963), virtually all typologists agree that the first step in dealing with the variation patterns individuated through cross-linguistic research is to account for them in terms of implicational generalizations. The theoretical value of implicational generalizations hinges on the fact that they not only exclude logically possible language types, but also allow for a certain range of variation among permitted types—exactly the range of variation that is found cross-linguistically.

However, different types of implicational generalizations exist, having different predictive force, and this point is not always stressed in typological studies. First, predictive force varies according to the logical structure of the generalization itself, for example whether the terms of the implication are simple or complex ones (e.g. 'X $\rightarrow$ Y' vs. 'X $\rightarrow$ Y & Z'), or whether quantifiers (e.g. '$\exists$X $\rightarrow$ $\forall$Y') are involved. Second, a number of candidate implicational generalizations have exceptions, or are based on too little cross-linguistic data. In this case one should define some general criteria in order to decide when and to what extent an implicational generalization can be taken as valid. Both of these issues are discussed in Section 4.2, where the logical structure of the implicational generalizations used in this study, as well as the evidence available for them, are discussed.

The issue of language sampling has been extensively investigated in the past twenty years (Bell 1978; Dryer 1989, 1992; Perkins 1989; Rijkhoff *et al.* 1993; Rijkhoff and Bakker1998), and a variety of methods have been proposed. Although

these differ from each other to a considerable extent, there is basic agreement among scholars that they are not in contrast. Rather, each of them is suitable for different research purposes. In Section 4.3, the major methods proposed so far are presented, and the criteria underlying the sample used in this study are discussed.

4.2. Implicational generalizations

As pointed out in Section 1.2.1, cross-linguistic variation is captured in the typological approach by means of a set of constraints or restrictive principles having universal validity. These universals are of two different kinds: unrestricted universals and implicational universals. The former, which are quite limited in number (Croft 1990: 7), state that all languages behave in the same way with respect to a given feature. The latter link the occurrence of a certain feature in a given language to the occurrence of other features in the same language, and account for patterns in linguistic variation. Since the candidate universals that will be examined throughout the study are of the implicational type, in what follows the standard method used to establish them will be discussed, and some observations on the nature and the predictive value of universals in typology will be made.

Implicational universals state a dependency between logically independent grammatical parameters. As such, they may be seen as an application of propositional logic to typology. A standard implicational universal of the form A → B covers four logically possible types: A & B, ~A & B, ~A & ~B, and A & ~B. Of these, the former three types are allowed by the implication, while the fourth is excluded.[1] Any dependency relation between logically independent grammatical parameters may thus be described by means of an implication formulated in such a way that the allowed types correspond to the actually attested ones, and the prohibited ones are actually unattested. For instance, the data about relativization strategies in the world's languages show that if a language can relativize indirect objects (Ind. o. Rel), than it can also relativize direct objects (O Rel) (Keenan and Comrie 1977). This pattern covers three actually occurring types, O Rel & Ind. o. Rel, ~O Rel & ~Ind. o. Rel, and O Rel & ~Ind. o. Rel, and an unattested one, ~O Rel & Ind. o. Rel. This is schematized in Figure 4.1 (+ = attested; − = unattested).

The distribution of attested and unattested combinations in this case makes it possible to draw the implication 'Ind. o. Rel → O Rel', which predicts the occurrence of the attested types and excludes the unattested one, just as in Figure 4.1.

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[1] The basic concepts and symbols of logic used throughout the study are illustrated in a number of textbooks, such as Allwood *et al*. (1977).

	Ind. o. Rel	~Ind. o. Rel
O Rel	+	+
~ O Rel	−	+

FIGURE 4.1. *Tetrachoric table for the relativization of direct and indirect objects*

Individual implications can also be combined in chains, or hierarchies, of the form

(4.1) X → Y & Y → Z & ...

In implicational hierarchies, the consequent of each implication is the antecedent of the following one. In current typological practice, these implicational hierarchies are indicated in the form

(4.2) Z > Y > X

The predictive power of implicational hierarchies is very high. If any of the terms involved in the hierarchy is present (that is, if its truth value is 1), then all the terms to the left of it on the chain have to be present: this allows for multiple predictions out of a single basis. On the other hand, if any of the terms involved in the hierarchy is absent (that is, if its truth value is 0), then all the terms to the right of it on the chain have to be absent too: this excludes a large number of language types, and the more the implications involved in the chain, the more the language types excluded. This is the reason why typological research has focused on the individuation of cross-linguistic hierarchies, such as those of number, animacy and grammatical relations (these are described in detail in Croft 1990: ch. 5), as well as Givón's Binding Hierarchy (Givón 1980, 1990: ch. 13). All of the generalizations about subordination proposed in the following chapters are arranged in hierarchies.

The implications considered so far refer to the existence of individual items (linguistic features, corresponding to the symbols X, Y, and Z in the examples) and to the relationship holding among these items (as indicated by the implicational formulation). For instance, in the case of relativization mentioned above, either relativization of indirect objects exists in a language, or it does not; if it exists, then relativization of direct objects also exists. There is however another type of implicational generalization. This type is usually not considered in typological literature, but yet is crucial to account for the cross-linguistic distribution of a number of linguistic phenomena.

Let us take the case of purpose clauses and complements of knowledge predicates discussed in Section 1.2.3, and consider some actual data from the languages examined in this study. For reasons that should be clear from the discussion in Sections 3.1 and 3.2, these data do not concern infinitives as such, but rather the distribution of deranked verb forms in general. Cross-linguistically, purpose clauses and complements of knowledge predicates may be expressed

	Knowledge		
Purpose	B	D	D/B
B	+ (i)	− (ii)	− (iii)
D	+ (iv)	+ (v)	+ (vi)
D/B	+ (vii)	− (viii)	+ (ix)

FIGURE 4.2. *Cross-linguistic distribution of balanced and deranked verb forms for purpose clauses and complements of knowledge predicates*

by balanced forms (B), by deranked forms (D), or by both (D/B). Figure 4.2 shows which of the logically possible combinations of balanced and deranked forms for purpose clauses and knowledge predicates are attested in the sample languages.

In this case, an implication of the form

(4.3)   Knowledge D → Purpose D

would correctly account for the distribution of deranked verb forms, but would not be an adequate description of the facts. Based on this implication, one might conclude that the occurrence of deranked forms is favoured in purpose clauses. However, in principle, the fact that deranked knowledge complements entail deranked purpose clauses does not exclude purpose clauses and knowledge complements being expressed by more than one construction, and one of these constructions being a balanced one. A language with deranked knowledge complements and deranked purpose clauses may belong to one of the following types: (a) both purpose clauses and knowledge complements can only be expressed by deranked verb forms (type (v) in Figure 4.2); (b) purpose clauses and knowledge complements can be expressed by either balanced or deranked verb forms (type (ix) in Figure 4.2); (c) knowledge complements can be expressed by both balanced and deranked forms, but purpose clauses are expressed by deranked verb forms only (type (vi) in Figure 4.2); (d) knowledge complements are expressed by deranked verb forms only, but purpose clauses can be expressed by either balanced or deranked forms (type (viii) in Figure 4.2). These languages types have different theoretical implications. Types (a), (b), and (c) confirm the assumption that the occurrence of knowledge complements is favoured in purpose clauses. However, type (d) represents a counterexample to this assumption, because in this case knowledge complements allow deranked verb forms only, while purpose complements also allow balanced forms. In order to conclude that the occurrence of deranked complements is really favoured in purpose clauses, one has to formulate the implication so that type (d) (which in fact is not attested, as can be seen from Figure 4.2) is excluded. To do so, a quantified implication can be used.

Quantified implications do not pertain to the existence of individual items, but rather to the number of items out of a given set for which a particular statement is

true. They involve the universal quantifier ∀ and the existential quantifier ∃. The former means that a certain statement is true for all the items belonging to a given set; in other words, if one randomly picks up an item from a given set, the relevant statement will be true for that item. Logically, this is formalized as

(4.4) $\forall x \mathrm{A}(x)$

that is, for every x it holds that x has property A.[2]

∃ means that there is at least one item out of a given set for which a certain statement is true. In this case, if one randomly picks out an item from a given set, the relevant statement may or may not be true for that item. Logically, this is formalized as

(4.5) $\exists x \mathrm{A}(x)$

that is, there is at least one x such that x has property A.

The fact that there are no languages with exclusively deranked knowledge complements, but both balanced and deranked purpose clauses, can be expressed by means of the following quantified implication:

(4.6)   ∀ Knowledge D → ∀ Purpose D (allows types (i), (iii), (iv), (v), (vi), (vii), and (ix) in Figure 4.2, and prohibits types (ii) and (viii))

However, this implication alone does not adequately account for the facts in Figure 4.2, because it allows for the existence of type (iii), which in fact is not attested. Another quantified implication is therefore necessary in order to exclude type (iii):

(4.7)   ∃ Knowledge D → ∃ Purpose D (allows types (i), (iv), (v), (vi), (vii), (viii) and (ix) in Figure 4.2 and prohibits types (ii) and (iii))

The facts in Figure 4.2 are described by the union of these two implications, which allows for all of the attested types in the figure and prohibits all of the non-attested types:

(4.8)   (∃ Knowledge D → ∃ Purpose D) & (∀ Knowledge D → ∀ Purpose D)

What all this shows is that the use of non-quantified implications or quantified implications in cross-linguistic research reflects different purposes. Non-quantified implications account for whether or not a given phenomenon (such as for instance relativization of certain syntactic roles) is possible. Quantified implications account for the fact that a given phenomenon may take place in a number of different ways, and restrict the domain for which a particular relation between linguistic

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[2] The terms of quantified implications are put in lower case to indicate that, contrary to simple implications, they do not refer to individual constants, but to variables, that is functions that take different individuals as arguments: see on this point Allwood *et al.* (1977: 63)

features may hold. Since the present research focuses on the different ways subordination (defined in functional terms) is expressed cross-linguistically, use of quantified implications is crucial. In fact, all the implicational generalizations that will be proposed in the following chapters involve quantifiers.

A major point that should be stressed in this connection is that different quantifier combinations have different predictive power. The two implications in (4.6) and (4.7) have the same quantifier in both the antecedent and the consequent, and they have the same predictive power, in that they both exclude two types out of nine. In principle, quantified implications may also have different quantifiers in the antecedent and the consequent, for instance

(4.9) $\forall$ Knowledge D $\rightarrow$ $\exists$ Purpose D

and

(4.10) $\exists$ Knowledge D $\rightarrow$ $\forall$ Purpose D

However, these implications would not be appropriate to describe the facts in Figure 4.2, for opposite reasons. The implication in (4.9) is too weak. It excludes only one type (ii) out of nine, and this is the same one excluded by (4.6) and (4.7): hence it can be viewed as a part of these two implications, and need not be stated separately. (4.10) is too strong. It excludes four types ((ii), (iii), (viii), and (ix)) out of nine: these are the same three types ((ii), (iii), and (viii)) excluded by (4.6) and (4.7), plus type (ix). Hence, (4.6) and (4.7) can be seen as part of (4.10), and, if (4.10) holds, they become unnecessary. However, since type (ix) is actually attested in Figure 4.2, only (4.6) and (4.7) can be asserted in this case.

In general, then, quantified implications can be arranged in terms of decreasing predictive power (*x* and *y* are whatever variables are used in the implication, for example in (4.6) and (4.7), Knowledge D and Purpose D):

(4.11) (a) $\exists x \rightarrow \forall y$ (4/9 types excluded)

(b) $\forall x \rightarrow \forall y$ (2/9 types excluded)

(c) $\exists x \rightarrow \exists y$ (2/9 types excluded)

(d) $\forall x \rightarrow \exists y$ (1/9 type excluded)

Note that any of these quantified implications can be used to establish a hierarchy of the form . . . > Y > X. This hierarchy is based on the non-quantified implicational proposition X $\rightarrow$ Y & Y $\rightarrow$ . . . , where X and Y are the sets out of which any variable *x* or *y* is taken (for instance, the whole set 'Knowledge D' or 'Purpose D'). This proposition is false in the case X & $\sim$Y. This case also falsifies the quantified implications (4.11*a*)–(4.11*d*): if the truth value of set Y is 0, then the truth value of the variables $\exists y$ and $\forall y$ is also 0.

However, the predictive power of this hierarchy will vary according to which quantified implications are involved. A hierarchy established on the basis of quantified implications of the type in (4.11*a*) will have stronger predictive power than one

established using either (4.11*b*) or (4.11*c*), or even the two of them simultaneously. The latter in turn will have stronger predictive power than a hierarchy established on the basis of (4.11*d*) only. Of course, as Figure 4.2 shows, cross-linguistic data do not always support implications of the type in (4.11*a*), and hierarchies have to be established using implications of the type in (4.11*b*), (4.11*c*), or even (4.11*d*) only. Most of the hierarchies that will be proposed in the following chapters are simultaneously based on implications of the type in (4.11*b*) and (4.11*c*).

It should finally be observed that a number of empirical facts may intervene to reduce the predictive value of a cross-linguistic implication regardless of how the implication itself is formulated. A very basic problem is that implications established on the basis of cross-linguistic data are rarely free from exceptions. In some cases this may lead to outright exclusion of a potential implication. But in other cases a certain level of exceptions can be tolerated. As repeatedly pointed out in the typological literature, by their very nature language universals should be regarded as tendencies rather than laws. Then, as Comrie (1981: 19–20) observes, the real problem is not whether or not a candidate universal has exceptions, but rather the proportion of the number of exceptions to the total number of cases covered by the universal.

If the latter significantly outnumbers the former, this is in any case a significant pattern in language, and one that is worth accounting for.[3] Thus, implications may be used in typological research even if they are not exceptionless, provided that the number of exceptions is small enough. Of course, the predictive value of an implication with exceptions is lower than that of an exceptionless one.

Another problem is that information for the relevant parameters may not always be available for all the languages in one's sample. Most typological studies have to rely on whatever reference grammars are available, and grammars do not always provide the information one needs. Thus, in some cases implications have to be established on the basis of a limited number of languages, and this may reduce their predictive value, and increase the weight of exceptions.

Finally, an implication always allows both its antecedent and its consequent to have the same truth value, either 1 or 0. This case is not significant in the construct of the implication itself, because it does not tell us about the direction of the implicational relationship: if X and Y have the same truth value, both X $\rightarrow$ Y and Y $\rightarrow$ X may hold. As a result, the cases where the parameters involved in the proposed implications have the same value are not significant for establishing the implications themselves. These cases can be used as evidence supporting a proposed implicational universal, but the latter has to be established on the basis

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[3] Comrie (1981: 19–20) observes that, if universals did not hold, that is if the distribution of logically possible language types were random, one would expect all logically possible language types to have approximately equal frequency. If this is not the case, that is if the distribution of language types is not random, one should account for that. In this perspective, language universals are seen as statistically significant deviations from random distribution patterns, and a universal with no exceptions is an extreme deviation: some logical possibilities, rather than being rare, never occur.

of other data. Taking the case of purpose clauses and complements of know-
ledge predicates again, languages where both purpose clauses and complements
of knowledge predicates behave in the same way with respect to the phenomenon
taken into account (e.g. both are expressed by deranked verb forms) cannot be used
to detect any implicational relationship between the two. This is indeed a quite
frequent case, as will be seen in the following chapters. It may significantly reduce
the number of languages that can actually be used to establish cross-linguistic
generalizations, thus increasing once again the weight of exceptions.

Thus, there may be four types of implications:

(a) implications supported by a large amount of data and a large number of
    significant cases, with few or no exceptions;
(b) implications with few or no exceptions, supported by a large number of
    significant cases, but by a small amount of data;
(c) implications with few or no exceptions, supported by a large amount of data,
    but a small number of significant cases;
(d) implications with some exceptions, supported by enough data, but a small
    number of significant cases.

Of course, there is no problem with implications of the (a) type. On the other hand,
all the other implication types have some factor affecting their predictive value.
Then the general question is: are there any consistent criteria to decide when these
implications should be taken as valid? So far, no straightforward procedure has
been proposed in the literature, but a number of criteria (for which see Stassen 1985:
20–1) turn out to be quite useful. The first one, as observed above, is the number
of exceptions in relation to the total number of cases covered by the implication.
Here, this criterion is taken most restrictively, and intended as the number of
exceptions in relation to the total number of significant cases, that is cases where
the antecedent and the consequent of the implication do not have the same truth
value. In order to regard a candidate for implicational generalization as valid, a
general criterion is adopted, namely that in principle the number of languages
representing a counterexample to a proposed generalization should never be more
than one-third of the number of significant cases (i.e. no more than half of the
number of the significant cases supporting the implication).

Then one should look at whether or not a principled explanation is available
for the candidate implication, and whether or not this explanation is theoretically
fertile, that is applicable in a number of different areas of grammatical structure.

Needless to say, using these criteria means treating different possible implica-
tions in a different manner. In the present study, for instance, some of the
implications concerning complement relations are proposed even though they are
supported by a small amount of data, because they have almost no exceptions and
are furthermore supported by Givón's (1980, 1990) studies. Likewise, implica-
tions concerning relative relations are regarded as valid even though there is only
a small number of significant cases, because they are confirmed by Keenan and

Comrie's (1977) hierarchy, as well as the data in Lehmann (1984). Other candidate implications are rejected because there is only a small number of significant cases and no principled explanation. Of course, these are all rules of thumb, rather than strict criteria. However, it seems reasonable to claim that, if an implication generally responds to these rules, it can be considered to be, if not a linguistic 'universal', at least a significant pattern in language (see Comrie 1981: 20).

4.3. Language sampling

The problem of selecting proportionally representative language samples for typological studies has been the topic of several publications in recent years (Bell 1978; Dryer 1989, 1992; Perkins 1989; Rijkhoff *et al.* 1993; Bybee, Perkins, and Pagliuca 1994; Rijkhoff and Bakker 1998). As Rijkhoff *et al.* (1993: 170–2) point out, samples may suffer from various kind of bias, and a biased sample may affect the results of research to a more or less significant degree. The most important kinds of bias involve genetic, typological, geographical, and cultural proximity between languages, as well as disproportion in the bibliographic material concerning individual languages. Of these, genetic relatedness is probably the one with the most far-reaching consequences: if languages are closely related genetically, they are likely to have inherited common linguistic types from their ancestor language, to be spoken in the same area and by people sharing the same culture. It is for this reason that most recent proposals concerning language sampling generally try to develop some methods to avoid genetic bias.[4]

One basic point highlighted by the current debate, however, is that the relevance of the method to be chosen essentially depends on the type of phenomenon to be investigated. If one is interested in finding statistical tendencies and correlations, such as, for example, whether languages tend to prefer SVO rather SOV order, then it is most important for the sample to not be genetically biased. The methods proposed in Dryer (1989) and Perkins (1989) are especially designed for this purpose. This type of sample is usually called a probability sample.

If, on the other hand, one is interested in accounting for all possible realizations of a certain meaning or semantic situation across languages (which is the case of the present research), genetic bias is not so important as not missing any linguistic type. In this case, the languages in the sample should display the greatest possible variety, so that even the rarest types have a chance of being included. According to this perspective, languages are not selected in order to test statistical claims,

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[4] Of course, in order to avoid genetic bias, one could include in the sample only one language per phylum (but see on this point Dryer 1989). This is, for instance, what is done in Bybee (1985). However, recent classifications (Ruhlen 1987) suggest still larger genetic groupings, which means that a sample selected according to this criterion would be too poor. Besides, this method rests heavily on the state of the art in language classification, which is exposed to rapid changes and evolution. All recent proposals then have to deal with the fact that samples have to include genetically related languages, and to find some way to minimize the effects of genetic bias.

but in order to provide possible counterexamples for a certain hypothesis. In order for a theory of grammar to have general significance, it has to prove itself valid for all language types, regardless of their genetic origin or geographical location. Languages may belong to the same family, provided that they are chosen according to the degree of internal diversity of this family, so that all the types it displays with respect to the relevant parameters are likely to be covered. This type of sample is usually called a variety sample.

The present research was based on an initial variety sample of 100 languages, selected according to the method proposed in Rijkhoff *et al.* (1993), using the genetic classification presented in Ruhlen (1987; for further discussion, see Rijkhoff and Bakker 1998). This method is designed to maximize the degree of linguistic diversity in any sample of a predetermined size. The universe from which the sample is taken is represented by all known languages, both extant and extinct; all phyla have to be represented by at least one language, and all language isolates have to be included. The additional contribution of each phylum is calculated on the basis of its degree of internal diversity. This corresponds to an index (the so-called Diversity Value) established according to the number of subgroups included in the phylum and to the genetic relations between them (the various subgroups do not all contribute in the same way: since it is presupposed that genetic splits occurring earlier in time are more significant in terms of variation than later splits, the value of the contribution of a subgroup decreases the further the subgroup is from the common ancestor of all the subgroups in the phylum). This makes it possible to determine the composition of any sample of a predetermined size. Languages, or language groups for which no information is available must simply be eliminated from the sample, and the corresponding vacancies should not be assigned to other phyla, since this would distort the proportions within the sample.

Due to a lack of information about many Indo-Pacific languages and language isolates, the final sample employed here was finally reduced to eighty languages. These are listed in Table 4.1 at the end of this chapter, while a complete description of their genetic affiliation is provided in Appendix 2.

Of course, the method proposed by Rijkhoff *et al.* (1993) does not protect language samples against certain kinds of bias (as indeed probably no method does). One problem may be that it rests on Ruhlen's (1987) classification, which is itself controversial, especially as far as the grouping of the indigenous languages of the Americas (based on Greenberg 1987) and of Indo-Pacific languages is concerned (see Blake 1988; Campbell 1988; Adelaar 1989; Greenberg 1989; Matisoff 1990). But then, as Bell (1978: 138) observes, if the genetic stratification of languages is used as the main criterion for a sampling procedure,[5] it will not be so sensitive

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[5] Genetic stratification of languages is not the only criterion for sampling procedures: these could be also based, for instance, on geographic location or linguistic type. Genetic stratification is, however, the only parameter that can be defined in relatively precise and consistent terms: while genetic relations and distances in time between languages are more or less fixed, the value of distances in space varies according to the areas taken into account (e.g. distances in desert and sparsely populated areas will be

TABLE 4.1. *The sample*

AFRO-ASIATIC (6/6)	Arabic (Gulf), Borana, Egyptian (Ancient), Gimira, Pero, Tamazight
ALTAIC (2/2)	Japanese, Turkish
AMERINDIAN (18/18)	Barasano, Canela-Krahô, Diegueño, Hixkaryana, Jacaltec, Maricopa, Paumarí, Pirahã, Quechua (Huallaga Huánuco), Resigaro, Retuarã, Shipibo-Conibo, Shoshone (Tümpisa Panamint), Squamish, Tarascan, Tzutujil, Ute, Wayãpi
AUSTRALIAN (7/7)	Djapu, Gumbayinggir, Guugu Yimidhirr, Kayardild, Maŋarayi, Warrgamay, Yidiɲ
AUSTRIC (11/14)	Acehnese, Hmong Njua, Ho, Khasi, Maori, Muna, Nung, Paiwan, Sawu, Tagalog
CAUCASIAN (1/1)	Lezgian
CHUKCHI-KAMCHATKAN (0/1)	
ELAMO-DRAVIDIAN(1/1)	Tamil
ESKIMO-ALEUT (1/1)	Greenlandic (West)
INDO-HITTITE (4/4)	Greek (Ancient), Hittite, Italian, Punjabi
INDO-PACIFIC (3/13)	Arapesh, Kobon, Makian (West)
KHOISAN (1/1)	Nama
LANGUAGE ISOLATES (4/9)	Basque, Burushaski, Hurrian, Sumerian
NA-DENE (1/1)	Slave
NIGER-KORDOFANIAN (9/9)	Akan (Fante), Banda Linda, Fula, Kolokumi, Krongo, Ngbaka, Supyire, Vai, Yoruba
NILO-SAHARIAN (5/5)	Kanuri, Karimojong, Lango, Nandi, Songhay
PIDGINS AND CREOLES (2/2)	Berbice Dutch Creole, Tok Pisin
SINO-TIBETAN (3/4)	Chinese (Mandarin), Limbu, Tanghkul Naga
URALIC-YUKAGHIR (1/1)	Finnish

Numbers in brackets indicate the number of languages included for each phylum in the final sample out of those required by the initial 100-language sample.

to the fine details of any particular classification; besides, any world-wide genetic classification will naturally be controversial, and Ruhlen's classification at least draws attention to the difficulties and controversies existing in this field (Blake 1988). It should also be kept in mind that, since the method is not crucially linked to any particular classification, it could easily be adapted to other classifications (as is shown in Rijkhoff and Bakker 1998).

Other problems arise from the actual availability of data. As pointed out in Section 4.2, most of the time typological studies have to rely heavily on reference grammars, and grammars vary to a considerable extent as to their degree

greater than those in densely populated areas); as for linguistic type, it is often the case that information about the relevant parameter is available only for a restricted subset of languages (see on this point Rijkhoff *et al.* 1993: 174–5).

of explicitness and sophistication. As a result, one often has to make do with whatever data are available, however scanty and unreliable they may be. Languages for which no satisfactory information is available are usually excluded and replaced. However, this could be done in the present research only to a limited extent. The study involves quite a large number of mutually independent parameters, and different grammars provide different information about different parameters. This means that finding languages for which information is available for all the parameters taken into account is quite rare, and replacement of poorly described languages is of little help. An additional constraint is that language families have to be represented in the sample according to fixed proportions, which means that not only should one find languages for which complete information is available, but these languages should also be found within the same families of the excluded languages. Hence many languages were included in the sample because they were the only ones in their family for which information was available for a reasonable number of subordination relations.

In fact, the choice of languages in a sample may be strongly influenced by the number and quality of available grammars. Furthermore, while certain areas of grammatical structure such as morphology are generally quite exhaustively investigated, it may be much more difficult to find information about other areas: syntax, and subordination in particular, are among these. This means that one may select languages in a sample according to the availability of grammatical information, and this will probably introduce some kind of bias.

The sample selected for the present research is no exception in this respect. First, it is mainly based on reference grammars (as well as, when possible, consultation with native speakers or specialists on the individual languages: see Appendix 1). As a result, there is a gap between the total number of languages examined and the number of languages for which complete information about the relevant parameters is available. The significance of such a gap varies according to the parameter taken into account, as will become clear from the tables pertaining to the proposed generalizations in the following chapters. Second, the main selection criterion was grammar availability and quality, which means that some potential factors of bias may have been disregarded. For instance, as can be seen from the map in Appendix 3, a number of languages (in some cases belonging to the same phylum or subphylum) are spoken in adjacent areas, even in ones that have been recognized as linguistic areas characterized by intense language contact, such as India. This is probably unavoidable, and all one can do is try to allow it to happen as few times as possible. However, if a sample is primarily meant to capture the degree of linguistic diversity in the world's languages, rather than to capture any statistical tendencies, the most important thing is for it to reflect the degree of internal diversity of each language phylum, and the problem of geographical bias is probably not so acute: in this perspective, the sample used here seems reasonably adequate.

5 Complement Relations

5.1. Introduction

This chapter describes the cross-linguistic coding of the first of the three subordination relation types defined in Section 2.4.2, complement relations. Different types of complement relation will first be distinguished on the basis of their semantic features, or, more specifically, the semantic features of the predicates expressing the main SoA (complement-taking predicates: Section 5.2). Then the cross-linguistic coding of the dependent SoA in these types of complement relations will be examined with respect to the morphosyntactic phenomena described in Chapter 3. It should be borne in mind that by 'dependent SoA' is meant the SoA identified as dependent by the assertiveness tests described in Chapter 2. This holds both for complement relations and adverbial and relative relations, which will be discussed in the next chapters. (As was stated in Section 2.4.2, the material belonging to the clauses coding the dependent SoA is indicated in square brackets in the examples.)

It will be shown that the distribution of the different morphosyntactic phenomena across the various types of complement relation can be described by means of a major implicational hierarchy, the Complement Deranking-Argument Hierarchy (Section 5.4). Finally, a connection will be established between this hierarchy and the semantic features of complement relations (Section 5.5).

Complement relations link two SoAs such that one of them (the main one) entails that another one (the dependent one) is referred to. For instance, in (2.7), which is repeated here,

(5.1)   He thinks [that she will arrive tomorrow]

introduction in discourse of the SoA 'He thinks' requires that the SoA representing the object of thought, namely 'She will arrive tomorrow' also be specified.[1]

This feature of complement relations is captured by most definitions of complement constructions, which usually describe complement clauses as clauses functioning as an argument of a main predicate (cf., e.g. Noonan 1985: 46). Arguments are a necessary specification of predicates, so these definitions are fully compatible with the definition provided here. The aim of this definition is to free

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[1] Actually, SoAs cannot directly be objects of thought: rather, it is propositions referring to SoAs that are objects of thought—more on this in Section 5.3.1 below.

the definition of complement relations from any specific formal feature of the con-
structions coding them. The assumption that a complement clause functions as an
argument of the main predicate usually implies that this clause is embedded in
the main clause as a nominal constituent of it. As was pointed out in Chapter 2,
however, languages need not use embedded clauses for all subordination relations.
In fact, there are languages where the dependent clause in a complement relation
does not function as an argument of the main predicate, and is not embedded. One
such case is provided by Muna, where complement relations may be expressed
by means of juxtaposed clauses. The clause expressing the dependent SoA is not
embedded in the other, and is cross-referenced by a pronominal form on the main
verb (-*e*, 'it'):

Muna (Austric, Austronesian, Malayo-Polinesian)
(5.2)   *a-kona*-**e**   *[ome-gholi   ghunteli]*
        1SG:REAL-think-it   2SG:REAL-buy   egg
        'I thought you had bought eggs.' (Van den Berg 1989: 243)

Also, in many languages, dependent clauses in complement relations are intro-
duced by complementizers such as English *that*. These clauses are usually
embedded. Historically, however, complementizers often derive from non-
embedded structures involving nouns and pronouns. Consider the following
Korean example:

Korean (Altaic, Korean-Japanese)
(5.3)   *a. ku* **kɛs**   *chayk iey   yo*
        that   thing is   a   book
        'That thing is a book'

        b. na   nɨn   kɨ   ka   o-nɨ   **kɛs**   *lɨ   lal-nn-ta*
        I   he   come-PRES   thing   ACC   know-PRES-M
        'I know (the fact) that he is coming'

        c. [na   nɨn   k   ka-l   **kɛs]**   *lɨl   myɛnglyɛngha-ess-ta*
        I   him   go-FUT   thing   ACC   order-PAST-M
        'I ordered him to go' (Ransom 1988: 355–66)

In (5.3*a*), the noun *kɛs* denotes a concrete item. In (5.3*b*), it may be interpreted
as referring to an abstract item whose nature is specified by one of the linked
clauses ('I know the fact, he is coming'), or as a complementizer introducing the
dependent clause. In (5.3*c*), this is the only possible interpretation. Heine, Claudi,
and Hünnemeyer (1991: 205) represent this situation as follows:

(5.4)   *a.*   verb + object noun (main clause) − appositive clause

        b.   verb − complementizer + clause (subordinate clause)

The schema in (5.4*a*), that refers to (5.3*b*), does not involve clausal embedding;
The schema in (5.4*b*), that refers to (5.3*c*), does.

In a number of languages, complementizers derive from relative pronouns occurring in correlative constructions of the type in (5.5), (5.6), and (5.7):

Biblical Hebrew (Afro-Asiatic, Semitic)

(5.5)   *ʔl*   *tirʔu-***ni**   [**she**-*ʔni*   *shaxoret]*
        NEG   see:IMPF:3SG:M-me   that-I   dark:SG:F
        'Don't see me that I am dark-skinned' (Givón 1991: 289)

Classical Greek (Indo-Hittite, Indo-European)

(5.6)   *puntháno-mai*   *gàr*   **taûta**   *apologḗ-se-sthai*
        know:PRES:IND-1SG   in.fact   this   plead.in.defence-FUT-INF

        autò-n,   *[***hóti**   *ekeín-ōi*   *fíl-os*
        3SG:M-ACC   that   that-DAT:SG:M   friend-NOM:SG:M

        ễ̂-n]
        be:IMPF-3SG

        'In fact, I know this, that he will plead in defence that he was that man's friend'
        (Lysias, Against Eratosthenes, 62.5)

Old English

(5.7)   **þæt**   *gefremede Duilius hiora consul,*   *[***þæt**   *þæt*   *angin*
        DEM   arranged   Duilius   their   consul,   that   DEM   beginning

        wearð   *tidlice*   *þurhtogen]*
        was   in-time   achieved

        'Their consul Duilius arranged (it) that it was started on time'
        (Orosius 4.6.172.2, quoted in Hopper and Traugott 1993: 186)

In these constructions (that are very frequent, for instance, in the early stages of Indo-European languages), the main clause contains a pronominal element, and the dependent clause is adjoined as an afterthought conveying further specification about this pronominal element. Adjunction is obtained by means of a relative pronominal element (often called a resumptive pronoun) recalling the pronominal element in the main clause. It is the main clause pronoun, not the dependent clause, that functions as an argument of the main predicate. Only at a later stage is the dependent clause reanalysed as the actual argument of the main predicate. The main clause need not contain a pronominal element any more, and the relative element linking the main and dependent clauses becomes a complementizer (Hebrew *she*, Classical Greek *hóti*, English *that*). This can be illustrated by (late) Biblical Hebrew:

Biblical Hebrew (Afro-Asiatic, Semitic)

(5.8)   *yada'ti*   **she**-*gam*   *[huʔr'u*   *ruax]*
        know:PERF:1SG   that-also   it   folly.of   spirit
        'I knew that this too was folly' (Givón 1979: 219)

What these examples show is in that certain languages, at least at a certain stage of their history, complement clauses do not function as (embedded) arguments of the main predicate. Further evidence of this is provided by a quite different case. As was mentioned in Section 2.4.3, in a number of languages direct report is the only means available to convey reported speech. In some languages, direct report may additionally be used to convey reported thoughts and commands. This is the case in Kobon, where the quotative particle *a* is also used for reported thought:

Kobon (Indo-Pacific, Trans-New Guinea)

(5.9) a. *Rol*　　　*Dusin laŋ*　　*nipe ip*　　　　*hag-öp*
　　　　yesterday Dusin above 3SG   ACC.1SG   say-PERF.3SG
　　　　/hag-öm　　*[yad   ram*　　*ar-ab-in*　　　**a**
　　　　say-SS.3SG   1SG   house go-PRES-1SG   QUOTE
　　　　g-öp]
　　　　do-PERF.3SG
　　　　'Yesterday at Dusin he said to me, "I am going home"./Yesterday at Dusin he told me that he was going home' (Davies 1981: 1)

　　　b. *Yad   gasɨ*　　　　　　*[nöŋ-bin möŋ*　　　　　　**a]**
　　　　1SG   think-PERF.1SG rain   shoot-IMPFV.3SG   QUOTE
　　　　'I think it is going to rain' (Davies 1981: 3)

Munro (1982) brings about a number of morphosyntactic arguments to show that direct report is not an argument of the utterance verb introducing it. This means that in all the languages where direct report is the only device available in utterance complement constructions (and possibly, as in Kobon, other complement constructions as well), the dependent clause in these constructions is not an argument of the main predicate.

The examples in (5.3)–(5.9) lead to the conclusion that the standard definition of complement clauses (clauses functioning as arguments of the main predicate) is untenable in a cross-linguistic perspective.[2] The functional definition proposed here accounts for all the cases where the dependent clause is actually an argument of the main predicate, plus the cases where it has a different syntactic status. More generally, the proposed definition does not oblige one to assume that dependent clauses in complement relations function as syntactic arguments of the main predicate, which need not be the case for all complement relations in all languages.[3]

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[2] If one wants to retain this definition, one might say that in the cases exemplified in (5.3)–(5.9) the relevant languages simply do not use complement clauses. This account has actually been put forward for non-embedded relative clauses (Comrie 1981: ch. 7). But then one still has to account for how these languages code the relevant subordination relation (see Section 2.4.4).

[3] It might be objected that in cases like (5.3)–(5.8), since the main clause contains a nominal or pronominal O argument, it is fully specified from the semantic point of view, and thus there is no need for reference to some other SoA (unlike what happens, for instance, in (2.7), where the main verb 'think' requires that the SoA corresponding to the object of thought be specified). In this case the proposed definition (in a complement relation, the main SoA entails that another SoA is referred to) would not apply. But the nominal or pronominal argument introduced in (5.3)–(5.8) is cataphoric, and so reference to another SoA is pragmatically necessary.

5.2. Complement-taking predicates

5.2.1. Overview

As Givón (1990: 516–17) observes, the semantics of complement relations may generally be expressed in terms of the semantics of the predicate coding the main SoA (see also Ransom 1986: ch. 5). This appears quite obvious, considering that the dependent SoA conveys a necessary specification required by the semantics of the main one. The semantics of the main SoA establishes, therefore, what kind of specification is required. Since predicates are the prototypical device used to refer to SoAs (Hopper and Thompson 1984; Croft 1990: 139–43, 1991),   the semantics of the predicate has a major role in establishing the overall semantics of the main SoA. Henceforth, complement relations will be identified on the basis of the predicate coding the main SoA, or complement-taking predicate. The classification of complement-taking predicates will be taken from Noonan (1985). The following predicate classes will be examined:

   (i) modals ('must', 'can', 'may', 'be able', etc.);
  (ii) phasals ('start', 'begin', 'stop', 'continue', etc.);
 (iii) manipulatives ('order', 'make', 'persuade', etc.);
  (iv) desideratives ('want', etc.);
   (v) perception ('see', 'hear', etc.);
  (vi) knowledge ('know', 'understand', 'realize', etc.);
 (vii) propositional attitude ('think', 'believe', etc.);
(viii) utterance ('say', 'tell', etc.).

These classes involve different relation types between main and dependent SoAs, and these will be examined in detail in Sections 5.2.2–5.2.9.[4] However, as has been pointed out in the literature (Givón 1980, 1990: ch. 13; Noonan 1985; Palmer 1986: ch. 4; Ransom 1986; Dik 1989; 1997a, 1997b; Hengeveld 1989, 1990; Siewierska 1991), the semantics of the various relation types can also be described in terms of a number of general parameters such as the level of clause structure at which the complement relation is established, predetermination of the semantic features

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[4] It should be pointed out that the proposed functional definition of complement relations—the semantics of one SoA entails that another SoA is referred to—pertains in some cases to just one possible sense of some complement-taking predicates. For instance, utterance predicates such as 'say' may be used to describe somebody's uttering some sounds, regardless of whether these sounds are used to refer to any entities or SoAs. This is the case in sentences like 'He said a few words', as well as direct speech report (see on this point Haiman 1985: 223–8). In this case, the SoA described by the complement-taking predicate is a complete SoA in itself, and does not entail any reference to other SoAs. But of course utterance predicates like 'say' can also be used to describe the fact that somebody claims that something is the case—this is the situation underlying indirect report. In this case, the SoA described by the utterance predicate (somebody's claiming that something is the case) entails that another SoA (the one corresponding to the content of the claim) is referred to. Similarly, desiderative predicates like 'want' and perception predicates like 'see' may take as their object individual entities, as in 'I want an apple', or 'I saw a beautiful tree', and in this case they do not entail any reference to other SoAs. However, the objects of desire or perception may also be SoAs as a whole, and in this case, of course, these SoAs must be referred to.

of the linked SoAs, and semantic integration between them. This is the topic of Section 5.3.

5.2.2. Modal predicates

In Section 3.2.3.1 a distinction was made between epistemic and deontic modality. Many, though not all, complement-taking predicates convey some modality indication. Modal predicates such as 'must' and 'may' pertain to the domain of deontic modality, in that they refer to some circumstances allowing or permitting the occurrence of some SoA. Propositional attitude predicates such as 'think' pertain to the domain of epistemic modality, in that they refer to somebody's commitment towards the truth of some proposition being expressed.

Noonan (1985: 126–9) observes that, in principle, any complement-taking predicate conveying a modality indication should rank as a modal predicate. However, he leaves out predicates expressing epistemic modality, and restricts the label 'modal predicates' to a class including expressions of ability such as 'be able', or 'know how', as exemplified by

(5.10)   He can be a very accurate reader

and expressions of obligation and permission, such as 'must', 'can', or 'may', as exemplified by

(5.11)   I must [go now]

(5.12)   You can [go now]

Expressions of obligation or permission and expressions of ability display quite different semantic features. The relationship holding between the linked SoAs can be construed in different ways. Predicates such as 'must', 'can' (expressing permission, as in (5.12) above), or 'may' describe a condition of obligation or permission. This condition corresponds to the main SoA, and holds in a twofold sense. On the one hand, the obligation or permission concerns the occurrence of an SoA as a whole (the dependent SoA), that is, it is the occurrence of this SoA that is necessary or permitted. On the other hand, the obligation or permission concerns some entity that must or may bring about the relevant SoA (the speaker in (5.11), the addressee in (5.12)). This difference is reflected in the two constructions found for predicates such as 'must', 'can', or 'may' cross-linguistically:

(5.13)   *a.* It is necessary [that I go]

         b. I must [go]

In (5.13*a*), the modal verb is impersonal, and the situation of obligation is construed as holding for the dependent SoA as a whole. In (5.13*b*), on the other hand, the situation of obligation is construed as holding for some individual entity that must bring about the dependent SoA (going). The different construals exemplified in

(5.13) are captured by Goossens's (1985) observation that modals can be one- or two-place predicates.

Predicates like 'know how', 'be able', or 'can' (expressing ability, not permission) involve a quite different situation. The SoAs involved in the complement relation are: (i) the fact that some entity has the ability to bring about some SoA; and (ii) the SoA this entity can bring about. Unlike what happens with expressions of permission and obligation, the condition of ability only concerns individual entities, not SoAs as a whole. In (5.10), the complement relation holds between somebody's ability to be an accurate reader and his possibly being an accurate reader.

The difference between expression of obligation and permission on the one hand and expressions of ability on the other is reflected syntactically in some languages. For instance, Acehnese has two distinct constructions for the two, exemplified in (5.14*a*) and (5.14*b*), respectively. When the modal verb conveys a meaning of ability, as in (5.14*a*), the entity bringing about the dependent SoA is cross-referenced by personal affixes on both the modal verb and the dependent verb. On the other hand, when the modal verb conveys a meaning of permission, as in (5.14*b*), the modal verb cannot have personal affixes, which can be taken as evidence that the condition of permission is construed as holding for the dependent SoA as a whole.

Acehnese (Austric, Austronesian, Malayo-Polinesian)
(5.14)   *a. h'an-jeuet-**jih**   [**jii**-jak]*
            NEG-can-3   3-go
            'He cannot walk yet' (Durie 1985: 251)

         *b. h'an   jeuet(***-geuh**)   [**geu**-jak   u-keude]*
            NEG   can(*-3)   3-go   to-town
            'He cannot go to town' (Durie 1985: 250)

Thus, expressions of ability only allow the condition of ability to be referred to individual entities. Expression of obligation and permission, on the other hand, imply that the condition of obligation or permission holds both for individual entities and for SoAs as a whole. In both cases, however, the entity for which the condition holds is the same entity that is supposed to bring about the SoA to which the condition of ability, permission, or obligation refers. For instance, the individual who can be a very accurate reader in (5.10) is of course the same individual who will possibly be an accurate reader, and the individual who must or can go in (5.11) and (5.12) is the same as the one who will possibly go. Somewhat less obviously, however, this also holds in sentences such as (5.13*a*) or (5.14*b*). In these cases, the condition of obligation or permission holds for some SoA as a whole, but this SoA has to be brought about by some entity, and the condition of permission or obligation holds for this entity too.

Sometimes modal notions are not expressed by means of modal predicates, but by means of uninflected particles or verbal affixes. In the sample, this is the case in Gulf Arabic, West Greenlandic, Japanese, Kayardild, Limbu, Sumerian, Turkish,

Slave, and Tangkhul Naga. Modal particles and affixes are exemplified in Gulf Arabic in (5.15) and in Japanese in (5.16), respectively:

Gulf Arabic (Afro-Asiatic, Semitic)
(5.15)   **laazim** *akammil   il-baHth   gabilla   asaafir*
      must   1SG-finish   ART-research   before   1SG-travel
      'I must finish the research before I travel' (Holes 1990: 201)

Japanese (Altaic, Korean-Japanese)
(5.16)   *John wa   nihongo   o/ga hanas-*(**r**)**e**-*ru*
      John   TOP   Japanese   OBJ   speak-can
      'John can speak Japanese' (Kuno 1973: 138)

These cases cannot be regarded as instances of clause linkage, because the modal condition and the SoA referred to are expressed by a single clause. Therefore, they are excluded from the analysis. However, they are quite relevant to the explanatory parameters that will be invoked for the cross-linguistic coding of dependent SoAs, and will therefore be taken up again in Chapter 8.

5.2.3. Phasal predicates

Phasal predicates (Noonan 1985: 129) refer to the phase of development (inception, continuation, and termination) of an SoA through time, and include expressions such as 'begin', 'continue', and 'stop', as exemplified by

(5.17)   At 2 p.m. the cook began [to work]

The SoAs involved in the complement relation are: (i) some entity's being in a certain phase with respect to the temporal development of some SoA (this is the main SoA); and (ii) the SoA to which this phase refers (this is the dependent SoA). For instance, in (5.17), the cook's beginning to do something is the main SoA, and the cook's working is the dependent SoA. The entity finding itself in a certain phase with respect to the temporal development of some SoA is the same one bringing about this SoA.

    Insofar as they specify the phase of development of an SoA through time, phasal predicates modify the internal constituency of this SoA, and thus can be regarded as aspectual operators. However, as Siewierska (1991: 118) observes, phasal predicates work quite differently from other aspectual operators, such as, for instance, those conveying the perfective/imperfective distinction. The reference of the latter is purely internal to the affected SoA. Phasal predicates, on the other hand, relate the SoA they modify, taken as a whole, to another one, namely the fact that a certain entity finds itself in a certain phase with respect to the realization of the SoA itself. The internal temporal constituency of the latter is not affected by the aspectual operator. The difference between phasal predicates and aspectual operators such as perfective/imperfective can be illustrated by

a comparison between (5.17) and

(5.18)   The cook is working now

Here it is specified that the action of working is on-going, but there is no reference to the phase in which the agent finds him-/herself with respect to the development of this action (e.g. s/he may have just started working, or be just about to finish).

   As in the case of modals, some languages in the sample were found to express phasal notions by verbal affixes rather than phasal predicates. These cases were not taken into account, but will be discussed in more detail in Chapter 8. An example from West Greenlandic follows:

West Greenlandic (Eskimo-Aleut)
(5.19)   *akiuti-***usaar**-*puq*
         resist-keep.on-3SG:IND
         'He continued resisting' (Fortescue 1984: 282)

5.2.4. *Desiderative predicates*

Desiderative predicates (Noonan 1985: 121–5) convey a wish on the part of an experiencer that the dependent SoA be realized. The dependent SoA may be brought about by the experiencer or by other entities, as shown by the contrast between (5.20*a*) and (5.20*b*):

(5.20)   *a.* She wanted him [to rewrite that chapter]

         b. She wanted [to rewrite that chapter]

It should be stressed that there actually are different types of desiderative predicates. Predicates like 'wish' and 'hope' also fall within the class of desiderat-ives, and they display semantic features quite different from those of 'want'. With predicates like 'wish', as exemplified in

(5.21)   Sometimes I wish [I had accepted that position]

the dependent SoA is presented as counterfactual; that is, it is assumed that it does not take place at any time. On the other hand, predicates like 'hope' (as exemplified in 5.22) have no implication about the realization of the dependent SoA. Just like 'want', they express a wish on the part of an experiencer that the dependent SoA be realized. Predicates like 'want', however, exclude that the dependent SoA may have taken place in the past, as is witnessed by the unacceptability of (5.22*a*). Predicates like 'hope', on the other hand, have no implication about the realization of the dependent SoA. The dependent SoA may take place at any moment (as is shown by the contrast between (5.22*b*), (5.22*c*), and (5.22*d*)), though the speaker does not know whether or not it takes or has taken place.

(5.22)   *a.* * He wants us [to have gone now]

         b. I hope [he has rewritten that paper by now]

    c. I hope [it's not raining outside]

    d. I hope [to finish this chapter as soon as possible]

In what follows, only predicates of the 'want' type will be taken into account, for cross-linguistic data on 'wish' and 'hope' is too scarce in the sample to allow for any principled generalization.

5.2.5. Manipulative predicates

Noonan (1985: 125–7) labels as 'manipulative predicates' two classes of expressions. The first one includes expressions of causation such as 'make', 'force', 'press', etc., as exemplified by

(5.23)   She made him [buy a desktop computer]

(5.24)   His ignoring other people's needs makes me [feel really angry]

(5.25)   This pollen makes me [sneeze]

The second class includes expressions of request such as 'order' or 'ask', as exemplified by

(5.26)   They ordered him [to go]

Both classes describe an act of manipulation involving an SoA or an entity functioning as a cause. For instance, in (5.23), 'she' is the causer, 'him' is the affectee, and 'buy a desktop computer' is the SoA resulting from the manipulation.

    The affectee must be a participant of the resulting SoA.[5] Predicates like 'make' imply that the manipulation is successful, that is the dependent SoA actually takes place as a result of the act of manipulation corresponding to the main SoA. Predicates like 'order', on the other hand, have no implication that the manipulation be successful, that is the dependent SoA need not take place.

    Due to the semantic differences between predicates of causation and predicates of request, these two predicate classes have been considered separately in the cross-linguistic analysis (as can be seen from the tables in Sections 5.4–5.7). Yet, data for 'make' predicates is actually quite scarce in the sample, and in most cases these predicates pattern like 'order' predicates as far as the cross-linguistic coding of the dependent SoA is concerned.

    As in the case of modals and phasals, a number of cases are found where the causation notion conveyed by 'make' predicates is expressed by means of verbal

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[5] This analysis assumes that the affectee is a participant of both the act of manipulation and the SoA resulting from it. This view, though not free from problems, is the standard one for predicates such as 'make', 'force', or 'persuade', as well as for predicates of request such as 'order'. On the other hand, it is generally assumed that predicates such as 'cause' refer to the realization of SoAs as a whole, not to an act of manipulation on individual participants of these SoAs. For a discussion of the relevant issues, see Givón (1975) and Langacker (1995: 6). Predicates like 'cause' were not taken into account in the cross-linguistic analysis.

affixes. These are described as synthetic causatives, as opposed to 'make' verbs proper, also called analytical causatives (Shibatani 1976). Here is an example from Japanese:

Japanese (Altaic, Korean-Japanese)
(5.27) *Boku   wa   Mary   ni   o   wakar-***(s)ase**-*ru*
      I   TOP Mary to   this   understand-cause
      'I will make Mary understand this' (Kuno 1973: 139)

Synthetic causatives are excluded from the cross-linguistic analysis. Their theoretical significance, as well as that of the analogous patterns found for modals and phasals, will be discussed in Chapter 9.

5.2.6. Perception predicates

Perception predicates refer to the way an experiencer perceives the occurrence of some SoA (Noonan 1985: 129–31). The SoAs involved in the complement relation are the act of perception (the main SoA) and the perceived SoA (the dependent SoA). This class involves predicates such as 'feel', 'see', or 'hear', as exemplified by

(5.28)   I saw him [walking in the street]

(5.29)   I heard him [playing the piano]

The object of the act of perception is the dependent SoA as a whole. However, perceiving the occurrence of some SoA implies perceiving the individual entities bringing it about. This is probably the reason why many languages use adjectival morphology on verbs coding dependent SoAs in perception relations, while the entity bringing about the dependent SoA is treated as an argument of the main predicate (i.e. raised, see Section 3.3.1.2). The act of perception is construed as referring to an individual entity bringing about some SoA. The fact that this entity brings about the dependent SoA is construed as a property of the entity, and this is reflected at the morphosyntactic level by the fact that the verb is treated as an adjectival modifier. One such case is represented by the Ancient Greek construction exemplified in (3.5). Another case is found in Supyire, where the dependent verb in perception relations is in the so-called adjectival form, and agrees with the dependent subject in definiteness:

Supyire (Niger-Kordofanian, Niger-Congo)
(5.30) *Mìi   à   u   [ŋ-karà-***ŋi***]   *ɲye   [mobílíŋi i]*
      I   PERF him(G.1SG) ADJ-go-DEF(G.1SG) see car.DEF in
      'I saw him going in the car' (Carlson 1994: 423)

5.2.7. Knowledge predicates

Knowledge predicates (Noonan 1985: 118–19) describe a state of knowledge or a process of acquisition of knowledge about a propositional content on the part of an experiencer. This process corresponds to the main SoA, while the SoA referred to by the propositional content is the dependent SoA. This class involves predicates such as 'know' and 'realize', as exemplified by

(5.31)   I know [he rewrote that chapter some months ago]

(5.32)   I realized [that he was actually rewriting that chapter]

Perception predicates such as 'see' or 'hear' may occasionally function as knowledge predicates. This is exemplified by

(5.33)   I hear [that you are looking for a job]

Here, unlike what happens in (5.29), the proposition referring to the dependent SoA cannot possibly be an object of sensory perception, but rather corresponds to reported information.

   Some languages use different constructions depending on whether perception predicates are used in the perceptive or in the knowledge sense. In Berbice Dutch Creole the verb *kiki*, 'see' requires a complementizer when used in the knowledge sense, but no complementizer when used in the perceptive sense (Kouwenberg 1994: 341). In Ancient Greek the dependent verb is in participial form in the case of true perception predicates, and in indicative form in the case of perception predicates used in the knowledge sense.

Ancient Greek (Indo-Hittite, Indo-European)
(5.34)   *a. [Krití-an]   mèn   aisthano-men-os*
            Kritias-ACC   PTCL   perceive.PRES-PTCPL-M:SG:NOM

            [erôn-ta   Eutudém-ou]
            be.in.love.with.PRES-PTCPL:M:SG:ACC   Eutidemos-GEN
            'Perceiving that Kritias was in love with Eutidemos' (Xenophon,
            Memorabilia, 1.2.29)

         b. tín-os   gàr   áll-ou   zôi-ou
            which-GEN   in.fact   other-GEN:NT:SG   creature-GEN:SG

            psuch-ề   (...)   the-ôn   héisthe-tai
            soul-NOM:SG   god-GEN:PL   perceive:PERF-IND:3SG

            [hóti   ei-sí]?
            COMP   be:IND:PRES-3SG
            'In fact, what other creature's soul has realized that the gods exist?'
            (Xenophon, Memorabilia, 1.4.13)

5.2.8. *Propositional attitude predicates*

Propositional attitude predicates (Noonan 1985: 113–15) convey an evaluation about the mood value of some SoA. Some propositional attitude predicates ('may' or 'be certain, possible, probable', as exemplified by (5.35)) express the evaluation directly. Other propositional attitude predicates ('think', 'doubt', 'believe', as exemplified by (5.36)) convey the evaluation indirectly, by expressing the attitude of an experiencer towards the truth of some propositional content. Since propositional content refers to SoAs (more on this in Section 5.3.1 below), an evaluation about the truth of some propositional content is an evaluation about the mood value of the corresponding SoA.

(5.35)   It is likely [that she will submit a paper to that conference]

(5.36)   She thinks [all this syntactic machinery is *ad hoc*]

The attitude or evaluation expressed by propositional attitude predicates is always subjective; that is, it originates from some source, either the speaker (when the predicate is first person or when the source is not specified), as in (5.35), or the experiencer of the propositional attitude predicate, as in (5.36) (Palmer (1986: 134) speaks in this case of original, as opposed to actual speaker). As a result, the propositional content of the propositional attitude predicate is never presented either as positively true or as positively false, even when the speaker is strongly committed to the likelihood of it being true (as is the case with predicates such as 'be certain'). Accordingly, the dependent SoA is never presented as positively realized, or positively unrealized. All that the propositional attitude predicate expresses is that somebody is more or less strongly committed to the likelihood of some propositional content being true and some SoA to being realized.

As no objective indication is given about whether or not the propositional content is actually true, or the SoA is actually realized, the dependent SoA is always presented as non-factual, at least with respect to the moment at which the main SoA is located. However, different propositional attitude predicates express a different likelihood for the dependent SoA to be factual, and different morphosyntactic devices may be used in the dependent clause accordingly. For instance, Italian uses the indicative when the dependent SoA is presented as quite likely to be factual, and the subjunctive when this is not the case. This is witnessed by the contrast between (5.37*a*) and (5.37*b*):

Italian (Indo-Hittite, Indo-European)
(5.37)   *a. Sono   sicur-o   [che   quest-o*
              be:PRES:IND:1SG   sure-M:SG   that   this-M:SG
              è   il   metod-o   miglior-e]
              be:PRES:IND:3SG   ART   method-SG   best-SG
              'I am sure this is the best method'

    b. *Non*   *sono*   *sicur-o*   *[che   quest-o*
       NEG   be:PRES:IND:1SG   sure-M:SG   that   this-M:SG
       sia   *il*   *metod-o*   *miglior-e]*
       be:PRES:SUBJN:3SG   ART   method-SG   best-SG
       'I am not sure this is the best method'

5.2.9. *Utterance predicates*

Utterance predicates (Noonan 1985: 110–13) describe a process of transfer of information initiated by an agent and directed towards an addressee who may be implicit or overtly expressed. As is well-known, these predicates may be used both in indirect report, to convey the propositional content of somebody's utterance, and in direct report, to quote the exact words uttered by somebody. The difference between the two is reflected at the morphosyntactic level by a number of phenomena, among which are the deictic shift often characterizing indirect report and the possibility of inserting direct report devices indicating the original illocutionary force of the utterance.

    Only indirect report will concern us here (apart from a number of cases to be discussed below). This point is far from trivial. For instance, indirect and direct report react in the same way to tests such as tag-questions:

(5.38)   *a.* He said [that she will be late], didn't he?

         b. * He said that she will be late, won't she?

(5.39)   *a.* He said: 'She will be late', didn't he?

         b. * He said: 'She will be late', won't she?

In both cases, the only thing that can be questioned is the act of saying, not its content. This might be taken as evidence that, apart from a number of formal differences, there is no reason to make a distinction between direct and indirect report as far as subordination is concerned. As was mentioned in Section 2.4.3, there is, however, a critical way in which indirect and direct report differ. Indirect report describes the content of somebody's utterance, and hence makes reference to both the SoA described by that utterance (the dependent SoA) and the fact that somebody says something (the main SoA). Direct report, on the other hand, is used to mention the sounds uttered by somebody, regardless of their semantic content. Thus, direct report involves just one SoA, and is therefore irrelevant to the present study.

    However, some languages apparently do not have indirect report, but only direct report. In this case, as was explained in Section 2.4.3, one should assume that direct report can also convey the cognitive implications of indirect report, and is used to report the content as well as the original sounds of somebody's utterance. This leads to an apparent contradiction if direct report only consists of mentioned sounds. A possible explanation is as follows. When mentioning somebody's utterance, one usually assumes that the original function of this utterance was to describe

some SoA. In this sense, direct report presupposes indirect report, and may then be used to convey the same cognitive implications. Of course, the reverse does not hold: reporting the content of somebody's utterance has no implications about the original words uttered.

Utterance predicates are used to ascribe to somebody (in Palmer's (1986: 134) terms, the original speaker) a statement about some SoA. However, the entity to which the statement is attributed need not be committed to its truth: a statement can be introduced in the discourse context for reasons other than its supposed truthfulness. As a result, just as with propositional attitude predicates, the propositional content of the utterance predicate is never presented either as positively true, or positively false, and the dependent SoA is therefore non-factual. The actual speaker may, however, attribute a specific truth value to the propositional content of the utterance predicate in the discourse context. In fact, languages often use special means to present the propositional content of the utterance predicate as false, or at least not positively true. For instance, Ancient Greek uses the complementizer *hōs*, or the accusative + infinitive construction for propositional contents presented as false in the discourse context (5.40*a*,*b*). When the dependent SoA is presented as true (5.40*c*), the complementizer *hóti* is used (Cristofaro 1995, 1996).

Ancient Greek (Indo-Hittite, Indo-European)

(5.40) *a.* *[hoútō*   *mèn*   **Ioũn**   *es*   *Aígupton*   **apiké-sthai***]*
in.this.way   PTCL   Io.ACC   to   Egypt   arrive.AOR-INF

lég-ou-si   *Pérs-ai*
say-IND.PRES-3PL   Persian-NOM.PL

'This is the way in which the Persians say that Io came to Egypt' (Herodotus, 1.2)

b. *kàn*   *hèn*   *gàr*   *dè̀*   *toũt-o*
and:PTCL   one:NT:ACC   in:fact   PTCL   this-ACC:M:SG

aletheú-s-ō,   *lég-ōn*
tell.the.truth.IND-FUT-1SG,   say-PRES:PTCP:NOM:M:SG

*[***hóti***   **pseúdo-mai***]*
COMP   lie:IND:PRES-1SG

'And I will tell the truth with respect to one thing only, the fact that I lie' (Lucian, A true story, 1.4)

5.3. Semantic features of complement relations

5.3.1. *Level of clause structure*

According to a model proposed within Functional Grammar (Dik 1989, 1997*a*, 1997*b*; Hengeveld 1989, 1990; Siewierska 1991) and partially deriving from Foley and Van Valin (1984) and Lyons (1977), each clause can be described as a structure consisting of four hierarchically ordered layers, or levels, such that each higher

layer fully encompasses the lower ones. Each layer designates a different entity type and displays different functional properties. The most basic layer includes predicates and terms. Predicates designate properties or relations, while terms are used to refer to entities. Terms can be placed in space and time, and evaluated in terms of their reality. The second layer is that of the predication. A predication is the result of the application of a predicate to the appropriate terms, and designates SoAs (Dik 1989: 46). An SoA is the conception of something that can be the case in some world, and can be evaluated in terms of its existence. It can be said to occur, take place, or obtain; it can be located in space and time; it can be heard, seen or otherwise perceived (see Section 2.3). The third layer is that of the proposition, and pertains to what is said or thought about SoAs. A proposition designates a propositional content, which is something that can be evaluated in terms of its truth. A propositional content can be said to be known or thought about; it can be a reason for surprise or doubt; it can be mentioned, denied, rejected, and remembered. The fourth and uppermost layer is that of the clause (or utterance) considered from a global point of view. It encompasses the speech situation as a whole, and specifically refers to the speech act, which can be evaluated in terms of its felicity.

Thus, for instance, a sentence like

(5.41)   In case you haven't heard, Marilyn allegedly gave the letter to Rob surreptitiously during the staff meeting (Siewierska 1991: 40)

consists of a predication built on the predicate 'give' and the terms it requires, as well as the manner satellite 'surreptitiously'. This predication is located in time by the past tense operator and in space by the satellite 'during the staff meeting'. It is built into a proposition by means of the quotative satellite 'allegedly', which indicates that the speaker has come to the propositional content indirectly, and thus cannot be held responsible for its veracity. Finally, the illocutionary satellite 'in case you haven't heard' mitigates the basic illocutionary force of the utterance by relating the felicity of the speech act to the state of the hearer's knowledge (Siewierska 1991: 40–2).

Different complement relations pertain to different layers of clause structure. Manipulative and perception relations pertain to the predication level, in that they refer to the (possible) occurrence of SoAs (the SoA resulting from the manipulation in the case of manipulative relations, the perceived SoA in the case of perception relations). On the other hand, knowledge, propositional attitude, and utterance relations pertain to the proposition level. SoAs as such cannot be objects of knowledge, thoughts, or reported speech; rather, propositional contents referring to SoAs are. Unlike what happens with manipulative and perception relations, then, in this case the complement relation does not involve two distinct SoAs directly, but rather an SoA (the fact that somebody knows, thinks, or says something) and

a propositional content referring to another SoA (what is known, thought, or said).[6]

Things are more complicated in the case of modal, phasal, and desiderative predicates. In the framework of Functional Grammar (for instance, Dik 1997*a*: 241–2), these are considered as operators modifying the internal structure of the SoA they refer to, and thus acting at the first (predicate and term) level. Modals and desideratives define the mood value of the SoA they refer to, while phasals define the aspect value of this SoA. This view is however problematic. In discussing phasals (Section 5.2.3, examples (5.17) and (5.18)), it was observed that phasals do act as aspectual operators, but differ from other aspectual operators in that their reference is not purely internal to the relevant SoA. The same observation applies to modals and desideratives. Modal operators such as verbal moods (e.g. subjunctives or conditionals as opposed to indicatives) define the mood value of the relevant SoA (e.g. irrealis) independently of any other SoAs. Modal and desiderative predicates, on the other hand, relate the occurrence of the SoA as a whole to a situation whereby this occurrence is necessary, possible, or desired. Hence their reference is not purely internal to the relevant SoA: they establish a connection between two distinct SoAs—the SoA to which the modal condition applies, and the circumstances defining the modal condition itself.

Thus, modal, phasal, and desiderative predicates act as operators modifying the internal constituency of individual SoAs, but they do so by relating these SoAs, taken as a whole, to other SoAs. Insofar as they involve a relation between two distinct SoAs, they pertain to the predication, not the predicate level.

The collocation of the various predicate classes at different levels of clause structure is illustrated in Table 5.1.

5.3.2. Predetermination

Complement relations entail that some of the semantic features of the linked SoAs are predetermined by the nature of the relation itself. Predetermination may concern the time reference, aspect, or mood value of the linked SoAs, or the participants of these SoAs. For instance, perception relations entail that main and dependent SoAs take place at the same time, and that the dependent SoA is on-going. In this case, the time reference of each of the linked SoAs is predetermined with respect to the time point at which the other SoA is located (the two SoAs have to be simultaneous). Moreover, the aspect and mood value of the dependent SoA are also predetermined, in that it has to be factual and on-going

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[6] Utterance predicates can be used to convey both direct and indirect report. Therefore, they can function at the speech act and the proposition level, according to whether they are used to mention an utterance or to report its propositional content (Hengeveld 1989; Siewierska 1991: 142). As was indicated in Sections 2.4.3 and 5.2.9, direct report will not be taken into account in the research, with the exception of languages having no indirect report. In the latter case, it is reasonable to assume that utterance predicates act at both the proposition and the utterance level simultaneously.

TABLE 5.1. *Complement-taking predicates and level of clause structure*

Predicate class	Level of clause structure
Modals	Predication
Phasals	Predication
Manipulatives	Predication
Desideratives	Predication
Perception	Predication
Knowledge	Proposition
Propositional attitude	Proposition
Utterance	Proposition

(and thus imperfective) at the time point at which the main SoA is located. On the other hand, knowledge predicates have no entailment about the time reference and aspect value of the dependent SoA. However, the propositional content referring to the dependent SoA is assumed to be true, and hence the corresponding SoA is assumed to be factual. This means that knowledge relations predetermine the mood value (factual) of the dependent SoA.

In the cases just discussed, individual features of the linked SoAs, such as, for example, aspect or mood value, are assigned a fixed value (on-going, factual) by virtue of the specific relation linking the SoAs. There are, however, other cases where the complement relation entails that these features should not be assigned any specific value, because their assuming a specific value is not relevant to the complement relation itself. For instance, modal and desiderative complement relations involve a situation whereby the occurrence of some SoA is necessary, possible, or desired. However, whether and when this SoA actually takes place is not relevant to the complement relation. Consider the following examples:

(5.42) *a.* He wants us [to go now]

      b. He wants me [to work on this]

      c. I am working on this because he wants me to

Example (5.42*a*) implies that, if the dependent SoA takes place, it takes place after the main one. This implication, however, is conveyed by the meaning of the verb 'go', not by the desiderative predicate in itself.

This is shown by the sentence in (5.42*b*), where the dependent SoA might already be on-going at the time the main SoA takes place (as is shown by (5.42*c*)), take place after the main one, or not take place at all. Whether and when the dependent SoA takes place is completely irrelevant to the condition of desire expressed by the main predicate.

The situation exemplified in (5.42) is quite different from that of perception and knowledge relations, as described above. In the former case, the semantic features

of the linked SoAs are assigned a specific value, while in the latter case the value of these features is irrelevant to the complement relation. In both cases, however, the complement relation defines the semantic features of the dependent SoA. In this sense it can be said that the value of these features is predetermined in both cases, either as specific or as irrelevant.

Different complement relations have different implications about the time reference, aspect value, mood value, and participants of the linked SoAs.

Some complement relations have no entailment about the time reference of the linked SoAs. The linked SoAs can have any time reference. This is the case with knowledge, propositional attitude, and utterance predicates, as can be seen from the following example:

(5.43)   *a.* He knows/thought/said [she would be late]

      b. He knows/thinks/says [he was late]

All the other complement relations taken into account predetermine the time reference of the linked SoA in various ways. Perception predicates, as was said above, entail that main and dependent SoA are simultaneous. Manipulative predicates, as exemplified in (5.23)–(5.26), entail that the dependent SoA is posterior to the main SoA, in that the SoA resulting from the act of manipulation must be posterior to the act of manipulation itself. Phasal predicates predetermine the time reference of the dependent SoA with respect to two time points: that immediately preceding the one of the main SoA, and that immediately following it (Givón 1973). Thus, a sentence like (5.17) entails that at a time prior to 2 p.m. the cook was not working, and that at a time immediately after 2 p.m. the cook was working. A sentence with 'stop' would obviously have the opposite entailments, and a sentence with 'continue', like

(5.44)   At 2 p.m. the cook continued [working]

entails that the cook was working both immediately before and immediately after 2 p.m. Unlike other predicate classes, then, phasal predicates predetermine the time reference of the dependent SoA with respect to two distinct time points instead of just one. Moreover, the time reference of the dependent SoA has different values depending on what phasal predicate is involved in the complement relation.

Finally, as was observed above (see the discussion of example (5.42)) modal and desiderative predicates entail that the time reference of the dependent SoA is irrelevant to the complement relation.

Similar observations can be made for aspect value. With knowledge, propositional attitude, and utterance predicates the linked SoAs can have any aspect value. On the other hand, perception, manipulative, and phasal predicates assign a fixed value to the aspect value of the dependent SoA. Perception relations entail that the perceived SoA is imperfective, or that it is on-going at the moment the act of perception takes place. With a manipulative predicate such as 'make', the dependent SoA is considered globally, as the result of the act of manipulation

described by the complement-taking predicate. This means that the dependent SoA is always presented as perfective (in the sense outlined in Comrie 1976*a*: 3; 16–24), that is with no reference to its internal temporal constituency.

As in the case of time reference, phasal predicates predetermine the aspect value of the dependent SoA with respect to two time points, that immediately preceding the one of the main SoA, and that immediately following it. Predicates like 'begin' entail that the dependent SoA was not realized before the time point where the main SoA is located, but is on-going immediately after that time point. Conversely, predicates like 'stop' entail that the dependent SoA was on-going before the time point of the main SoA, but is no longer on-going after that time point. Predicates like 'continue', just like perception predicates, entail that the dependent SoA is on-going at the time point where the main SoA is located.

With modal and desiderative predicates, as well as manipulative predicates like 'order', the aspect value of the dependent SoA is irrelevant to the complement relation. As was observed in Section 5.1, modal and desiderative predicates describe a situation whereby the occurrence of some SoA is necessary, possible, or desired. However, whether or not this SoA actually occurs is irrelevant to the complement relation. The same holds for predicates like 'order', which describe a situation whereby somebody asks somebody else to bring about some SoA, with no regard to whether or not this SoA will actually be brought about. Now, aspect pertains to the internal temporal constituency of SoAs, that is, to their development through time (Section 3.2.3.1). But in order to specify the phase of development of an SoA through time, reference to the occurrence of that SoA must be made. Since the actual occurrence of the dependent SoA is irrelevant in modal and desiderative relations, its aspect value is irrelevant too.

As for mood value, all complement relations predetermine the mood value of the dependent SoA, albeit in different ways. With modal and desiderative predicates the mood value of the dependent SoA is irrelevant, since whether or not the dependent SoA actually takes place is irrelevant to the complement relation. Manipulative predicates such as 'order' entail that the dependent SoA is unrealized at the time point where the main SoA is located, and may (but need not) take place at some subsequent time point. Predicates expressing successful manipulation, such as 'make', entail that the dependent SoA actually takes place as a result of the act of manipulation described by the predicate. Hence the dependent SoA is presented as factual. Perception predicates also entail that the dependent SoA is factual—in order for an SoA to be perceived, it has to take place, and at the same time as the act of perception. The dependent SoA is factual in knowledge relations too, although in this case its mood value is defined indirectly. Knowledge predicates take as their object propositional contents, not SoAs. Knowledge predicates entail, however, that the relevant propositional content is presented as true. As a result, the SoA corresponding to this propositional content is presented as factual too. With propositional attitude predicates, on the other hand, the propositional content representing the object of the complement-taking predicate is never presented as

positively true (see Section 5.2.8), nor as positively false. As a result, the mood value of the corresponding SoA is predetermined as non-factual. The same holds for utterance predicates. As was observed in Section 5.2.9, utterance predicates are used to ascribe a statement to somebody, and neither the actual nor the original speaker need be committed to the truth of this statement. This means that the statement is never presented as positively true, nor as positively false, and the corresponding SoA is non-factual.

The situation found with propositional attitude and utterance predicates can be compared to that found with predicates like 'order'. In both cases, the dependent SoA is not conceived as realized. With 'order' predicates, however, the dependent SoA is conceived as positively unrealized at the time point the main SoA is located. Propositional attitude and utterance predicates, on the other hand, do not exclude that the dependent SoA may be realized (though this may be more or less likely), but the speaker has no evidence to present it as realized (or unrealized, for that matter). To distinguish between these two situations, the term 'unrealized' will be used for the dependent SoA in the case of 'order' predicates, while in the case of propositional attitude and utterance predicates the dependent SoA will be indicated as 'non-factual' (the term 'counterfactual', on the other hand, will be reserved for the situations where the dependent SoA is unrealized and it is excluded that it may possibly take place, as is, for example, the case in (5.21) above).

Some complement relations also predetermine the participants of the linked SoAs. In phasal relations, the entity finding itself in a certain phase with respect to the development of some SoA is the same as that bringing about this SoA. Manipulative relations entail that the entity bringing about the SoA resulting from the manipulation is the same one as that affected by the manipulation act.

Modal predicates also entail that main and dependent SoAs share a participant. As was observed in Section 5.2.2, this is not straightforward in the case of impersonal modals such as the ones exemplified in (5.13*a*) and (5.14*b*). However, in order for a modal condition to hold, it has to hold both for SoAs as a whole, and for individual entities bringing about these SoAs. Therefore, these entities have a role in both the modal situation described by the modal predicate and the SoA to which the modal situation applies.

Other complement-taking predicates, namely desideratives, perception, knowledge, propositional attitude, and utterance, have no entailment about the participants of the linked SoA. Main and dependent SoAs may or may not share their participants, as can be seen, for instance, from example (5.43).

The implications of the various complement relations with respect to predetermination of the semantic features of the linked SoA are schematized in Table 5.2. The case where the semantic features of the dependent SoA are predetermined as irrelevant to the complement relation is distinguished from the case where these features are assigned a fixed value by the complement relation (this latter case is indicated as 'predetermination' with no further specification).

TABLE 5.2. *Complement-taking predicates and predetermination*

Predicate class	Semantic features of the dependent SoA			
	Time reference	Aspect value	Mood value	Participants
Modals	PD (irr.)	PD (irr.)	PD (irr.)	PD
Phasals	PD	PD	PD	PD
Manipulatives ('make')	PD	PD	PD	PD
Manipulatives ('order')	PD	PD (irr.)	PD	PD
Desideratives	PD (irr.)	PD (irr.)	PD (irr.)	UD
Perception	PD	PD	PD	UD
Knowledge	UD	UD	PD	UD
Propositional attitude	UD	UD	PD	UD
Utterance	UD	UD	PD	UD

PD = predetermined; UD = undetermined; irr. = irrelevant

For simplicity's sake, only the information concerning the dependent SoA is reported in Table 5.2. It should, however, be borne in mind that in many cases, when the semantic features of the dependent SoA are predetermined, those of the main SoA are also predetermined. For instance, when the time reference of the dependent SoA is predetermined, it is predetermined with respect to the time point of the main SoA. This means that the time reference of the main SoA is also predetermined with respect to time point of the dependent SoA. In perception relations, main and dependent SoA are simultaneous, while in manipulative relations they are sequential. Since simultaneity and sequentiality obviously involve two elements, it is the time reference of each of the linked SoAs, not just that of the dependent one, that is predetermined with respect to the other SoA. Similarly, some complement relations entail that main and dependent SoAs share a participant. This means that the reference of this participant is predetermined for both the dependent SoA and the main one. For instance, phasal predicates entail that the entity bringing about the dependent SoA is the same as that finding itself in the phase described by the predicate. Conversely, however, the entity finding itself in the phase described by the predicate is the same as the entity bringing about the dependent SoA.

The fact that predetermination applies to both main and dependent SoAs has some significant linguistic consequences. If the semantic features of some SoA are predetermined with respect to some other SoA, these features need not be overtly specified for both SoAs. For instance, if a complement relation entails that the linked SoAs are simultaneous (as is the case in perception relations), there is no need to overtly specify the time reference of both of them, since the time reference of one of the two can be inferred from that of the other. Similarly, if a complement relation entails that the linked SoAs have the same participants, the participants of one SoA can be inferred from those of the other, and thus need no overt specification.

As will be seen in more detail in Chapter 9, this has some relevant consequences for the cross-linguistic coding of dependent SoAs. When the semantic features of dependent SoAs are predetermined, the dependent clause may be stripped of all the morphosyntactic markers pertaining to these features with no loss of information. For example, if a dependent SoA must be simultaneous with the main SoA (as is the case in perception relations), there is no need for overt specification of tense in the dependent clause, as the time reference of this clause can be inferred from the main clause. Similarly, if main and dependent SoAs share a participant (as is the case with phasal predicates) this participant need not be overtly specified in the dependent clause, as its reference is the same as that of the corresponding participant in the main clause.

However, if the semantic features of the main SoA are also predetermined, there is no need to overtly specify these features in the main clause either. They may be specified in the dependent clause instead. Hence, in some cases it is the main clause, rather than the dependent one, that has no overt specification for a number of semantic features. For example, as will be seen in more detail in Section 5.4.3, phasal relations are good candidates for a lack of overtly expressed arguments in the dependent clause. One of the reasons is that these relations entail that main and dependent SoAs share their participants, and thus there is no need to overtly specify the shared participants twice, in both the main and dependent clauses. However, in some languages, the shared participants in phasal relations are overtly specified in the dependent clause, not in the main one. This is, for example, the case in Tsetz:

Tsetz (Caucasian)
(5.45) *[kid-bā   ziya   b-išr-a]   y-oq-si*
        girl.II-ERG   cow.III-ABS   III-feed-INF   II-begin-PAST.EVID
        'The girl began to feed the cow' (Polinsky and Potsdam 2001: 5)

Polinsky and Potsdam (2001) provide morphosyntactic evidence that in (5.45) the shared participant of the main and dependent clauses ('the girl') is overtly expressed in the dependent clause only (the verb *yoqsi* 'began' agrees with it in gender class, though). This shows that information about the main SoA need not be overtly specified in the main clause, provided that it can be recovered from the dependent clause. This study will not be concerned with such phenomena, as attention is focused on the coding of dependent SoAs rather than main ones. Non-specification of predetermined information will turn out to be a crucial aspect of the cross-linguistic coding of dependent SoAs. However, the extent to which this phenomenon affects main SoAs remains a topic for further investigation.

5.3.3. Semantic integration

Main and dependent SoAs in a subordination relation may be interconnected to varying degrees. For instance, it is quite clear that in a causation process, as depicted by a predicate like 'make', there is a tight interconnection between the act

of causation and the SoA resulting from this act. It is also clear that in attributing a statement to somebody, as is the case with utterance predicates, there is no connection at all between the statement and the SoA it refers to. There are also intermediate cases, however. For example, a perceived SoA is quite independent from the corresponding act of perception (as depicted by a predicate like 'see'), in that it takes place independently of the act of perception. However, a certain degree of interconnection exists between the two. Basically, the act of perception could not take place if the perceived act did not take place. The perceived SoA is an essential component of the act of perception. As a result, the two have to be simultaneous, and the perceived SoA has to be factual and on-going. Thus, the two SoAs are still interconnected, unlike what happens with utterance predicates.

Interconnection between SoAs goes under the name of semantic integration. Manipulative predicates such as 'make' involve a high degree of semantic integration between the linked SoAs, while utterance predicates involve no semantic integration at all. Perception predicates involve a reduced degree of semantic integration.

The notion of semantic integration was originally introduced by Givón (1980, 1990: ch. 13). Givón (1990: ch. 13) distinguishes three predicate classes: manipulative verbs, modality verbs (including desideratives, phasals, and so-called implicative verbs such as 'try'), and cognition–utterance verbs (including knowledge, propositional attitude, and utterance predicates). Manipulative and modality verbs involve higher semantic integration than cognition–utterance verbs. Then, within each individual class, different verbs rank differently depending on their semantic features. Semantic integration is higher if the agent of the main SoA can control the realization of the dependent SoA, and if the dependent SoA originates from an act of deliberate manipulation on the part of the agent of the main SoA (as is the case with predicates such as 'make', as opposed to 'cause', where no deliberate causation is assumed). Semantic integration is also higher if the linked SoAs share their referents, and are spatio-temporally contiguous.

Givón (1990: 526) suggests that the dimension underlying semantic integration is 'the spatio-temporal integration of two events into a single event frame'. In this view, cotemporal and spatially contiguous SoAs, and/or SoAs sharing participants (which Givón calls referential integration), should be more semantically integrated that non-cotemporal and non-spatially contiguous SoAs. However, there is reason to believe that spatio-temporal/referential integration on the one hand, and integration into a single event (SoA) frame on the other, play a quite different role in semantic integration, as will be seen below.

If two SoAs are part of the same SoA frame, they are tightly interconnected. This is, for example, the case with phasal predicates, which Givón puts at the top of the integration hierarchy. Phasal predicates involve integration of the linked SoAs into a single SoA frame: starting, continuing, or finishing an action are actually part of that action.

On the other hand, spatio-temporal contiguity and referential integration are neither necessary nor sufficient conditions for semantic integration. Givón's ground for claiming that spatio-temporal contiguity is the crucial dimension for semantic integration are sentences like

(5.46)   She saw him [come out of the theater] (Givón 1990: 526)

where the two SoAs are spatio-temporally contiguous and quite interconnected (as was pointed out above, the act of perception could not take place if the perceived SoA did not take place). However, consider sentences like

(5.47)   When I go to the Institute at weekends, there are not many people around

Here the linked SoAs are spatio-temporally contiguous, but completely distinct from each other—and hence not interconnected. In fact, there is no direct connection between going to the institute at weekends and not many people being around (except of course that the reason why not many people are around is that it's the weekend). Similarly, one quite clear case of referential integration is provided by relative relations, as in

(5.48)   The man [wearing the purple shirt] is now walking in the garden

Here the linked SoAs share a participant, but they are completely distinct from each other: of course there is no connection whatsoever between wearing a purple shirt and walking in the garden. What is going on here is simply that a specific person taking part in some SoA (in this case, sitting in the garden) is being identified within a set of possible referents by mentioning some other SoA (wearing a purple shirt) in which he takes part.[7]

What all this suggests is that semantic integration, as such, is independent of spatio-temporal contiguity. Semantic integration, as such, basically pertains to whether and how much two SoAs are interconnected. Interconnection results from a variety of factors, such as the fact that the two SoAs are part of the same global SoA frame (as is the case with phasals), or are related in terms of occurrence (as is the case with manipulative and perception predicates). If two SoAs are interconnected, then they are likely to be spatio-temporally contiguous, but spatio-temporal contiguity itself does not contribute to semantic integration.

In what follows, the various complement relations described so far will be examined with respect to semantic integration. A ranking of complement-taking predicates in terms of semantic integration will be proposed. It is slightly different from Givón's, and some predicate classes not taken into account by Givón, such as

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[7]   One might object here that the relations holding between the two SoAs in (5.47) and (5.48) are an adverbial one and a relative one respectively, and the notion of semantic integration has been applied by Givón to complement relations only. However, semantic integration is logically independent from the kind of subordination relation holding between the relevant SoAs, so there is no reason why it should not apply to adverbial relations. In fact, as will be shown in Chapters 6 and 7, the same principles governing semantic integration in complement relations apply to adverbial and relative relations too.

perception predicates, will be included (on the other hand, some predicate classes taken into account by Givón, such as implicatives, will not be included, because they were excluded from the cross-linguistic analysis).

The cases of semantic integration discussed above suggest that the basic component of semantic integration, that is interconnection between linked SoAs, is the degree to which the boundaries between these SoAs are eroded or kept intact. For instance, in discussing phasal predicates in Section 5.2.3 it was stressed that there are two SoAs involved: the fact that some entity finds itself in some phase with respect to the development of some SoA, and the SoA to which the phase pertains. However, as was pointed out above, starting, continuing, or finishing an action are actually part of that action (this is why phasal predicates function as aspectual operators on the dependent SoA, as was pointed out in Section 5.2.3). Therefore, the boundaries between the two SoAs are eroded to a considerable extent.

A slightly different case is provided by modal predicates. Here too there are two distinct SoAs involved—the fact that the occurrence of some SoA is necessary or possible, which corresponds to the modal condition, and the SoA to which the modal condition applies. The modal condition cannot be regarded as part of the SoA to which it applies—in fact, the latter need not even take place. In this respect, modal predicates involve lower semantic integration than phasal predicates. However, unlike other complement-taking predicates, modal predicates do not define distinct SoAs with autonomous participants. An act of perception, an act of manipulation or any other act described by complement-taking predicates other than modals are SoAs in their own right, with autonomous participants performing specific actions. A condition of possibility or necessity, on the other hand, is only defined in terms of the SoAs to which it applies (see on this point Langacker 1991: 270), and does not involve entities other than those involved in that SoA (see Section 5.2.2 above). Therefore the modal condition, though being an SoA in itself, cannot be conceptualized separately from the SoA to which it applies. Of course, this determines a very high degree of interconnection between the modal condition and the SoA to which it applies.

Other complement-taking predicate classes involve varying degrees of semantic integration between the linked SoAs. Manipulative predicates such as 'make' involve a direct causation relationship between the linked SoAs. In some cases (example (5.23)) the act of manipulation described by the manipulative predicate is performed with the goal of obtaining the realization of the dependent SoA, and the dependent SoA is the direct result of the act of manipulation. In other cases, such as the ones exemplified in (5.24) and (5.25), no deliberate manipulation is involved, but it is assumed that the properties of one SoA are such that they necessarily trigger the occurrence of the dependent SoA. In both cases, the boundaries between the linked SoAs are eroded, and hence the two are tightly interconnected. However, interconnection is lower than in the case of phasals and modals. The linked SoAs are not part of the same SoA frame, and, though being interconnected, they can be conceptualized as distinct SoAs involving different entities (the process

of causation involving the causer and the affectee on the one hand, and the SoA brought about by the affectee on the other).

Manipulative predicates such as 'order', desiderative, and perception predicates involve a different, and lower, degree of interconnection between the linked SoAs. Basically, the commands, desires, or acts of perception described by these predicates could not take place if they did not refer to some SoA. A command or desire only make sense if they refer to the possible realization of some SoA, and an act of perception could not take place if a perceived SoA did not take place as well. However, unlike what happens with predicates such as 'make', SoAs representing the object of commands, desires, or acts of perception take place independently of these commands, desires, and acts of perception. In fact, in order for commands or desires to make sense, they have to refer to the occurrence of some SoA, but the occurrence of this SoA is independent of the command or desire in itself—as was observed in Section 5.3.2, the relevant SoA need not even take place. Similarly, in perception relations, the act of perception could not take place independently of the perceived SoA, but the perceived SoA takes place independently of the act of perception. This reduces the degree of interconnection between the linked SoAs.

According to Givón (1990: 528–30), another component of semantic integration is so-called preference, that is, the fact that a participant of the main SoA has a desire for or an interest in the occurrence of the dependent SoA. Preference is a fundamental component of the meaning of desideratives and manipulatives such as 'order'. In fact, a common claim in the literature is that these predicates involve an element of will (see on this point Palmer 1986: ch. 3). Givón claims that (other things being equal) predicates involving preference determine a higher degree of semantic integration between the linked SoAs than predicates involving no preference (such as for instance perception, knowledge, propositional attitude, and utterance predicates). However, SoAs occur quite independently of people's desires, so in principle the fact that somebody wants some SoA to occur need not have any effect on the actual occurrence of that SoA.[8] In this respect, 'order' and desiderative predicates, which involve preference, are no different from perception predicates, which involve no preference. In both cases, the dependent SoA occurs independently of the main SoA. Thus, there seems to be no actual reason why the fact that somebody has a desire or an interest in the occurrence of some SoA should determine a higher degree of interconnection between that SoA and the interest or desire itself, as described by the complement-taking predicate. However, as will be seen in Chapter 9, the fact that desiderative and 'order' predicates involve an element of will does have some significant implications for the cross-linguistic coding of the corresponding complement relations.

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[8] Givón (1990: 535) observes that the fact that somebody has an interest in the realization of some SoA means s/he will display stronger intent towards the realization of that SoA, and hence the realization of the SoA is more likely. However, desiderative and 'order' predicates as such have no implication about strength of intent, nor about the actual likelihood of the dependent SoA occurring.

TABLE 5.3. *Complement-taking predicates and semantic integration*

Semantic integration: The Semantic Integration Hierarchy	No semantic integration
Phasals > Modals > Manipulatives ('make') > Manipulatives ('order'), Desideratives, Perception	Knowledge, Propositional attitude, Utterance

'>' = 'involves higher semantic integration than'

Finally, some complement relations involve no semantic integration at all between the linked SoAs. This is the case with knowledge, propositional attitude, and utterance relations. As was pointed out in Sections 5.2.7–5.2.9, these relations do not involve two SoAs directly, but rather an SoA (the one described by the complement-taking predicate) and a propositional content. There still are two SoAs involved, because propositional contents refer to SoAs (Section 5.1). However, the linkage between these SoAs and those described by the complement-taking predicate is indirect, and hence there is no interconnection between them.

We are now in a position to rank the various complement-taking predicate classes in terms of degree of semantic integration. Phasal predicates involve the highest degree of semantic integration between the linked SoAs, because the latter are actually part of the same global SoA frame. With modal predicates the linked SoAs are not actually part of the same SoA frame, but one of the two cannot be conceptualized separately from the other. Hence modal predicates also involve a high degree of semantic integration between the linked SoAs. All of the other complement-taking predicate classes involve conceptualization of the linked SoAs as distinct SoAs, hence they involve a lower degree of semantic integration, or no semantic integration at all. However, manipulative predicates such as 'make' involve a higher degree of semantic integration than predicates such as 'order', desiderative, and perception predicates, because there is a direct causation relation between the linked SoAs. Finally, knowledge, propositional attitude and utterance predicates involve no semantic integration between the linked SoAs. This is represented in Table 5.3.

5.4. Cross-linguistic coding of complement relations

5.4.1. Methodological premises

This section will present the data concerning the morphosyntactic structures used cross-linguistically to code the complement relation types described so far, and

TABLE 5.4. *Complement relations: balancing and deranking in different languages*

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Finnish	D	D	°	D/B	D/B	D/B	D/B	D/B	D/B
Basque	D	D	°	D	D	D	B		B
Egyptian (Ancient)	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B
Jacaltec	D	D/B	D/B	D/B	D/B	D/B	B	B	B
Lezgian	D	D	D	D	D	D	D/B	D/B	D/B
Maricopa	D	D	°		D	D	D	D	D/B
Resigaro			°	D	D	D	D		D
Tok Pisin	B	B	B	B	B	B	B	B	B

B = balancing; D = deranking; D/B = both balancing and deranking; ° = the relevant relation is not expressed by means of clause linkage; blank = no information available

a number of implicational hierarchies which may be inferred from them will be proposed. The method underlying the hierarchies will also be used in the next two chapters for adverbial and relative relations, and can be described as follows. First, for each language, each of the complement relations taken into account is compared with each of the others with respect to the parameters listed in Section 3.4. For example, let us consider balancing and deranking in general. Each of the complement relations taken into account is examined in each language, in order to see whether balanced verb forms, deranked ones or both are used to express the dependent SoA. Table 5.4 illustrates what the results would be for eight of the languages in the sample.

   In this way it is possible to establish quantified implicational generalizations of the types described in Section 4.2; these are in turn ranged into implicational hierarchies. For instance, the data in Table 5.4 allow us to establish the implicational generalizations in (5.49)–(5.51). (Note that these are not all of the generalizations that could be drawn from Table 5.4. Logical equivalences could be established as well, but they will be ignored here because they are not supported by data from the other languages in the sample.)

(5.49)   *a.*   ∃ Utterance D → ∃ (Perception D & Desideratives D & 'order' D & 'make' D & Phasals D & Modals D)

   b.   ∃ Propositional attitude D → ∃ (Perception D & Desideratives D & 'order' D & 'make' D & Phasals D & Modals D)

   c.   ∃ Knowledge D → ∃ (Perception D & Desideratives D & 'order' D & 'make' D & Phasals D & Modals D)

     d. ∃ Perception D → ∃ (Phasals D & Modals D)

     e. ∃ Desideratives D → ∃ (Phasals D & Modals D)

     f. ∃ 'order' D → ∃ ('Phasals D & Modals D)

     g. ∃ 'make' D → ∃ (Phasals D & Modals D)

(5.50) *a.* ∀ Utterance D → ∀ (Perception D & Desideratives D & 'order' D)

     b. ∀ Propositional attitude D → ∀ (Perception D & Desideratives D & Phasals D & Modals D)

     c. ∀ Knowledge D → ∀ (Perception D & Desideratives D & Phasals D & Modals D)

     d. ∀ Perception D → ∀ (Phasals D & Modals D)

     e. Desideratives D → ∀ (Phasals D & Modals D)

     f. ∀ 'order' D → ∀ (Phasals D & Modals D)

     g. ∀ 'make' D → ∀ (Phasals D & Modals D)

(5.51) *a.* ∀ Modals B → ∀ ('make' B & 'order' B & Desideratives B & Perception B & Knowledge B & Propositional attitude B & Utterance B)

     b. ∀ Phasals B → ∀ ('make' B & 'order' B & Desideratives B & Perception B & Knowledge B & Propositional atittude B & Utterance B)

     c. ∀ 'make' B → ∀ (Knowledge B & Propositional attitude B & Utterance B)

     d. ∀ 'order' B → ∀ (Knowledge B & Propositional attitude B & Utterance B)

     e. ∀ Desideratives B → ∀ (Knowledge B & Propositional attitude B & Utterance B)

     f. ∀ Perception B → ∀ (Knowledge B & Propositional attitude B & Utterance B)

These generalizations allow us to establish the implicational hierarchy in (5.52):

(5.52)   Modals, Phasals > Manipulatives ('make', 'order'), Desideratives, Perception > Knowledge, Propositional attitude, Utterance

The principle governing this hierarchy is that, if deranking is used at any point on the hierarchy, then it is used at all points to the left.[9]

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[9] Data from the whole sample actually support a more detailed ranking of the complement-taking predicate classes. This will be disregarded for the moment, because it is not supported by the data in Table 5.4.

Different complement relation types rank in the same way on this hierarchy. Modals rank in the same way as phasals, manipulatives, and desideratives, and knowledge predicates rank in the same way as propositional attitude and utterance predicates. The same ranking on an implicational hierarchy may be due to one of two reasons. On the one hand, different relation types may rank in the same way because they behave in the same way with respect to the relevant parameter cross-linguistically, that is there are no (or not enough) significant languages (languages in which the relevant parameters have different value: Section 4.2). For instance, in Table 5.4 there are no languages where desideratives and manipulatives have different values with respect to deranking. This makes it impossible to rank desideratives and manipulatives hierarchically.

It should finally be borne in mind that, as illustrated in Section 4.2, implicational generalizations do not always have the same predictive value. They represent the result of an evaluation of a number of variable factors: the number of languages providing data about the parameters taken into account; the number of significant cases; the number of exceptions to the proposed generalization with respect to the number of significant cases. Each of these factors will be discussed in detail when relevant to the proposed generalization. In fact, in Sections 5.6 and 5.7, a number of tables are provided reporting the data on the various implicational generalizations proposed in the chapter. Tables 5.7 and 5.8 in Section 5.6 refer directly to the implicational generalizations, and report the number of languages for which information about both of the parameters involved in the generalizations is available, the number of significant cases supporting the implication, and the number of significant cases contradicting the implication. Tables 5.9–5.20 in Section 5.7 report the data on the various parameters taken into account for each language.

5.4.2. *The form of the verb*

The data on the various parameters concerning the form of the verb in complement relations are reported in Tables 5.9–5.18.

These data allow us to establish the Complement Deranking Hierarchy in (5.53):

(5.53)   The Complement Deranking Hierarchy
Modals, Phasals > Desideratives, Manipulatives ('make', 'order') >
Perception > Knowledge, Propositional attitude, Utterance

If a deranked verb form is used to code the dependent SoA at any point on the hierarchy, then it is used at all points to the left. Languages in Figure 5.1 instantiate some possible cut-off points for the Complement Deranking Hierarchy.

The data on the distribution of balanced and deranked verb forms are reported in Table 5.9 (see Section 5.7).

The Complement Deranking Hierarchy also holds for some of the individual morphosyntactic phenomena involved in deranking, namely lack of TAM and person agreement distinctions. If TAM or person agreement distinctions are not expressed at any point on the hierarchy, then they are not expressed at all points to the left. Figures 5.2–5.6 illustrate some possible cut-off points for the hierarchy with respect to lack of TAM and person agreement distinctions.

In principle, person agreement distinctions may be not expressed at all, or they may be expressed for some arguments, but not for others. However, the general tendency seems to be for person agreement distinctions to be either all expressed, or not expressed at all. The one language in which person agreement is expressed for some arguments only is Lango, a nominative Nilo-Saharan language where verbs agree with both A/S and O. With modals, phasals, and desideratives, agreement with A/S is not expressed, while agreement with O is expressed. This can be seen

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Tamil	D	D		D	D	D			D
Lezgian	D	D	D	D	D	D	D/B	D/B	B
Lango	D	D	D	D	D	B	B	B	B
Egyptian (Ancient)	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B
Tok Pisin	B		B	B	B	B	B	B	B

FIGURE 5.1. *Balancing and deranking: cut-off points in the hierarchy of complement relations*

B = balancing; D = deranking; D/B = either deranking or balancing; ° = the relevant relation is not expressed by means of clause linkage; blank = no information available

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Basque	−	−	°	−	−	−	+	+	+
Lezgian	−	−	−	−	−/+	+	+	+	+
Finnish	−	−	°	−/+	+	+	+	+	+
Slave	°	+	+	+	+	+	+	+	+

FIGURE 5.2. *Lack of T distinctions: cut-off points in the hierarchy of complement relations*

− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Barasano	−	−	°	−	−	−	+	+	+
Lango	−	−	−	−	−	+	+	+	+
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+	+	+	+

FIGURE 5.3. *Lack of A distinctions: cut-off points in the hierarchy of complement relations*

− = A distinctions not expressed; + = A distinctions expressed; −/+ = A distinctions either not expressed or expressed; blank = no information available

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Greek (Ancient)	−	−	−	−	−	−	−/+	−/+	−/+
Punjabi	−	−		−	−/+		+	+	+
Italian	−	−	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Tok Pisin	+	+	+	+	+	+	+	+	+

FIGURE 5.4. *Lack of M distinctions: cut-off points in the hierarchy of complement relations*

− = M distinctions not expressed; + = M distinctions expressed; −/+ = M distinctions either not expressed or expressed; blank = no information available

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Basque	−	−	°	−	−/+	−/+	+	+	+
Jacaltec	−	−/+	−/+	−/+	−/+	+	+	+	+
Italian	−	−	−	−/+	−/+	−/+	−/+	−/+	−/+
Slave	°	+	+	+	+	+	+	+	+

FIGURE 5.5. *Lack of person agreement distinctions: cut-off points in the hierarchy of complement relations*

− = person agreement not expressed; + = person agreement expressed; −/+ = person agreement either not expressed or expressed; ° = the relevant relation is not expressed by means of clause linkage

as a reflection of the Deverbalization Hierarchy presented in Croft (1991: 83; see Section 3.3).

The other phenomena involved in deranking, namely case marking/adpositions on the dependent verb and use of special forms to express TAM and person

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Perc.	Des.	Kn.	Pr. a.	Utt.
Quechua (Huallaga Huánuco)	+	+	°	+	+	+	+		−
Basque	+	+	°	+	+	+	−		−
Maricopa	+	−			−	−	−	−	−

FIGURE 5.6. *Case marking/adpositions on verbs: cut-off points in the hierarchy of complement relations*

− = no case marking/adpositions; + = case marking/adpositions; −/+ = either case marking/adpositions, or no case marking/adpositions; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage (see Section 5.2.2)

agreement distinctions, follow a slightly different pattern. The distribution of case marking/adpositions obeys the hierarchy in (5.54):

(5.54)   Complement relations: Case marking/adpositions on the dependent verb
         Modals, Phasals, Desideratives, Manipulatives, Perception >
         Knowledge, Propositional Attitude, Utterance

Some possible cut-off points for this hierarchy are instantiated in Figure 5.6, while the relevant data are reported in Table 5.18.

Subordination relations are divided into two blocks: modals, phasals, manipulatives, desideratives, and perception on the one hand, and knowledge, propositional attitude, and utterance on the other. As can be seen from Table 5.18, the data on case marking/adpositions are quite scanty, and the reciprocal ranking of the various relation types cannot be established due to a lack of significant languages. This makes it impossible to define any internal boundaries within the two blocks in the hierarchy. However, the hierarchy basically reflects the Complement Deranking Hierarchy, in that the relation types towards the leftward end are also located towards the leftward end of the Complement Deranking Hierarchy, and the relation types towards the rightward end are also located towards the rightward end of the Complement Deranking Hierarchy.

Coding of TAM and person agreement distinctions by means of special forms does not seem to be very frequent cross-linguistically (the relevant data are reported in Tables 5.13, 5.14, 5.15, and 5.17). Even in languages displaying dependent moods, such as West Greenlandic (see Section 3.2), these distinctions are often coded by the same inflectional affixes used in independent clauses, while the dependent status of the verb is indicated by other, specific affixes. Use of special forms to code TAM and person agreement distinctions was indicated in Section 3.2 as a deranking strategy. Hence one would expect the distribution of this strategy not to contradict the hierarchy established for deranking in general. This is generally

the case. However, it should be borne in mind that use of special forms is but one of the factors contributing to deranking, and not a very frequent one. Lack of the relevant distinctions is much more frequent. This has two consequences. First, the use of special forms alternates with a lack of the relevant distinctions. Second, the infrequency of special verb forms makes it impossible to establish implicational hierarchies such as those established for the other parameters. All that can be safely said is that

(5.55)   When TAM and person agreement distinctions are expressed overtly in the dependent clause, use of special forms to express these distinctions does not violate the Complement Deranking Hierarchy

By 'does not violate' is meant here that the data about special forms suggest that the various complement relation types should rank approximately in the same way as in the Complement Deranking Hierarchy. However, it is not possible to establish whether the distribution of special forms exactly follows the Complement Deranking Hierarchy or some slightly modified version of it such as the one in (5.54) (where the various relation types are found in the same position as in the Complement Deranking Hierarchy, but the internal boundaries are different).

5.4.3. The coding of participants

The data on the parameters concerning the coding of participants in complement relations are reported in Tables 5.19 and 5.20.

Alignment splits in complement relations are usually associated with other phenomena, such as there being no overt expression of arguments or coding of arguments as possessors or obliques. However, some languages also display alignment splits independently of these phenomena. This is the case in four of the sample languages: Ancient Greek, Jacaltec, Maricopa, and Turkish. The relevant data are reported in Table 5.5.

When arguments are not expressed in complement relations, this phenomenon obeys an accusative pattern. A and S arguments are not expressed in the dependent clause under coreferentiality with A or S in the main clause, while O arguments are generally expressed overtly. One exception is represented by Yidiɲ (see Section 3.3.1). Here a single construction is used for relative relations, temporal relations and relations established by perception predicates. In this construction, S and O arguments are not expressed under coreferentiality with S or O arguments in the main clause, and an antipassive system may be used to obtain promotion of A to S.

Lack of A and S arguments obeys the Complement Deranking Hierarchy. Therefore, from now on this hierarchy will be indicated as the Complement Deranking-Argument Hierarchy. If A and S arguments are not expressed at any

TABLE 5.5. *Complement relations: splits in alignment patterns*

Language	Predicate class	Alignment pattern in dependent clause	Alignment pattern in independent clauses
Greek (Ancient)	Modals, Desideratives, Knowledge, Propositional attitude, Utterance	(A, S, O)	(A, S), O
Jacaltec	Desideratives, Manipulatives ('make', 'order'), Perception, Knowledge	(A, S), O	(S, O), A
Maricopa	Modals	(A, S, O)	(A, S), O
Turkish	Perception	(A, S, O)	(A, S), O

Arguments in brackets are coded in the same way.

Language	Mod.	Phas.	Man. ('make')	Man. ('order')	Des.	Perc.	Kn.	Pr. a.	Utt.
Berbice Dutch Creole	−	−			−	−/+	+	+	+
Lezgian	−	−	−	−	−/+	+	+	+	+
Finnish	−	−	−/+	+	+	+	+	+	+
Chinese (Mandazin)	−	−	+	+	+	+	+	+	+
Banda Linda	+	+		+	+	+	+	+	+

FIGURE 5.7. *Lack of overtly expressed arguments (A and S): cut-off points in the hierarchy of complement relations*

− = A and S not expressed; + = A and S expressed; −/+ = A and S either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage

point on the hierarchy, then they are not expressed at all points to the left. Some possible cut-off points for the hierarchy with respect to lack of A and S arguments are illustrated in Figure 5.7. The relevant data are reported in Table 5.19 (Section 5.7).

As for coding of arguments as possessors, simultaneous coding of both A and O as possessors is quite rare cross-linguistically, (Section 3.3.1.3). Complement relations involving coding of O as a possessor are only attested in four of the

sample languages (Ancient Egyptian, West Greenlandic, Tamazight, Turkish), which makes it impossible to establish any implicational generalization.

Coding of A and S as possessors is also very rare in the sample languages, as can be seen from the data in Table 5.20. This considerably reduces the basis for comparison between the various complement relation types. All of the significant cases conform to the Complement Deranking-Argument Hierarchy and, more specifically, the hierarchy for case marking/adpositions on the dependent verb in (5.54). However, since there are extremely few languages, and extremely few significant cases, no implicational hierarchy will be proposed.

5.5. Cross-linguistic coding of complement relations and the semantics of complement-taking predicates

Cross-linguistic analysis shows that the distribution of the various morphosyntactic devices used to code the dependent SoA in complement relations follows ordered patterns of variation. These patterns are defined by a major hierarchy, the Complement Deranking-Argument Hierarchy, which is repeated in (5.56):

(5.56)   The Complement Deranking-Argument Hierarchy:
         Modals, Phasals > Manipulatives ('make', 'order'), Desideratives >
         Perception > Knowledge, Propositional attitude, Utterance

The Complement Deranking-Argument Hierarchy holds for a variety of phenomena such as the distribution of deranked verb forms in general, lack of TAM and person agreement distinctions, and lack of A and S arguments. Other phenomena, namely the distribution of case marking/adpositions on the dependent verb, follow a modified version of the Complement Deranking-Argument Hierarchy, reported in (5.54) (the differences between this hierarchy and the Complement Deranking-Argument Hierarchy will be ignored for the moment, but they will be discussed in more detail in Chapters 8 and 9). In principle, all of these phenomena are logically distinct, and need not follow the same pattern. The two basic questions about the Complement Deranking-Argument Hierarchy are then (i) why individual phenomena obey the hierarchy, and (ii) why logically distinct phenomena obey the same pattern. A more general question is why the relevant phenomena take place at all in the cross-linguistic coding of dependent SoAs.

A full answer to these questions must await the discussion of the cross-linguistic patterns found for adverbial and relative relations. What will be suggested here, however, is that the answer should be sought in the semantic features of complement-taking predicates, as defined in Section 5.3. That is, a correlation exists between the cross-linguistic patterns found for complement relations and the semantic features of complement-taking predicates. The correlation in itself will need to be explained, and this will be done in the final chapters.

The first aspect of the correlation may be stated as follows. Some of the morpho-syntactic phenomena taken into account imply that some information relevant to the dependent clause is not specified, or at least less easily recoverable. For instance, lack of TAM distinctions on the dependent verb obviously implies that no information about the time reference, aspect, and mood value of the dependent SoA is provided. Lack of person agreement distinctions and lack of overtly expressed arguments imply that no information about (some of) the participants of the dependent SoA is provided. Use of special forms for TAM and person agreement distinctions implies that information about these distinctions is not coded in the usual way, hence is less easily recoverable. Also, special TAM forms often express a reduced set of distinctions, and thus information about time reference, aspect, and mood value of the dependent SoA may be partially lost. These phenomena strongly correlate with predetermination of the corresponding semantic features of the dependent SoA, as described in Section 5.3.2. That is, if a morpho-syntactic phenomenon involving non-specification of some information takes place for the complement relations not involving predetermination of the corresponding semantic features, then it also takes place for the complement relations involving predetermination of these semantic features. This can easily be verified by comparing the Complement Deranking-Argument Hierarchy with the classification of complement-taking predicates in terms of predetermination in Table 5.2.

For example, if TA distinctions are not expressed when there is no predetermination of time reference and aspect value (as is the case with knowledge, propositional attitude, and utterance predicates), then they are not expressed when time reference and aspect value are predetermined (modal, phasal, manipulative, and desiderative predicates). Similarly, if person agreement distinctions and arguments are not expressed when the linked SoAs need not share any participants (as is the case with desiderative, perception, knowledge, and propositional attitude predicates), then they are not expressed when the linked SoAs share some participants (as is the case with modals, phasals, and manipulatives). It should be observed in this connection that desiderative predicates rank in the same way as manipulatives, although they do not involve the predetermination of participants. However, in virtually all of the languages where constructions involving lack of person agreement distinctions and lack of overtly expressed arguments are used for desideratives, these are used when main and dependent SoAs are brought about by the same entity (see for instance the Retuarã example in (3.22)). This is a rather common situation cross-linguistically, not only for desiderative predicates. For instance, Italian infinitives are not marked for person, and they are used in complement and adverbial relations whenever main and dependent SoAs share their subject (5.57*a*). If main and dependent SoAs do not share any participants, indicatives or subjunctives are used (5.57*b*):

Italian (Indo-Hittite, Indo-European)

(5.57)   *a. Pens-a*   *[di* **essere**   *molto   brav-o]*
              think-PRES:3:SG   of   be:PRES:INF   very   smart-M:SG
              '*He$_j$* thinks *he$_j$* is very smart'

b. *Pens-a*   *[che io **sia***   *molt-o*
  think-PRES:3:SG   that I be.PRES:SUBJN:1.SG very
  brav-a]
  smart-F:SG
  'He thinks I am very smart'

However, this phenomenon (use of special constructions involving lack of person agreement distinctions and lack of overtly expressed arguments when the main and dependent SoAs share participants) seems to be more frequent for desiderative predicates than for other predicates not entailing sharing of participants, such as perception, knowledge, propositional attitude, and utterance predicates. As was observed in Section 5.3.3, desiderative predicates involve an element of will, or an interest in the realization of the dependent SoA on the part of a participant of the main SoA. A participant's desires or interests are more likely to be referred to the occurrence of SoAs involving that entity rather than SoAs where that entity has no role. Hence one may assume that sharing of participants between main and dependent SoAs is more frequent with desiderative predicates than with other predicates that do not entail the sharing of participants between main and dependent SoAs (for a similar approach, see Haspelmath 2000). This may be the reason why desiderative predicates display constructions with no overt arguments or person agreement distinctions more often than other predicates. This issue will be taken up in Section 9.2.

Perception predicates outrank knowledge, propositional attitude, and utterance predicates with respect to lack of person agreement distinctions and lack of overtly expressed arguments. None of these predicate types entails sharing of participants between main and dependent SoAs. However, as was pointed out in Section 5.2.6, an act of perception involves both a perceived SoA as a whole, and the individual entities bringing about that SoA. As a result, these entities may be construed as arguments of the main verb (raising, see Section 3.3.1.2), and are not expressed in the dependent clause. The dependent verb is treated as an adjectival modifier. This was illustrated in example (5.30), and is the case in all of the languages where perception predicates outrank the other predicate types with respect to lack of person agreement distinctions or arguments.

Predetermination of the semantic features of the linked SoA has already been indicated by Givón (1990: ch. 13) and Noonan (1985) as one major factor involved in the cross-linguistic coding of complementation, and the theoretical implications of Givón's account will be discussed in detail in Chapter 9.

However, predetermination cannot be the only factor involved in the cross-linguistic coding of complement relations. If it were, one would expect the complement relations involving predetermination of the same type of information to rank in the same way with respect to the phenomena leading to non-specification of that information. Yet this is clearly not the case. For example, all complement-taking predicates involve predetermination of the mood value of the dependent

SoA, yet they rank differently with respect to a lack of M distinctions. A number of complement-taking predicates (modals, phasals, manipulatives, desideratives, perception) involve predetermination of the time reference and aspect value of the dependent SoA, yet they rank differently with respect to a lack of TA distinctions. Modals, phasals, and manipulatives all involve predetermination of the participants of the dependent SoA, yet modals and phasals outrank manipulatives with respect to lack of person agreement distinctions and lack of overtly expressed arguments.

Also, there does not seem to be any direct connection between predetermination and the morphosyntactic phenomena not leading to non-specification of information, such as case marking/adpositions on the dependent verb or coding of verb arguments as possessors. Yet the distribution of these phenomena basically follows the same pattern as that of the phenomena leading to non-specification of information.

Closer inspection of the hierarchies shows that there are at least two other factors associated with the cross-linguistic patterns for complement relations. The first one is semantic integration. Semantic integration is also invoked by Givón (1980, 1990: ch. 13) to account for his Binding Hierarchy of complement clauses, which is similar to the Complement Deranking-Argument Hierarchy. The analysis that will be proposed here follows basically the lines of Givón's analysis. However, Givón's analysis will be discussed in more detail in Chapter 9, where it will be argued that semantic integration fails to account for the cross-linguistic coding of complement relations (and subordination relations in general) as a whole, and should be integrated into a more comprehensive model.

In Section 5.3.3 a distinction was drawn between complement-taking predicates involving semantic integration (modals, phasals, desideratives, manipulatives, and perception predicates) and predicates not involving semantic integration (knowledge, propositional attitude, and utterance predicates). Within the predicates involving semantic integration, some involve a higher degree of integration than others, as defined by the Semantic Integration Hierarchy in Table 5.3. The Complement Deranking-Argument Hierarchy shows that if any of the morphosyntactic phenomena taken into account occur for predicates not involving semantic integration, then they occur for predicates involving semantic integration. Thus, knowledge, utterance, and propositional attitude predicates, which involve no semantic integration, always rank lower than the other predicate classes. This holds both for the morphosyntactic phenomena leading to non-specification of information (lack of TAM/person agreement distinctions, use of special forms to code these distinctions, lack of overtly expressed arguments) and the other morphosyntactic phenomena.

Furthermore, within the predicates involving semantic integration, those involving higher semantic integration, such as modals and phasals, rank higher on the Complement Deranking-Argument Hierarchy than those involving lower semantic integration, such as manipulatives, desideratives, and perception.

If semantic integration does play a role in the Complement Deranking-Argument Hierarchy, one would also expect phasals to rank higher than modals, and manipulatives such as 'make' to outrank manipulatives such as 'order', desideratives and perception predicates. Yet, modals and phasals rank in the same way, and manipulatives as a whole rank in the same way as desideratives. This need not be due to any theoretical reason, however. As can be seen from the tables in Section 5.7, the data for modals and phasals are quite scarce in the sample (forty-eight languages for modals, thirty-nine for phasals). Moreover, the languages where data are available for both modals and phasals number just twenty-six, and only four of these are significant languages. This is not enough to establish the reciprocal ranking of modals and phasals. Similarly, data about 'make' predicates are available for nineteen languages only. Data for both 'make' and 'order' predicates are available for just eighteen languages, and data for both 'make' and desiderative predicates are available for fourteen languages. There are just two significant languages for the ranking of 'make' and 'order' predicates, and there are three significant languages for the ranking of 'make' and desiderative predicates. Once again, then, there are not enough data to establish the reciprocal ranking of 'make' predicates on the one hand, and 'order' and desiderative predicates on the other.

Manipulatives such as 'order' and desideratives outrank perception predicates with respect to a lack of TAM distinctions, yet the three involve the same degree of semantic integration. Thus semantic integration cannot play a role in the reciprocal ranking of these predicates.

The question then arises whether there is some semantic difference that might be associated with the different ranking of these predicates with respect to the morphosyntactic coding of the dependent SoA. In fact, there actually is a semantic difference, in that perception predicates imply that the dependent SoA is realized, while desideratives and manipulatives such as 'order' have no such implication. Desiderative predicates entail that the mood value of the dependent SoA is irrelevant, while 'order' predicates entail that the dependent SoA is unrealized (Section 5.3.2). This difference is reflected in the literature by the claim that perception predicates take realis complements, while desideratives and manipulatives such as 'order' take irrealis complements (see for instance, Noonan 1985).

If one assumes that for some reason (with other things being equal) the fact that the dependent SoA is unrealized, or that its mood value is irrelevant, determines a higher position on the hierarchy for lack of TAM distinctions, this would account for the positioning of desideratives and manipulatives such as 'order' vs. perception predicates. Perception predicates involve the same degree of semantic integration as desideratives and manipulatives such as 'order', but the dependent SoA is realized, so they rank lower.

Another difference between desideratives and manipulatives on the one hand, and perception predicates on the other is that the former involve an element of will, or an interest in the realization of the dependent SoA on the part of a participant of

the main SoA (Section 5.3.3). Here again, one may assume that this fact is relevant to the cross-linguistic coding of the relevant complement relation types, and has a role in the ranking of desideratives and manipulatives with respect to perception predicates. This will be discussed in detail in Section 9.3.

The discussion above deliberately ignored the use of special forms for TAM and person agreement distinctions. At the beginning of this section, it was suggested that the distribution of special forms might be related to a predetermination of the semantic features of the linked SoAs. Since the distribution of special forms does not seem to violate the Complement Deranking-Argument Hierarchy, one would expect the other semantic factors related to this hierarchy to play a role in the distribution of special forms too. In Chapter 9, it will be shown that there are principled grounds to assume that this hypothesis is correct. However, the data on special forms in the sample are too few to provide linguistic evidence for this hypothesis.

The following conclusions can now be drawn:

(i) Some of the morphosyntactic phenomena involved in the cross-linguistic coding of complement relations are related to the predetermination of the semantic features of the dependent SoA, as defined by the complement relation. The connection is quite straightforward. The morphosyntactic phenomena related to predetermination of the semantic features of the dependent SoA are those leading to non-specification or difficult recoverability of information concerning these features (lack of TAM/person agreement distinctions, use of special forms to code these distinctions, lack of overtly expressed arguments).

(ii) However, other things being equal (e.g. when two distinct complement relations predetermine the same features of the dependent SoA), the distribution of the morphosyntactic phenomena involved in the cross-linguistic coding of complement relations is sensitive to the degree of semantic integration between the linked SoAs. In general, if any of these phenomena takes place for any complement-taking predicate class, then it takes place for the classes involving the same or a higher degree of semantic integration.

(iii) Additional parameters interacting with semantic integration are the mood value of the dependent SoA, and the fact that the main predicate involves an element of will, or an interest in the realization of the dependent SoA. Other things being equal, if TAM distinctions are not expressed when the dependent SoA is realized, then they are not expressed when the dependent SoA is unrealized, or when its mood value is irrelevant to the complement relation. Also, other things being equal, predicates involving an element of will or an interest in the realization of the dependent SoA rank higher than the other predicates with respect to lack of TAM distinctions.

The role of the various semantic factors in the cross-linguistic coding of complement relations is schematized in Table 5.6.

TABLE 5.6. *Cross-linguistic coding of complement relations and semantic factors*

Hierarchical pattern	Morphosyntactic phenomenon	Semantic factors
Mod., Phas., Des., Man., Perc. > Others	Lack of TA distinctions	Predetermination; semantic integration
Mod., Phas. > Des., Man., Perc.		Semantic integration
Mod., Phas. > Des., Man., Perc. > Others	Lack of M distinctions	
Mod., Phas., Man., Des., Perc. > Others	Case marking/adpositions, possessor coding	
Mod., Phas. > Others	Lack of person agreement distinctions, lack of arguments	
Mod., Phas., Man. > Perc., Know., Prop. a., Utt.		Predetermination
Des. > Perc. > Know., Prop. a., Utt.		Sharing of participants between main and dependent SoA (not predetermined); semantic integration
Man. ('order'), Des. > Perc.	Lack of TAM distinctions	The dependent SoA is unrealized, or its mood value is irrelevant; the main predicate involves an element of will

5.6. Data supporting the implicational hierarchies

This section presents the data supporting the implicational hierarchies proposed in this chapter. The data are contained in two tables, pertaining to balanced and deranked verb forms (Table 5.7) and lack of A and S arguments (Table 5.8) respectively. There are no tables for the individual phenomena involved in balancing and deranking, because these phenomena all contribute to balancing and deranking, and their distribution basically reflects the Complement Deranking-Argument Hierarchy. Thus, the table for balancing and deranking in general also reflects the distribution of the individual phenomena involved in balancing and deranking, and the tables for these phenomena would just be a slightly modified version of the table for balancing and deranking in general.

The tables should be read as follows. Each of the relation types on the vertical axis outranks each of the relation types on the horizontal axis, unless otherwise specified. For each combination of relation types, three numbers are reported. The first number is the number of languages for which information is available for both relation types. The second two numbers correspond to the languages where the relevant

TABLE 5.7. *Language numbers for the Complement Deranking Hierarchy*

	Phas.	Des.	Man.	Perc.	Know.	Pr. a.	Utt.
Mod.	===	38/4/1	37/5/1	38/9/0	33/19/0	32/19/0	45/29/0
Phas.	*	35/5/1	34/11/1	33/9/0	26/14/0	24/16/0	38/27/0
Des.	—	*	===	44/8/2	39/18/0	35/18/0	52/30/0
Man.	—	===	*	46/6/2	40/15/1	35/16/0	55/32/0
Perc.	—	—	—	*	39/14/0	36/11/0	52/22/0

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

TABLE 5.8. *Language numbers for the Complement Argument Hierarchy*

	Phas.	Des.	Man.	Perc.	Know.	Pr. a.	Utt.
Mod.	===	39/22/1	38/18/1	37/23/3	31/27/0	32/29/0	43/41/0
Phas.	*	34/20/1	31/12/3	33/21/1	25/18/0	25/20/0	37/30/0
Des.	—	*	===	44/15/5	38/18/1	34/20/1	52/29/0
Man.	—	===	*	46/14/6	37/20/1	39/21/0	55/30/0
Perc.	—	—	—	*	38/9/0	38/10/0	52/15/0

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

relation types do not have the same value with respect to the relevant parameter, that is, the number of significant cases. The second number indicates the number of significant cases supporting the implicational generalization. The third number is the number of significant cases contradicting the implicational generalization.

As can be seen from the tables, almost all of the implicational generalizations about complement relations are exceptionless, or have a very limited number of exceptions. As was pointed out in Section 4.2, in order to decide whether a proposed implicational generalization is valid, the number of exceptions is compared with the number of significant cases, not the total number of cases involved in the implication (which corresponds to the first number in Tables 5.6 and 5.7, that is, the number of cases for which information is available for both of the parameters involved in the implication). If the number of exceptions is compared with the total number of cases involved in the implication, the weight of exceptions is reduced even further.

Some of the implications in Tables 5.7 and 5.8 have a very limited number of significant cases. Nevertheless, as was pointed out in Section 4.2, they are regarded as valid, because they are supported by Givón's (1980, 1990) studies.

A lack of significant cases is due to two factors. On one hand, there are complement relations for which information is quite difficult to obtain from reference

grammars. This is the case with phasal and perception complements. In such cases, the total number of languages relevant to the implication is reduced, and the number of significant cases is also reduced.

However, the number of significant cases appears to be directly related to the semantic features of the relation types involved in the implication. Table 5.7 is clearly divided in two areas, left and right. The implications on the left are supported by a low number of significant languages. In these implications, both the antecedent and the consequent involve relation types located towards the leftward end of the Complement Deranking-Argument Hierarchy, namely modal, phasal, desiderative, manipulative, and perception predicates. These relation types share a number of semantic features. For instance, they all predetermine the time reference and the aspect value of the dependent SoA, and involve a semantic integration between the linked SoAs. Also, some of these relation types (modals, phasals, manipulatives) entail the sharing of participants between main and dependent SoAs. With other relation types, there is often sharing of participants at the discourse level, or the linked SoAs are construed as sharing a participant (desiderative and perception predicates, Section 5.5).

The implications on the right of Table 5.7 have the same relation types in the antecedent, but other relation types (knowledge, propositional attitude, and utterance predicates) in the consequent. These relation types display very different semantic features, in that they involve no predetermination of the time reference or the aspect value of the dependent SoA, no semantic integration, and no sharing of participants. These implications are supported by a relatively high number of significant languages.

A similar pattern can be observed for the lack of overtly expressed arguments. Table 5.8 also displays differences in the number of significant cases depending on the semantic features of the relation types involved in the implication. In some implications, the antecedent is a relation type entailing the sharing of participants between the linked SoAs (modals, phasals, manipulatives) or involving frequent sharing of participants at the discourse level (desideratives). The consequent is a relation type not involving the sharing of participants (knowledge, propositional attitude, and utterance predicate). These implications are supported by a high number of significant languages. On the other hand, when neither the antecedent nor the consequent involve the sharing of participants between the linked SoAs, the number of languages supporting the implication is lower. This is the case for the relation types having perception predicates in the antecedent and knowledge, propositional attitude, and utterance predicates in the consequent.

This suggests that the higher the semantic difference between individual relation types, the higher the number of languages coding those relations in different ways. This hypothesis should be tested on the basis of a probability sample, that is a sample designed to reveal the statistical frequency of individual linguistic types (Section 4.3). If correct, however, it would provide further evidence for the postulated correlation between semantic features and the cross-linguistic coding of individual relation types.

5.7. Language data

TABLE 5.9. *Complement relations: balanced and deranked verb forms*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Acehnese	B	B	D		D/B	B	B	B	B
Akan					D	B	B		B
Arabic (Gulf)	D/B		D/B	°	D/B	D/B	D/B	D/B	D/B
Arapesh						B			B
Banda Linda	B	B	B		B	B	B	B	B
Barasano	D	D		°	D	D	B	B	D
Basque	D	D	D	°	D	D	B		B
Berbice Dutch Creole	D	D	D			D	B	B	B
Borana	D	D	D		D/B	D	B	B	B
Burushaski	D	D	D	D	D	D	D		B
Canela-Krahô				D	D				B
Chinese (Mandarin)	B	B	B	B	B	B	B	B	B
Diegueño		D	D			D			
Djapu	D		D/B	°		D/B	B	B	B
Egyptian (Ancient)	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B	D/B
Finnish	D	D	D/B	°	D/B	D/B	D/B	D/B	D/B
Fula	D		D	D	D	B	B	B	
Gimira		D	D	°	B	D	D		B
Greek (Ancient)	D	D	D	D	D	D	D/B	D/B	D/B
Greenlandic (West)	°	°	D	°	D	D	D/B	D	D/B
Gumbaynggir	D				D	D			B
Guugu Yimidhirr			D		D	D	B		B
Hittite							B	B	B
Hixkaryana		D	D	°	D				D/B
Hmong Njua	B		B	B	B	B	B	B	B
Ho		D	B		B				B
Hurrian									B
Italian	D	D	D	D	D	D/B	D/B	D/B	D/B
Jacaltec	D	D/B	D/B	D/B	D/B	D/B	D/B	B	B
Japanese	D/B	°	B	°	B	B	B	B	B
Kanuri	D	D	D			B			B
Karimojong	D	D	D			B		B	B
Kayardild	°		B	°	B	B	B	B	B
Khasi	D						B	B	B
Kobon		D			B	B		B	B
Kolokumi	D	D	D	D	D	D			B
Krongo	D		D				D		D/B
Lango	D	D	D	D	D	B	B	B	B
Lezgian	D	D	D	D	D	D	D/B	D/B	B

TABLE 5.9. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Limbu	D			D	D	D	D	B	B
Makian (West)	B		B						B
Maŋarayi			D		B	B		B	B
Maori		D	D	D	D	D	D/B		B
Maricopa	D	D	D	°		D	D	D	D
Muna		B	B		B	B	B	B	B
Nama									B
Nandi			D		B			B	B
Ngbaka					B			B	B
Nung	B		B			B			B
Paiwan	B	°			B			B	
Paumarí		B	B	°	B	D			B
Pero		D	D/B		D				B
Pirahã	D		°	D	D/B				B
Punjabi	D	D	D		D		B	B	B
Quechua (Huallaga Huánuco)	D	D	D	°	D	D	D		B
Resigaro			D	°	D	D	D		D
Retuarã	°		D	D	D	B	B	B	B
Sawu	B				B	B		B	B
Shipibo-Conibo	D		D						
Shoshone (Tümpisa Panamint)	D	°			D	D	B		B
Slave	°	B	B	B	B	B	B	B	B
Songhay	D		D		D		B	B	B
Squamish	D	D			D	D			D
Sumerian	°				D				D
Supyire	D/B	D	D	D/B	D/B	D/B	B	B	B
Tagalog					D		B	B	B
Tamazight	D	D	D						B
Tamil	D	D			D	D			D
Tangkhul Naga	°		°	°					B
Tok Pisin	B	B	B	B	B	B	B	B	B
Turkish	°	D	D/B	D	D	D	D/B	D/B	D/B
Tzutujil	B	D/B	B		B	B		B	B
Ute	D		D		D		D	D	B
Vai	D	D	D		D	D	B	B	B
Vietnamese	B		B		B	B	B	B	B
Warrgamay			D		D				
Wayãpi									B
Yidiɲ					D	D			
Yoruba	B	B	B		B				B

B = balancing; D = deranking; D/B = either deranking or balancing; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage (see Section 5.2.2)

TABLE 5.10. *Complement relations: lack of T distinctions*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Akan					−	+	+		+
Arabic (Gulf)	−/+		−/+	°	−/+	−/+	−/+	−/+	−/+
Barasano	−	−		°	−	−	+	+	+
Basque	−	−	−	°	−/+	−	+	+	+
Berbice Dutch Creole	−	−	−			−	+	+	+
Borana	−	−	−		−/+	−	+	+	+
Burushaski	−	−	−	−	−	−	−		+
Canela-Krahô				+	+				+
Diegueño		+	+			+			
Djapu	−		−/+	°		−/+	+	+	+
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Finnish	−	−	+	°	−/+	+	+	+	+
Fula	−		−	−	−	+	+	+	
Gimira		−	−	°	+	+	+		+
Greek (Ancient)	−	−	−	−	−	−	−/+	−/+	−/+
Greenlandic (West)	°	°	+	°	+	−/+	+	+	+
Gumbaynggir	−				−	+			+
Guugu Yimidhirr			−		−	−	+		+
Hittite							+	+	+
Hixkaryana		−	−	°	−				−/+
Ho	+		+		+				+
Hurrian									+
Italian	−	−	−/+	−	−/+	−/+	−/+	−/+	−/+
Jacaltec	−	−/+	−/+	−/+	−/+	−/+	−/+	+	+
Japanese	−/+	°	+	°	+	+	+	+	+
Kanuri	−	−	−			+			+
Karimojong	+	+	+			+		+	+
Kayardild	°		−	°	−	−/+	+	+	+
Khasi	−						+	+	+
Kobon		−			+	+		+	+
Kolokumi	−	−	−	−	−	−			+
Krongo	−		−/+				+		+
Lezgian	−	−	−/+	−	−	+	+	+	+
Limbu	−		−		−	−	−	+	+
Maŋarayi			−		+	+		+	+
Maori		−	−	−	−	−	−/+		+
Muna		+	+		+	+	+	+	+
Nandi			−		+	+	+	+	+
Ngbaka					+			+	+

TABLE 5.10. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Paiwan	+	°			+			+	
Pero		−	−/+		−				+
Punjabi	−	−	−		−		+	+	+
Quechua (Huallaga Huánuco)	−	−	−	°	−	−			+
Resigaro			+	°	+	+	+		+
Retuarã	°		−	−	−	+	+	+	+
Sawu	+				+	+		+	+
Shipibo-Conibo	−		−						
Shoshone (Tümpisa Panamint)	−	°			−	+	+		+
Slave	°	+	+	+	+	+	+	+	+
Songhay	−		−		−		+	+	+
Squamish	+	+			+	−/+			+
Sumerian	°				+				+
Supyire	−/+	−	−	−/+	−/+	−/+	+	+	+
Tamazight	−	−	−						+
Tamil	−	−			−	−/+			−/+
Tangkhul Naga	°			°					+
Tok Pisin	+	+	+	+	+	+	+	+	+
Turkish	°	−	−/+	−	−	+	+	+	+
Tzutujil	+	−/+	+		+	+		+	+
Ute	+		+		+		+	+	+
Vai	−	−	+		+	−	+	+	+
Wayãpi									+
Yidiɲ					−	+			
Yoruba	+	+	+		+				+

− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage. Languages that do not code tense on the verb are not included.

TABLE 5.11. *Complement relations: lack of A distinctions*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Akan					+	+	+		+
Arabic (Gulf)	−/+		−/+	°	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+		+	+	+	+	+
Barasano	−	−	−		−	−	+	+	+
Basque	−/+	+	−/+	°	−/+	−	+	+	+
Berbice Dutch Creole	+	+	+			+	+	+	+
Borana	−	−	−		−/+	−	+	+	+
Burushaski	−	−	−	−	−	−			+
Canela-Krahô				+	+				+
Chinese (Mandarin)	+	+	+	+	+	+	+	+	+
Diegueño		+	+			+			
Djapu	−		−/+	°		−/+	+	+	+
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Finnish	−	−	+	°	−/+	+	+	+	+
Fula	−		−	−	−	+	+	+	
Gimira		−	−	°	+	+	+		+
Greek (Ancient)	+	+	+	+	+	+	+	+	+
Greenlandic (West)	°	°	+	°	+	+	+	+	+
Gumbaynggir	−				−	+			+
Guugu Yimidhirr			−		−	+	+		+
Hittite							+	+	+
Hixkaryana		−	−	°					−/+
Ho	+		+		+				+
Hurrian									+
Italian	+	+	+	+	+	+	+	+	+
Jacaltec	−	−/+	−/+	−/+	−/+	−/+	−/+	+	+
Japanese	−/+	°	+	°	+	+	+	+	+
Kanuri	−	−	−			+			+
Karimojong	+	+	+			+		+	+
Kayardild	°			°	−	+	+	+	+
Khasi	−						+	+	+
Kobon		−			+	+		+	+
Kolokumi	−	−	−	−	−	−			+
Krongo	−		+				+		+
Lango	−	−	−	−	−	+	+	+	+
Lezgian	−	−	−/+	−	−	+	+	+	+
Limbu	−		−		−	−	−	+	+
Maŋarayi			−		+	+		+	+
Maori		−	−	−	−	−	−/+		+

Table 5.11. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Maricopa	−	−	−	°		−	−/+	−	−
Muna		+	+		+	+	+	+	+
Nama									+
Nandi			+			+		+	+
Ngbaka					+			+	+
Paiwan	+	°			+			+	
Paumarí			+	°	+	−			+
Pero		−	−/+		−				+
Pirahã	−	°	−		−/+				+
Punjabi	−	−	−		−		+	+	+
Quechua (Huallaga Huánuco)	−	−	−/+	°	+	+	+		+
Resigaro			+	°	+	+	+		+
Retuarã	°		−	−	−	+	+	+	+
Sawu	+				+	+		+	+
Shipibo-Conibo	−		−						
Shoshone (Tümpisa Panamint)	−	°			−	+	+		+
Slave	°	+	+	+	+	+	+	+	+
Songhay	−		−		−		+	+	+
Squamish	+	+			+	−/+			+
Sumerian	°				+				+
Supyire	−/+	−	+	+	+	−/+	+	+	+
Tagalog					−		+	+	+
Tamazight	+	−/+	+						+
Tamil	+	+			+	+			+
Tangkhul Naga	°		°	°					+
Tok Pisin	+	+	+	+	+	+	+	+	+
Turkish	°	−	−/+	−	−	+	+	+	+
Tzutujil	+	−/+	+		+	+		+	+
Ute	+		+		−		+	+	+
Vai	−	−	+		+	−	+	+	+
Vietnamese	+		+		+	+	+	+	+
Warrgamay			−		−				
Wayãpi									+
Yidiŋ					−	+			
Yoruba	+	+	+		+				+

− = A distinctions not expressed; + = A distinctions expressed; −/+ = A distinctions either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage. Languages that do not code aspect on the verb are not included.

TABLE 5.12. *Complement relations: lack of M distinctions*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Akan					+	+	+		+
Arabic (Gulf)	−/+		−/+	°	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+		+	+	+	+	+
Barasano	−	−		°	−	−	+	+	+
Basque	−	−	−	°	−/+	−	+	+	+
Berbice Dutch Creole	−	−	−			−	+	+	+
Borana	−	−	+		−/+	+	+	+	+
Burushaski	−/+	−	+	−	−/+	−	−		+
Canela-Krahô				+	+				+
Diegueño		+	+			+			
Djapu	−		−	°		−/+	+	+	
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Finnish	−	−	−/+	°	−/+	−/+	−/+	−/+	−/+
Fula	−		−/+	+	+	+	+	+	
Gimira		−	−	°	+	+	+		+
Greek (Ancient)	−	−	−	−	−	−	−/+	−/+	−/+
Greenlandic (West)	°	°	+	°	+	−/+	+	+	+
Gumbaynggir	+				+	+			+
Guugu Yimidhirr			+		+	+	+		+
Hittite							+	+	+
Hixkaryana		−	−	°	−				−/+
Ho	−		+		+				+
Hurrian									+
Italian	−	−	−/+	−	−/+	−/+	−/+	−/+	−/+
Jacaltec	−	−/+	−/+	−/+	−/+	−/+	−/+	+	+
Japanese	−/+	°	+	°	+	+	+	+	+
Kanuri	−	−	−			+			+
Karimojong	−/+	−	−/+			+		+	+
Kayardild	°		+	°	+	+	+	+	+
Khasi	−						+	+	+
Kobon		−			+	+		+	+
Kolokumi	−	−	−	−	−	−			+
Krongo	−		−				−		−/+
Lango	−	−	−/+	+	+	+	+	+	+
Lezgian	−	−	−	−	−	−	−/+	−/+	+
Limbu	+			+	+	−	−	+	+
Maŋarayi			+		+	+		+	+
Maori		−	−	−	−	−	−/+		+

TABLE 5.12. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Maricopa	+	−	−/+	°		−	−/+	−	−
Muna		+	+		+	+	+	+	+
Nama									+
Nandi			+			+		+	+
Ngbaka					+			+	+
Paiwan	+	°			+			+	
Paumarí			+	°	+	−			+
Pero		−	−/+		+				+
Pirahã	−		°	−	−/+				+
Punjabi	−	−	−/+		−		+	+	+
Quechua (Huallaga Huánuco)	−	−	−	°	−	−	−		+
Resigaro			+	°	+	+	+		+
Retuarã	°	−	−		−		+	+	+
Shipibo-Conibo	−		−						
Shoshone (Tümpisa Panamint)	−	°			−	−	+		+
Slave	°	+	+	+	+	+	+	+	+
Songhay	−/+	+			+		+	+	+
Squamish	−	−			−	−/+			−
Sumerian	°				−				−
Supyire	−/+	−	+	+	+	−/+	+	+	+
Tamazight	+	−	+						+
Tamil	−	−			−	−			−/+
Tangkhul Naga	°		°	°					+
Tok Pisin	+	+	+	+	+	+	+	+	+
Turkish	°	−	−/+	−	−	+	−/+	−/+	−/+
Tzutujil	+	−/+	+		+	+		+	+
Ute	+	+			+		+	+	+
Vai	−	−	+		+	−	+	+	+
Vietnamese	+		+		+	+	+	+	+
Warrgamay			+		+				
Wayãpi									+
Yidiɲ					+	−			
Yoruba	+	+	+		+				+

− = M distinctions not expressed; + = M distinctions expressed; −/+ = M distinctions either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage. Languages that do not code mood on the verb are not included.

TABLE 5.13. *Complement relations: T distinctions expressed differently from independent clauses*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Finnish	−	D	t/T	°	−/t/T	t/T	t/T	t/T	t/T
Greek (Ancient)	t	t	t	t	t	t	t/T	t/T	t/T
Italian	−	−	−/t	−	−/t	−/t/T	−/t/T	−/t/T	−/t/T
Karimojong	t	t	t			T		T	T
Lezgian	−	−	−/t	−	−/t	t/T	t/T	t/T	T
Shoshone (Tümpisa Panamint)	−	°			−	t	T		T
Turkish	°	−	−/t/T	−	−	T	t/T	t/T	t/T
Vai	−	−	t		t	−	T	T	T
Yidiɲ				−		t			

− = T distinctions not expressed; t = T distinctions expressed differently from independent clauses; T = T distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for T distinctions at all are not included.

TABLE 5.14. *Complement relations: A distinctions expressed differently from independent clauses*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Finnish	−	−	a/A	°	−/a/A	a/A	a/A	a/A	a/A
Greek (Ancient)	a	a	a	a	a	a	a/A	a/A	a/A
Italian	a	a	a	a	a	a/A	a/A	a/A	a/A
Karimojong	a	a	a			A		A	A
Lezgian	−	−	−/a	−	−	a	a/A	a/A	A
Supyire	−/a/A	−	a	a/A	a/A	−/A	A	A	A
Turkish	°	−	−/a/A	a	a	A	a/A	a/A	a/A
Yidiɲ				−		a			

− = A distinctions not expressed; a = A distinctions expressed differently from independent clauses; A = A distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for A distinctions at all are not included.

TABLE 5.15. *Complement relations: M distinctions expressed differently from independent clauses*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Greenlandic (West)	°	°	m	°	m	−/m	m/M	m	m/M
Gumbaynggir	m				m	M			M
Italian	−	−	−/m	−	−/m	−/M	−/m/M	−/m/M	−/m/M
Karimojong	−/m	−	−/m			M		M	M
Lango	−	−	−/m	m	m	M	M	M	M
Maricopa	m	−	−	°		−	−/M	−	−
Nandi			m			M	M	M	M
Squamish	−	−			−	−/m	−	−	−
Supyire	−/m/M	−	m	m/M	m/M	−/M	M	M	M
Warrgamay			m		m				

− = M distinctions not expressed; m = M distinctions expressed differently from independent clauses; M = M distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for M distinctions at all are not included.

TABLE 5.16. *Complement relations: lack of person agreement distinctions*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Acehnese	+	+	−/+		−	+	+	+	+
Arabic (Gulf)	−/+		−/+	°	−/+	−/+	−/+	−/+	−/+
Arapesh						+			+
Barasano	−	−		°	−	−	+	+	+
Basque	−	−	−	°	−/+	−	+		+
Borana	−	−	+		−/+	+	+	+	+
Burushaski	−	−	−	−	−	−	−		+
Canela-Krahô				+	+				+
Diegueño		+	+			+			
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Finnish	−	−	−/+	°	−/+	−/+	−/+	−/+	−/+
Gimira		+	+	°	+	−	−		+
Greek (Ancient)	−	−	−	−	−	−	−/+	−/+	−/+
Greenlandic (West)	°	°	+	°	+	+	+	+	+
Hittite							+	+	+
Hixkaryana		+	+	°	+				+
Ho	−	+	+		+				+
Hurrian									+
Italian	−	−	−/+	−	−/+	−/+	−/+	−/+	−/+
Jacaltec	−/+	−/+	−/+	−/+	−/+	−/+	−/+	+	+
Kanuri	−	−	−			+			+

TABLE 5.16. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Karimojong	−/+	−	−/+			+		+	+
Khasi	−						+	+	+
Kobon		−			+	+		+	+
Krongo	−		−			−	−		−/+
Lango	−	−	−/+	+	+	+	+	+	+
Limbu	+		+	+	+	+	+	+	+
Makian (West)	+		+						+
Maṅarayi			−		+	+		+	+
Maricopa	+	+	+	°		+	+	+	+
Muna		+	+		+	+	+	+	+
Nama									+
Nandi			+			+		+	+
Punjabi	−	−	−/+		−		+	+	+
Quechua (Huallaga Huánuco)	−	−	−/+	°	+	−	+		+
Retuarã	°		−/+	−	−	+	+	+	+
Shoshone (Tümpisa Panamint)	−	°			−	−	+		+
Slave	°	+	+	+	+	+	+	+	+
Squamish	+	+			+	+			+
Sumerian	°				+				+
Tamazight	+	−/+	+						+
Tamil	−	−			−	−			−/+
Turkish	°	−	−/+	−	−	+	−/+	−/+	−/+
Tzutujil	+	−/+	+		+	+		+	+
Ute	−		−		−		−	−	+
Wayãpi									+

− = person agreement distinctions not expressed; + = person agreement distinctions expressed; −/+ = person agreement distinctions either not expressed or expressed; blank = no information available; ° = the relevant relation is not expressed by means of clause linkage. Languages with no person agreement are not included.

TABLE 5.17. *Complement relations: person agreement distinctions expressed differently from independent clauses*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Kn.	Prop. a.	Utt.
Arabic (Gulf)	−/ag/AG		−/ag/AG	°	−/ag/AG	ag/AG	ag/AG	ag/AG	ag/AG
Borana	−	−	ag		−/AG	ag	AG	AG	AG
Gimira		ag	ag	°	AG	−	−		AG
Greenlandic (West)	°	°	ag	°	ag	ag	ag	−/ag	ag/AG
Hixkaryana		ag	ag	°	ag				ag
Italian	−	−	−/ag	−	−/ag	−/AG	−/ag/AG	−/ag/AG	−/ag/AG
Jacaltec	−/ag	−/ag/AG	−/ag/AG	−/ag/AG	−/ag/AG	AG	ag/AG	ag/AG	AG
Nandi			ag			AG		AG	AG
Quechua (Huallaga Huánuco)	−	−	−/ag	°	ag	−	ag		AG

− = person agreement distinctions not expressed; ag = person agreement distinctions expressed differently from independent clauses; AG = person agreement distinctions expressed as in independent clauses; ° = the relevant relation is not expressed by means of clause linkage; blank = no information available. Languages that do not use any special form for person agreement distinctions at all are not included.

TABLE 5.18. *Complement relations: case marking/adpositions on verbs*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Arabic (Gulf)	−/+		−/+	°	−/+	−/+	−/+	−/+	−/+
Basque	+	+	+	°	−/+	+	−	−	−
Burushaski	−/+	+	−		+	+	+		−
Canela				+	+				−
Diegueño		+	+			+			
Djapu	+		−/+	°		−/+	−	−	
Finnish	−	−/+	−	°	−	−	−	−	−
Greek (Ancient)	−	+	−	−	−	+	−/+	−	−
Greenlandic (West)	°	°	−	°	−	−/+	−	−	−
Hixkaryana		+	−	°	+				+
Italian	−	−/+	−/+	−/+	−/+	−	−/+	−/+	−/+
Kayardild	°			°	−/+	−/+	+	+	+
Krongo	+		+				+		−/+
Lezgian	−/+	−/+	−	−	+	−	−	−	−
Maṇarayi			+		−			−	−
Maori			+		+	+	−/+		−
Maricopa	+	−	−	°		−	−	−	−
Punjabi	+	+	−/+		+	−	−	−	
Quechua (Huallaga Huánuco)	+	+	+	°	+	+	+		−

TABLE 5.18. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Sumerian					+				+
Supyire	−/+	+	−	−	−	−/+	−	−	−
Tamil	−	−			−	+			−/+
Turkish	°	+	−/+	+	+	−	−/+	−/+	−/+

− = no case marking/adpositions; + = case marking/adpositions; −/+ = either case marking/ adpositions, or no case marking/adpositions; blank = no information available. Languages that do not use case marking/adpositions for complement relations at all are not included.

TABLE 5.19. *Complement relations: lack of overtly expressed arguments (A and S)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Acehnese	−	+	−		−	+	+	+	+
Akan					+	+	+		+
Arabic (Gulf)	−/+		+	°	−/+	−/+	+	+	+
Arapesh						+			+
Banda Linda	+	+	+		+	+	+	+	+
Barasano	−	−			−	+	+	+	+
Basque	−	−	−/+	°	−/+	−	+	+	+
Berbice Dutch Creole	−	−	−			−/+	+	+	+
Borana	−		+		−/+	+	+	+	+
Burushaski	−/+	−/+	+	−/+	−/+	−/+	−/+	−/+	+
Canela-Krahô				−	−				+
Chinese (Mandarin)	−	−	+	+	+	+	+	+	+
Diegueño		−	−/+			+			
Djapu	−		−	°		−/+	−/+	−/+	+
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Finnish	−	−	+	°	+	+	+	+	+
Fula	−		−	+	+	+	+	+	
Gimira		−	−	°	+	+	+		+
Greek (Ancient)	−/+	−	+	−	−	−	+	+	+
Greenlandic (West)	°	°	−	°	−	−	+	+	+
Gumbaynggir	−/+				−/+	−			+
Guugu Yimidhirr			−/+		−/+	−/+			−/+
Hittite							+	+	+

TABLE 5.19. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Hixkaryana		−	+	°	+				+
Hmong Njua	−	−/+	−/+	−/+	−/+	−/+	−/+	−/+	−/+
Ho	−		+		+				+
Hurrian									+
Italian	−	−	−/+	−	−/+	−/+	−/+	−/+	−/+
Jacaltec	−	−/+	−/+	−/+	−/+	+	+	+	+
Japanese	−	°	+	°	+	+	+	+	+
Kanuri	−	−	−			+			+
Karimojong	−/+	−	−/+			+		+	+
Kayardild	°		−/+	°	−/+	−/+	+	+	+
Khasi	−						+	+	+
Kobon		−			+	+			+
Kolokumi	−	−/+	−/+	−	−	+			+
Krongo	−		−/+				+		+
Lango	−	−	−/+	−	−	+	+	+	+
Lezgian	−	−	−/+	−	−	+	+	+	+
Limbu	−			+	+	−	−	+	+
Makian (West)	−			−					+
Maŋarayi				−	+	−		+	+
Maori		−	−	−	−	+	+		+
Maricopa	+	−	−/+	°		+	+	+	+
Muna		+	+		+	+	+	+	+
Nama									+
Nandi			+			+	+	+	+
Ngbaka					+			+	+
Nung	−		−		−	+			+
Paiwan	−	°	+		−			+	
Paumarí			+	°	−	+			+
Pero		−	−/+		−				+
Pirahã	−		°	+	+				+
Punjabi	−	−	−/+		−		+	+	+
Quechua, (Huallaga Huánuco)	−	−	-/?	°	?	−/+	?		+
Resigaro			+	°	+	+	+		+
Retuarã	°		−	−	−	+	+	+	+
Sawu	+				+	+		+	+
Shipibo-Conibo	−		−						
Shoshone (Tümpisa Panamint)	−	°			−/+	−	+		+

TABLE 5.19. *(contd.)*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Slave	°	°	+	+	+	+	+	+	+
Songhay	−		−		−		+	+	+
Squamish	+	+			+	+			+
Sumerian	°				+				+
Supyire	−/+	+	+	−/+	−/+	−	+	+	+
Tagalog					−/+		+	+	+
Tamazight	−	−	+						+
Tamil	−	−			−	+			+
Tangkhul Naga	°		°	°					+
Tok Pisin	−	−	+	+	+	+	+	+	+
Turkish	°	−	−/+	−	−	+	+	+	+
Tzutujil	−	−	+		−	+		+	+
Ute	−	−			−		+	+	+
Vai	−	−	+		+	−	+	+	+
Vietnamese	−		−		−	−	+	+	+
Warrgamay			+		−				
Wayãpi									+
Yidiɲ					−/+	+			
Yoruba	−	−	−		+				+

− = A or S not expressed; + = A and S expressed; −/+ = A or S either not expressed or expressed; ° = the relevant relation is not expressed by means of clause linkage; blank = no information available

TABLE 5.20. *Complement relations: Arguments (A and S) coded as possessors*

Languages	Mod.	Phas.	Des.	Man. ('make')	Man. ('order')	Perc.	Know.	Prop.a.	Utt.
Arabic (Gulf)	−/O/p	−	p/O	°	−/p/O	−/p/O	p/O	p/O	p/O
Finnish	−		p/O		p/O	p/O	p/O	p/O	p/O
Kolokumi	−	−/p	−/p		−	p			O
Krongo			−/p				p		p/O
Maori			−		−	p	p/O		O
Squamish	p/O	p/O			p/O	p/O			p/O
Supyire	−/p/O	p/O	O	−/O	−/O	−	O	O	O
Turkish	°	−	−/p/O	−/p	−/p	ac	p/O	p/O	p/O
Ute	−				−		p	p	O

ac = A or S overtly expressed as O; p = A or S overtly expressed as possessors; O = A and S overtly expressed as in independent clauses; − = A and S not expressed; blank = no information available. Languages with no possessor coding for A or S in complement relations are not included.

6 Adverbial Relations

6.1. Introduction

Adverbial relations link two SoAs such that one of them (the dependent SoA) corresponds to the circumstances under which the other one (the main SoA) takes place. The dependent SoA may represent the goal in bringing about the main SoA (purpose relations: (6.1)), the temporal setting for the main SoA (temporal relations: (6.2)), the condition under which the main SoA can take place (conditional and concessive relations: (6.3)), the reason why or the way in which the main SoA takes place (reason and manner relations: (6.4)), or the outcomes of the main SoA (result relations). The following examples provide instances of purpose, temporal, condition, and reason relations:

(6.1)   We went to the market [to buy pumpkin, basil, and cranberries]

(6.2)   [When I listen to these harpsichord pieces], I am always overjoyed

(6.3)   [If we go to the market too late], there will not be many stands left

(6.4)   I am working on this topic [because I have to give a talk on it in one week]

Traditional definitions of adverbial constructions capture this basic property of adverbial relations by describing an adverbial clause as one functioning as an adverb with respect to the main predicate (see for instance Koptjevskaja-Tamm 1993*b*: 23). As in the case of complement relations, this description turns out to be inadequate in the light of cross-linguistic data. The problems involved are the same as for complement relations. Traditional definitions assume that adverbial clauses are syntactically part of the main clause, that is are embedded in it (see e.g. Haspelmath (1995), where a number of criteria for embedding are provided based on adverbial constructions). However, there are a number of languages where this is not the case. Relevant examples were provided in the general discussion of subordination in Chapter 2. For example, many Creole languages convey adverbial meanings by the simple juxtaposition of non-embedded clauses, and develop embedding subordinators only at a later stage. Similarly, some Australian languages express adverbial meanings by means of non-embedded clauses, like the one exemplified in (2.15).

This shows, once again, that the notion of embedding is inappropriate in a cross-linguistic perspective. The proposed functional definition frees the notion of adverbial relation from any specific syntactic correlate, and is able to account

for both embedded adverbial clauses and clauses displaying a different syntactic structure.

In what follows, the following adverbial relations, classified on the basis of Givón (1990: 827–37), Kortmann (1997), and Thompson and Longacre (1985), will be taken into account:

  (i) purpose;
 (ii) temporal posteriority ('before' relations);
(iii) temporal anteriority ('after' relations);
(iv) temporal overlap ('when' relations);
 (v) reality condition, as exemplified in (6.3);
(vi) reason.

This chapter is organized in the same way as Chapter 5. The semantics of the various types of adverbial relation will be examined first (Section 6.2). Adverbial relations display a crucial difference with respect to complement relations. In complement relations, the main predicate has a crucial role in defining the semantic features of the linked SoAs. This is a result of the fact that the main SoA in a complement relation involves obligatory reference to another SoA, and defines the semantic features of this SoA. In adverbial relations, on the other hand, neither of the linked SoAs involves reference to the other. Rather, it is the adverbial relation itself that involves reference to two distinct SoAs, and defines the semantic features of these SoAs. Nevertheless, adverbial relations can be described in terms of the same parameters applied to complement relations, such as level of clause structure, predetermination of the semantic features of the linked SoAs, and semantic integration. This is the subject of Section 6.3.

The cross-linguistic coding of dependent SoAs in adverbial relations is then examined (Section 6.4). The distribution of the various morphosyntactic phenomena involved in the cross-linguistic coding of dependent SoAs can be described in terms of two major implicational hierarchies, the Adverbial Deranking Hierarchy and the Adverbial Argument Hierarchy.

As for complement relations, a connection can be established between these hierarchies and the semantic features of adverbial relations. This connection works very much in the same way as the corresponding one outlined for complement relations in Chapter 5, that is, semantic integration, predetermination, and the mood value of the dependent SoA play a major role in the cross-linguistic coding of adverbial relations (Section 6.5). It will, however, be shown that other factors, such as the ability of the dependent SoA to be construed as an object, should also be brought into the picture. Some of the semantic parameters that will be invoked in the analysis, namely level of clause structure and predetermination, are the same as those invoked by Hengeveld (1998) in his analysis of the distribution of deranked (or, in his terms, dependent) verb forms in the languages of Europe. In general, the analysis presented in this chapter is fully compatible with Hengeveld's one,

though it focuses on a different range of morphosyntactic phenomena and adverbial relation types.

6.2. Adverbial relation types

6.2.1. Purpose

Purpose relations link two SoAs one of which (the main one) is performed with the goal of obtaining the realization of another one (the dependent one). Typical cases of purpose relations involve motion predicates, as in (6.1). Other predicates may be involved too, as in:

(6.5)   I printed out a draft of this chapter [in order to look for typos]

(6.6)   I introduced some small adjustments [in order for readers to be more favourably disposed]

Purpose relations have no logical entailment about the participants of the dependent SoA, nor about whether the performer of the main SoA can actually control the realization of the dependent one. For instance, in (6.1) the main and dependent SoAs share an agent, which can obviously control the realization of the dependent SoA. In (6.6), on the other hand, the linked SoAs share no participants, and the agent of the main SoA cannot control the realization of the dependent one. By their very nature, however, purpose relations imply that the performer of the main SoA is in some way involved in the realization of the dependent one, at least in that there is an element of will on his or her part towards such realization. Involvement and will are, of course, more motivated if the performer of the main SoA actually controls the realization of the dependent one, and control is higher when the two SoAs are performed by the same entity. Thus, the prototypical purpose relation seems to be one in which the main and dependent SoAs are performed by the same entity, which can control the realization of the dependent SoA.

This conclusion is supported by extensive language data, which offers very little evidence about purpose relations in which main and dependent SoAs are not performed by the same entity, and virtually no evidence about purpose relations in which the performer of the main SoA cannot control the realization of the dependent one. In fact, most of the data on purpose relations concern the purpose of motion, as exemplified in (6.1) above. In motion purpose relations, an entity goes somewhere in order to obtain the realization of a certain SoA, and it is usually assumed (though not logically entailed) that this realization is brought about by the entity itself (this is the case in (6.1)).

The semantics of purpose relations is quite similar to that of the complement relations established by desiderative predicates. In both cases there is an element of will on the part of a given participant toward the realization of a given SoA (preference: see Section 5.3.3). The realization of the dependent SoA is presented

as possible at a future point in time with respect to that at which the main SoA is located. In this sense, purpose relations may be included within the domain of deontic modality, for, just like the complement-taking predicates pertaining to this modality type (modals, desideratives, manipulatives) they imply that some entity finds itself in a given position (or, in other words, has a given attitude) with respect to the realization of some SoA (on this point see Palmer 1986: 174–9). In fact, some languages use the same morphology for the different subordination relations pertaining to the domain of deontic modality, regardless of whether these are complement or adverbial relations. This is the case in many Australian languages, where the same mood (purposive) is used for purpose relations, desideratives, and possibly modals and manipulatives:

Guugu Yimidhirr (Australian)
(6.7) a. *Ngayu*   *wawu-dhirr*   *[mayi   buda-**nhu**]*
        1SG:NOM   want-COM:ABS   food:ABS   eat-PURPV
        'I want to eat food' (Haviland 1979: 135)

     b. *Nyulu   gabiirr   gada-almugu   [mayi*
        3SG:NOM   girl:ABS   come-PAST:NEG   food:ABS
        *baawa-**nhu**]*
        cook-PURP
        'The girl didn't come to cook the food' (Haviland 1979: 135)

Many languages display a special morphology to code negative purpose, that is to convey the idea that a certain SoA is performed in order to prevent another one from occurring. This is a very rich and complex realm, in which various connections are established between purpose relations and other subordination relations such as those established by predicates of fearing (for extensive discussion of this topic, see Lichtenberk 1995). A morphology used to express negative purpose may consist of special verbal inflections, as is the case in many Australian languages (this is exemplified in (6.8) below), or of special conjunctions such as English '*lest*' or Mandarin Chinese '*shĕngde*':

Yidiɲ (Australian)
(6.8) *ɲundu   gaḍidagan   [giyaṇgu*
        you-ABS/ERG   long.way-INCH:VBLZR-IMP   stinging.tree-ERG
        guba:nḍi]
        burn-LEST-ABS
        'You keep away, lest you get stung (lit. 'burnt') by the stinging tree'
        (Dixon 1977: 351)

The data on negative purpose are, however, too scarce in the sample to allow for any generalizations. Therefore, in what follows only positive purpose will be considered.

6.2.2. Temporal posteriority ('before' relations)

Relations of temporal posteriority ('before' relations) involve two SoAs occurring in a sequence. The dependent SoA follows the main one in time and is selected as a temporal reference point for it, as exemplified in

(6.9)   [Before I got that job], I had much more spare time

(6.10)   I will phone her [before I leave]

'Before' relations entail that the dependent SoA is located at a time point posterior to that of the main SoA, and is unrealized when the main SoA takes place.

As was pointed out in Section 3.2.3, 'before' relations, just like purpose relations, have no logical entailment about whether the dependent SoA actually takes place. However, it is normally assumed that it does, for it would be communicatively pointless to select as a temporal reference point an SoA that does not occur. Some languages use special constructions to explicitly indicate that the dependent SoA actually takes place, as was shown in Section 3.2.3.1 (example (3.14)).

6.2.3. Temporal anteriority ('after' relations)

Relations of temporal anteriority ('after' relations) also involve two SoAs occurring in a sequence. In this case the dependent SoA is anterior to the main one, as exemplified in

(6.11)   This happened [after you left]

'After' relations entail that the dependent SoA takes place before the main one, and is realized and completed at the moment the main one takes place.

6.2.4. Temporal overlap ('when' relations)

'When' relations, as exemplified in (6.2), imply that the main and dependent SoAs overlap in their realization, even though the exact extent of the overlapping is unspecified and subject to variation. For instance, a sentence like

(6.12)   [When the Nazis came to power], Georg Grosz left Germany

does not mean that the two SoAs take place at exactly the same temporal point. There might be an interval of some days, or even months or years between the two. On the other hand, in a sentence like

(6.13)   [When he entered the room], she went out

it is normally assumed that the two SoAs are either simultaneous or separated by a very short time interval. The point is that the length of the time interval separating the two SoAs is irrelevant, and can normally be easily recovered from the discourse context: for the purposes of discourse, the two SoAs can be regarded as taking place simultaneously.

6.2.5. *Reality condition*

Condition relations have been the topic of extended investigation in the last decades (see in particular Traugott, ter Meulen, Reilly, and Ferguson 1986; Sweetser 1990: ch. 5; Athanasiadou and Dirven 1997; and Dancygier 1998) with regard to both their pragmatics and semantics, and the morphosyntactic devices used to code them.

Condition relations establish a connection between two SoAs such that the occurrence of one of them (the dependent one, also indicated as the antecedent) is the condition for the occurrence of the other. This basic situation may be further specified by the speaker by providing some indication about the likelihood of the dependent SoA taking place: many languages have special strategies indicating that the dependent SoA did not take place (counterfactual conditionals) or has a low likelihood of taking place (Givón 1990: 828–33). These two situations are instantiated in the English examples (6.14) and (6.15).

(6.14)   [If I had done this], I would have died (Givón 1990: 833)

(6.15)   [If I did this], I would surely die (Givón 1990: 833)

In the relation type that will be taken into account here, named, after Thompson and Longacre (1985: 190), a reality condition, and instantiated in (6.3), the realization of the dependent SoA is presented as possible (which distinguishes it from counterfactual conditionals) but no indication is given about the likelihood of it taking place (which distinguishes it from condition relations where this likelihood is presented as quite low).

The definition 'reality condition' is used in Thompson and Longacre (1985) to refer to situations such as the one instantiated in (6.3), where the occurrence of the dependent SoA is presented as possible in the present or in the past. However, following Givón (1990: 829), this definition will be used here to also cover a condition relation type which Thompson and Longacre (1985: 191) call 'unreality predictive conditionals', where the speaker predicts what will be. This relation type is instantiated in

(6.16)   [If he gets the job], we will all celebrate (Thompson and Longacre 1985: 191)

The basic implication of reality condition relations is that if the dependent SoA takes place, the main one also takes place. However, just as in the situation of propositional attitude predicates (cf. Section 5.2.8) the speaker has no grounds for establishing whether or not the dependent SoA actually takes place. Hence the dependent SoA is always presented as non-factual. Reality condition relations, however, display a distinctive feature with respect to other subordination relations where the dependent SoA is non-factual. Since the realization of the main SoA is contingent on that of the dependent SoA (albeit not necessarily in causal terms), the main SoA is also presented as non-factual.

Many languages neutralize the distinction between reality conditions and 'when' relations, and code the two by means of the same morphology. In fact, the semantics of the two are quite similar, in that both imply that when a given SoA takes place, another one also takes place. In relations of temporal overlap, however, the occurrence of the relevant SoAs is presented as certain, while in reality condition relations it is presented as possible. Furthermore, whereas in reality condition relations the dependent SoA can be either anterior or simultaneous to the main one, in relations of temporal overlap the two SoAs are normally interpreted as simultaneous (but see Section 6.2.4 above). An instance of neutralization between the two relation types is provided by Djapu:

Djapu (Australian)
(6.17) *[ga   ŋunhi   ŋanapurr   ḻarru-ma-ni   yurru ya'*
        and   that   1PL.EXCL:NOM   eat-UNM-PROSP   FUT   INTERJ
        marrtji-ny   nhä-ma-ny   ŋanya   borum-nha]
        go-UNM-PROSP   see-UNM-PROSP   3SG:ACC   fruit-ACC
        bala   ŋanapurr   bitja-n-a   waŋa
        then   1PL.EXCL:NOM   do.thus-UNM-IMM   speak-UNM
        ŋuli   dhuwa-na   borum-dja
        IRREAL   this-IMM   fruit-PROSP
        'And when/if we go looking for that fruit, and see it, then we might say: "*this* is the fruit now" ' (Morphy 1983: 128–9)

6.2.6. Reason

Reason relations connect two SoAs, one of which (the dependent one) represents the reason for the other to take place. This is the case in (6.4), as well as in (6.18):

(6.18) We went to the usual cafe [because the new one had no cakes]

The semantics of reason relations partially overlaps that of other subordination relations. Like 'when' and 'after' relations, they imply that the dependent SoA is factual. In fact, if two SoA are both factual and contiguous in time, as is often the case with 'when' and 'after' relations, they can be inferred to be causally related. Like purpose relations, reason relations imply that the dependent SoA provides a motivation for the main one to occur. In fact, reason, 'when', 'after', and purpose relations are often coded by means of the same morphology (Thompson and Longacre 1985) . Diachronically, forms used to express some of these relations may be extended to cover the others. This is for instance the case of Homeric and Classical Greek *hōs*, a conjunction deriving from the ablative/instrumental case form of a demonstrative pronoun. The original function of *hōs* in the Homeric age

was to express purpose and 'when' relations, as can be seen from (6.19):

Homeric Greek (Indo-Hittite, Indo-European)

(6.19)   *a. allà   mèn'*   *óphra   ké   toi*
         but   stay-(IMP) till   PTCL   2SG:DAT
         meliēdé-a   *oĩn-on*   *eneík-ō,*
         honey.sweet-ACC:SG   wine-ACC:SG   bring:AOR-SUBJN:1SG
         *[**hōs**   speí-s-ēis*   *Di-i*
         in order for   pour.libation-AOR-SUBJN:2SG   Zeus-DAT
         patr-ì   kaì   áll-ois   *athanát-oisi]*
         father-DAT   and   other-DAT:M:PL   immortal-DAT:PL
         'But stay till I have brought honey-sweet wine in order for you to
         pour libation to Zeus and the other immortals' (Homer, Iliad 6.258–9)

       b. Héktōr   d'   *[**hōs** ouk   éndon (. . .)*
         Hector:NOM   PTCL   as   NEG   inside
         tétm-en   *ákoit-in]*   *(. . .)*
         find:AOR-IND:3SG   spouse-ACC
         é-eip-en
         PAST-say:AOR-IND:3SG
         'Hector, as he did not find his spouse within (. . .) said (. . .)' (Homer,
         Iliad 6.374–5)

In the Classical age, the use of *hōs* was extended to reason relations, as illustrated in (6.20) (Cristofaro 1998*b*):

Classical Greek (Indo-Hittite, Indo-European)

(6.20)   *Metà   dè   toũt-o,*   *[**hōs** oudeís*
         after   PTCL   that-ACC:NT:SG   as   no.one:NOM:M:SG
         sphi   epéple-e   (. . .)   aut-oi   *epanéple-on*
         they:DAT   sail:PAST-3SG   they-NOM:M:PL   sail:PAST-3PL
         epì   toùs   *barbár-ous]*
         against   ART:M:ACC:PL   barbarian-ACC:PL
         'After this, as no one sailed against them, (. . .) they themselves
         advanced their ships against the barbarians' (Herodotus, 8.9)

6.3. Semantic features of adverbial relations

6.3.1. Level of clause structure

Just like complement relations, adverbial relations may be established at different levels of clause structure. In general, all adverbial relations may be established at the predication level, that is between two distinct SoAs. In addition, some of them may function at the proposition and the utterance level. This is the case in (6.21)

and (6.22):

Lezgian (Caucasian)

(6.21) *A   qãri.di   [zun   kaka-jar   čünüx-iz*
        that   old.woman(ERG)   I:ABS   egg-PL   steal-INF

        ata-nwa-j-di   ja   luhuz]   rak'.ar.a-l
        come-PERF-PTCP-NOMLZR   COP   saying   door-PL-SRESS

        čefte   hald-na
        lock   put.on-AOR
        'That old woman put the lock on the door because [she thought that] I
        had come to steal the eggs' (Haspelmath 1993: 391)

(6.22) To tell you the truth, I do not like this at all

In neither of these cases are the relevant SoAs linked by a reason or a purpose
relation. In (6.21), the motivation for the main SoA (the speaker's coming to steal
eggs) is a subjective opinion, and the SoA this opinion refers to is non-factual.
In (6.22), one of the linked SoAs (telling the truth to the addressee) actually
represents the purpose for bringing about some other SoA. The latter, however,
does not correspond to the other SoA described in the sentence, but to the speech
act itself. That is, it is not that the purpose of my not liking something at all is to
tell you the truth. Rather, telling you the truth is my purpose for saying that I do
not like something at all (see on this point Hengeveld 1989).

    According to Hengeveld (1998), the higher the level the adverbial relation refers
to, the lower the likelihood of the dependent SoA being coded by deranked verb
forms. This is in accordance with the patterns found for complement relations in
Chapter 5. Complement relations established at the predication level outrank com-
plement relations established at the proposition level (knowledge, propositional
attitude, utterance) with respect to all of the morphosyntactic phenomena taken
into account.

    As far as adverbial relations are concerned, however, none of the relation types
considered here can be established exclusively at the proposition or the utterance
level (unlike some of the relation types examined in Hengeveld (1998), such as, for
example, explanation relations). Some of the relation types taken into account can
be established both at the predication and the proposition or the utterance level, as is
shown by examples (6.21) and (6.22) (and see Sweetser (1990: 116–21) for reality
condition relations at the proposition and the utterance level). However, languages
where the same adverbial relation is expressed differently depending on the level
of clause structure are quite rare, both in the sample and in Hengeveld's data.[1]
Also, grammars usually provide no information about adverbial relations at the

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[1] For instance, Hengeveld (1998: 360–1) only has four languages out of thirty-nine where the same
adverbial relation (the one indicated here as reason) is expressed differently depending on the level
of clause structure (Hengeveld uses the terms 'cause' for reason relations at the predication level, and
'reason' for reason relations at the proposition level).

proposition and utterance level. Therefore, all of the adverbial relations taken into account in this chapter will be intended as operating at the predication level. This means that, unlike what happened for complement relations, the parameter 'level of clause structure' does not allow us to distinguish different types of adverbial relations, because all the adverbial relations taken into account have the same value ('predication') with respect to this parameter. Yet, as will be seen in Chapter 9, the fact that adverbial relations are established at the predication level turns out to be relevant to their ranking with respect to complement relations in the overall patterns for the cross-linguistic coding of subordination.

6.3.2. *Predetermination*

Adverbial relations have different implications about the participants, time reference, aspect, and mood value of the linked SoAs. Adverbial relations do not predetermine the participants of the linked SoAs, that is, there is no adverbial relation implying that the linked SoAs share any participants. However, sharing of participants seems to be the prototypical situation for purpose relations, as was seen in Section 6.2.1.

Some adverbial relations predetermine the time reference and aspect value of the linked SoAs, and all adverbial relations predetermine the mood value of the dependent SoA. In purpose, 'before', and 'after' relations the linked SoAs are sequential, hence the time reference of each of the linked SoAs is predetermined with respect to that of the other. In purpose and 'before' relations, the dependent SoA is posterior to the main one. This means that the dependent SoA is unrealized at the time the main SoA takes place, and there is no implication that it actually takes place at some subsequent point in time. Hence the aspect value of the dependent SoA is irrelevant to the adverbial relation. It should, however, be pointed out that in 'before' relations it is normally assumed that the dependent SoA actually takes place (Section 6.2.2).

In 'after' relations, the dependent SoA is anterior to the main one. It is also completed and realized at the point in time when the main SoA takes place. Hence the aspect and mood value of the dependent SoA are predetermined as completed and factual respectively.

In 'when' relations the time reference of each of the linked SoAs is also predetermined with respect to that of the other. As was pointed out in Section 6.2.4, the main and dependent SoAs overlap to some extent, and hence take place simultaneously. The dependent SoA is realized at the point in time when the main SoA is realized, hence its mood value is also predetermined as factual. On the other hand, the aspect value of the dependent SoA is undetermined, as is demonstrated by the contrast between (6.12), where the dependent SoA is perfective, and (6.23), where the dependent SoA is imperfective:

(6.23)   I often listen to music [when I am working]

Reality conditions and reason relations do not predetermine either the time reference or the aspect value of the linked SoAs. The dependent SoA in reality condition relations can be anterior or simultaneous, but not posterior to the main SoA. This is witnessed by the contrast between (6.24*a*) and (6.24*b*) on the one hand, and (6.24*c*) on the other:

(6.24)   *a.* [If he has already arrived], he will phone

  b. [If it's raining outside], my papers are getting wet

  c. *If he will arrive soon, he has already phoned

The time reference of the dependent SoA can therefore be regarded as non-predetermined (even though it is subject to some semantic constraints), because the cases of predetermined time reference examined so far imply that the time reference of the relevant SoA is unique. The aspect value of the dependent SoA is also non-predetermined, as witnessed by the aspectual contrast between (6.24*a*), where the dependent SoA is completed, and (6.24*c*), where it is on-going.

Reason relations also do not specify the time reference and the aspect value of the dependent SoA, as can be seen from the contrast between (6.4) and (6.18) on the one hand and (6.25) and (6.26) on the other:

(6.25)   We are not going out [because it's raining outside]

(6.26)   I am doing this now [because I will be away next week]

As for mood value, the basic implication of reality condition relations is that if the dependent SoA takes place, the main one also takes place. However, as with propositional attitude predicates (see Section 5.2.8) the speaker has no grounds on which to establish whether or not the dependent SoA actually takes place. Hence the dependent SoA is always presented as non-factual. On the other hand, reason relations imply that the dependent SoA is factual. This is true even if the dependent SoA has a future time reference with respect to the main one, as in (6.26). In this case the dependent SoA is not realized yet. However, there is no doubt about its future realization, so it can be regarded as factual.

The implications of the various adverbial relations with respect to the participants, time reference, aspect, and mood value of linked SoAs are given in Table 6.1. As in Table 5.2, only the information concerning the dependent SoA is reported, even though when the time reference of the dependent SoA is predetermined, the time reference of the main SoA is also predetermined.

6.3.3. Semantic integration

The adverbial relations taken into account so far have different implications with respect to semantic integration. Purpose relations imply that the main SoA is brought about with the goal of obtaining the realization of the dependent one. This situation is similar to the one found with manipulative predicates such as 'make'.

TABLE 6.1. *Adverbial relations and predetermination*

Adverbial relation	Semantic features of the dependent SoA			
	Time reference	Aspect value	Mood value	Participants
Purpose	PD	PD (irr.)	PD	UD
Before	PD	PD (irr.)	PD	UD
After	PD	PD	PD	UD
When	PD	UD	PD	UD
Reality condition	UD	UD	PD	UD
Reason	UD	UD	PD	UD

PD = predetermined; UD = undetermined; irr. = irrelevant

The obvious difference, however, is that 'make' predicates entail the realization of the dependent SoA. This means that the linked SoAs are related in terms of occurrence, in that the main one is performed with the goal of obtaining the realization of the dependent one, and the dependent one takes place as the direct result of the main one taking place. Purpose relations, on the other hand, do not entail that the dependent SoA actually takes place. For instance (6.1) above does not imply that the speaker actually bought pumpkin, basil, and cranberries at the market, and (6.5) does not imply that the speaker looked for typos, although of course s/he might have done so. In this respect, the degree of interconnection between SoAs in purpose relations is similar to the one found with 'order', desideratives, and perception predicates. These predicates imply that the occurrence of the main SoA is connected to the dependent SoA—a command or desire only make sense if they refer to the possible occurrence of some SoA, and an act of perception cannot exist independently of the perceived SoA. However, just as in purpose relations, the occurrence of the dependent SoA is independent of the main SoA. With 'order' and desiderative predicates, the dependent SoA need not occur, and with perception predicates the perceived (dependent) SoA occurs independently of the perception act.

Hence the degree of semantic integration in purpose relations is roughly equivalent to that found with 'order', desiderative, and perception predicates.

The Semantic Integration Hierarchy in Table 5.3 can now be modified in order to integrate purpose relations:

(6.27)   The revised Semantic Integration Hierarchy:
         Phasals > Modals > Manipulatives ('make') > Purpose, Manipulatives
         ('order'), Desideratives, Perception

The other adverbial relations do not involve any semantic integration between the linked SoAs, that is, the linked SoAs are not interconnected, and are perceived as distinct. This is intuitively quite clear in the case of temporal and reality condition relations. In temporal relations, the linked SoAs either occur in succession, or

overlap temporally. As was observed in relation to example (5.47), the fact that two SoAs occur in succession, or overlap temporally, does not imply that they are interconnected. In principle, the two SoAs need not have anything to do with each other (although this may be assumed in discourse, as is the case in (6.2) above, where a causal relationship is assumed between the linked SoAs).

Reality condition relations do not imply *per se* that main and dependent SoA are interconnected. All they imply is that if the dependent SoA takes place, the main one also takes place. However, the two SoAs as such are completely distinct from each other, and they need not be related even in terms of occurrence. For instance, in (6.3) and (6.24*b*) the linked SoAs are related by a causation relationship, but in (6.24*a*) they are not.

Reason relations do not involve semantic integration between the linked SoAs either. This may not be straightforward, because, as in the case of 'make' predicates and purpose relations, there is a causal relationship between the linked SoAs. The causal relationship is, however, quite different from the one involved with 'make' predicates and purpose relations. 'Make' predicates and purpose relations imply that the boundaries between the linked SoAs are eroded. In purpose relations, the main SoA is deliberately brought about to obtain the realization of the dependent SoA. 'Make' predicates refer either to the fact that an SoA is deliberately brought about by some agent to obtain the realization of the dependent SoA (example (5.23)), or the fact that the properties of some entity or SoA are such as to necessarily trigger the realization of the dependent SoA (examples (5.24) and (5.25)). In both cases, the linked SoAs are interconnected.

In reason relations, on the other hand, the causal relationship is indirect (as is witnessed by the fact that the linked SoA need not be spatio-temporally contiguous, nor share any participants). The SoA representing the cause usually takes place independently of the SoA resulting from it, and its properties are not such as to trigger the realization of the SoA representing the effect. For example, in (6.4), the speaker's having to give a talk on some topic need not trigger her or his working on that topic a week before, and in (6.18) the new cafe's having no cakes need not trigger the speaker's going to the usual cafe. As a result, the linked SoAs are completely distinct from each other, and the boundaries between the two of them are fully preserved. This shows that causation should be kept distinct from semantic integration, that is, interconnection between SoAs. In reason relations, just as in temporal and reality condition relations, the linked SoAs are not interconnected.

6.4. Cross-linguistic coding of adverbial relations

6.4.1. Methodological premises

The cross-linguistic coding of adverbial relations will be described by means of implicational generalizations established via the same method described in Section 5.4. Each of the adverbial relations taken into account is compared

Language	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Greenlandic (West)	D	D	D	D	D	D
Tagalog	D	D	D/B	D/B	B	B
Basque	D	D/B	D/B	D/B	D/B	D/B
Egyptian (Ancient)	D/B	D/B	D/B	D/B	D/B	D/B
Banda Linda	B	B	B	B	B	B

FIGURE 6.1. *Balancing and deranking: cut-off points in the hierarchy of adverbial relations*

with each of the others with respect to the parameters listed in Section 3.4. The implicational generalizations established in this way are then arranged into implicational hierarchies.

The data supporting the implicational hierarchies are reported in Tables 6.4 and 6.5 in Section 6.6. These tables report the number of languages for which information about both of the parameters involved in the generalizations is available, the number of significant cases supporting the implication, and the number of significant cases contradicting the implication. Tables 6.6–6.17 in Section 6.7 report the data about the various parameters taken into account for each language.

6.4.2. The form of the verb

The data on the various parameters concerning the form of the verb in adverbial relations are reported in Tables 6.6–6.15. These data allow us to establish the Adverbial Deranking Hierarchy in (6.28):

(6.28)   The Adverbial Deranking Hierarchy
          Purpose > Before, After, When > Reality condition, Reason

If a deranked verb form is used to code the dependent SoA at any point on the hierarchy, then it is used at all points to the left. The data on the distribution of balanced and deranked verb forms are reported in Table 6.6. The languages in Figure 6.1 instantiate some possible cut-off points for the Adverbial Deranking Hierarchy.

Lack of TAM and person agreement distinctions[2] and use of case marking or adpositions on the dependent verb follow slightly different versions

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[2] As in the case of complement relations, lack of person agreement distinctions in adverbial relations tends to be total, that is to involve all the arguments that can be cross-referenced on the verb in the language. The sample provides only two cases in which some arguments are not cross-referenced on the verb, but others are. One is found in Lango, a language displaying similar phenomena for complement relations (see Section 5.4.2). In purpose constructions, the verb does not agree with A/S arguments, but agrees with O arguments. The second case is quite similar, and is found in Limbu, a Sino-Tibetan (Tibeto-Burman) language where agreement normally follows an ergative pattern. In purpose constructions, the usual agreement markers are not used, and the verb bears a possessive prefix agreeing with O arguments. Both of these cases reflect, once again, Croft's (1991) Deverbalization Hierarchy, and the Limbu pattern conforms to Kazenin's hierarchy for syntactic ergativity (Kazenin 1994: sect. 3.3).

Language	Purp.	Bef.	Aft.	Wh.	Reas.	R. c.
Barasano	−	−	−	−	−	−
Finnish	−/+	−/+	−/+	−/+	−/+	+
Supyire	−/+	−/+	+	−/+	+	+
Punjabi	−	−	−	−/+	−/+	+
Fula	−	−/+	+	−/+	+	+
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Karimojong	+	+	+	+	+	+

FIGURE 6.2. *Lack of T distinctions: cut-off points in the hierarchy of adverbial relations*
− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed; blank = no information available

of the Adverbial Deranking Hierarchy:

(6.29) Adverbial relations: Lack of T distinctions:
Purpose > Before, After, When > Reason > Reality condition

(6.30) Adverbial relations: Lack of A distinctions:
Purpose > Before, After > When, Reason > Reality condition

(6.31) Adverbial relations: Lack of M distinctions, case marking/adpositions
on the dependent verb:[3]
Purpose > Before, After, When, Reason > Reality condition

(6.32) Adverbial relations: Lack of person agreement distinctions:
Purpose > Before, After, When, Reason, Reality condition

The data on lack of TAM distinctions, lack of person agreement distinctions, and case marking/adpositions are reported in Tables 6.7, 6.8, 6.9, 6.13, and 6.15. The languages in Figures 6.2–6.6 instantiate some of the possible cut-off points for these hierarchies.

As for the use of special forms to express TAM and person agreement distinctions, the same observations as those made for complement relations hold for adverbial relations. Use of special forms is much less frequent than lack of the relevant distinctions. As a result, the distribution of special forms cannot be described by means of implicational hierarchies as precise as the Adverbial Deranking Hierarchy. The only generalization that can be made is a reformulation of the

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[3] In fact, the data on case marking/ adpositions (reported in Table 6.17) suggest that 'before', 'after', and 'reason' relations outrank 'when' and reason relations. The hierarchy for case marking/ adpositions would then be:

Purpose > Before, After, Reason > When > Reality condition

However, the ranking of 'before', 'after', and reason relations with respect to 'when' relations is supported by a small number of languages and/or a small number of significant cases. Therefore this ranking will be disregarded here.

Language	Purp.	Bef.	Aft.	Wh.	Reas.	R. c.
Barasano	−	−	−	−	−	−
Punjabi	−	−	−/+	−/+	−/+	+
Maricopa		−	−	−/+	+	+
Lezgian	−	−	+	+	+	+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+

FIGURE 6.3. *Lack of A distinctions: cut-off points in the hierarchy of adverbial relations*
− = A distinctions not expressed; + = A distinctions expressed; −/+ = A distinctions either not expressed or expressed; blank = no information available

Language	Purp.	Bef.	Aft.	Wh.	Reas.	R. c.
Barasano	−	−	−	−	−	−
Punjabi	−/+	−	−	−/+	−/+	+
Akan	−/+	+	+	+	+	+
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+

FIGURE 6.4. *Lack of M distinctions: cut-off points in the hierarchy of adverbial relations*
− = M distinctions not expressed; + = M distinctions expressed; −/+ = M distinctions either not expressed or expressed; blank = no information available

Language	Purp.	Bef.	Aft.	Wh.	Reas.	R. c.
Barasano	−	−	−	−	−	−
Kanuri	−	+	+	+	+	+
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Ho	+	+	+	+	+	+

FIGURE 6.5. *Lack of person agreement distinctions: cut-off points in the hierarchy of adverbial relations*
− = person agreement distinctions not expressed; + = person agreement distinctions expressed; −/+ = person agreement distinctions either not expressed or expressed; blank = no information available

Language	Purp.	Reas.	Aft.	Bef.	Wh.	R. c.
Greek (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Turkish	+	+	+	+	−/+	−
Krongo	+	−	−/+	−	−	−
Basque	−/+	−/+	−/+	−/+	−/+	−/+

FIGURE 6.6. *Case marking/adpositions on verbs: cut-off points in the hierarchy of adverbial relations*
− = no case marking/adpositions; + = case marking/adpositions; −/+ = either no case marking/adpositions or case marking/adpositions

general statement in (5.55):

(6.33)   When TAM and person agreement distinctions are expressed overtly in
         the dependent clause, use of special forms to express these distinctions
         does not violate the Adverbial Deranking Hierarchy

However, as can be seen from the data in Table 6.12, reality condition relations
outrank reason relations as far as the use of special forms for M distinctions is
concerned. In the Adverbial Deranking Hierarchy these two relation types rank
in the same way, while in the hierarchies concerning lack of TAM distinctions,
reason relations outrank reality condition relations. The difference between these
hierarchies is due to the distribution of special mood forms. Reason relations out-
rank reality condition relations as far as lack of TAM distinctions is concerned, but
reality condition relations outrank reason relations as far as the use of special mood
forms is concerned. Since these two parameters contribute equally to deranking,
the two relation types rank in the same way with respect to deranking.[4]

Language data concerning the use of special TAM and person agreement forms
in adverbial relations are reported in Table 6.10, 6.11, 6.12, and 6.14.

6.4.3. The coding of participants

The data on the various parameters concerning the coding of participants in
adverbial relations are reported in Tables 6.16 and 6.17.

Splits in alignment patterns are even rarer in adverbial relations than they are
in complement relations. In fact, they occur in three languages only (Ancient
Greek, Kayardild, Tümpisa (Panamint) Shoshone). The data on these languages
are reported in Table 6.2.

When arguments are not overtly expressed in the dependent clause, it is in
accordance with an accusative pattern. Non-expressed arguments are almost
always A and S rather than O.

Lack of A and S arguments and coding of these arguments as possessors follow
the same hierarchy as lack of person agreement distinctions, that is

(6.34)   Adverbial relations: Lack of A and S arguments:
         Purpose > Before, When, After, Reason, Reality condition

Figure 6.7 instantiates some possible cut-off points for this hierarchy, while the
relevant language data are reported in Tables 6.16.

It should be pointed out that there is a tendency for languages not to express
arguments in purpose relations only. As can be seen from Table 6.16, this is the

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[4] Hengeveld (1998) claims that reason relations (which he calls 'cause' relations) outrank reality
condition relations with respect to the distribution of deranked (or, in his terms, dependent) verb forms.
This is in contrast with the Adverbial Deranking Hierarchy in (6.29). However, as was mentioned in
Section 3.2.2, Hengeveld does not regard special TAM or person agreement forms (such as subjunctives,
etc.) as deranked, and in the Adverbial Deranking Hierarchy reality condition relations rank in the same
way as reason relations exactly because of these forms.

TABLE 6.2. *Adverbial relations: splits in alignment patterns*

Language	Adverbial relation type	Alignment pattern in dependent clause	Alignment pattern in independent clauses
Greek (Ancient)	Purp., Bef., Aft., Wh., Reas.	(A, S, O)	(A, S), (O)
Kayardild	Aft., Reas.	(S, O), (A)	(A, S), (O)
Shoshone (Tümpisa Panamint)	Aft., Wh., Reas., R. c.	(A, S, O)	(A, S),(O)

Arguments in brackets are coded in the same way.

Language	Purp.	Bef.	Aft.	Wh.	Reas.	R. c.
Gimira	−/+	−/+	−/+	−/+	−/+ ‖	+
Akan	−/+ ‖	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+

FIGURE 6.7. *Lack of overtly expressed arguments (A and S): cut-off points in the hierarchy of adverbial relations*

− = A and S not expressed; + = A and S expressed; −/+ = A and S either not expressed or expressed; blank = no information available

case in nineteen out of the forty-six languages in the sample where arguments are not expressed.

Coding of arguments as possessors is quite rare, being attested in ten languages only. One of these (West Greenlandic) uses such coding for A, S, and O, while the others allow it for A and S only, as predicted by Croft's (1991) Deverbalization Hierarchy. Since coding of arguments as possessors is so rare, no implicational hierarchy will be proposed. However, the distribution of coding of arguments as possessors or obliques basically follows the patterns observed for balanced and deranked verb forms and lack of overtly expressed arguments. The relevant data are reported in Table 6.17.

6.5. Cross-linguistic coding of adverbial relations and functional factors

Cross-linguistic analysis allows us to establish two major hierarchies for the coding of adverbial relations. The first one is the Adverbial Deranking Hierarchy:

(6.35)   The Adverbial Deranking Hierarchy:
          Purpose > Before, After, When > Reality condition, Reason

The Adverbial Deranking Hierarchy holds for the distribution of balanced and deranked forms, and has a number of variants (reported in (6.30)–(6.33)) for

lack of TAM distinctions, lack of person agreement distinctions, and case marking/adpositions on the dependent verb.

The hierarchy for lack of person agreement distinctions is the same as the one for lack of overtly expressed arguments. In fact, person agreement distinctions also pertain to arguments, in that they cross-reference arguments on the verb. The relevant hierarchy may now be called the Adverbial Argument Hierarchy:

(6.36)   The Adverbial Argument Hierarchy:
         Purpose > Before, After, When, Reality condition, Reason

As was done for complement relations, a connection will now be established between these hierarchies and the semantics of adverbial relations, as described in Section 6.3. The relevant semantic factors are the same as those invoked for complement relations, namely predetermination, semantic integration, the fact that the dependent SoA is unrealized, and preference, that is the fact that the subordination relation involves an element of will or an interest in the realization of the dependent SoA. Yet it will be shown that the interaction of these factors is more complicated than was assumed so far, and additional factors must be brought into the picture.

As with complement relations, a correlation can be identified between predetermination of the semantic features of the linked SoAs and the distribution of the phenomena leading to non-specification or difficult recoverability of information pertaining to these features.

For example, the relation types involving predetermination of the time reference of the dependent SoA (purpose and temporal relations) outrank those where this parameter is not predetermined (reason and reality condition relations) with respect to a lack of T distinctions. Similarly, the relation types involving predetermination of the aspect value of the dependent SoA (purpose, 'before', and 'after' relations) outrank those where this parameter is not predetermined ('when', reason, and reality condition relations) with respect to a lack of A distinctions. As for lack of person agreement distinctions and lack of overtly expressed arguments, no adverbial relation has any entailment about the participants of the dependent SoA. However, as was shown in Section 6.2.1, the prototypical situation in a purpose relation seems to be one where the main and dependent SoAs are performed by the same entity, and in fact purpose relations are found at the leftward end of the Adverbial Argument Hierarchy.

As in the case of complement relations, however, predetermination does not account for a number of facts.

First, individual relation types rank differently with respect to the morphosyntactic phenomena leading to non-specification of information even if they all predetermine, or do not predetermine, the relevant semantic features of the linked SoAs. For instance, like other adverbial relations, purpose relations predetermine the time reference, the aspect, and mood value of the dependent SoA. Yet they outrank all of the other adverbial relations with respect to a lack of TAM distinctions. Similarly, 'before', 'after', 'when', reason, and reality condition relations

all involve predetermination of the mood value of the dependent SoA, yet reality condition relations rank lower than the other relation types with respect to a lack of M distinctions. On the other hand, although neither reason nor reality condition relations predetermine the time reference and aspect value of the dependent SoA, reason relations outrank reality condition relations with respect to a lack of TA distinctions.

The second point is that predetermination does not account for the phenomena not leading to a non-specification of information, such as case marking/adpositions on the dependent verb. This point was made in connection with complement relations in Section 5.5.

The position of purpose relations can be accounted for in terms of semantic integration. Purpose relations are the only adverbial relation involving semantic integration between main and dependent SoAs, and they outrank the other adverbial relations with respect to all of the morphosyntactic phenomena taken into account. In some cases this can be accounted for in terms other than semantic integration. As was pointed out above, purpose relations seem to prototypically involve a sharing of participants between the linked SoAs, and this may explain why they outrank the other adverbial relation types with respect to the phenomena leading to a non-specification of participants of the dependent SoA (lack of person agreement distinctions and lack of overtly expressed arguments). For all of the other phenomena, however, no such explanation can be invoked, while there is a difference between purpose and the other relation types in terms of semantic integration. This can be taken as evidence that semantic integration plays a role in the cross-linguistic coding of adverbial relations also.

The position of purpose relations on the hierarchies also suggests that the cross-linguistic coding of adverbial relations is sensitive to the mood value of the dependent SoA, in the same way as for complement relations. In Section 5.5 it was argued that the fact that certain relation types outrank others with respect to a lack of TAM distinctions is due to the fact that these relation types entail that the dependent SoA is unrealized, or its mood value is irrelevant. This seems to hold for adverbial relations too, in that purpose relations entail that the dependent SoA is unrealized at the point in time where the main SoA is located, and they outrank the other adverbial relations with respect to a lack of TAM distinctions.[5] Also, purpose relations imply that a participant of the main SoA has a will or an

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[5] This hypothesis seems to be contradicted by the position of 'before' relations on the Adverbial Deranking Hierarchy. 'Before' relations entail that the dependent SoA is unrealized at the point in time where the main SoA is located, yet they rank in the same way as relation types where the dependent SoA is realized, such as 'after' and 'when' relations. However, as was pointed out in Section 6.2.2, in 'before' relations (as in other temporal relations) the dependent SoA provides a temporal reference point for the main SoA, and it would be communicatively pointless to select as a temporal reference point an SoA that does not occur. Therefore, it is normally assumed that the dependent SoA in a 'before' relation actually takes place (with purpose relations, on the other hand, no such assumption need be made). This may be the reason why the fact that the dependent SoA is unrealized seems to have no effect on the coding of 'before' relations.

interest in the realization of the dependent SoA (preference). In Section 5.5, it was suggested that this fact may play a role in the occurrence of a lack of TAM distinctions, and this hypothesis is borne out by the position of purpose relations on the Adverbial Deranking Hierarchy.

The hierarchy for case marking/adpositions on the dependent verb cannot be explained in terms of predetermination (see above). Semantic integration may account for the position of purpose relations on this hierarchy, but not for the fact that temporal and reason relations outrank reality condition relations, because none of these relation types involves semantic integration.

Case marking/adpositions on the dependent verb can be regarded as evidence that the dependent verb has nominal properties. Case marking and adpositions are a prototypical property of nouns, not verbs. As demonstrated by a number of studies (Hopper and Thompson 1984, 1985; Langacker 1987*a*, 1987*b*, 1991; Croft 1991), verbs prototypically code SoAs, or processes, while nouns prototypically code objects, that is stable, atemporal entities (this issue will be taken up again in Chapter 9). Now, some relation types are such that the dependent SoA is easier to construe as an object rather than as an SoA in its own right, while in other cases this is more difficult. In temporal and reason relations, it appears that the dependent SoA is easier to construe as an object than it is in reality condition relations.

In temporal relations, the dependent SoA provides a reference point, or ground, for the main one. That is, the dependent SoA is used to locate the main one in time. But temporal location is conceptually similar to spatial location, that is the dependent SoA may be assimilated to a place, and places are object-like conceptual entities, in that they are stable and atemporal. The similarity between spatial and temporal location is manifested in a number of linguistic phenomena. For instance, in virtually all of the languages that use case markers or adpositions for temporal relations, these also have spatial meanings. More generally, conceptualization of time on the basis of space is a well-attested cross-linguistic process, and one which plays a crucial role in grammaticalization phenomena (see, among others, Heine, Claudi, and Hünnemeyer 1991; Hopper and Traugott 1993; Haspelmath 1997*a*). In fact, temporal conjunctions also have spatial meanings in many languages, as illustrated by the following English example:

(6.37)   Turn left **before/after** the traffic lights

As for reason relations, they can either be established between two distinct SoAs, or between an SoA and a stable atemporal entity representing the cause of its occurrence, as in

(6.38)   I came because of you

In this case, the occurrence of the relevant SoA is caused by a given entity in itself, not by any SoAs in which this entity is involved. This suggests that

in reason relations too the dependent SoA is relatively easy to assimilate to an object.

On the other hand, there does not seem to be any way to assimilate the dependent SoA to an object in reality condition relations. This is revealed by the unacceptability of sentences such as (6.39*a*), as opposed to (6.39*b*), (6.37) and (6.38):

(6.39)   *a.* *In case of you, I will come

         b. If you are there, I will come

In fact, the impossibility of the dependent SoA being assimilated to an object seems to be related to the semantic features of reality condition relations. Reality condition relations establish a link between the occurrence of some SoA and the occurrence of some other SoA. But objects are stable, atemporal entities that cannot be evaluated in terms of occurrence. (This is discussed further in Chapters 8 and 9.) Therefore, reality condition relations seem to be incompatible with construal of the dependent SoA as an object.[6]

It should be observed in this connection that purpose relations also allow the dependent SoA to be construed as an object. Purpose relations define a situation where the performance of some SoA (the main SoA) on the part of an agent is directed towards some goal, namely the realization of the dependent SoA. This situation may be assimilated to one involving motion towards some target, or place, this target or place being the realization of the dependent SoA. Motion is directly involved in motion purpose constructions, such as the one in (6.1), and there is reason to believe that these constructions are the prototypical purpose constructions (see the discussion in Section 6.2.1 above). In fact, in a number of languages, purposive markers are identical to directional markers: this is, for instance, the case of English *to*, as exemplified in (6.1).

Thus, all adverbial relations except reality condition relations allow construal of the dependent SoA as an object. If case marking/adpositions on the dependent verb represent the acquisition of nominal properties on the part of the dependent verb, it seems reasonable to assume that it occurs when the dependent SoA is easier to construe as an object rather than when this is not the case. In the case of purpose relations, an additional motivation for the occurrence of case marking/adpositions on the dependent verb may be represented by semantic integration (provided that one can find a plausible motivation underlying the connection between semantic integration and case marking/adpositions: this issue will be discussed in Chapter 9).

Construal of the dependent SoA as an object also allows us to account for a further fact that has remained unexplained so far. Reason relations outrank reality

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[6] It should, however, be observed that reality condition relations may be expressed by the same constructions used for 'when' relations, as the two relation types display a number of semantic similarities (Section 6.2.5). In this case, since 'when' relations allow construal of the dependent SoA as an object, the relevant constructions may in principle display case marking/adpositions on the dependent verb.

condition relations with respect to a lack of TAM distinctions. This cannot be accounted for in terms of semantic integration, predetermination, preference, or the fact that the dependent SoA is unrealized, as both relation types pattern the same way with respect to these parameters. However, time reference, aspect, and mood value (as reflected by TAM distinctions) are typical properties of SoAs as opposed to objects, because SoAs can be evaluated in terms of occurrence through time, while objects are atemporal entities. Hence it is reasonable to assume that, other things being equal, a lack of TAM distinctions is found when the dependent SoA is easier to construe as an object rather than when this is not the case. If this assumption is correct, it does not hold for reason relations only, but for all relation types where the dependent SoA is easier to construe as an object, that is, all adverbial relations other than reality condition relations. This means that construal of the dependent SoA as an object should be regarded as a motivation for a lack of TAM distinctions for all of these relations. This issue will be taken up in detail in Chapter 9.

The discussion has ignored the use of special forms to express TAM and person agreement distinctions. As in the case of complement relations, this is because the data on special forms are too few to establish whether or not the semantic factors invoked so far play any role in the cross-linguistic distribution of special forms. However, this issue will be considered further in Chapter 9.

Table 6.3 schematizes the semantic factors accounting for the various patterns found for the cross-linguistic coding of adverbial relations.

We are now in a position to better define the explanatory model for subordination proposed in Chapter 5. The cross-linguistic coding of complement relations was accounted for in terms of four major semantic factors: predetermination of the semantic features of the linked SoAs, semantic integration, the mood value of the dependent SoA, and preference. These factors also work for adverbial relations. Adverbial relations involving predetermination of the semantic features of the linked SoAs outrank those involving no predetermination with respect to the phenomena leading to non-specification of the information corresponding to the relevant features. The only adverbial relation involving semantic integration and preference—purpose—is found at the leftward end ot the Adverbial Deranking Hierarchy and the Adverbial Argument Hierarchy. Finally, relation types where the dependent SoA is unrealized (purpose) outrank those where the dependent SoA is realized.

Adverbial relations suggest, however, that a further factor—ability of the dependent SoA to be construed as an object—should be brought into the picture. This factor was not invoked for complement relations, because predetermination, semantic integration, preference, and the mood value of the dependent SoA alone allowed us to account for all of the hierarchies. Nevertheless, one may wonder whether the ability of the dependent SoA to be construed as an object also has a role to play in the coding of complement relations.

TABLE 6.3. *Cross-linguistic coding of adverbial relations and functional factors*

Hierarchical pattern	Morphosyntactic phenomenon	Functional factors
Purp., Bef., Aft., Wh. > Others	lack of T distinctions	predetermination
Purp., Bef., Aft. > Others	lack of A distinctions	
Purp. > Others	lack of person agreement distinctions, lack of arguments	sharing of participants between main and dependent SoA (not predetermined); semantic integration; preference
	lack of TAM distinction	semantic integration; preference; the dependent SoA is unrealized
	case marking/ adpositions, possessor coding	semantic integration
Purp., Bef., Aft., Wh., Reas. > R. c.	lack of TAM distinctions, case marking/adpositions, possessor coding	construal of the dependent SoA as an object

In addition, as was observed with respect to complement relations, in order for the semantic factors discussed so far to count as explanatory parameters, the connection between these factors and the morphosyntactic phenomena taken into account should be motivated in terms of general functional principles.

These issues will be considered in Chapter 9. First, however, the cross-linguistic coding of relative relations will be discussed (Chapter 7) and a comparison between complement, adverbial, and relative relations in terms of their cross-linguistic coding will be made (Chapter 8).

6.6. Data supporting the implicational hierarchies

In this section, the data supporting the implicational hierarchies for adverbial relations are presented. In the same way as the discussion of complement relations in Section 5.6, there are two tables, pertaining to balanced and deranked verb forms (Table 6.4) and lack of A and S arguments (Table 6.5) respectively. For both of these tables, each of the relation types on the vertical axis outranks each of the relation types on the horizontal axis, unless otherwise specified. For each combination of relation types on the vertical and the horizontal axis, three numbers are reported. The first number is the number of languages for which information is available for

TABLE 6.4. *Language numbers for the Adverbial Deranking Hierarchy*

	Bef.	Aft.	Wh.	R. c.	Reas.
Purp.	43/15/0	51/18/0	64/29/0	66/27/2	66/32/0
Bef.	*	===	===	42/8/3	44/12/2
Aft.	===	*	===	51/9/1	51/11/2
Wh.	===	===	*	63/11/3	65/10/3

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

TABLE 6.5. *Language numbers for the Adverbial Argument Hierarchy*

	Bef.	Aft.	Wh.	R. c.	Reas.
Purp.	42/19/1	51/22/0	63/30/1	65/36/0	66/30/0

* = same relation type on both the vertical and the horizontal axis

both relation types. The second two numbers correspond to the languages where the relevant relation types do not have the same value with respect to the relevant parameter, that is the number of significant cases. The second number indicates the number of significant cases supporting the implicational generalization. The third number is the number of significant cases contradicting the implicational generalization.

As in the case of complement relations, the number of significant languages for each implication varies depending on the semantic features of the individual relation types involved in the implication. The implications having purpose relations in the antecedent are supported by a higher number of significant languages than the implications having other relation types in the antecedent. Purpose relations are the only adverbial relations involving semantic integration, preference, and a sharing of participants between the linked SoAs. Thus, the semantic difference between purpose relations and the other adverbial relations is greater than the difference between any of the other adverbial relations. This can be regarded as further evidence that the higher the semantic difference between individual relation types, the higher the number of languages coding those relations in different ways (see the discussion in Section 5.6).

6.7. Language data

TABLE 6.6. *Adverbial relations: balanced and deranked verb forms*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Acehnese	D	B		B	B	B
Akan	D/B	B	B	B	B	B
Arabic (Gulf)	D/B	D/B	D/B	D/B	D/B	D/B
Arapesh	B				B	
Banda Linda	B	B	B	B	B	B
Barasano	D	D	D	D	D	D
Basque	D	D/B	D/B	D/B	D/B	D/B
Berbice Dutch Creole	D	B	B	B	B	B
Borana	D	D	B	D/B	B	D/B
Burushaski	D	D	D	D/B	B	B
Canela-Krahô				B		B
Chinese (Mandarin)	B	B	B	B	B	B
Diegueño			D	D	D	D
Djapu	D			B	B	D/B
Egyptian (Ancient)	D/B		D/B	D/B	D/B	D/B
Finnish	D/B	D/B	D/B	D/B	D/B	D/B
Fula	D	D/B	B	D/B	B	B
Gimira	D	D	D	D		D
Greek (Ancient)	D/B	D/B	D/B	D/B	D/B	D/B
Greenlandic (West)	D	D	D	D	D	D
Gumbaynggir	D		B	B	B	
Guugu Yimidhirr	D					B
Hittite	B	B		B	B	B
Hixkaryana	D		D	D	D	D
Hmong Njua	B				B	B
Ho	D	D	D	D	D	D/B
Hurrian	B					
Italian	D	D	D/B	D/B	B	D/B
Jacaltec	D/B				B	
Japanese	D/B	B	D/B	D/B	B	B
Kanuri	D	B	D	D/B	D	D
Karimojong	D/B	B	B	B	D	B
Kayardild	B		B	D/B	D	B
Khasi	D	B		B	B	B
Kobon	D		B	D/B	B	D/B
Kolokumi	D			B		B
Krongo	D	B	D/B	B	B	B
Lango	D	B	B	B	B	B

TABLE 6.6. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Lezgian	D	D	D	D	D	D/B
Limbu	D	D	D	D/B	D/B	D/B
Makian (West)	B		B	B	B	B
Maŋarayi	D		D	D/B	B	D/B
Maori	D			D/B	D/B	D/B
Maricopa		D	D	D	D	D
Muna	B		B	B	B	B
Nama	B		B	B	B	B
Nandi				B	B	B
Ngbaka	D/B		D/B		D/B	D/B
Nung	B	B	B	B	B	B
Paiwan	B			B	B	B
Paumarí	D/B	B	B	B		D/B
Pero	D		B	B	B	B
Pirahã	D		B	B	B	
Punjabi	D	D	D	D/B	B	D/B
Quechua (Huallaga Huánuco)	D	D	D	D	D	D
Resigaro	D				D	D
Retuarã	D	B	D/B	D/B	D/B	D/B
Sawu	B				B	
Shipibo-Conibo	D			D		
Shoshone (Tümpisa Panamint)	D		D	D	D	D
Slave	B	B	B	B	B	B
Songhay	D			B	B	B
Squamish					D	
Sumerian	D			D	D	D
Supyire	D/B	D/B	B	D/B	D	B
Tagalog	D	D	D/B	D/B	B	B
Tamazight	B	B	B	B	B	B
Tamil	D	D	D	D	D	D
Tangkhul Naga	D	D	D	D	D	D
Tarascan	D					
Tok Pisin	B	B	B	B	B	B
Turkish	D	D	D	D	D	D/B
Tzutujil	D			B	B	B
Ute	D					D
Vai	D	D/B		B	D/B	B
Vietnamese	B	B	B	B	B	B
Wargamay	D					
Wayãpi	D/B	B	B	B	B	B
Yidiɲ	D		D	D	D	D
Yoruba	B	B		B	B	B

B = balancing; D = deranking; blank = no information available

TABLE 6.7. *Adverbial relations: lack of T distinctions*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Akan	−/+	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Barasano	−	−	−	−	−	−
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Berbice Dutch Creole	−	+	+	+	+	−
Borana	−	−	+	−/+	+	+
Burushaski	−	−	−	−/+	+	+
Canela-Krahô				+		+
Diegueño			+	+	+	+
Djapu	−			+	+	−/+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	+	−/+
Fula	−	−/+	+	−/+	+	+
Gimira	−/+	+	+	+		+
Greek (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Greenlandic (West)	+	−/+	−/+	−/+	+	−/+
Gumbaynggir	−		+	+	+	
Guugu Yimidhirr	−					+
Hittite	+	+		+	+	+
Hixkaryana	−		−	−	−	−
Ho	+	+	+	+	+	+
Hurrian	+					
Italian	−/+	−/+	−/+	−/+	+	−/+
Jacaltec	−/+				+	
Japanese	−/+	+	−/+	−/+	+	+
Kanuri	−	+	+	+	+	+
Karimojong	+	+	+	+	+	+
Kayardild	−		−	−/+	+	−/+
Khasi	−	+		+	+	+
Kobon	−		+	−/+	+	−/+
Kolokumi	−			+		+
Krongo	−	+	+	+	+	+
Lezgian	−	−	+	+	+	+
Limbu	−	−	−	−/+	−/+	−/+
Maŋarayi	−		−	−/+	+	−/+
Maori	−			−/+	−/+	−/+
Muna	+		+	+	+	+
Nandi				+	+	+
Ngbaka	−/+		−/+		−/+	−/+
Paiwan	+		+	+	+	+
Pero	−		+	+	+	+

TABLE 6.7. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Punjabi	−	−	−	−/+	+	−/+
Quechua (Huallaga Huánuco)	−	−	−	−	−/+	−
Resigaro	+				+	+
Retuarã	−	+	−/+	−/+	−/+	−/+
Sawu	+				+	
Shipibo-Conibo	−			−		
Shoshone (Tümpisa Panamint)	−		−	−	−	−
Slave	+	+	+	+	+	+
Songhay	−			+	+	+
Squamish					−	
Sumerian	+			+	+	+
Supyire	−/+	−/+	+	+	+	+
Tamazight	+	+	+	+	+	+
Tamil	−/+	−	−/+	−/+	−	−/+
Tangkhul Naga	−	−	−	−	−	−
Tarascan	−					
Tok Pisin	+	+	+	+	+	+
Turkish	−/+	+	+	+	+	+
Tzutujil	−			+	+	+
Ute	+					+
Vai	−/+	+		+	+	+
Wayãpi	+	+	+	+	+	+
Yidiɲ	−		+	+	+	+
Yoruba	+	+		+	+	+

− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed; blank = no information available. Languages that do not code tense on the verb are not included.

TABLE 6.8. *Adverbial relations: lack of A distinctions*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Akan	−/+	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+
Barasano	−	−	−	−	−	−
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Berbice Dutch Creole	+	+	+	+	+	+
Borana	−	−	+	−/+	+	−
Burushaski	−	−/+	−/+	−/+	+	+
Canela-Krahô				+		+
Chinese (Mandarin)	+	+	+	+	+	+
Diegueño			+	+	+	+
Djapu	−			+	+	−/+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	+	−/+
Fula	−	−/+	+	−/+	+	+
Gimira	−/+	+	+	+		+
Greek (Ancient)	+	+	+	+	+	+
Greenlandic (West)	+	+	+	+	+	+
Gumbaynggir	−		+	+	+	
Guugu Yimidhirr	−					+
Hittite	+	+		+	+	+
Hixkaryana	−		−	−	−	−
Ho	+	+	+	+	+	+
Hurrian	+					
Italian	+	+	+	+	+	+
Jacaltec	−/+				+	
Japanese	−/+	+	−/+	−/+	+	+
Kanuri	−	+	+	+	+	+
Karimojong	+	+	+	+	+	+
Kayardild	−/+		+	+	+	+
Khasi	−	+		+	+	+
Kobon	−		−	+	+	−/+
Kolokumi	−			+		+
Krongo	−	+	+	+	+	+
Lango	−	+	+	+	+	+
Lezgian	−	−	+	+	+	+
Limbu	−	−	−	−/+	−/+	−/+
Maŋarayi	−		−	−/+	−/+	−/+
Maori	−			−/+	−/+	−/+
Maricopa		−	−	−/+	+	+
Muna	+		+	+	+	+
Nama	+			+	−/+	+

TABLE 6.8. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Nandi				+	+	+
Ngbaka	−/+		−/+		−/+	−/+
Paiwan	+			+	+	+
Paumarí	−/+	+	+	+		−/+
Pero	−		+	+	+	+
Pirahã	−		+	+	+	+
Punjabi	−	−	−	−/+	+	−/+
Quechua (Huallaga Huánuco)	+	+	+	+	+	+
Resigaro	+				+	+
Retuarã	−	+	−/+	+	+	−/+
Sawu	+				+	
Shipibo-Conibo	−			−		
Shoshone (Tümpisa Panamint)	−		−	−	−	−
Slave	+	+	+	+	+	+
Songhay	−			+	+	+
Squamish					−	
Sumerian	+			+	+	+
Supyire	−/+	+	+	+	+	+
Tagalog	−	−	−/+	−/+	+	+
Tamazight	+	+	+	+	+	+
Tamil	+	+	+	+	−	+
Tangkhul Naga	−	−	−	−	+	−
Tarascan	−					
Tok Pisin	+	+	+	+	+	+
Turkish	−/+	+	+	+	+	+
Tzutujil	−			+	+	+
Ute	+					+
Vai	−/+	+		+	+	+
Vietnamese	+	+	+	+	+	+
Wargamay	−					
Wayãpi	+	+	+	+	+	+
Yidiɲ	−		+	+	+	+
Yoruba	+	+		+	+	+

− = A distinctions not expressed; + = A distinctions expressed; −/+ = A distinctions either not expressed or expressed; blank = no information available. Languages that do not code aspect on the verb are not included.

TABLE 6.9. *Adverbial relations: lack of M distinctions*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Akan	−/+	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Banda Linda	+	+	+	+	+	+
Barasano	−	−	−	−	−	−
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Berbice Dutch Creole	−	+	+	+	+	+
Borana	−	+	+	+	+	−
Burushaski	−	−	−	−/+	+	+
Canela-Krahô				+		+
Diegueño			+	+	+	+
Djapu	−			+	+	−/+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	+	−/+
Fula	−	+	+	+	+	+
Gimira	−/+	−/+	−/+	−/+		−/+
Greek (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Greenlandic (West)	+	−/+	−/+	−/+	+	−/+
Gumbaynggir	+		+	+	+	
Guugu Yimidhirr	+					+
Hittite	+	+		+	+	+
Hixkaryana	−		−	−	−	−
Ho	−/+	−	−	−	−	−/+
Hurrian	+					
Italian	−/+	−/+	−/+	−/+	+	−/+
Jacaltec	−/+				+	
Japanese	−/+	+	−/+	−/+	+	+
Kanuri	−	+	+	+	+	+
Karimojong	−/+	+	+	+	+	+
Kayardild	−/+		+	+	+	+
Khasi	−	+		+	+	+
Kobon	−/+		−	+	+	−/+
Kolokumi	−			+		+
Krongo	−	+	+	+	+	+
Lango	−	+	+	+	+	+
Lezgian	−/+	−	−	−	+	−/+
Limbu	−	−	−	−/+	−/+	−/+
Maŋarayi	−		+	+	+	−/+
Maori	−			−/+	−/+	−/+
Maricopa		−	−	−/+	−/+	−/+
Muna	+		+	+	+	+
Nama	+		+	−/+	+	+

TABLE 6.9. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Nandi				+	+	+
Ngbaka	−/+		−/+		+	−/+
Paiwan	+			+	+	+
Paumarí	−/+	+	+	+		−/+
Pero	−		+	+	+	+
Pirahã	−		+	+	+	
Punjabi	−/+	−	−	−/+	+	−/+
Quechua (Huallaga Huánuco)	−	−	−	−	−/+	−
Resigaro	+				+	+
Retuarã	−	+	−/+	−/+	−/+	−/+
Shipibo-Conibo	−			−		
Shoshone (Tümpisa Panamint)	−		−	−	−	−
Slave	+	+	+	+	+	+
Songhay	+			+	+	+
Squamish					+	
Sumerian	−			−	−	−
Supyire	−/+	+	+	+	+	+
Tamazight	+	+	+	+	+	+
Tamil	−	+	−/+	−/+	+	−
Tangkhul Naga	−	−	−	−	+	−
Tarascan	−					
Tok Pisin	+	+	+	+	+	+
Turkish	−	−	−	−/+	+	−/+
Tzutujil	−			+	+	+
Ute	+					+
Vai	−/+	+		+	+	+
Vietnamese	+	+	+	+	+	+
Wargamay	+					
Wayãpi	+	+	+	+	+	+
Yidiɲ	+		−	−	−	−
Yoruba	+	+		+	+	+

− = M distinctions not expressed; + = M distinctions expressed; −/+ = M distinctions either not expressed or expressed; blank = no information available. Languages that do not code mood on the verb are not included.

TABLE 6.10. *Adverbial relations: T distinctions expressed differently from independent clauses*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Finnish	−/T	−/t/T	−/t/T	−/t/T	T	−/t/T
Gimira	−/t/T	t/T	t/T	t/T		t/T
Italian	−/t	−/t	−/t/T	−/t/T	T	−/t/T
Kanuri	−	T	t	t/T	t	t
Karimojong	t/T	T	T	T	T	T
Lezgian	−	−	t	t	t/T	t/T
Turkish	−/t	t	t	t/T	T	t/T
Vai	−/t	T		T	T	T
Yidiɲ	−		t	t	t	t

− = T distinctions not expressed; t = T distinctions expressed differently from independent clauses; T = T distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for T distinctions at all are not included.

TABLE 6.11. *Adverbial relations: A distinctions expressed differently from independent clauses*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Burushaski	−	−/a	−/a	−/a/A	A	A
Finnish	−/A	−/a/A	−/a/A	−/a/A	A	−/A
Gimira	−/a/A	a/A	a/A	a/A		a/A
Greek (Ancient)	a/A	a/A	a/A	a/A	a/A	a/A
Italian	a	a	a/A	a/A	A	a/A
Kanuri	−	A	a	a/A	a	a
Karimojong	a/A	A	A	A	A	A
Lezgian	−	−	a	a	a/A	a/A
Punjabi	−	−	−/a	−/A	A	−/a/A
Supyire	−/a/A	a/A	A	A	A	A
Turkish	−/a	a	a	a/A	A	a/A
Vai	−/a	A		A	A	A
Yidiɲ	−		a	a	a	a

− = A distinctions not expressed; a = A distinctions expressed differently from independent clauses; A = A distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for A distinctions at all are not included.

TABLE 6.12. *Adverbial relations: M distinctions expressed differently from independent clauses*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Greek (Ancient)	−/m/M	−/m/M	−/m/M	−/m/M	−/M	−/M
Greenlandic (West)	m	−/m	−/m	−/m	m	−/m
Gumbaynggir	m/M		M	M		M
Italian	−/m	−/m	−/M	−/m/M	M	−/m/M
Kanuri	−	M	m	m/M	m	m/M
Karimojong	−/M	M	M	M	m	M
Kayardild	−/M		−/M	−/m/M	m	−/M
Lezgian	−/M	−	−	−	m	−/M
Ngbaka	−/M		−/M		m/M	−/M
Quechua (Huallaga Huánuco)	−	−	−	−	−/m	−
Squamish					m	
Supyire	−/m/M	M	M	m/M	m	M
Tamil	−	m	−/m/M	−/m/M	m	−
Turkish	−	−	−	−/M	m	−/M
Vai	−/M	m/M		M	m	M
Wargamay	m					

− = M distinctions not expressed; m = M distinctions expressed differently from independent clauses; M = M distinctions expressed as in independent clauses; blank = no information available. Languages that do not use any special form for M distinctions at all are not included.

TABLE 6.13. *Adverbial relations: lack of person agreement distinctions*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Acehnese	−	+		+	+	+
Arabic (Gulf)	−/+	−/+	/+	−/+	−/+	−/+
Arapesh	+				+	
Barasano	−	−	−	−	−	−
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Borana	−	+	+	+	+	−
Burushaski	−	−/+	−/+	−/+	+	+
Canela-Krahô				+		+
Diegueño			+	+	+	+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	+	−/+
Gimira	−/+	−/+	−/+	−/+		−/+
Greek (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Greenlandic (West)	+	+	+	+	+	+
Hittite	+	+		+	+	+

TABLE 6.13. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Hixkaryana	−/+		−/+	−/+	−/+	−/+
Ho	−/+	−/+	−/+	−/+	−/+	−/+
Hurrian	+					
Italian	−/+	−/+	−/+	−/+	+	−/+
Jacaltec	−/+				+	
Kanuri	−	+	+	+	+	+
Karimojong	−/+	+	+	+	+	+
Khasi	−	+		+	+	+
Kobon	−		+	+	+	+
Krongo	−	+	−/+	+	+	+
Lango	−	+	+	+	+	+
Limbu	−	−/+	−	−/+	−/+	−/+
Makian (West)	+		+	+	+	+
Maŋarayi	−		+	+	+	−/+
Maricopa		+	+	+	+	+
Muna	+		+	+	+	+
Nama	+		+	−/+	+	+
Nandi				+	+	+
Punjabi	−/+	−	−/+	−/+	+	−/+
Quechua (Huallaga Huánuco)	−/+	−	+	−/+	−/+	−/+
Retuarã	−/+	+	+	+	+	−/+
Shoshone (Tümpisa Panamint)	−		−	−	−	−
Slave	+	+	+	+	+	+
Squamish					+	
Sumerian	+			+	+	+
Tamazight	+	+	+	+	+	+
Tamil	−	−	−	−	+	−
Tarascan	−					
Turkish	−	−	−	−	+	−/+
Tzutujil	−			+	+	+
Ute	−					−
Wayãpi	+	+	+	+	+	+

− = person agreement distinctions not expressed; + = person agreement distinctions expressed; −/+ = person agreement distinctions either not expressed or expressed; blank = no information available. Languages with no person agreement are not included.

TABLE 6.14. *Adverbial relations: person agreement distinctions expressed differently from independent clauses*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Gimira	−/ag	−/ag	−/ag	−/ag		−/ag
Greenlandic (West)	ag	ag	ag	ag	ag	ag
Italian	−/ag	−/ag	−/AG/ag	−/AG/ag	−/AG/ag	−/AG
Jacaltec	−/ag/AG				AG	
Koban	−		AG	ag/AG	AG	ag/AG
Punjabi	−/ag	−	−	−/AG	AG	−/AG
Quechua (Huallaga Huánuco)	−	−	ag	−/ag	−/ag	−/ag
Wayãpi	ag/AG	AG	AG	AG	AG	AG

− = person agreement not expressed; AG = person agreement expressed as in independent clauses; ag = person agreement distinctions not expressed as in independent clauses; blank = no information available. Languages that do not use any special form for person agreement distinctions at all are not included.

TABLE 6.15. *Adverbial relations: case marking/adpositions on verbs*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Arabic (Gulf)	−/+	−/+	−/+	−/+	−/+	−/+
Basque	−/+	−/+	−/+	−/+	−/+	−/+
Burushaski	+	−/+	−/+	−/+	−	−
Diegueño			+	+	+	+
Djapu	+			−	−	−/+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	−/+	−/+
Greek (Ancient)	−/+	−/+	−/+	−/+	−/+	−/+
Greenlandic (West)	−	−/+	−/+	−/+	−	−/+
Hixkaryana	−/+	−/+	−	−	−	−/+
Ho	−/+	+	+	+	+	−/+
Italian	−/+	−/+	−/+	−/+	+	−/+
Japanese	−/+	−	−	−	−	−
Kayardild	−/+		+	−/+	−	−/+
Krongo	+	−	−/+	−	−	−
Lango	+	−	−	−	−	−
Lezgian	−/+	−	−	−	−	−/+
Maŋarayi	+		+	−	−	−/+
Maori	−/+			−/+	−/+	−/+
Punjabi	−/+	+	−/+	−/+	−	−/+
Quechua (Huallaga Huánuco)	−/+	−	−	−	−	−/+
Sumerian	+			+	+	+
Supyire	−/+	−	−	−	−	−
Tamil	+	+	−/+	−	−	+
Turkish	+	+	+	−/+	−	−/+

− = no case marking/adpositions; + = case marking/adpositions; −/+ = either case marking/adpositions, or no case marking/adpositions; blank = no information available. Languages that do not use case marking/adpositions for adverbial relations at all are not included.

TABLE 6.16. *Adverbial relations: lack of overtly expressed arguments (A and S)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Acehnese	−	+		+	+	+
Akan	−/+	+	+	+	+	+
Arabic (Gulf)	+	+	+	+	+	+
Arapesh	+				+	
Banda Linda	+	+	+	+	+	+
Barasano	−	+	−/+	+	+	+
Basque	+	+	+	+	+	+
Berbice Dutch Creole	−	+	+	+	+	+
Borana	−	+	+	+	+	−
Burushaski	−/+	−/+	−/+	−/+	+	+
Canela-Krahô				+		+
Chinese (Mandarin)	+	+	+	+	+	+
Diegueño			+	+	+	+
Djapu	+			+	+	+
Egyptian (Ancient)	−/+		−/+	−/+	−/+	−/+
Finnish	−/+	−/+	−/+	−/+	+	−/+
Fula	+	+	+	+	+	+
Gimira	−/+	−/+	−/+	−/+		−/+
Greek (Ancient)	+	+	+	+	+	+
Greenlandic (West)	+	+	+	+	+	+
Gumbaynggir	−/+		−/+	−/+	−/+	
Guugu Yimidhirr	−/+					−/+
Hittite	+	+		+	+	+
Hixkaryana	−/+		−/+	+	+	+
Hmong Njua	−				+	+
Ho	−/+	−/+	−/+	−/+	−/+	−/+
Hurrian	+					
Italian	−/+	−/+	−/+	−/+	+	−/+
Jacaltec	−/+				+	
Japanese	−/+	+	+	+	+	+
Kanuri	−	+	+	+	+	+
Karimojong	−/+	+	+	+	+	+
Kayardild	−/+		−/+	−/+	+	−/+
Khasi	−	+		+	+	+
Kobon	−		+	−/+	+	−/+
Kolokumi	−			+		+
Krongo	+	+	+	+	+	+
Lango	−/+	+	+	+	+	+
Lezgian	−/+	+	+	+	+	+
Limbu	−	+	+	+	+	+
Makian (West)	−		+	+	+	+

TABLE 6.16. *(contd.)*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Maŋarayi	−		+	+	+	−/+
Maori	−/+			+	+	+
Maricopa		+	+	+	+	+
Muna	+		+	+	+	+
Nama	+		+	−/+	+	+
Nandi				+	+	+
Ngbaka	−/+		−/+		+	+
Nung	−	+	+	+	+	+
Paiwan	+			+	+	+
Paumarí	+	+	+	+		+
Pero	−		+	+	+	+
Pirahã	−		+	+	+	+
Punjabi	−/+	−	−/+	−/+	+	−/+
Quechua (Huallaga Huánuco)	?	?	?	?	+	?
Resigaro	+				+	+
Retuarã	−/+	+	+	+	+	−/+
Sawu	+				+	
Shipibo-Conibo	−			+		
Shoshone (Tümpisa Panamint)	−		−/+	−/+	−/+	−/+
Slave	+	+	+	+	+	+
Songhay	−			+	+	+
Squamish					+	
Sumerian	+			+	+	+
Supyire	−/+	+	+	+	+	+
Tagalog	+	+	+	+	+	+
Tamazight	+	+	+	+	+	+
Tamil	+	+	+	+	+	+
Tangkhul Naga	+	+	+	+	+	+
Tarascan	−					
Tok Pisin	+	+	+	+	+	+
Turkish	−/+	+	+	+	+	+
Tzutujil	−			+	+	+
Ute	+					+
Vai	−/+	+		+	+	+
Vietnamese	+	+	+	+	+	+
Wargamay	+					
Wayãpi	−/+	+	+	+	+	+
Yidiɲ	−/+		−/+	−/+	−/+	−/+
Yoruba	+	+		+	+	+

− = A or S not expressed; + = A or S expressed; −/+ = A or S either not expressed or expressed; blank = no information available

TABLE 6.17. *Adverbial relations: Arguments (A and S) coded as possessors*

Languages	Purp.	Bef.	Aft.	Wh.	R. c.	Reas.
Arabic (Gulf)	p/O	p/O	p/O	p/O	p/O	p/O
Finnish	−/p/O	−/p/O	−/p/O	−/p/O	−/O	−/p/O
Greek (Ancient)	ac/O	ac/O	ac/p/O	ac/p/O	ac/p/O	ac/p/O
Greenlandic (West)	O	o/p/O	o/p/O	o/p/O	O	o/p/O
Krongo	−/o/p	O	p/O	O	O	O
Lango	−/p	O	O	O	O	O
Maori	−/O			p/O	O	o/p/O
Shoshone (Tümpisa Panamint)			−/ac/p	−/ac/p	−/ac/p	−/ac/p
Turkish	−/p/O	p/O	p/O	p/O	O	p/O
Ute	p					p

ac = A and S overtly expressed as O; o = A and S overtly expressed as obliques; p = A and S overtly expressed as possessors; O = A and S overtly expressed as in independent clauses; − = A and S not expressed; blank = no information available. Languages with no possessor coding for A and S in complement relations are not included.

7 Relative Relations

7.1. Introduction

Relative relations involve two SoAs, one of which (the dependent one) provides some kind of specification about a participant of the other (the main one). That is, a participant of the main SoA is identified within a set of possible referents by mentioning some other SoA in which he or she takes part. In principle, the relevant participant may have any role in both main and dependent SoA, as is illustrated in (7.1)–(7.3).

(7.1)   The man [who is sitting in that office] is a psychologist

(7.2)   Those CDs [you gave me] are really fabulous

(7.3)   We went to the Bach concerts [my friend got the tickets for]

It should be stressed that this definition actually pertains only to what are usually called restrictive relatives. Some languages display constructions that are similar in structure to the ones used for relative relations, yet express a quite different cognitive situation. These are so-called non-restrictive relatives, as exemplified in

(7.4)   They went to a number of Bach concerts, for which they had booked tickets several months in advance

Unlike restrictive relatives, non-restrictive relatives provide additional information about a participant of a given SoA, but do not identify it within a set of possible referents (Keenan 1985: 168–9). In (7.4), getting the tickets in advance is not mentioned in order to identify some specific concerts with respect to others (as is the case in (7.3)), but only in order to give more information about the concerts themselves. In fact, under the criteria provided in Chapter 2, non-restrictive relatives do not count as instances of subordination, as is proved, for instance, by sentential negation:

(7.5)   It is not the case that they went to a number of Bach concerts, for which they had booked tickets several months in advance [= 'It's not true that they went to a number of Bach concerts'; 'It's not true that they had booked tickets several months in advance'; 'It's not true that they went to a number of Bach concerts, neither that they had booked tickets for them several months in advance']

Both of the linked SoAs in a non-restrictive relative construction can be affected by sentential negation. Under the criteria for subordination discussed in Chapter 2,

this means that both of these SoAs are asserted, or profiled, and the construction does not involve subordination. Therefore, non-restrictive relatives will be disregarded here.

As usual, the proposed definition of relative relations is meant to cover all the constructions used cross-linguistically to code the relevant functional situation, regardless of their structural properties. This means that a number of constructions will be included that would not count as instances of relativization under traditional criteria. This is for instance the case of the Walbiri sentence in (2.15).

Languages sometimes use the same constructions for relative relations and other subordination relations. For instance, in many Australian languages (such as Djapu, Gumbaynggir, Guugu Yimidhirr, Maŋarayi, Yidiɲ, Yukulta, Walbiri), the same construction may be used for relative relations, various types of adverbial relations (such as 'when', reason, purpose), and complement relations established by perception predicates. One such case is represented by the aforementioned Walbiri example. Another example is provided by Yukulta, where clauses marked by the clitic particle *ŋala* may have a temporal or relative meaning:

Yukulta (Australian)

(7.6) *a.* *ṭanma-kaṭi*   *wiṭiṭʸa*   *wukuwawukuwaṭa,*   *[ŋala*
          here:STAT-I:PRES   sit:IND   work:IND   ŋala

          nʸma-nʸi   *marṛa*   *wiṭiṭʸa]*
          you:STAT-you   empty-handed   sit:IND
          'I am sitting here working while you do nothing' (Keen 1983: 244)

       b. *ṭʸina-ŋka*   *ṭaṭinṭa*   *[ṭaŋka-**ŋala**-pakari*   *miyaạlṭa*
          where-PRES   that:ABS   man-ŋala-you:TRANS:PRES   spear:ABS

          yi:ṭʸa]
          give:IND
          'Where is that man who gave you the spear?' (Keen 1983: 244)

Similarly, in a number of languages, relative relations are coded by means of the same morphology used for complement relations established by perception predicates. This is the case in Gulf Arabic, where participial verb forms are used in both cases:

Gulf Arabic (Afro-Asiatic, Semitic)

(7.7) *a.* *il-badu*   *[r-raakbiin*   *il-boosh]*
          ART-Bedu   ART-ACT.PTCP   ART-camels
          'The Bedouin who ride camels/Who have mounted the camels' (Holes 1990: 23)

       b. *shift*   *naas*   *[raayHiin*   **yaayiin]**
          saw-1SG   people   ACT.PTCP-go-PL   ACT.PTCP-come-PL
          'I saw people coming and going' (Holes 1990: 23)

The structural similarities between the constructions used for relative relations on the one hand, and adverbial and perception relations on the other, may be accounted

for on semantic grounds. In both relative and adverbial relations, the dependent SoA provides some kind of specification to the main SoA, one that is not required by the semantics of the main SoA itself. This is why the same construction may be used for the two relation types. However, in adverbial relations the dependent SoA provides a specification about the main SoA as a whole, while in relative relations it only provides a specification about a single participant of it, which plays a role in both of the linked SoAs. Thus, depending on whether or not the main and dependent SoA share a participant, the specification provided by the dependent SoA may be understood as referring either to the main SoA as a whole, or to the shared participant. This seems to be what is going on in the Australian cases.

As for the association between relative relations and perception predicates, an act of perception involves an SoA as a whole (the perceived SoA: Section 5.2.6). However, it also involves the entity bringing about this SoA. That is, we simultaneously see, hear, or otherwise perceive SoAs going on and entities bringing them about. As a result, the dependent SoA can be construed as a property attributed to the entity bringing it about. This is the reason why the constructions used to code the perceived SoA sometimes display adjectival morphology, as was pointed out in Section 5.2.6 (see in particular example (5.30)). A similar situation is found with relative relations. In this case too, the dependent SoA can be construed as a property attributed to some entity taking part in it. This property is used to uniquely identify this entity within a set of possible referents.

Despite these similarities, relative relations display a major difference with respect to the other subordination relations examined so far. They involve no semantic connection whatsoever between the linked SoAs. In complement relations, the main SoA involves obligatory reference to another SoA. In adverbial relations, one of the linked SoAs represents the circumstances under which the other takes place. In relative relations, on the other hand, it is the speaker who arbitrarily selects two SoAs on the grounds that they share a participant. The speaker's purpose in doing so is to identify a participant of one of the two SoAs by mentioning another SoA in which s/he takes part. The two SoAs as such are completely unrelated, except that they happen to involve the same entity. But of course entities in the real world may be involved in a variety of SoAs, and there need not be any connection between these.

Relative relations can be described in terms of the same parameters used for complement and adverbial relations, namely level of clause structure, predetermination of the semantic features of the dependent SoA, and semantic integration. However, all relative relations behave in the same way with respect to these parameters. Relative relations are established at the predication level. Since there need not be any semantic connection between the linked SoAs, there is no semantic integration either. As for predetermination, relative relations entail that main and dependent SoAs share a participant, but have no implication about the role of this participant in either SoA. Therefore, the role of this participant in either

of the linked SoAs cannot be recovered from the other SoA, and hence is not predetermined.

   Relative relations have no implications about the time reference or aspect value of the linked SoAs either. As for mood value, the dependent SoA may in principle be either factual or non-factual. Factual SoAs uniquely identify existing items. For instance, in

(7.8)   The book [lying on the kitchen table] is about syntactic categories and grammatical relations

the dependent SoA (the book lying on the kitchen table) is factual, and is used to identify a specific, existing book with respect to others. On the other hand, in a sentence like

(7.9)   I am looking for a book [explaining the problem in detail]

the dependent SoA is non-factual, in that it is not known whether or not the relevant book exists.

   Languages sometimes use different constructions to distinguish between the two situations exemplified in (7.8) and (7.9). For instance, Italian uses the indicative for factual SoAs (7.10*a*) and the subjunctive for non-factual ones (7.10*b*)

Italian (Indo-Hittite, Indo-European)

(7.10)   *a. St-o*   *cerc-ando*   *il*   *libro*   *[che*
             AUX:PRES-IND:1:SG   look.for-GER   ART   book   that
             ho   **lasci-ato**   *qui   ieri]*
             AUX:PRES-IND:1SG   leave-PAST:PTCP   here   yesterday
             'I am looking for the book that I left here yesterday'

         b. St-o   *cerc-ando*   *un*   *libro*   *[che*
             AUX:PRES:IND-1:SG   look.for-GER   ART   book   that
             spiegh-i   *la*   *questione   in   dettaglio]*
             explain-PRES-SUBJ:3:SG   ART   problem   in   detail
             'I am looking for a book explaining the problem in detail'

The factual vs. non-factual value of the dependent SoA in relative relations depends on the semantic features of the participant shared by the main and dependent SoAs. Relative relations are always used to identify a given participant by mentioning some SoA in which s/he takes part. This SoA is the dependent SoA. If the relevant participant is conceived as existing (as in (7.8) and (7.10*a*)), then the dependent SoA is factual. If the relevant participant is not conceived as existing (as in (7.9) and (7.10*b*)), then the dependent SoA is non-factual. Thus, the mood value of the dependent SoA is predetermined by the semantic features of the shared participant. However, data on relative relations involving non-factual SoAs are quite difficult to find in reference grammars, and therefore this type of relative relation will be disregarded here.

Since all relative relations behave in the same way with respect to level of clause structure, predetermination, and semantic integration, these parameters do not allow one to distinguish different types of relative relations (as will be shown in Chapter 8, however, it turns out that they play a crucial role in the ranking of relative relations as a whole with respect to complement and adverbial relations).

As is well-known, there is, however, one parameter that allows one to distinguish different types of relative relations. This is the syntactic role of the participant shared by the main and dependent SoAs—that is, the relativized item—in the clause coding the dependent SoA. Keenan and Comrie have demonstrated (Keenan and Comrie 1977; Keenan 1985) that different languages exhibit different constraints with respect to which roles are accessible to relativization, and which strategies can be used for which roles. The original formulation of Keenan and Comrie's (1977) so-called Accessibility Hierarchy is as follows:

(7.11) Subject > Direct Object > Indirect Object > Oblique > Genitive >
        Object of comparison

If a given role on the hierarchy is accessible to relativization in a language, then all the roles to its left are accessible too. Different constructions are used for different roles. For instance, use of resumptive pronouns to recall the role of the relativized item is more likely to be found towards the rightward end of the hierarchy than towards the leftward end.

The Accessibility Hierarchy has been the object of much debate since its original formulation (even on the part of Keenan and Comrie themselves, see for example Keenan and Comrie (1979) and Keenan (1985)). Discussion has focused on the data supporting the hierarchy, the conceptual organization of the hierarchy itself, and the possible explanatory factors for it.

A major modification of the Accessibility Hierarchy after it was first presented concerns the notion of subject. As was pointed out in Section 3.3.1, this notion is problematic. Lehmann (1984: 21–9) claims that the relativization hierarchy should be formulated in different ways for nominative and for ergative languages. In nominative languages the role most accessible to relativization is subject, intended as A/S, and the second most accessible one is O. In ergative languages, the most accessible role is S/O, and the second most accessible one is A. In fact, Fox (1987) shows that even in nominative languages such as English the roles that are more frequently relativized are S and O, rather than A.

Keenan (1985: 159) also observes that not all subjects are relativizable in the same way, and that intransitive subjects can be more easily relativized than transitive ones. Thus, Keenan and Comrie's (1977) original claims about subject relativization (subject is the role most accessible to relativization, and all languages are able to relativize subjects) should be intended as referring to S rather than A.

As will be shown throughout the chapter, the Accessibility Hierarchy turns out to be of crucial relevance to the cross-linguistic coding of relative relations.

7.2. Cross-linguistic coding of relative relations

7.2.1. Methodological premises

The cross-linguistic coding of relative relations will be examined with respect to the role of the relativized item. Each of the parameters taken into account (verb form, participant coding) will be investigated using the method described in Section 5.4.1. For each language, each relativization type, as defined by the role of the relativized item (A, S, O, etc.) will be compared with each of the others with respect to the relevant parameters. For instance, A relativization will be compared with S relativization, O relativization, etc. with respect to the occurrence of deranked verb forms, lack of TAM distinctions, case marking/adpositions on the verb and so on.

Before proceeding to an examination of the data, a few remarks are in order. First, not all of the roles covered by the Accessibility Hierarchy have been taken into account; genitives and objects of comparison have been excluded due to a lack of data.

Also, the roles that are not accessible to relativization (such as indirect object or obliques) can usually be promoted to roles that are accessible to relativization by means of devices such as passivization, antipassivization and so on (Croft 1990: 197–9). For instance, in Yidiɲ relativization is restricted to S and O. A can however be promoted to S by means of a process of antipassive derivation. Similarly, Muna has a participial relativization strategy restricted to A and S, but the other roles can be promoted to S by means of passivization or nominalization.

In these cases, there is no direct strategy to relativize some roles, and these roles can only be relativized through promotion. It might therefore be argued that these cases are not real instances of the relativization of the relevant roles. They will, however, be regarded as such. The basic assumption of this research (and of typological research in general) is that any given language should in principle be able to express any given concept (Chapters 1 and 2). If the relativization of a given role (that is, expression of the conceptual situation normally conveyed by the relativization of that role) takes place not directly, but through the promotion of that role to other roles, this should count as an instance of the relativization of the relevant role, because the same conceptual situation is being expressed. The morphosyntactic features of the relevant constructions provide evidence in support of this approach. When a role is relativized through promotion to some other role, such as A, S, or O, the constructions used are not the same as those normally used for the relativization of those roles (e.g. there are derivational affixes signalling passivization or the like). In fact, the former are usually typologically marked with respect to the latter, that is, they display a higher number of morphemes, less inflectional distinctions, and reduced behavioural potential (the notion of typological

markedness is defined in Croft 1990: ch. 4). This suggests that the relativization of a promoted role should be kept distinct from the relativization of the roles to which it is promoted.[1]

It should also be pointed out that a number of aspects in the cross-linguistic coding of relative relations are not covered by the parameters taken into account for complement and adverbial relations. This specifically pertains to participant coding. The basic point about relative relations is that main and dependent SoAs share a participant. This participant is usually treated in some special way in the dependent clause, and this indicates that it corresponds to the relativized item. The various ways to treat the relativized item are not always covered by the parameters included here within 'participant coding'. Sometimes the relativized item is not expressed at all, or, on the contrary, is expressed as a full NP. This is covered by the parameter 'lack of overtly expressed arguments', except of course that only a lack of A, S, and O arguments was investigated for complement and adverbial relations, and the relativized item can occur in other roles too. Also, in principle, the relativized item might be coded as a possessor, although this never occurs in practice (see Section 7.2.3 below). This obviously corresponds to a coding of arguments as possessors, except of course that, once again, the relativized item may be in a role other than A, S, or O.

However, the relativized item may be treated in other ways too. For instance, it may be coded by means of a pronoun, as illustrated in (7.12) (the pronoun *akka* agrees in case with the head noun *wa'ippüa*):

Tümpisa (Panamint) Shoshone (Central Amerindian)
(7.12)   *Wa'ippüa*   *nüü*   *pusikwa*   *[**akka**   nühakkawitünna]*
           woman-OBJ I   know   that-OBJ make.basket-INF
           'I know the woman who is making baskets' (Dayley 1989: 359)

Coding of the relativized item by means of a pronoun is equivalent to overt expression of the relativized item. Hence, if the relativized item corresponds to A, S, or O, this situation falls within the parameter 'lack of overtly expressed arguments' (that is, arguments are expressed overtly). However, a parameter such as lack of overtly expressed arguments in itself does not allow one to distinguish whether the relativized item is coded by means of a pronoun or a full NP.

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[1] This is the same kind of argumentation applied by Croft (1991: chs 2–3, 2001: ch. 2) to the analysis of parts of speech. In a number of languages, lexical roots can occur as nouns, verbs, and adjectives. This led some scholars to claim that these languages make no difference between nouns, verbs, and adjectives (see Section 9.5.2). Croft observes, however, that in these languages individual lexical roots are typologically unmarked when they occur in some function (e.g. as nouns), but they are typologically marked when they occur in other functions (e.g. as verbs or adjectives). This shows that there actually is a difference between the relevant functions in these languages.

Similarly, some languages display so-called internal relatives. These are constructions where the relativized item is expressed as a full NP in the dependent clause, but is not expressed in the main clause (Keenan 1985: 161–3). This is, for example, the case in Slave:

Slave (Na-Dene)
(7.13) **[dene** *ghá sǫ́*   *ba*   *rirénįlayįlé i]*   *radéhła*
   man to money 2SG.gave PAST COMP 3.went.back
   'The man you gave money to left' (Rice 1989: 1311)

If the relativized item is in the A, S, or O role, internal relatives count as a case where arguments are expressed overtly. However, this does not reveal anything about the peculiar structure of internal relatives with respect to other relative constructions.

The obvious solution in these cases would be to develop new parameters specific to relative relations, such as, for intance, internal vs. external relative, or pronominal vs. nominal relative. However, the ultimate goal of this research is to compare complement, adverbial, and relative relations (this will be done in Chapter 8), and such comparison should be made on a common base. Therefore, the features specific to relative relations will be disregarded.

In what follows, a number of implicational hierarchies concerning the cross-linguistic coding of relative relations will be proposed. The data supporting these hierarchies are reported in Tables 7.1 and 7.2 in Section 7.4. As with the corresponding tables for complement and adverbial relations, these tables report the number of languages for which information about both of the parameters involved in the generalizations is available, the number of significant cases supporting the implication, and the number of significant cases contradicting the implication. Tables 7.3–7.13 in Section 7.5 report the data on the various parameters taken into account for each language.

As was mentioned in Section 7.1 (and see also Section 3.3), relativization may take place on an accusative basis (S arguments are treated in the same way as A arguments) or on an ergative basis (S arguments are treated in the same way as O arguments). Except for one language (Basque), in all of the significant languages in the sample (i.e. all the languages that use different constructions for the relativization of S, A, and O), relativization follows an accusative pattern (as can be seen from the data in Section 7.5). There are two languages where relativization takes place on an ergative basis (Wargamay and Yidiɲ), but no information is available about the relativization of roles other than S and O. This has some significant consequences for the hierarchies that will be put forward in this chapter. These consequences will be discussed in Section 7.3.

7.2.2. *The form of the verb*

The data on the various parameters concerning the form of the verb in relative relations are reported in Tables 7.3–7.11. These data make it possible to establish

Language	A	S	O	Indirect Object	Oblique
Tangkhul Naga	D	D	D	D	D
Arabic (Gulf)	D/B	D/B	D/B	B	B
Kobon	D/B	D/B	B	B	B
Maricopa	D/B	D/B	D/B	D/B	D/B
Paiwan	B	B	B	B	B

FIGURE 7.1. *Balancing and deranking: cut-off points in the hierarchy of relative relations*
B = balancing; D = deranking; D/B = either deranking or balancing

Language	A	S	O	Indirect Object	Oblique
Greenlandic (West)	−	−	−	−	−
Punjabi (Gulf)	−/+	−/+	−/+	+	+
Kobon	−/+	−/+	+	+	+
Borana	−/+	−/+	−/+	−/+	−/+
Karimojong	+	+	+	+	+

FIGURE 7.2. *Lack of T distinctions: cut-off points in the hierarchy of relative relations*
− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed

the Relative Deranking Hierarchy in (7.14):

(7.14)   The Relative Deranking Hierarchy:
         A, S > O > Indirect Object, Oblique

The Relative Deranking Hierarchy holds for the distribution of deranked verb forms in general, and some of the individual factors contributing to deranking, namely lack of T and person agreement distinctions, use of special forms to express T and A distinctions, and case marking/adpositions on the dependent verb. If any of these phenomena takes place at any point on the hierarchy, then it takes place at all points to the left. (No hierarchy can be established for the use of special forms to express M distinctions, as this phenomenon occurs in four languages only, and in these languages it is found with all syntactic roles.)

  Figures 7.1 and 7.2 illustrates some possible cut-off points for the Relative Deranking Hierarchy with respect to balanced and deranked verb forms and lack of T distinctions. The language data for balancing and deranking are reported in Table 7.3 and those for lack of T distinctions are reported in Table 7.4.

  Figure 7.3 illustrates some possible cut-off points for the Relative Deranking Hierarchy with respect to lack of person agreement distinctions. The language data for lack of person agreement distinctions are reported in Table 7.10.

Language	A	S	O	Indirect Object	Oblique
Ho	−	−	−	−	−
Arabic (Gulf)	−/+	−/+	−/+	+	+
Tamazight	−	−	+	+	+
Acehnese	−/+	−/+	−/+	−/+	−/+
Borana	+	+	+	+	+

FIGURE 7.3. *Lack of person agreement distinctions: cut-off points in the hierarchy of relative relations*

− = person agreement not expressed; + = person agreement expressed; −/+ = person agreement either not expressed or expressed

As was pointed out in Section 3.2.3.5 verbs may agree in person with more than one argument. This means that lack of person agreement distinctions may be total or partial. The latter case takes place when the language allows person agreement with more than one argument, and not all of these arguments are cross-referenced on some verb forms. This is the case in three of the languages in the sample, Maricopa, Muna, and Squamish. For instance, Maricopa allows person agreement with both A/S and O. When A/S is relativized, the verb affixes referring to it are replaced by a relative particle, while agreement with O is maintained. This is illustrated in (7.15) (the relative particle *kw-* and the agreement affix *ny-* are in bold):

Maricopa (Northern Amerindian, Hokan)
(7.15) *[aany=lyvii=m   'iipa   **ny-kw**-tshqam-sh]   shmaa-m*
        yesterday   man   1-REL-slap.DIST-SUBJ   sleep-REAL
        'The man who beat me is asleep' (Gordon 1986: 255)

This Maricopa example illustrates the general pattern found for partial lack of person agreement distinctions. Person agreement distinctions cross-referencing the relativized item are not expressed, while person agreement distinctions cross-referencing the other arguments are expressed (in fact, the Maricopa construction illustrated in (7.15) is only used for A/S relativization). In Muna, the only roles that can be relativized directly are A and S. In this case, the verb displays no person agreement affixes. Relativization of the other roles is obtained through promotion of these roles to S. In this case, the verb has no S agreement affixes, but displays possessive affixes agreeing with the other verb arguments. As for Squamish, relativization of A/S involves a lack of A/S agreement affixes, but the presence of O affixes. Relativization of O, on the other hand, involves a lack of O agreement affixes, but the presence of the other agreement affixes.

Sometimes person agreement distinctions are not expressed, but nevertheless the verb displays some form of argument cross-referencing on the verb. However, this follows a nominal, rather than a verbal pattern, and usually

Language	A	S	O	Indirect Object	Oblique
Greenlandic (West)	+	+	+	+	+
Greek (Ancient)	−/+	−/+		−	−
Finnish	−/+	−/+	−	−	−
Maricopa	−/+	−/+	−/+	−/+	−/+

FIGURE 7.4. *Case marking/adpositions on verbs: cut-off points in the hierarchy of relative relations*

− = no case marking/adpositions; + = case marking/adpositions ; −/+ = either no case marking/adpositions or case marking/adpositions

indicates gender or number rather than person distinctions. This phenomenon is found, for example, in Barasano, Ancient Greek, Italian, Resigaro, and Tamazight.

Figure 7.4 illustrates some possible cut-off points for the Relative Deranking Hierarchy with respect to the use of case marking or adpositions on the dependent verb. The language data for case marking/adpositions are reported in Table 7.11.

Use of case marking or adpositions on the dependent verb is quite rare, being attested in twelve languages only. Case marking and adpositions signal the syntactic role played by the relativized item in the main clause. This phenomenon is often found in internal relatives. The Maricopa sentence in (7.15) above provides an example of an internal relatives clause where the verb displays case marking. Another example from Maricopa is provided in (7.16):

Maricopa (Northern Amerindian, Hokan)
(7.16) *Bonnie [va-s-ii   uuyem-***sh***]   havshuu-k*
       Bonnie   house-DEM-at   go-NOMLZR-SUBJ   blue-REAL
       'The house Bonnie went to is blue' (Gordon 1986: 261)

The verb coding the dependent SoA bears the nominative case marker -*sh*. This obviously corresponds to the role of the shared participant in the main clause (S), not in the dependent clause (where it has a locative role).

It should be pointed out that the evidence for the distribution of case marking/adpositions following the Relative Deranking Hierarchy is quite scarce. In most cases where case marking or adpositions are found, they are used for all roles, as is shown by the data in Table 7.11. However, in five languages (Finnish, Ancient Greek, Kayardild, Limbu, and Sumerian), case marking is used for some roles, but not for others. The roles where case marking is found are always A, S, and possibly O. This suggests that case marking/adpositions on the dependent verb follow the Relative Deranking Hierarchy, but this hypothesis should be tested by further research.

Lack of A and M distinctions follows a slightly different version of the Relative Deranking Hierarchy:

(7.17)   Relative relations: Lack of A and M distinctions:
          A, S, O > Indirect Object, Oblique

The reciprocal ranking of A, S, and O cannot be established for lack of significant languages. The language data for lack of TAM distinctions and use of special forms is reported in Tables 7.4–7.6 and 7.7–7.9.

No hierarchy can be established for the use of special forms to express person agreement distinctions, as these are found in only three languages (Borana, Huallaga (Huánuco) Quechua, and Turkish).

7.2.3. The coding of participants

The data on the various parameters concerning the coding of participants in relative relations are reported in Tables 7.12–7.13.

Alignment splits are attested in relative relations to the extent that the alignment pattern for relativization may be different from the alignment pattern found in independent clauses. The sample includes a number of ergative languages, as well as one language (Acehnese) of the so-called active type (see Section 3.3.1). Almost all of these languages display a nominative alignment pattern in relativization (the only exception is Yidiɲ, as was pointed out in Section 3.3.1). This is a case of an alignment split, but a different one from those examined for complement and adverbial relations (Sections 5.4.3 and 6.4.3). The alignment splits found in complement and adverbial relations were morphological splits, that is, arguments were treated differently in main and dependent clauses from the morphological point of view. On the other hand, the alignment splits found in relative relations are syntactic, in that arguments are treated in the same way in main and dependent clauses from the morphological point of view (for instance, they receive the same case marking), but they are aligned differently with respect to relativization patterns.

As for lack of overtly expressed arguments, a frequent relativization strategy is the one sometimes referred to as 'gapping' (Keenan 1985: 153–5), whereby any reference to the participant shared by the linked SoAs is omitted in the dependent clause. This strategy obviously corresponds to what has been called a here a lack of overtly expressed arguments, except that, depending on the role of the relativized item, it may involve not only A, S, and O, but also indirect objects and obliques. In fact, only relativized items may get no overt expression in relative relations: the data show no cases in which non-relativized items receive no overt expression. The data in Table 7.12 refer to gapping of the relativized item, not just a lack of overtly expressed A, S, or O arguments (as was the case for complement and adverbial relations).

Gapping obeys the Relative Deranking Hierarchy. If oblique or indirect object are gapped in relativization, then so are O, A, and S. If O is omitted, then so are A

Language	A	S	O	Indirect Object	Oblique
Tangkhul Naga	−	−	−	−	−
Ho	−	−	− ‖	+	+
Tamazight	−	− ‖	+	+	+
Akan	+	+	+	+	+

FIGURE 7.5. *Gapping of the relativized item: cut-off points in the hierarchy of relative relations*

− = relativized item gapped; + = relativized item expressed overtly; −/+ = relativized item either gapped or expressed overtly; blank = no information available

and S. The same observation was made in Keenan and Comrie (1977) and Keenan (1985).

Some possible cut-off points for the Relative Deranking Hierarchy with respect to gapping are instantiated in Figure 7.5, while the relevant language data are reported in Table 7.12.

Coding of A or S as possessors is attested in four languages only (West Greenlandic, Sumerian, Turkish, and Ute), and is only allowed when A or S are not relativized. Coding of O as a possessor is never attested.

7.3. Cross-linguistic coding of relative relations and functional factors

The crucial factor in the cross-linguistic coding of relative relations is the role of the relativized item in the clause coding the dependent SoA. This is the only parameter allowing us to distinguish different types of relative relations. The phenomena taken into account conform to two variants of the same hierarchical pattern, one defined by the different roles played by the relativized item. The first variant holds for deranking in general, lack of T distinctions, lack of person agreement distinctions, use of special forms to express T and A distinctions, case marking/adpositions on the dependent verb, and gapping. This hierarchy may now be indicated as the Relative Deranking-Argument Hierarchy:

(7.18)   The Relative Deranking-Argument Hierarchy:
        A, S > O > Indirect Object, Oblique

The second variant,

(7.19)   A, S, O > Indirect Object, Oblique

holds for the lack of A and M distinctions. No hierarchy could be established for the other parameters examined, namely the use of special forms to code person agreement distinctions and the coding of arguments as possessors. The former is attested in too few languages, while the latter, besides being quite rare, appears

to be subject to no constraints other than that the argument coded as a possessor should not be the relativized one.

The similarity of the two hierarchies in (7.18) and (7.19) to the Accessibility Hierarchy illustrated in (7.11) is self-evident, and leads to the conclusion that

   (i) If deranked verb forms (in particular, forms showing no TAM or person agreement distinctions, or forms with case marking or adpositions) are used for a role less accessible to relativization, then they are used for the roles more accessible to relativization;

  (ii) If participants of the dependent SoA are not expressed (gapping) when a role is less accessible to relativization, then they are not expressed when the role is more accessible to relativization.

The question then arises as to what the relationship is between accessibility to relativization and the cross-linguistic coding of relative relations. Since the cross-linguistic coding of relative relations directly reflects the Accessibility Hierarchy, it seems reasonable to assume that whatever explanation holds for the latter also holds for the former.

Three major accounts have been put forward for the Accessibility Hierarchy so far. Keenan and Comrie's (1977) original proposal is grounded on psychological ease of comprehension. The lower a role is on the Accessibility Hierarchy, the harder it is to understand relative clauses formed on that role. This claim is supported by several psycholinguistic studies (cited in Keenan and Comrie 1977). The underlying assumption is that if the speakers of a language are able to process relative clauses formed on a more difficult role, then they are able to process relative clauses formed on less difficult roles.

A similar analysis has been put forward by Hawkins (1994: 37–45, 1999). Hawkins' analysis is based on the notion of complexity within structural domains. This notion ultimately derives from generative grammar, although the details of Hawkins' formulation are different.

A structural domain consists of a grammatically and/or psycholinguistically significant subset of structurally related nodes in a tree diagram dominated by a given constituent (Hawkins 1994: 25). The degree of complexity of a structural domain is given by the set of nodes within it. Hawkins' basic claim is that the Accessibility Hierarchy reflects the degree of complexity of the structural domains corresponding to the different roles on the hierarchy. That is, roles lower on the hierarchy involve more complexity than roles higher on the hierarchy. As in Keenan and Comrie's analysis, the underlying assumption is that if a language can relativize a role involving a higher degree of complexity, then it can relativize roles involving a lower degree of complexity, as more complex structures are harder to process than less complex structures. Unlike Keenan and Comrie, Hawkins provides a complexity metric, namely the number of syntactic nodes within a structural domain.

Fox (1987) accounts for the Accessibility Hierarchy in discourse rather than psychological/processing terms. Resting on a corpus of spoken English data, she claims that the roles that are actually most accessible to relativization are S and O (see Section 7.1 above), and motivates this in terms of the discourse function of relative clauses. Relative clauses serve to situate the referent that is being introduced as a relevant part of the on-going discourse. This is typically done in two ways. Either the relative clause provides a stative description of some aspect of the referent it situates, or it provides a link via a referent that has already been introduced into the discourse (as is the case in (7.2)). These two situations correspond to S and O relativization respectively, and this is why S and O are the roles most accessible to relativization.

In principle, Keenan and Comrie's psychological account is compatible with both Hawkins' and Fox's accounts. Keenan and Comrie assume that relatives formed on certain roles are easier to understand, and this is why these roles are more accessible to relativization. However, they give no conclusive indication as to why these relatives should be easier to understand. This might well be because the relevant roles have a lower degree of structural complexity, as is assumed by Hawkins, or because they correspond to the prototypical discourse function of relativization, and are the most common relativization types in discourse, as is assumed by Fox. Yet, Hawkins' account and Fox's one are radically different. The former is based on the degree of structural complexity of the different roles, regardless of their discourse function, while the latter is based on discourse function only, regardless of structural complexity. There does not seem to be any straightforward way to bridge structural complexity and discourse function. So either certain roles are more accessible to relativization because they are structurally less complex, or they are more accessible to relativization because of the discourse function of relativization itself.

Problems arise, however, with Hawkins' account when actual cross-linguistic data are considered. As was mentioned in Section 7.1 above, S is actually more accessible to relativization than, A. This emerges both from Keenan's (1985) cross-linguistic data and Fox's (1987) investigation of conversational English. This cannot be accounted for in terms of structural complexity, as A and S have the same degree of structural complexity. Also, Fox's data suggest that O is actually as accessible to relativization as S, and more accessible than A. In fact, in ergative languages such as Yidiɲ (Section 7.2.1 above) direct relativization is restricted to S/O, and promotion devices are used to relativize other roles. This runs against the structural complexity hypothesis, as O is structurally more complex than both A and S.

This leaves us with Keenan and Comrie's and Fox's account. That is, we may assume that relatives formed on the roles that are more accessible to relativization are easier to understand, and possibly that this is so because of the prototypical discourse function of relativization. The question then arises whether this may have a connection with the hierarchies described in this chapter, namely those concerning deranking in general, lack of TAM and person agreement distinctions,

coding of TAM distinctions by means of special forms and gapping (the other phenomena taken into account do not allow us to establish any hierarchical pattern, as was seen throughout the chapter).

The answer that will be suggested here rests on the fact that the relevant morpho-syntactic phenomena are phenomena that lead to the non-specification or more difficult recovery of information (this does not hold for case marking/adpositions on the dependent verb, which will be discussed in Section 8.3.6). Lack of inflectional distinctions and gapping lead to non-specification of the corresponding information about tense, aspect, mood, and participants of the dependent SoA, as was already observed in connection to complement and adverbial relations. Use of special forms to code TAM distinctions implies that the corresponding information is not expressed in the usual way, and hence is more difficult to recover. Also, as was pointed out in Section 5.5, special TAM forms often express a reduced set of TAM distinctions, which means, once again, that information about the time reference, aspect, and mood value of the dependent SoA may be less easily recoverable.

In the case of complement and adverbial relations, a significant correlation was observed between the distribution of morphosyntactic phenomena leading to non-specification of information and predetermination of the corresponding semantic features of the dependent SoA. The proposed account for this correlation was that non-specification of information takes place when this information can be recovered from the context rather than when this is not the case, otherwise there would be a loss in the communicative value of the sentence. In the case of relative relations, there is no predetermination of information, except for the mood value of the dependent SoA (Section 7.1). Hence the morphosyntactic phenomena leading to non-specification of information actually involve a loss in the communicative value of the sentence. It seems reasonable to assume that this takes places when the relative construction is easier to understand than when this is not the case, otherwise the processing load would be too heavy. The same observation has been made by Lehmann (1984: 221) with respect to the nominalization of relative clauses. Also, a similar account is provided by Keenan and Comrie (1977) and Hawkins (1994: 37–50, 1999) for the distribution of gapping strategies. Gapping strategies are strategies that provide no indication about the role of the relativized item. A typical case of gapping strategy would be the English sentence in (7.2). If gapping strategies are used at any point on the Accessibility Hierarchy, then they are used at all points to the left. Keenan and Comrie and Hawkins assume that this is because gapping strategies involve a higher processing load than strategies explicitly indicating the role of the relativized item.

Some qualifications should be introduced about the hierarchies presented in this chapter. As was observed in Section 7.2.1, almost all of the significant languages relativize on an accusative basis, and in fact A and S roles are found at the leftward end of all of the hierarchies. However, cross-linguistic as well as intralinguistic evidence shows that S and O are more accessible to relativization than A. The proposed analysis of the hierarchies crucially rests on the fact that the leftmost

roles are the most accessible to relativization. But then this analysis should be able to account for why A and S outrank O, while a ranking S, O > ... should be expected. However, the hierarchies can be read as follows:

(i) S occupies the topmost position, and this is in accordance with Keenan's (1985) cross-linguistic data.

(ii) S outranks O. Apparently, this is in contrast with the conversational data presented in Fox (1987). However, Fox (1987: 865) stresses that her data only concern a specific type of O relatives, those containing a pronominal subject and semantically weak verbs such as 'have', not those with nominal subjects (which are the most common ones in Keenan and Comrie's data, as well as in reference grammars). Therefore, the evidence provided by Fox's conversational data is not actually conclusive as to the reciprocal ranking of S and O with respect to accessibility to relativization. It may be the case that S actually outranks O with respect to accessibility to relativization, although further cross-linguistic as well as intralinguistic evidence is needed to test this hypothesis.

(iii) A ranks in the same way as S, and outranks O. This too is in contrast with Fox's conversational data. The position of A may be explained by the fact that the hierarchies are defined by significant languages (cf. Section 4.2), and all significant languages have an A/S alignment pattern for relativization. But alignment patterns as such are independent of accessibility to relativization, and may be accounted for in terms of independent functional principles (for one functional account of accusative as opposed to ergative alignment, see Du Bois (1985)). This means that A may rank in the same way as S just because the language has an A/S alignment pattern for relativization, not because A is as accessible to relativization as S. Then the reason why A outranks O is because it is coded in the same way as S, and S outranks O because it is actually more accessible to relativization.

Thus, the basic hypothesis presented in this section is that the hierarchies concerning the morphosyntactic coding of relative relations are connected to accessibility to relativization. The connection is grounded on the fact that the relevant morphosyntactic phenomena lead to non-specification or more difficult recovering of information concerning the dependent SoA. Therefore, they are used when the clause coding the dependent SoA (the relative clause) is easier to process rather than when this is not the case, so as not to increase processing load. The rightmost part of the hierarchies presented above (from O to Oblique) corresponds to the Accessibility Hierarchy. As for the position of A and S, cross-linguistic as well as intralinguistic evidence shows that the most accessible role to relativization is S, and this explains the position of S on the hierarchies. Since all of the significant languages defining the hierarchies have an A/S alignment pattern for relativization, A ranks in the same way as S on the hierarchies, although it seems to be less accessible to relativization.

It should be pointed out that the proposed analysis of the cross-linguistic coding of relative relations actually explains why individual morphosyntactic phenomena do not occur with certain relativization types, not why they occur with other relativization types. The proposed analysis assumes that the morphosyntactic phenomena taken into account increase the processing load of the relative clause, and thus do not occur when this load is higher. However, this does not explain why these phenomena occur at all when the processing load of the relative sentence is lower, as is the case with roles that are more accessible to relativization. Phenomena such as gapping and lack of person agreement distinctions can be accounted for in terms of the nature of relative relations. Relative relations involve the sharing of a participant between the main and dependent SoAs, but do not predetermine the role of this participant in either of the linked SoAs. Hence some device must be used to specify the role of the shared participant in either of the linked clauses. Arguments and person agreement distinctions refer to participants of SoAs. Thus, lack of overtly expressed arguments and lack of person agreement distinctions in the dependent clause may be used to indicate the role of the shared participant, in that it may be assumed that the missing arguments or person agreement distinctions refer to that participant.[2]

However, other phenomena such as lack of TAM distinctions or case marking/adpositions on the dependant verb cannot be easily related to any specific property of relative relations. A different explanation should therefore be sought for the occurrence of these phenomena.

In the previous chapters, a correlation was observed between the morphosyntactic phenomena involved in the cross-linguistic coding of subordination and particular semantic features of individual subordination relation types, such as semantic integration. The assumption underlying the analysis was that this correlation is motivated, and the motivating principles explain why the relevant morphosyntactic phenomena occur at all in the coding of individual subordination relation types (Sections 5.5 and 6.5). To explain why particular morphosyntactic phenomena occur at all in the cross-linguistic coding of relative relations, two approaches can be taken. On the one hand, one may look for a functional principle motivating the connection between individual morphosyntactic phenomena and accessibility to relativization. One such principle would explain why individual morphosyntactic phenomena occur at all in the relativization of more accessible roles. Otherwise, one may assume that there is a motivated connection between the relevant morphosyntactic phenomena and some property of relative relations other than accessibility to relativization. In this case, accessibility to relativization would explain why the relevant morphosyntactic phenomena occur with certain relativization types but not with others, while other principles would explain why these

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[2]   In principle, since main and dependent SoAs share a participant, reference to that participant may be omitted in either the main or the dependent clause. In fact, in internal relatives (e.g. (7.13), (7.15), and (7.16)) the shared participant is fully specified in the dependent clause, not in the main one.

phenomena occur at all in the coding of relative relations. In Chapters 8 and 9 it will be shown that some such principles can be invoked, and they are similar to those motivating particular aspects of the coding of complement and adverbial relations.

So far, independent accounts have been provided for the cross-linguistic coding of complement, adverbial, and relative relations. In the next chapter, it will be shown that all these relations can be ranked together on implicational hierarchies as far as their cross-linguistic coding is concerned. Also, it was claimed that semantic factors exist (semantic integration, predetermination, etc.) that account for the cross-linguistic coding of complement and adverbial relations, but not relative relations. It transpires that these factors play a crucial role in the global hierarchies of subordination relations, also with respect to the position of relative relations.

7.4. Data supporting the implicational hierarchies

Following the same procedure as for complement and adverbial relations, the data supporting the implicational hierarchies for relative relations will now be presented. The data will be arranged into two tables, pertaining to balanced and deranked verb forms (Table 7.1) and gapping of the relativized item (Table 7.2) respectively. For both of these tables, each of the relation types on the vertical axis outranks each of the relation types on the horizontal axis, unless otherwise specified. For each combination of relation types on the vertical and the horizontal axis, three numbers are reported. The first number is the number of languages for which information is available for both relation

TABLE 7.1. *Language numbers for the Relative Deranking Hierarchy*

	O r.	Ind. o. r.	Obl. r.
A, S r.	72/4/0	48/8/0	47/7/0
O r.	*	47/5/0	47/5/0

* = same relation type on both the vertical and the horizontal axis

TABLE 7.2. *Language numbers for the Relative Argument Hierarchy*

	O r.	Ind. o. r.	Obl. r.
A, S r.	72/8/1	48/17/0	47/19/0
O r.	*	48/12/0	47/15/0

* = same relation type on both the vertical and the horizontal axis

types. The second two numbers correspond to the languages where the relevant relation types do not have the same value with respect to the relevant parameter, that is the number of significant cases. The second number indicates the number of significant cases supporting the implicational generalization. The third number is the number of significant cases contradicting the implicational generalization.

Some of the implications for relative relations are supported by a large amount of data, but only a small number of significant cases. However, these implications are exceptionless, and correspond to Keenan and Comrie's (1977) Accessibility Hierarchy, as well as the data in Lehmann (1984). Therefore, they are regarded as valid.

7.5. Language data

TABLE 7.3. *Relative relations: balanced and deranked verb forms*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Acehnese	B	B	B	B	B
Akan	B	B	B	B	B
Arabic (Gulf)	D/B	D/B	D/B	B	B
Arapesh	B	B			
Banda Linda	B	B	B	B	B
Barasano	D	D	D		
Basque	B	D/B	D/B	B	B
Berbice Dutch Creole	B	B	B	B	B
Borana	D/B	D/B	D/B	D/B	D/B
Burushaski	D	D	D		
Canela-Krahô	B	B	B	B	B
Chinese (Mandarin)	B	B	B	B	B
Diegueño	D	D			
Djapu	D	D	D		
Egyptian (Ancient)	D/B	D/B	D/B	D/B	D/B
Finnish	D/B	D/B	B	B	B
Fula	D	D	D		
Gimira	D	D	D		
Greek (Ancient)	D/B	D/B	D/B	B	B
Greenlandic (West)	D	D	D	D	D
Gumbaynggir	B	B	B		
Hittite	B	B	B	B	B
Hixkaryana	D	D/B	D/B		
Hmong Njua	B	B	B		
Ho	D	D	D	D	D
Hurrian		B	B		

TABLE 7.3. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Italian	D/B	D/B	D/B	B	B
Jacaltec	B	B	B	B	B
Japanese	B	B	B	B	B
Kanuri	B	B	B	B	B
Karimojong	B	B	B	B	B
Kayardild	B	B	B	B	B
Khasi	B	B	B	B	B
Kobon	D/B	D/B	B	B	B
Kolokumi	D	D	D		
Krongo	B	B			
Lango	B	B	B	B	B
Lezgian	D	D	D	D	D
Limbu	D	D	D		
Makian (West)	B	B			
Maŋarayi	B	B	B		
Maori	B	B	B	B	B
Maricopa	D/B	D/B	D/B	D/B	D/B
Muna	D	D	D	D	
Nama	B	B	B		
Nandi	B	B	B	B	B
Ngbaka	B	B	B	B	B
Nung	B	B	B	B	B
Paiwan	B	B	B	B	B
Paumarí	B	B	B	B	B
Pero	B	B	B		
Pirahã	B	B	B		
Punjabi	D/B	D/B	D/B	B	B
Quechua (Huallaga Huánuco)	D	D	D		D
Resigaro	D	D	D		
Retuarã	D	D	D	D	D
Sawu	B	B	B	B	
Shipibo-Conibo	D	D			
Shoshone (Tümpisa Panamint)	D	D	D	D	D
Slave	B	B	B	B	B
Songhay	B	B			
Squamish	D	D	D		
Sumerian	D	D	D		
Supyire	B	B	B	B	B
Tagalog		B	B	B	B
Tamazight	D	D	B	B	B
Tamil	D	D	D	D	D
Tangkhul Naga	D	D	D	D	D
Tarascan	D	D	D		

TABLE 7.3. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Tok Pisin	B	B	B	B	B
Turkish	D	D	D	D	D
Tzutujil	B	B	B	B	B
Ute	D	D	D		
Vai	B	B	B	B	B
Vietnamese	B	B	B		
Wargamay		D	D		
Wayãpi	B	B	B	B	B
Yidiɲ		D	D		
Yoruba	B	B	B		

B = balancing; D = deranking; D/B = either deranking or balancing; blank = no information available

TABLE 7.4. *Relative relations: lack of T distinctions*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Akan	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	+	+
Barasano	−/+	−/+	−/+		
Basque	+	−/+	−/+	+	+
Berbice Dutch Creole	+	+	+	+	+
Borana	−/+	−/+	−/+	−/+	−/+
Burushaski	−	−	−		
Canela-Krahô	+	+	+	+	+
Diegueño	+	+			
Djapu	−	−	−		
Egyptian (Ancient)	+	+	+	+	+
Finnish	−/+	−/+	+	+	+
Fula	+	+	+		
Gimira	+	+	+		
Greek (Ancient)	+	+	+	+	+
Greenlandic (West)	−	−	−	−	−
Gumbaynggir	+	+	+		
Hittite	+	+	+	+	+
Hixkaryana	−	−			
Ho	+	+	+	+	+
Hurrian		+	+		
Italian	−/+	−/+	−/+	+	+
Jacaltec	+	+	+	+	+
Japanese	+	+	+	+	+
Kanuri	+	+	+	+	+

TABLE 7.4. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Karimojong	+	+	+	+	+
Kayardild	−/+	−/+	−/+	−	−
Khasi	+	+	+	+	+
Kobon	−/+	−/+	+	+	+
Kolokumi	−	−	−		
Krongo	+	+			
Lezgian	+	+	+	+	+
Limbu	−	−	−/+		
Maɲarayi	+	+	+		
Maori	+	+	+	+	+
Muna	−	−	−	−	
Nandi	+	+	+	+	+
Ngbaka	+	+	+	+	+
Paiwan	+	+	+	+	+
Pero	+	+	+		
Punjabi	−/+	−/+	−/+	+	+
Quechua (Huallaga Huánuco)	−	−	−		−
Resigaro	+	+	+		
Retuarã	−	−	−	−	−
Sawu	+	+	+	+	
Shipibo-Conibo	−	−			
Shoshone (Tümpisa Panamint)	+	+	+	+	+
Slave	+	+	+	+	+
Songhay	+	+			
Squamish	−	−	−		
Sumerian	+	+	+		
Supyire	+	+	+	+	+
Tamazight	−	−	+	+	+
Tamil	+	+	+	+	+
Tangkhul Naga	−	−	−	−	−
Tarascan	+	+	+		
Tok Pisin	+	+	+	+	+
Turkish	+	+	+	+	+
Tzutujil	+	+	+	+	+
Ute	+	+	+		
Vai	+	+	+	+	+
Wayãpi	+	+	+	+	+
Yidiɲ		+	+		
Yoruba	+	+	+		

− = T distinctions not expressed; + = T distinctions expressed; −/+ = T distinctions either not expressed or expressed; blank = no information available. Languages that do not code tense on the verb are not included.

TABLE 7.5. *Relative relations: lack of A distinctions*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Akan	+	+	+	+	+
Arabic (Gulf)	+	+	+	+	+
Banda Linda	+	+	+	+	+
Barasano	−/+	−/+	−/+		
Basque	+	+	+	+	+
Berbice Dutch Creole	+	+	+	+	+
Borana	−/+	−/+	−/+	−/+	−/+
Burushaski	+	+	+		
Canela-Krahô	+	+	+	+	+
Chinese (Mandarin)	+	+	+	+	+
Diegueño	+	+			
Djapu	−	−	−		
Egyptian (Ancient)	+	+	+	+	+
Finnish	−/+	−/+	+	+	+
Fula	+	+	+		
Gimira	+	+	+		
Greek (Ancient)	+	+	+	+	+
Greenlandic (West)	+	+	+	+	+
Gumbaynggir	+	+	+		
Hittite	+	+	+	+	+
Hixkaryana	−/+	−/+			
Ho	+	+	+	+	+
Hurrian		+	+		
Italian	+	+	+	+	+
Jacaltec	+	+	+	+	+
Japanese	+	+	+	+	+
Kanuri	+	+	+	+	+
Karimojong	+	+	+	+	+
Kayardild	+	+	+	+	+
Khasi	−/+	−/+	+	+	+
Kobon	+	+	+	+	+
Kolokumi	−	−	−		
Krongo	+	+			
Lango	+	+	+	+	+
Lezgian	+	+	+	+	+
Limbu	−	−	−/+		
Maŋarayi	+	+	+		
Maori	+	+	+	+	+
Maricopa	−/+	−/+	−/+	−/+	−/+
Muna	−	−	−	−	
Nama	+	+	+		

TABLE 7.5. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Nandi	+	+	+	+	+
Ngbaka	+	+	+	+	+
Paiwan	+	+	+	+	+
Paumarí	+	+	+	+	+
Pero	+	+	+		
Pirahã	+	+	+		
Punjabi	+	+	+	+	+
Quechua (Huallaga Huánuco)	+	+	+		+
Resigaro	+	+	+		
Retuarã	−	−	−	−	−
Sawu	+	+	+	+	
Shipibo-Conibo	+	+			
Shoshone (Tümpisa Panamint)	+	+	+	+	+
Slave	+	+	+	+	+
Songhay	+	+			
Squamish	−	−	−		
Sumerian	+	+	+		
Supyire	+	+	+	+	+
Tagalog		+	+		
Tamazight	+	+	+	+	+
Tamil	+	+	+	+	+
Tangkhul Naga	+	+	+	+	+
Tarascan	+	+	+		
Tok Pisin	+	+	+	+	+
Turkish	+	+	+	+	+
Tzutujil	+	+	+	+	+
Ute	+	+	+		
Vai	+	+	+	+	+
Vietnamese	+	+	+		
Wargamay		−	−		
Wayãpi	+	+	+	+	+
Yidiɲ		+	+		
Yoruba	+	+	+		

− = A distinctions not expressed; + = A distinctions expressed; −/+ = A distinctions either not expressed or expressed; blank = no information available. Languages that do not code aspect on the verb are not included.

TABLE 7.6. *Relative relations: lack of M distinctions*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Akan	+	+	+	+	+
Arabic (Gulf)	−/+	−/+	−/+	+	+
Banda Linda	+	+	+	+	+
Barasano	−/+	−/+	−/+		
Basque	+	−/+	−/+	+	+
Berbice Dutch Creole	+	+	+	+	+
Borana	+	+	+	+	+
Burushaski	−	−	−		
Canela-Krahô	+	+	+	+	+
Diegueño	+	+			
Djapu	−	−	−		
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+
Finnish	−/+	−/+	+	+	+
Fula	−/+	−/+	+		
Gimira	+	+	+		
Greek (Ancient)	−/+	−/+	−/+	+	+
Greenlandic (West)	−	−	−	−	−
Gumbaynggir	+	+	+		
Hittite	+	+	+	+	+
Hixkaryana	−/+	−/+			
Ho	−	−	−	−	−
Hurrian	+	+	+		
Italian	−/+	−/+	−/+	+	+
Jacaltec	+	+	+	+	+
Japanese	+	+	+	+	+
Kanuri	+	+	+	+	+
Karimojong	+	+	+	+	+
Kayardild	+	+	+	+	+
Khasi	+	+	+	+	+
Kobon	−/+	−/+	+	+	+
Kolokumi	−	−	−		
Krongo	+	+			
Lango	+	+	+	+	+
Lezgian	−	−	−	−	−
Limbu	−	−	−		
Makian (West)	+	+			
Maŋarayi	+	+	+		
Maori	+	+	+	+	+
Maricopa	−/+	−/+	−/+	−/+	−/+
Muna	−	−	−	−	
Nama	+	+	+		

TABLE 7.6. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Nandi	+	+	+	+	+
Ngbaka	+	+	+	+	+
Paiwan	+	+	+	+	+
Paumarí	+	+	+	+	+
Pero	+	+	+		
Pirahã	+	+	+		
Punjabi	−/+	−/+	−/+	+	+
Quechua (Huallaga Huánuco)	−	−	−		−
Resigaro	+	+	+		
Retuarã	−	−	−	−	−
Shipibo-Conibo	−	−			
Shoshone (Tümpisa Panamint)	−	−	−	−	−
Slave	+	+	+	+	+
Songhay	+	+			
Squamish	−	−	−		
Sumerian	−	−	−		
Supyire	+	+	+	+	+
Tamazight	−	−	+	+	+
Tamil	+	+	+	+	+
Tangkhul Naga	+	+	+	+	+
Tarascan	+	+	+		
Tok Pisin	+	+	+	+	+
Turkish	−	−	−	−	−
Tzutujil	+	+	+	+	+
Ute	+	+	+		
Vai	+	+	+	+	+
Vietnamese	+	+	+		
Wargamay		+	+		
Wayãpi	+	+	+	+	+
Yidiɲ		−	−		
Yoruba	+	+	+		

− = M distinctions not expressed; + = M distinctions expressed; −/+ = M distinctions either not expressed or espressed; blank = no information available. Languages that do not code mood on the verb are not included.

TABLE 7.7. *Relative relations: T distinctions expressed differently from independent clauses*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Barasano	−/t	−/t	−/t		
Egyptian (Ancient)	t/T	t/T	t/T	t/T	t/T
Finnish	−/t/T	−/t/T	T	T	T
Fula	t	t	t		
Greek (Ancient)	t/T	t/T	t/T	T	T
Lezgian	t	t	t	t	t
Shoshone (Tümpisa Panamint)	t	t	t	t	t
Turkish	t	t	t	t	t
Yidiɲ		t	t		

− = T distinctions not expressed; t = T distinctions expressed differently from independent clauses; T = T distinctions expressed as in independent clauses. Languages that do not use any special form for T distinctions at all are not included.

TABLE 7.8. *Relative relations: A distinctions expressed differently from independent clauses*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Barasano	−/a	−/a	−/a		
Egyptian (Ancient)	a/A	a/A	a/A	a/A	a/A
Finnish	a/A	a/A	A	A	A
Fula	a	a	a		
Greek (Ancient)	a/A	a/A	a/A	A	A
Lezgian	a	a	a	a	a
Punjabi	a/A	a/A	a/A	A	A
Shipibo-Conibo	a	a			
Shoshone (Tümpisa Panamint)	a	a	a	a	a
Turkish	a	a	a	a	a
Yidiɲ		a	a		

− = A distinctions not expressed; a = A distinctions expressed differently from independent clauses; A = A distinctions expressed as in independent clauses. Languages that do not use any special form for A distinctions at all are not included.

TABLE 7.9. *Relative relations: M distinctions expressed differently from independent clauses*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Barasano	−/m	−/m	−/m		
Fula	−/m	−/m	−/m		
Tamil	m/M	m/M	m/M	m/M	m/M
Wargamay		m	m		

− = M distinctions not expressed; m = M distinctions expressed differently from independent clauses; M = M distinctions expressed as in independent clauses. Languages that do not use any special form for M distinctions at all are not included.

TABLE 7.10. *Relative relations: lack of person agreement distinctions*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Acehnese	−/+	−/+	−/+	−/+	−/+
Arabic (Gulf)	−/+	−/+	−/+	+	+
Arapesh	+	+			
Barasano	−	−	−		
Basque	+	−/+	−/+	+	+
Borana	+	+	+	+	+
Burushaski	−	−	−		
Canela-Krahô	+	+	+	+	+
Diegueño	−	−			
Egyptian (Ancient)	−/+	−/+	−/+	−/+	−/+
Finnish	−/+	−/+	+	+	+
Gimira	−	−	−		
Greek (Ancient)	−/+	−/+	−/+	+	+
Greenlandic (West)	+	+	+	+	+
Hittite	+	+	+	+	+
Hixkaryana	−/+	−/+			
Ho	−	−	−	−	−
Hurrian		+	+		
Italian	−/+	−/+	−/+	+	+
Jacaltec	+	+	+	+	+
Kanuri	+	+	+	+	+
Karimojong	+	+	+	+	+
Khasi	+	+	+	+	+
Kobon	−/+	−/+	+	+	+
Krongo	−	−			
Lango	+	+	+	+	+
Limbu	−	−	−		
Makian (West)	+	+			
Maŋarayi	+	+	+		

TABLE 7.10. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Maricopa	−/+	−/+	+	+	+
Muna	−	−	−	−	
Nama	+	+	+		
Nandi	+	+	+	+	+
Punjabi	−/+	−/+	−/+	+	+
Quechua (Huallaga Huánuco)	−/+	−/+	−/+		−/+
Retuarã	−	−	−	−	−
Shoshone (Tümpisa Panamint)	−	−	−	−	−
Slave	+	+	+	+	+
Squamish	−/+	−/+	−/+		
Sumerian	−/+	−/+	−/+		
Tamazight	−	−	+	+	+
Tamil	−	−	−	−	−
Tarascan	+	+	+		
Turkish	+	+	+	+	+
Tzutujil	+	+	+	+	+
Ute	+	+	+		
Wayãpi	+	+	+	+	+

− = person agreement distinctions not expressed; + = person agreement distinctions expressed;
−/+ = person agreement distinctions either not expressed or expressed; blank = no information
available. Languages with no person agreement are not included.

TABLE 7.11. *Relative relations: case marking/adpositions on verbs*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Burushaski	+	+	+		
Djapu	+	+	+		
Finnish	−/+	−/+	−	−	−
Gimira	+	+	+		
Greek (Ancient)	−/+	−/+	−/+	−	−
Greenlandic (West)	+	+	+	+	+
Kayardild	−/+	−/+	−/+	+	+
Limbu	−/+	−/+	−		
Maricopa	−/+	−/+	−/+	−/+	−/+
Retuarã	+	+	+	+	+
Shoshone (Tümpisa Panamint)	+	+	+	+	+
Sumerian	+	−/+	−/+		

− = no case marking/adpositions; + = case marking/adpositions ; −/+ = either
case marking/adpositions or no case marking/adpositions; blank = no information
available

Table 7.12. *Relative relations: gapping of the relativized item*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Acehnese	−	−	−	−/+	−/+
Akan	+	+	+	+	+
Arabic (Gulf)	−	−	−/+	+	+
Arapesh	+	+			
Banda Linda	+	+	+	+	+
Barasano	−	−	−		
Basque	−	−	−	−	−
Berbice Dutch Creole	−	−	+	+	+
Borana	+	+	+	+	+
Burushaski	−	−	−		
Canela-Krahô	+	+	+	+	+
Chinese (Mandarin)	−	−	−	−	−
Diegueño	−	−			
Djapu	−	−	−		
Egyptian (Ancient)	+	+	+	+	+
Finnish	−/+	−/+	+	+	+
Fula	−/+	−/+	+		
Gimira	−	−	−		
Greek (Ancient)	−/+	−/+	−/+	+	+
Greenlandic (West)	−	−	−	+	+
Gumbaynggir	−	−	−		
Hittite	+	+	+	+	+
Hixkaryana	−/+	−/+			
Hmong Njua	−	−	−		
Ho	−	−	−	+	+
Hurrian		+	+		
Italian	−	−	−	+	+
Jacaltec	−	−	−	+	+
Japanese	−	−	−	−	−
Kanuri	−/+	−/+	−/+	+	+
Karimojong	+	+	+	+	+
Kayardild	−	−	−	−	−
Khasi	+	+	+	+	+
Kobon	−/+	−/+	−/+	−/+	−/+
Kolokumi	−/+	−/+	+		
Krongo	+	+			
Lango	−	−	−	−	+
Lezgian	−	−	−	−	−/+
Limbu	−	−	−		
Makian (West)	−/+	−/+			
Maŋarayi	−	−	−		
Maori	−/+	−/+	−/+	−/+	−/+

TABLE 7.12. *(contd.)*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Maricopa	+	+	+	+	+
Muna	−	−	−	−	
Nama	−	−	−		
Nandi	+	+	+	+	+
Ngbaka	−/+	−/+	−/+	−/+	−/+
Nung	+	+	+	+	+
Paiwan	−	−	−	−	−
Paumarí	+	+	+	+	+
Pero	−/+	−/+	−/+		
Pirahã	−	−	−		
Punjabi	−/+	−/+	+	+	+
Quechua (Huallaga Huánuco)	−	−	−		−
Resigaro	−	−	−		
Retuarã	−	−	−	+	+
Sawu	−	−	−	−	
Shipibo-Conibo	−	−			
Shoshone (Tümpisa Panamint)	−	−	−	+	+
Slave	−/+	−/+	−/+	−/+	−/+
Songhay	−	−			
Squamish	−	−	−		
Sumerian	−/+	−/+	−/+		
Supyire	+	+	−/+	+	+
Tagalog	−	−	−	+	+
Tamazight	−	−	+	+	+
Tamil	−/+	−/+	−/+	+	+
Tangkhul Naga	−	−	−	−	−
Tarascan	+	+	+		
Tok Pisin	+	+	+	+	+
Turkish	−	−	+	+	+
Tzutujil	−	−	−	−	−
Ute	−	−	−		
Vai	+	+	+	+	+
Vietnamese	−	−	−		
Wargamay		−	−		
Wayãpi	+	+	+	+	+
Yidiɲ		−	−		
Yoruba	−/+	−/+	−/+		

− = relativized item gapped; + = relativized item expressed overtly; −/+ = relativized item either gapped or expressed overtly; blank = no information available

TABLE 7.13. *Relative relations: Arguments (A or S) coded as possessors*

Languages	A r.	S r.	O r.	Ind. o. r.	Obl. r.
Greenlandic (West)	–	–	p/O	p/O	p/O
Sumerian	–/O	–	p/O		
Turkish	–	–	p	p	p
Ute	O	O	p		

o = A and S overtly expressed as obliques; p = A and S overtly expressed as possessors; O = A and S overtly expressed as in independent clauses; – = A and S not expressed; blank = no information available. Languages with no possessor coding for S or A in relative relations are not included.

8 Comparison of Complement, Adverbial, and Relative Relations

8.1. Introduction

So far, complement, adverbial, and relative relations have been considered separately. The aim of this chapter is to make a global comparison between them, in order to ascertain whether the various types of complement, adverbial, and relative relations examined in the previous chapters can be ranged along global hierarchies as far as their morphosyntactic coding is concerned. In fact, it will be shown that such hierarchies can actually be established, and they are related to the same factors examined for complement, adverbial, and relative relations taken in isolation (semantic integration, predetermination, etc.). These factors will be discussed in detail for each hierarchy, and the interaction between them will be defined in more precise terms than has been done so far.

The hierarchies will be established using the same method as that outlined in Section 5.4.1 and applied in Chapters 5–7. This time, the method will be applied across complement, adverbial, and relative relations as a whole. The comparison so far has involved different forms of the same subordination relation, for example different types of complement, adverbial, or relative relation. Now all of the complement, adverbial, and relative relation types taken into account will be compared. The results will be described by means of hierarchies established using the implicational method. For the sake of simplicity, no tables reporting language data will be included. Such tables would only collect the data reported in the tables in Chapters 5–7, and the reader is referred to those. However, as was done in the chapters for complement, adverbial, and relative relations, a number of tables (Tables 8.1–8.4) will be provided reporting the number of languages for which information is available for the relation types involved in the various implicational generalizations, and the number of significant cases supporting or contradicting each implication.

8.2. Global hierarchies of subordination relations

8.2.1. The form of the verb

The distribution of deranked verb forms across complement, adverbial, and relative relations obeys the Subordination Deranking Hierarchy in (8.1) below:

(8.1)   The Subordination Deranking Hierarchy:

Phasals, Modals > Desideratives, Manipulatives, Purpose > Perception > Before, After, When, A relativization, S relativization > Reality condition, Reason, O relativization > Knowledge, Propositional attitude, Utterance, Indirect object relativization, Oblique relativization

If a deranked verb form is used to code the dependent SoA at any point on the hierarchy, then it is used at all points to the left.

The individual phenomena contributing to deranking obey slightly different versions of the Subordination Deranking Hierarchy. For all of these, if the relevant phenomenon occurs at any point on the hierarchy, then it occurs at all points to the left.

The hierarchy for lack of T distinctions is reported in (8.2):

(8.2)   Lack of T distinctions: The global hierarchy for subordination relations:

Phasals, Modals > Desideratives, Manipulatives, Purpose > Perception > Before, After, When > Reason, A relativization, S relativization > O relativization > Reality condition > Knowledge, Propositional attitude, Utterance, Indirect object relativization, Oblique relativization

The hierarchy for lack of A distinctions is as follows:

(8.3)   Lack of A distinctions: The global hierarchy for subordination relations:

Phasals, Modals > Desideratives, Manipulatives, Purpose > Perception > Before, After > When, Reason, A relativization, S relativization, O relativization > Reality condition > Knowledge, Propositional attitude, Utterance, Indirect object relativization, Oblique relativization

The hierarchy for lack of M distinctions is as follows:

(8.4)   Lack of M distinctions: The global hierarchy for subordination relations:

Phasals, Modals > Desideratives, Manipulatives, Purpose > Perception > Before, After, When, Reason, A relativization, S relativization, O relativization > Reality condition > Knowledge, Propositional attitude, Utterance, Indirect object relativization, Oblique relativization

The hierarchy for lack of person agreement distinctions is as follows:

(8.5)   Lack of person agreement distinctions: The global hierarchy for
         subordination relations:

         Modals, Phasals >
         Desideratives, Manipulatives, Purpose, A relativization, S
         relativization > Perception >
         Before, When, After, Reason, Reality condition, Utterance, Propositional
         attitude, Knowledge, O relativization, Indirect object relativization,
         Oblique relativization

Finally, the hierarchy for use of case marking/adpositions on the dependent verb
is as follows:

(8.6)   Case marking/adpositions on the dependent verb: The global hierarchy
         for subordination relations:

         Modals, Phasals, Purpose, Desideratives, Manipulatives, Perception,
         Before, After, When, Reason > A relativization, S relativization, O
         relativization > Reality condition, Knowledge, Utterance, Propositional
         attitude, Indirect object relativization, Oblique relativization

   No hierarchy can be established for the use of special forms to express TAM
and person agreement distinctions. As was seen in the chapters concerning indi-
vidual subordination relations, the use of special forms to code TAM and person
agreement distinctions is quite rare in the languages of the sample, and alternates
with a lack of these distinctions, which is a much more frequent phenomenon. In
most cases, this does not allow any hierarchy to be established for this parameter,
apart from a general statement that the distribution of special forms across differ-
ent subordination relations does not violate the deranking hierarchy established
for those relations. The same situation is, of course, found across subordination
relations as a whole. The distribution of special forms does not seem to violate the
hierarchies established so far for deranking and lack of TAM and person agree-
ment distinctions. In general, if special forms are used for a relation type at any
point on these hierarchies, then they are used for the relation types to the left of
the hierarchies. However, scarcity of data does not allow one to establish the exact
boundaries between different subordination relation types.

8.2.2. The coding of participants

A lack of overtly expressed arguments (A and S) across subordination relations as
a whole obeys the Subordination Argument Hierarchy:

(8.7)   The Subordination Argument Hierarchy:

         Modals, Phasals, A relativization, S relativization >
         Desideratives, Manipulatives, Purpose, >

Perception >
Before, When, After, Reason, Utterance, Propositional attitude,
Knowledge, Reality condition

The Subordination Argument Hierarchy is the same as the one for lack of person agreement distinctions, except for relative relations. A and S relativization rank higher than in the hierarchy for lack of person agreement distinctions. O, indirect object, and oblique relativization are missing from the Subordination Argument Hierarchy hierarchy. In relative relations, a lack of overtly expressed arguments involves relativized items only (Section 7.2.3). This means that in A and S relativization the arguments that are not expressed may be A or S, but in other relativization types a lack of overtly expressed arguments involves roles other than A or S. Since only a lack of A and S arguments was taken into account for complement and adverbial relations, these relativization types are not included in the global hierarchy for lack of A and S arguments in subordination relations.

No hierarchy will be proposed for the coding of arguments as possessors, as this phenomenon is attested in too few languages (Sections 5.4.3, 6.4.3, and 7.2.3). A comparison of the data for complement and adverbial relations shows that coding of arguments as possessors basically follows the global hierarchy for the distribution of case marking/adpositions in (8.6). It should, however, be stressed that the coding of arguments as possessors is extremely rare in relative relations, and only takes place when the relevant arguments are not relativized. As a result, no hierarchy of relative relations can be established, and relative relations cannot be included in a global hierarchy of subordination relations either. The coding of arguments as possessors is also rare with modals and phasals, because arguments tend to receive no overt expression in those relation types (see the discussion in Section 5.4.3).

8.3. Cross-linguistic coding of subordination relations and functional factors

8.3.1. Overview

Cross-linguistic investigation shows that the coding of the various types of complement, adverbial, and relative relations can be described by means of overall implicational hierarchies. In particular, two such hierarchies can be individuated. The first one is the Subordination Deranking Hierarchy in (8.1), repeated here for the reader's convenience:

(8.8)   The Subordination Deranking Hierarchy:

Phasals, Modals > Desideratives, Manipulatives, Purpose > Perception > Before, After, When, A relativization, S relativization > Reality condition, Reason, O relativization > Knowledge, Propositional attitude, Utterance, Indirect object relativization, Oblique relativization

The Subordination Deranking Hierarchy holds for the distribution of deranked verb forms in general, and has variants (reported in (8.2)–(8.6) for lack of TAM and person agreement distinctions and presence of case marking/adpositions on the dependent verb.

The second hierarchy is the Subordination Argument Hierarchy, and holds for a lack of overtly expressed arguments (A and S):

(8.9)   The Subordination Argument Hierarchy:

>   Modals, Phasals, A relativization, S relativization >
>   Desideratives, Manipulatives, Purpose >
>   Perception > Before, After, When, Reason,
>   Reality condition, Utterance, Propositional attitude, Knowledge

In what follows, it will be shown that these hierarchies are related to the same semantic factors considered for complement, adverbial, and relative relations in isolation, such as predetermination, semantic integration, preference, the mood value of the dependent SoA, and the ability of the dependent SoA to be construed as an object.

In Chapters 5–7, it was shown that these factors are relevant to the internal hierarchies for complement and adverbial relations, but not the internal hierarchies for relative relations (though they are relevant for describing the semantics of relative relations as a whole, see Section 7.1). The hierarchies for relative relations should instead be accounted for in terms of accessibility to relativization. Nevertheless, the global hierarchies for subordination presented in this chapter do include relative relations. In the Subordination Deranking Hierarchy and variants thereof, relative relations never rank higher than certain types of complement and adverbial relations (modals, phasals, desideratives, manipulatives, perception, purpose, and temporal relations). In addition, some relative relation types (indirect object and oblique relativization) are always found at the rightward end of all of the hierarchies. It will be argued that the ranking of relative relations as a whole with respect to adverbial and complement relations can be accounted for in terms of the same semantic factors that govern the internal hierarchies for complement and adverbial relations. These factors interact, however, with accessibility to relativization, and the interaction is responsible for the positioning of some individual relative relation types, namely A, S, and O relativization.

8.3.2. Predetermination

Predetermination of the semantic features of the linked SoAs seems to play the same role in the global hierarchies for subordination relations as it does in the internal hierarchies for complement and adverbial relations. In general, the relation types involving predetermination of the semantic features of the linked SoAs outrank those involving no predetermination with respect to the morphosyntactic

phenomena leading to non-specification of information about the relevant features.

Thus, the relation types involving predetermination of the time reference of the dependent SoA (modal, phasal, desiderative, manipulative, and perception predicates, purpose and temporal relations) outrank those where this parameter is not predetermined (reason, reality condition and relative relations, knowledge, propositional attitude, and utterance predicates) with respect to a lack of T distinctions. The relation types involving predetermination of the aspect value of the dependent SoA (modal, phasal, desiderative, manipulative, and perception predicates, purpose, 'before', and 'after' relations) outrank those where this parameter is not predetermined ('when', reason, reality condition, and relative relations, knowledge, propositional attitude, and utterance predicates).

Similarly, in the hierarchy for lack of person agreement distinctions and the Subordination Argument Hierarchy, the relation types involving predetermination of participants outrank those involving no predetermination of participants. The relation types occupying the leftmost position, modals and phasals, imply a sharing of participants between the main and dependent SoAs (A and S relativization are also found at the leftward end of the Subordination Argument Hierarchy, and their position will be dealt with in Section 8.3.6). Purpose relations, which are found at the next leftmost position, do not imply that the linked SoAs share any participants, but this seems to be the prototypical situation for this relation type (see the discussion in Section 6.2.1). Manipulatives, which rank in the same way as purpose, involve a sharing of participants between the main and dependent SoAs. The other complement and adverbial relations do not involve predetermination of participants, and they rank lower (except desideratives, for which see the discussion in Section 5.5).

As was seen when examining individual subordination relations, predetermination cannot be the only factor involved in the cross-linguistic coding of subordination. In particular, predetermination cannot account for two aspects of the hierarchies. First, different subordination relation types all predetermine the same semantic features of the linked SoAs, yet they rank differently with respect to the phenomena leading to non-specification of information about those features. For instance, modals, phasals, manipulatives, desideratives, perception predicates, and purpose relations outrank temporal relations with respect to the elimination of T and A distinctions, yet all of these relations involve predetermination of the time reference and aspect value of the linked SoAs. All subordination relations predetermine the mood value of the dependent SoA, yet they rank differently with respect to a lack of M distinctions. Also, relative relations do not involve predetermination of any feature of the linked SoAs but the mood value of the dependent SoA. Hence one would expect to find them at the rightward end of all of the hierarchies for the phenomena leading to non-specification of information. This is the case with indirect object and oblique relativization, but not A, S, and O relativization.

The second problem is that there does not seem to be any obvious connection between predetermination and morphosyntactic phenomena such as case marking/ adpositions on the dependent verb and coding of arguments as possessors. All this shows that, just as for individual subordination relations, the cross-linguistic coding of subordination as a whole cannot be related to predetermination only.

8.3.3. Semantic integration

The relation types involving higher semantic integration outrank those involving lower or no semantic integration. This is a general principle holding for all of the hierarchies. In fact, the Semantic Integration Hierarchy presented in (6.27)

(8.10)   Phasals > Modals > Manipulatives ('make') > Purpose,
             Manipulatives ('order'), Desideratives, Perception

is directly reflected in the hierarchies. Thus, modals and phasals involve the highest degree of semantic integration, and they are found at the leftward end of all of the hierarchies. Relation types involving lower semantic integration, such as purpose, desiderative, manipulative, and perception predicates, are found in an intermediate area along the hierarchies. Finally, relation types involving no semantic integration, such as all adverbial relations except purpose, relative relations and knowledge, propositional attitude, and utterance predicates, are found towards the rightward end of the hierarchies (except for A, S, and O relativization in the Subordination Argument Hierarchy and the hierarchy for a lack of person agreement distinctions).

The relative positioning of purpose relations, manipulatives such as 'order', desiderative and perception predicates is not predicted by semantic integration. These relation types involve the same degree of semantic integration, hence, other things being equal, they should rank in the same way (on the other hand, manipulatives such as 'make' should rank higher, but one cannot single them out from other manipulatives for lack of significant languages: see Section 5.2.5). Yet purpose relations, desideratives, and manipulatives outrank perception predicates in the Subordination Deranking Hierarchy and the Subordination Argument Hierarchy. In Section 5.5, it was pointed out that 'order' and desiderative predicates differ from perception predicates because they involve preference (i.e. an element of will, or an interest in the realization of the dependent SoA on the part of a participant of the main SoA), and because of the mood value of the dependent SoA (with 'order' predicates, the dependent SoA is unrealized, while with desideratives its mood value is irrelevant). The same holds for purpose relations. Purpose relations entail that the dependent SoA is unrealized. Also, they imply that some entity brings about the main SoA with the goal of obtaining the realization of the dependent SoA. Therefore, this entity is obviously interested in the realization of the dependent SoA. These factors may have a role in the ranking of purpose relations with respect to perception predicates.

8.3.4. *Construal of the dependent SoA as an object*

The ability of the dependent SoA to be construed as an object was invoked in Chapter 6 to account for the distribution of case marking/adpositions on the dependent verb and the coding of arguments as possessors in adverbial relations. It was also suggested that the ability of the dependent SoA to be construed as an object might play a role in the distribution of case marking/adpositions and the coding of arguments as possessors in complement relations. (In relative relations, these phenomena are rarer, as was shown in Chapter 7. Case marking and adpositions are used to indicate the role of the relativized item, while possessor coding is only found with non-relativized items.) In fact, the ability of the dependent SoA to be construed as an object seems to play a role in the global distribution of case marking/adpositions and possessor coding across all types of subordination relation (and hence across complement relations too). The distribution of case marking/adpositions obeys the variant of the Subordination Deranking Hierarchy presented in (8.6), that is

(8.11)   Case marking/adpositions on the dependent verb: The global hierarchy for subordination relations:

Modals, Phasals, Purpose, Desideratives, Manipulatives, Perception, Before, After, When, Reason > A relativization, S relativization, O relativization >
Knowledge, Utterance, Propositional attitude, Reality condition, Indirect object relativization, Oblique relativization

Coding of arguments as possessors displays a similar distribution, though no hierarchy was proposed.

   The relation types located at the rightward end of the hierarchy in (8.11) do not seem to easily allow construal of the dependent SoA as an object. Reality condition relations were discussed in Section 6.5. As for knowledge, propositional attitude, and utterance, these relation types pertain to the propositional, not the predicational level (Section 5.3.1). That is, the relation is not established between two SoAs, but between an SoA and a propositional content. Propositional contents are mental entities having no direct connection with the real world. Hence they are quite difficult to assimilate to objects, which usually are entities having existence in the real world (SoAs, on the other hand, are supposed to take place in the the real world, even if they do not actually take place). Finally, in relative relations there is no particular connection between the linked SoA (i.e. the connection is arbitrarily established by the speaker, see Section 7.1). Hence there is no particular reason why the dependent SoA should be assimilated to an object.

   At the leftward end of the hierarchy, however, things are more complicated. As can be seen from Tables 5.18 and 6.15, the data for case marking/adpositions and for the coding of participants as possessors are very scarce for the relation types in this part of the hierarchy, and there are very few significant languages. This makes

it impossible to rank the various relation types with respect to each other. The relation types in this part of the hierarchy suggest, however, that the distribution of case marking/adpositions and coding of arguments as possessors is related to both the ability of the dependent SoA to be construed as an object, and semantic integration, and that the interaction between these two factors is possibly rather complex.

Some relation types do not seem to allow construal of the dependent SoA as an object. This is the case with modals, phasals, and manipulatives. Modals refer to the possible occurrence of SoAs, and objects cannot be evaluated in terms of occurrence (see the discussion about reality condition relations in Section 6.5). Phasals refer to the inception, continuation, or termination of processes, and these notions cannot easily apply to objects. As for manipulatives, the effect of an act of manipulation is usually to produce a change in the world, and changes are usually introduced through processes, not through objects. This reduces the ability of the dependent SoA to be construed as an object. However, modals, phasals, and manipulatives involve varying degrees of semantic integration.

Other relation types, namely purpose, desideratives, and perception predicates, involve both semantic integration and the ability of the dependent SoA to be construed as an object. Purpose relations were discussed in Section 6.5. Desires, as expressed by desiderative predicates, can be referred to either the realization of SoAs, or objects, as is shown by the contrast between (8.12*a*) and (8.12*b*):

(8.12)   *a.* I want you to come
         b. I want an apple

Similarly, acts of perception, as described by perception predicates, can involve either SoAs as a whole, or individual entities, as in

(8.13)   *a.* I saw a tree
         b. I saw him working in his office

Finally, temporal and reason relations involve no semantic integration, but allow the dependent SoA to be construed as an object (Section 6.5).

The effects of semantic integration and construal of the dependent SoA as an object cannot be determined exactly, because the scarcity of data and lack of significant languages make it impossible to rank the various relation types with respect to each other. There is, however, a clear difference between the two parts of the hierarchy for case marking/adpositions. The relation types at the rightward end of the hierarchy involve no semantic integration and do not allow construal of the dependent SoA as an object. The relation types at the leftward end of the hierarchy involve a varying degree of semantic integration, and/or allow construal of the dependent SoA as an object. This suggests that semantic integration and construal of the dependent SoA as an object both play a role in the cross-linguistic

distribution of case marking/adpositions (as well as in the coding of arguments as possessors, which appears to basically follow the same pattern).

The analysis just oulined does not account for the position of A, S, and O relativization, which are found in an intermediate position on the hierarchy. As was pointed out above, relative relations do not seem to allow conceptualization of the dependent SoA as an object, and they do not involve semantic integration either. This issue will be dealt with in Section 8.3.6 below.

In Section 6.5, it was suggested that the ability of the dependent SoA to be construed as an object might also affect the expression of TAM distinctions. The ability of the dependent SoA to be construed as an object favours a lack of TAM distinctions, because tense, aspect, and mood are typical properties of SoAs as opposed to objects. This prediction is borne out by the global hierarchies for lack of TAM distinctions. The relation types found at the rightward end of the hierarchies (reality condition, knowledge, propositional attitude, utterance, indirect object, and oblique relativization) do not allow construal of the dependent SoA as an object. The relation types located at the leftward end of the hierarchy (modals, phasals), do not allow construal of the dependent SoA as an object either, but involve high semantic integration, which was argued to be an independent motivation for lack of TAM distinctions. The relation types located in the intermediate part of the hierarchy (purpose, temporal and reason relations, manipulatives, desideratives, and perception) involve semantic integration and/or allow construal of the dependent SoA as an object.

This confirms that there actually is a connection between a lack of TAM distinctions and construal of the dependent SoA as an object. In most cases, construal of the dependent SoA as an object is associated with other factors, such as semantic integration or predetermination, and therefore its role cannot be disentangled from that of the other factors. There is, however, one case where construal of the dependent SoA as an object seems to be the only factor involved in the ranking of subordination relations. Reason relations outrank reality condition relations with regard to a lack of TAM distinctions. Yet both of these relations have the same implications for tense, aspect, and mood. They both predetermine the mood value of the dependent SoA, but have no implication for the time reference and aspect value of the dependent SoA. Also, neither of these relations involves semantic integration. However, reason relations allow construal of the dependent SoA as an object, while reality condition relations do not. This suggests that construal of the dependent SoA as an object plays a role in the reciprocal ranking of these relations with regard to a lack of TAM distinctions.

Once again, the analysis just outlined does not account for the position of A, S, and O relativization on the hierarchies for a lack of TAM distinctions. A, S, and O relativization outrank the relation types where the dependent SoA cannot be construed as an object and there is no semantic integration. Yet A, S, and O relativization do not involve either semantic integration or construal of the dependent SoA as an object. This issue will be dealt with in Section 8.3.6.

8.3.5. *Level of clause structure*

None of the semantic factors invoked so far (predetermination, semantic integration, preference, construal of the dependent SoA as an object, or the mood value of the dependent SoA) accounts for the ranking of reality condition relations with respect to knowledge, propositional attitude, and utterance predicates on the Subordination Deranking Hierarchy (and variants thereof). All of these relation types behave in the same way with respect to these factors, yet reality condition relations outrank knowledge, propositional attitude, and utterance predicates with respect to a lack of TAM distinctions (and consequently also on the Subordination Deranking Hierarchy). However, reality condition relations pertain to the predication level (see the discussion in Section 6.3.1), while knowledge, propositional attitude, and utterance predicates pertain to the proposition level.

In Section 6.3.1, it was observed that there is evidence that relation types established at the predication level outrank those established at the proposition level with respect to the occurrence of deranking. Thus, level of clause structure might explain the position of reality condition, knowledge, propositional attitude, and utterance predicates.

Up to this point, the role of clause structure in the cross-linguistic coding of subordination could not be disentangled from the role of other semantic factors, because there were no cases of relation types ranking differently on the hierarchies, and differing only with respect to level of clause structure. Among the relation types taken into account, knowledge, propositional attitude, and utterance predicates are the only ones pertaining to the proposition level, and are always found at the rightward end of the hierarchies. This suggests that the level of clause structure does play a role in the cross-linguistic coding of subordination. However, most of the relation types pertaining to the predication level involve predetermination and semantic integration (while knowledge, propositional attitude, and utterance predicates involve no predetermination and no semantic integration). Therefore, one cannot disentangle the role of the level of clause structure from that of predetermination and semantic integration. On the other hand, reality condition relations differ from knowledge, utterance, and propositional attitude predicates only in terms of the level of clause structure. In this case, then, one should conclude that the reciprocal ranking of these relation types is due to the level of clause structure only.

There are still two aspects of the hierarchies that are not accounted for by the semantic factors invoked so far, including level of clause structure. First, reality condition relations outrank indirect object and oblique relativization with regard to a lack of TAM distinctions, although all of these relations behave in the same way with respect to the semantic factors invoked so far. Second, knowledge, propositional attitude, and utterance predicates rank in the same way as indirect object and oblique relativization, despite the fact that the former pertain to the proposition level and the latter to the predication level (and no other factor—such as, for example, semantic integration or predetermination—can be invoked

to account for this ranking). This apparently contradicts the hypothesis that was just put forward about the level of clause structure.

The ranking of reality condition relations can be explained in terms of the constructions used to code these relations. In Section 6.2.5 it was pointed out that many languages use the same construction for the reality condition and 'when' relations. The construction is usually a temporal one, whose use has been extended to cover the semantic space of reality condition relations. This is the case in about half of the languages that are significant for the generalization 'reality condition > indirect object and oblique relativization'. If reality condition constructions in these languages are originally 'when' constructions, one may assume that their ranking with respect to relative relations is motivated in terms of the same principles that motivate the ranking of 'when' constructions, such as predetermination and construal of the dependent SoA as an object. In other words, the ranking of the reality condition with respect to indirect object and oblique relativization is not due to any specific theoretical principle, but is a side-effect of the fact that reality condition constructions derive from temporal constructions in many of the significant languages.

On the other hand, the ranking of indirect object and oblique relativization with respect to knowledge, propositional attitude, and utterance predicates can be explained in terms of accessibility to relativization, and will be dealt with in the next section.

8.3.6. The ranking of relative relations

Relative relations involve no semantic integration and no preference, and only predetermine the mood value of the dependent SoA, which is realized (Section 7.1). Therefore, one would expect to find them at the rightward end of the global hierarchies for subordination. This is actually the case with indirect object and oblique relativization. However, A, S, and O relativization are found at a higher position on the hierarchies.

The question then arises as to what the motivations are underlying the occurrence of phenomena such as a lack of TAM and person agreement distinctions, case marking/adpositions on the dependent verb, and a lack of overtly expressed arguments in A, S, and O relativization (see the discussion in Section 7.3).

The ranking of A, S, and O relativization with respect to a lack of overtly expressed arguments and a lack of person agreement distinctions can be explained in terms of the nature of relative relations. In complement and adverbial relations, a lack of overtly expressed arguments usually reflects a sharing of participants between the linked SoAs. On the other hand, as was pointed out in Section 7.3, relative relations involve the sharing of a participant between the main and dependent SoAs, but do not predetermine the role of this participant in either of the linked SoAs. Hence some device must be used to specify the role of the shared participant in either of the linked clauses. A lack of overtly expressed arguments and a lack of

person agreement distinctions in the dependent clause may be used to indicate the role of the shared participant, in that it may be assumed that the missing arguments or person agreement distinctions refer to that participant. This means that a lack of overtly expressed arguments and a lack of person agreement distinctions are motivated in terms of different principles—predetermination and the need to specify the role of the relativized item—for complement and adverbial relations on the one hand, and relative relations on the other. Since a lack of overtly expressed arguments and a lack of person agreement distinctions are quite frequent in A, S, and O relativization, these relativization types are found on the leftward end of the Subordination Argument Hierarchy.

As for a lack of TAM distinctions and case marking/adpositions on the dependent verb, it was argued that these phenomena may reflect the fact that the dependent SoA is construed as an object. As was pointed out in Section 8.3.4, relative relations do not seem to allow construal of the dependent SoA as an object. However, the dependent SoA provides a specification about a participant of the main SoA. Therefore, similar to what happens with perception predicates (Section 5.2.6) the dependent SoA may be construed as a property attributed to the relevant participant of the main SoA (see the discussion in Sections 5.2.6 and 7.1). Like objects, properties are atemporal concepts (see Croft 1991: ch. 2; more on this in Chapter 9). This may account for why TAM distinctions may be not expressed in relative relations, in that tense, aspect, and mood are crucially related to the occurrence of SoAs through time (Section 3.2.3). Also, properties are often expressed by adjectival forms agreeing in number, gender, and case with the entity to which they apply. This may account for the occurrence of case marking/adpositions on the dependent verb in relative relations. In fact, case marking/adpositions always correspond to the role of the relativized item in the main clause, and this supports the hypothesis that the dependent SoA is construed as a property attributed to the relevant participant of the main clause.

Under this view, the motivation underlying the occurrence of a lack of TAM distinctions and case marking/adpositions on the dependent verb in relative relations is similar to one of the motivations underlying the occurrence of these phenomena in complement and adverbial relations. In both cases, the dependent SoA is not construed as a process, that is, it is construed as a property or as an object.[1] However, the occurrence of a lack of TAM distinctions and case marking/adpositions on the dependent verb in at least some complement and adverbial relations is also motivated in terms of other factors, such as predetermination, semantic integration, preference, and the mood value of the dependent SoA. Thus,

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[1] The fact that the relation types allowing construal of the dependent SoA as an object and/or semantic integration outrank relative relations with respect to case marking/adpositions suggests that construal of the dependent SoA as an object and semantic integration are stronger motivations for the occurrence of case marking/adpositions than construal of the dependent SoA as a property. However, since case marking/adpositions in relative relations is only found in a tiny minority of the sample languages, this hypothesis should be tested against further cross-linguistic data.

one would expect these relation types to outrank, or at least not to rank lower than relative relations with respect to the occurrence of a lack of TAM distinctions and case marking/adpositions on the dependent verb. This is exactly what happens, in that relative relations always rank lower than the relation types involving predetermination, semantic integration, preference, unrealized SoAs, or SoAs whose mood value is irrelevant (modals, phasals, manipulatives, desideratives, purpose, perception, and temporal relations). Thus, these factors play no role in the internal hierarchies for relative relations, but they do play a role in the ranking of relative relations as a whole with respect to complement and adverbial relations.

The analysis just outlined implies that all relative relations should rank in the same way with respect to the occurrence of the relevant phenomena, because the invoked motivations (the necessity to specify the role of the relativized item, construal of the dependent SoA as a property) hold for all relative relation types regardless of the role of the relativized item. Yet the occurrence of the relevant phenomena is related to the role of the relativized item, in that more accessible roles outrank less accessible roles. This was partially accounted for in Chapter 7. Phenomena such as a lack of TAM and person agreement distinctions and a lack of arguments lead to non-specification of information, and hence to a loss in the communicative value of the sentence. Therefore they tend to occur when the relative construction is easier to understand, that is, with roles more accessible to relativization, because otherwise the processing load would be too heavy. A similar principle can be invoked to account for the ranking of relative relations with respect to case marking/adpositions on the dependent verb, which was not accounted for in Chapter 7. Case marking/adpositions on the dependent verb presumably reflect the fact that the dependent SoA is construed as a property attributed to a participant of the main SoA. It may be assumed that construal of the dependent SoA as a property involves a higher processing load than conceptualization of the dependent SoA as a process, because it is not the usual way in which SoAs are construed (this issue will be discussed in detail in Chapter 9). If this assumption is correct, one would expect that conceptualization of the dependent SoA as a property is disfavoured when the processing load involved by relative relations is higher, as is the case with roles less accessible to relativization. However, since the data on case marking/adpositions on the dependent verb in relative relations are extremely scanty (Section 7.2.2), further cross-linguistic evidence is needed to substantiate this hypothesis.

As was pointed out in Section 7.3, accessibility to relativization determines the reciprocal ranking of individual relativization types and is independent of the factors motivating the occurrence of the relevant morphosyntactic phenomena. This is an example of what is usually called a competing motivation model (Du Bois 1985; Croft 1990: 192–7). In a competing motivation model, different functional motivations may be at work pushing linguistic systems in different directions. Competing motivations cannot be simultaneously satisfied. Any of

them will prevail at different times in different languages, which accounts for cross-linguistic variation, and in different constructions within the same language, which accounts for intra-linguistic variation. For instance, one of the motivations underlying ergative systems is that arguments corresponding to new participants are aligned together. The reason why not all of the world's languages are ergative is that there is another functional principle motivating a different alignment pattern— arguments corresponding to more agentive participants are aligned together, which is what happens in accusative systems (DuBois 1985).

In the case of relativization, competing motivations are accessibility to relativization on the one hand, and construal of the dependent SoA as a property on the other. The latter principle would motivate ranking of all relative relations in the same way with respect to a lack of TAM and person agreement distinctions and a lack of overtly expressed arguments. Accessibility to relativization, however, motivates an internal ranking of relative relations, such that more accessible roles outrank less accessible roles.

Accessibility to relativization can also explain why indirect object and oblique relativization rank in the same way as knowledge, propositional attitude, and utterance predicates with respect to a lack of TAM distinctions and case marking/adpositions on the dependent verb. Knowledge, propositional attitude, and utterance predicates pertain to the propositional level of clause structure, while relative relations pertain to the predicational level. Hence one would expect knowledge, propositional attitude, and utterance predicates to rank lower than relative relations with respect to a lack of TAM distinctions (Section 8.3.5). However, as was pointed out above, indirect objects and obliques have low accessibility to relativization, and this disfavours the occurrence of a lack of TAM distinctions. This is why indirect object and oblique relativization are found at the bottom end of the hierarchy for a lack of TAM distinctions.

As for case marking/adpositions on the dependent verb, one would expect all relative relations to outrank knowledge, propositional attitude predicates, and reality condition relations, because the former allow conceptualization of the dependent SoA as a property, while the latter do not allow conceptualization of the dependent SoA as an object (or a property, for that matter). However, case marking/adpositions on the dependent verb seems to be disfavoured in indirect object and oblique relativization, presumably because of the low accessibility to relativization of these roles. This explains why indirect object and oblique relativization are found at the bottom end of the hierarchy for case marking/adpositions.

8.4. Summary remarks

The analysis of the global hierarchies of subordination relations, as well the observations made about the hierarchies for individual relations in Chapters 5–7, lead

to the following conclusions:

(i) Some of the morphosyntactic phenomena taken into account (lack of inflectional distinctions on the verb and lack of overtly expressed arguments) lead to non-specification of some kind of information concerning the dependent SoA. The distribution of these phenomena is directly related to predetermination of the corresponding semantic features of the dependent SoA. If some morphosyntactic phenomenon leading to non-specification of information takes place in relation types where the semantic features of the linked SoA are not predetermined, then it takes place in relation types where these features are predetermined.

(ii) The cross-linguistic coding of subordination is also related to semantic integration between the linked SoAs. Other things being equal, the relation types involving higher semantic integration outrank those involving lower or no semantic integration with respect to lack of TAM and person agreement distinctions, use of special forms to express these distinctions, case marking/adpositions on the verb, lack of overtly expressed arguments, and coding of arguments as possessors.

(iii) Some individual morphosyntactic phenomena also appear to be related to semantic factors other than predetermination of information and semantic integration. Other things being equal, if TAM distinctions are not expressed in relation types where the dependent SoA is realized, then they are not expressed in relation types where the dependent SoA is unrealized, or its mood value is irrelevant. If TAM distinctions are not expressed in relation types involving no preference (an element of will or interest about the realization of the dependent SoA), then they are not expressed in relation types involving preference. Also, if TAM distinctions are not expressed in relation types pertaining to the propositional level of clause structure, they are not expressed in relation types pertaining to the predicational level of clause structure. Finally, case marking/adpositions on the verb and coding of participants as possessors are related to the ability of the dependent SoA to be construed as an object or as a property.

(iv) The factors described in (i)–(iii) have no role in the internal ranking of relative relations. However, they do have a role in the ranking of relative relations as a whole with respect to complement and adverbial relations. Moreover, these factors compete with accessibility to relativization to determine the ranking of individual relativization types.

Table 8.1 schematizes the semantic factors accounting for the various patterns found for the cross-linguistic coding of subordination relations.

Two questions arise at this point. First, one may wonder whether the connection between the various semantic factors discussed so far and the morphosyntactic coding of subordination is motivated (see Section 6.5). Second, one may wonder whether this connection can be accounted for in terms of a single overall pattern encompassing all the individual semantic factors. This is the topic of Chapter 9.

TABLE 8.1. *Cross-linguistic coding of subordination relations and functional factors*

Hierarchical pattern	Morphosyntactic phenomenon	Functional factors
Mod., Phas., Des., Man., Purp., Perc., Bef., Aft., Wh. > Others	lack of T distinctions	predetermination
Mod., Phas., Des., Man., Purp., Perc., Bef., Aft. > Others	lack of A distinctions	
Mod., Phas., Man. > Bef., Aft., Wh., Reas., Reality Condition, Know., Prop. a., Utt., Ind. O. r., Obl. r.	lack of person agreement distinctions, lack of arguments	
Des., Perc., Purp. > Bef., Aft., Wh., Reas., O r., R. c., Know., Prop. a., Utt., Ind. o. r., Obl. r.		sharing of participants between main and dependent SoA (not predetermined)
Mod., Phas. > Man., Des., Perc., Purp. > Bef., Aft., Wh., Reas., O r., R. c., Know., Prop. a., Utt., Ind. o. r., Obl. r.		semantic integration
Man., Des., Purp. > Perc., Bef., Aft., Wh., Reas., A r., S r., O r., R. c., Know., Prop. a., Utt., Ind. o. r., Obl. r.	lack of TAM distinctions	the dependent SoA is unrealized, or its mood value is irrelevant; preference
Mod., Phas., Man., Des., Perc., Bef., Aft., Wh., A r., S r., O r., R. c., Reas. > Know., Prop. a., Utt.		level of clause structure
Purp., Des., Perc., Bef., Aft., Wh., Reas. > A r., S r., O r., Know., Prop. a., Utt., Ind. o. r., Obl.		construal of the dependent SoA as an object
Mod., Phas., Purp., Des., Man., Perc., Bef., Aft., Wh., Reas. > R. c., Know., Prop. a., Utt., S r., O r., Ind. o. r., Obl. r.	case marking/adpositions	semantic integration or construal of the dependent SoA as an object
A r., S r. > Des., Man., Purp.	lack of arguments	specification of the role of the relativized item
A r., S r. > Perc., Bef., Aft., Wh., Reas., R. c., Know., Prop. a., Utt.	lack of person agreement distinctions, lack of arguments	
A r., S r., O r. > R. c., Know., Prop. a., Utt.	lack of TAM distinctions	construal of the dependent SoA as a property
A r., S r., O r. > Ind. O. r., Obl. r.	lack of TAM distinctions, lack of person agreement distinctions, case marking/adpositions	accessibility to relativization

8.5. Data supporting the implicational hierarchies

In this section, the data supporting the global implicational hierarchies for sub-ordination relations are presented. As in the case of complement, adverbial, and relative relations, the data are arranged into tables pertaining to balanced and deranked verb forms (Tables 8.2 and 8.3), and a lack of overtly expressed arguments (Tables 8.4 and 8.5). For each of these tables, each of the relation types on the vertical axis outranks each of the relation types on the horizontal axis, unless otherwise specified (having two distinct tables for each parameter is due to format reasons). For each combination of relation types on the vertical and the horizontal

TABLE 8.2. *Language numbers for the Subordination Deranking Hierarchy*

	Phas.	Des.	Man.	Purp.	Perc.	Bef.	Aft.	Wh.	A, S r.
Mod.	===	38/4/1	37/5/1	48/6/1	38/9/0	32/13/0	33/14/0	41/22/0	48/20/0
Phas.	*	35/5/1	34/11/1	36/4/1	33/9/0	28/9/0	31/11/0	37/16/0	41/17/1
Des.	—	*	===	===	44/8/2	36/13/2	39/13/3	49/23/3	55/21/4
Man.	—	===	*	===	46/6/2	33/8/3	43/14/3	52/21/6	59/18/4
Purp.	—	===	===	*	51/11/2	43/15/0	51/18/0	64/29/0	74/29/2
Perc.	—	—	—	—	*	34/6/2	41/8/4	47/13/7	54/12/5

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

TABLE 8.3. *Language numbers for the Subordination Deranking Hierarchy (continued)*

	R. c.	Reas.	O r.	Kn.	Pr. a.	Utt.	Ind. o. r.	Obl. r.
Mod.	45/22/1	43/22/0	44/19/0	33/19/0	32/19/0	45/29/0	31/18/0	31/18/0
Phas.	37/16/0	38/20/0	39/20/1	26/14/0	24/16/0	38/27/0	28/19/0	28/19/0
Des.	49/19/1	52/25/2	51/20/4	39/18/0	35/18/0	52/30/0	35/17/3	35/17/2
Man.	57/20/3	56/23/6	58/19/3	37/20/1	39/21/0	55/30/0	37/16/2	38/16/1
Purp.	66/27/2	66/32/0	69/28/1	45/25/0	43/26/0	71/45/0	44/24/1	44/25/0
Perc.	52/11/5	50/15/4	51/12/4	39/14/0	36/11/0	52/22/0	35/11/2	36/11/1
Bef.	42/7/9	44/12/3	42/9/2	34/14/1	31/12/0	44/17/0	35/9/1	36/10/1
Aft.	51/9/1	51/11/2	51/10/5	33/10/1	31/11/0	50/21/0	38/10/2	38/10/1
Wh.	63/11/3	65/10/3	63/11/7	40/14/2	38/12/0	63/21/0	48/10/2	48/10/1
A, S r.	70/11/8	69/12/7	72/4/0	45/11/4	44/10/1	72/18/1	48/8/0	48/8/0
R. c.	*	===	===	43/8/4	42/9/1	66/18/1	47/11/3	48/11/2
Reas.	===	*	===	46/8/4	43/10/0	66/20/0	45/12/5	45/12/4
O r.	===	===	*	43/12/4	43/10/2	69/20/1	48/5/0	47/5/0

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

TABLE 8.4. *Language numbers for the Subordination Argument Hierarchy*

	Phas.	A, S r.	Des.	Man.	Purp.	Perc.	Bef.
Mod.	===	===	39/22/1	38/18/1	47/22/0	37/23/3	32/26/0
Phas.	*	===	34/20/1	31/12/3	35/18/4	33/21/1	26/20/0
A, S r.	===	*	57/25/10	60/33/11	75/34/16	55/35/3	43/27/1
Des.	—	—	*	===	===	44/15/5	33/17/3
Man.	—	—	===	*	===	46/14/6	33/13/3
Purp.	—	—	===	===	*	51/21/8	42/19/1

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis; * = same relation type on both the vertical and the horizontal axis

TABLE 8.5. *Language numbers for the Subordination Argument Hierarchy (continued)*

	Aft.	Wh.	R. c.	Reas.	Kn.	Pr. a.	Utt.
Mod.	33/28/0	44/36/0	46/41/0	44/40/0	31/27/0	32/29/0	45/41/0
Phas.	27/22/0	35/26/0	35/30/0	34/31/0	25/18/0	25/20/0	37/30/0
A, S r.	53/35/1	67/46/1	70/57/1	70/50/2	45/31/1	46/34/1	73/55/0
Des.	39/16/4	51/26/2	48/26/0	54/29/3	38/18/1	34/20/1	52/29/0
Man.	44/19/5	51/23/3	55/28/0	55/27/6	37/20/1	39/21/0	55/30/0
Purp.	51/22/0	63/30/1	65/36/0	66/30/0	43/22/0	44/24/0	66/39/0
Perc.	===	===	52/15/0	49/12/6	38/9/0	38/10/0	52/15/0

=== = the relevant relation types rank in the same way; — = the relation type on the horizontal axis outranks the relation type on the vertical axis

axis, three numbers are reported. The first number is the number of languages for which information is available for both relation types. The second two numbers correspond to the languages where the relevant relation types do not have the same value with respect to the relevant parameter, that is the number of significant cases. The second number indicates the number of significant cases supporting the implicational generalization. The third number is the number of significant cases contradicting the implicational generalization.

Individual implicational generalizations are supported by a varying number of significant cases. In discussing the tables for complement and adverbial relations (Sections 5.6 and 6.6) it was observed that the number of significant cases appears to be related to the semantic features of the relation types involved in the implication, that is, the greater the semantic difference between individual relation types, the higher the number of significant cases. The same observation applies to the implications involving complement, adverbial, and relative relations as a whole. For instance, in the tables for balancing and deranking, the implications having modals and phasals in the antecedent have a varying number of significant cases

depending on the relation type in the consequent. When the relation type in the consequent is one semantically similar to modals and phasals, there is a low number of significant cases. This is, for example, the case with purpose relations. Like modals and phasals, purpose relations involve semantic integration, predetermination of the time reference, mood, and aspect value of the dependent SoA, and a sharing of participants between the main and dependent SoAs. On the other hand, there are cases where the relation type in the consequent is very different from modals or phasals from the semantic point of view. This is, for example, the case with temporal, reason, reality condition and relative relations, knowledge, propositional attitude, and utterance predicates. None of these relation types involves semantic integration, and many of them involve no predetermination either. The implications having these relation types in the consequent have a much higher number of significant cases.

Similar patterns can be observed for a lack of overtly expressed arguments in Tables 8.4 and 8.5. In most of the implications in these tables, the antecedent is a relation type entailing the sharing of participants between the linked SoAs (such as modals, phasals, and manipulatives), or entailing the sharing of participants at the discourse level (such as desideratives and purpose relations). The consequent is a relation type involving no sharing of participants. In all of these cases, the number of significant cases, or at least the ratio between significant cases and cases relevant to the implication, remains relatively constant. On the other hand, when neither the antecedent nor the consequent of the implication involve the sharing of participants between the linked SoAs, the number of significant cases is much lower. This is the case with all of the implications having perception predicates in the antecedent.

These patterns provide further evidence for the hypothesis that the greater the semantic difference between individual relation types, the higher the number of languages coding those relations in different ways. As was observed in Section 5.6, in order for this hypothesis to be proven correct, further evidence should be sought from a probability sample. If this evidence could be found, however, it would provide further support for the postulated correlation between semantic features and the cross-linguistic coding of individual relation types.

9 The Coding of Subordination Relations: Functional Motivations

9.1. Introduction

In the previous chapters, a connection was observed between the various morpho-syntactic phenomena involved in the cross-linguistic coding of subordination and a number of semantic factors such as predetermination of the semantic features of the linked SoAs, semantic integration, the ability of the dependent SoA to be construed as an object or a property, etc.

The aim of this chapter is to show that this connection is functionally motivated, that is, there are some general functional principles accounting for why the distri-bution of certain morphosyntactic phenomena is related to the semantic features of individual subordination relation types.

In fact, some motivations for this connection have already been proposed in previous literature, such as Givón (1980, 1990: ch. 13) and Haiman (1983*a*, 1985). These motivations are based on the principles discussed in Section 1.2.2, economy and iconicity. In what follows, the role of these motivations in the cross-linguistic coding of subordination will be discussed in detail. It will be shown that these motivations actually explain some aspects of the cross-linguistic coding of subordination, but other aspects should be accounted for in terms of different principles. These principles are based on the distinction, outlined by Langacker (1987*a*, 1987*b*, 1991), between processes and things.

9.2. Syntagmatic economy and the Principle of Information Recoverability

In Section 1.2.2 economy was defined as a pressure towards minimal effort and maximal simplification of expression, and two kinds of economy, paradigmatic and syntagmatic, were distinguished. Syntagmatic economy is the tendency to reduce the length or complexity of any utterance or message, so that the most frequent expressions tend to be reduced phonetically, and information that is redundant and/or recoverable from the context tends to be omitted.

Syntagmatic economy can obviously account for the correlation between prede-termination of the semantic features of the linked SoAs and the morphosyntactic phenomena leading to non-specification of the corresponding information. In dis-cussing this correlation, it was repeatedly pointed out that the motivation for it

might be that information is not specified in the sentence when it is recoverable from the context. We may call this the Principle of Information Recoverability. This principle is clearly related to syntagmatic economy: the speaker leaves out whatever s/he may afford to leave out without affecting the communicative value of the sentence. Thus, for instance, if the time reference, aspect, or mood value of the dependent SoA are predetermined by the semantic features of the main predicate, or the relation linking the two SoAs, they need not be specified on the verb coding the dependent SoA. Similarly, if the semantic features of the main SoA are such that main and dependent SoA share their participants, reference to these participants, be it verb arguments or person agreement, may be omitted in the dependent clause.[1]

The Principle of Information Recoverability, as described so far, is an instance of semiotic function, that is, there is an economically motivated correspondence between the morphosyntactic features of particular constructions and the semantic features of the situations they encode (Section 1.2.2). However, the Principle of Information Recoverability may function in other ways too. Constructions with no person agreement distinctions and no overtly expressed arguments are sometimes used also for subordination relations that involve no predetermination of the participants of the linked SoAs. In this case, these constructions are generally used when main and dependent SoAs do share a participant. When no participants are shared, constructions involving overt expression of arguments and person agreement distinctions are used (see the discussion of the Retuarã examples in Section 3.2.3.7). As was observed in Section 5.4.3 with regard to example (5.57), alternation of these two construction types is in principle possible with any subordination relation. However, this phenomenon is much more common with some individual relation types, such as desiderative predicates (Section 5.5) and purpose relations (Section 6.5). In Chapters 5 and 6, it was suggested that this phenomenon may be related to the fact that these relation types involve the sharing of participants more often than others, and this for semantic and discourse reasons. The semantic features of these relation types are such that they are used to refer to SoAs sharing participants more often than is the case with other relation types. Desiderative

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[1] Some qualifications are in order about the connection between the Principle of Information Recoverability and complement relations established by modal and phasal predicates. Modals and phasals are found at the leftward end of the Subordination Argument Hierarchy. This is in accordance with the Principle of Information Recoverability, in that modals and phasals entail a sharing of participants between the main and dependent SoAs. However, as is shown by examples (5.13*a*), (5.14*b*), and (5.45), modals and phasals can be impersonal. In this case, participants must be referred to in the dependent clause, as there is no overt reference to them in the main clause. Thus, the Principle of Information Recoverability predicts that overt reference to participants will be omitted in the dependent clause with modals and phasals, but only when modals and phasals are not impersonal. In principle, modals and phasals may or may not be impersonal, so the Principle of Information Recoverability *per se* does not predict that there will be no overt participant reference in the dependent clause. However, impersonal modals and phasals are a minority of the cases of modals and phasals found in the sample languages, and this explains why modals and phasals are found at the leftward end of the Subordination Argument Hierarchy.

predicates and purpose relations imply that a participant of the main SoA has a desire or interest about the realization of the dependent SoA, and an entity's desires or interests are more likely to be referred to SoAs where this entity has a part (Sections 5.5 and 6.2.1).

One should then explain why the fact that these relations involve participant sharing more often than others should have a role in the occurrence of constructions with no person agreement distinctions or overtly expressed arguments. It is quite clear that this is a different case from predetermination. When participants are predetermined, the speaker may afford to leave out overt reference to these participants, because the corresponding information is entailed by the subordination relation. On the other hand, when participants are not predetermined, and there is no overt reference to them, there is no way to recover the missing information.

As was pointed out above, however, constructions with no overt participant reference usually alternate with constructions involving overt participant reference, and the latter are used when the main and dependent SoAs do not share participants. This means that the two construction types function as switch-reference devices (Section 3.2.3.5): when there is no overt reference to participants of the dependent SoA, the hearer should assume that these are the same as those of the main SoA, otherwise participants are overtly referred to in the dependent clause. In this way, the construction with no overt participant reference involves no real loss of information, because the hearer knows that if that construction is used, the participants of the dependent SoA are the same as those of the main SoA. The question is, however, why these constructions arise in the first place, and why they are more frequent with the relation types that involve the sharing of participants between main and dependent SoAs more often. Use of these constructions is presumably related to the fact that speakers tend to leave out information whenever they can afford to do so. If some relation types usually involve the sharing of participants between the main and dependent SoAs, the hearer will expect the participants of the two SoAs to be the same, and hence the speaker can afford to leave out information about these participants in the dependent clause with no major loss of information (see on this point Haspelmath 2000). This may explain why constructions involving no overt participant reference tend to be used with these relation types rather than with relation types that usually do not involve sharing of participants (independently of whether the language has another construction involving overt participant reference). This is of course another instance of the Principle of Information Recoverability. However, the occurrence of the relevant constructions reflects the fact that a particular situation (main and dependent SoA sharing a participant) is more common at the discourse level, rather than the semantics of the encoded situation (the relevant relation types do not entail sharing of participants between main and dependent SoAs). This is a case of what is usually called external function (Section 1.2.2), that is, the distribution of language structures is motivated in

terms of the conditions of language use rather than the semiotic correlates of these structures as such.

9.3. Iconicity of independence

In Section 1.2.2, iconicity of independence was defined as the fact that reduced independence between linguistic expressions reflects reduced independence between the concepts they encode. Iconicity of independence may explain the correlation between semantic integration and phenomena such as lack of verbal inflection and lack of overtly expressed arguments. These phenomena lead to syntactic integration, that is reduced grammatical independence between the linked clauses, to the extent that a number of parameters relevant to both clauses are coded in one of them only. Reduced independence between clauses reflects semantic integration between SoAs, and semantic integration is a case of reduced conceptual independence, in that the linked SoAs are not conceptualized as completely distinct. Thus, there are two distinct motivations for lack of verbal inflection and lack of overtly expressed arguments. Syntagmatic economy motivates the connection between these phenomena and predetermination of the semantic features of the linked SoAs (Section 9.2 above). Iconicity of independence motivates the connection between these phenomena and semantic integration between the linked SoAs. This explains why relation types involving the same kind of predetermination (or lack thereof), but different degrees of semantic integration, rank differently with respect to a lack of verbal inflection and a lack of overtly expressed arguments.

Similar observations are made by Haiman (1983*a*, 1985: 102–30). In discussing Givón's Binding Hierarchy (Givón 1980, 1990: ch. 13), Haiman says that there can be two simultaneous motivations for phenomena such as a lack of verbal inflection: the iconic representation of separatedness, and an economic motivation for the reduced expression of predictable information.

Iconicity of independence was also Givón's (1980, 1990: ch. 13) original account for his hierarchy of complement relations,[2] discussed in Chapter 5. In fact, Givón accounts for the hierarchy in terms of both semantic integration and predetermination of the semantic features of the linked SoAs. According to him, predetermination is a crucial component of semantic integration between SoAs (this view, as well as the problems raised by it, were discussed in Section 5.3.3). Hence the morphosyntactic phenomena related to predetermination are actually related to semantic integration. Since these phenomena lead to morphosyntactic integration between clauses, there is an iconic correspondence between semantic integration and morphosyntactic integration. This iconic correspondence is labelled by Givón the Binding Principle.

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[2] Givón, however, does not speak of iconicity of independence. The connection between the iconicity of independence and Givón's analysis is made by Newmeyer (1992: 762–3).

It should however be pointed out that Givón's notion of syntactic integration between clauses is different from the one assumed here. Givón (1991: ch. 13) claims that phenomena such as lack of verbal inflection reflect semantic integration between SoAs to the extent that they lead to a nominalization of the relevant verb forms, and thus the integration of the dependent clause into the main clause as a nominal argument. There are, however, two problems with this claim. The first one is that it is not straightforward that phenomena such as a lack of verbal inflection can be taken as evidence that the relevant verb form is a nominalized one. A lack of verbal inflection is evidence that the relevant verb form lacks typical verbal properties (and thus is a non-prototypical instance of the category it belongs to), not that it has nominal properties. In fact, verb forms with no TAM or person agreement distinctions often take adverbial, not adjectival modifiers, which shows they are not, or are not fully, nominalized.

The second problem is that there does not seem to be any principled reason to claim that a sentential argument of a verb is less of an argument than a nominal argument. Both nominal and sentential arguments perform the same function with respect to the verb, that is, they provide a specification required by the semantics of the verb. Thus, even if one admits that lack of verbal inflection leads to nominalization of the relevant verb forms, there is no ground to claim that nominal arguments are more integrated into a clause than sentential arguments.

The approach taken here is similar to Givón's one in that it assumes that lack of TAM and person agreement distinctions (as well as lack of overtly expressed arguments) leads to syntactic integration between clauses, and iconically reflects semantic integration between SoAs. But this is because the dependent verb depends on the main one for the interpretation of tense, aspect, mood, or participants, not because the lack of TAM and person agreement distinctions leads to integration of the dependent clause into the main one as a nominal argument of the main verb.

Iconicity of independence allows us to account for a phenomenon discussed in Chapter 5, namely the fact that some languages use verbal affixes or particles instead of full verbs to code modal, phasal, and manipulative notions (of the 'make' type). The semantics of these notions involves two distinct SoAs, as was pointed out in the individual sections concerning modal (5.2.2), phasal (5.2.3), and manipulative predicates (5.2.5). Yet these SoAs have a very high degree of semantic integration. Use of affixes or particles, instead of full modal, phasal, or manipulative verbs, may be seen as an instance of very high syntactic integration, to the extent that pieces of information pertaining to distinct SoAs are expressed by means of a single clause instead of two. In fact, as Givón (1990: 556–7) points out, causative affixes usually derive from full manipulative verbs, that become affixed to the verb coding the SoA resulting from the manipulation (Givón (1990: 538–45) calls this phenomenon 'co-lexicalization', and Croft (2001: 216–20) describes similar cases under the label 'clause-collapsing'; see also Song 1996). Hence very high morphosyntactic integration between clauses reflects very high semantic integration between SoAs, as predicted by iconicity of independence. Use of verbal

affixes or particles instead of fully inflected verbs is possible because the linked SoAs share their participants, and the time reference, aspect, and mood value of one of the two are predetermined (this is the SoA to which the phasal or modal conditions apply, or the SoA resulting from the manipulation). Hence information about participants, time reference, aspect, and mood value can be specified only once, for the SoA for which it is not predetermined (this is the SoA corresponding to the modal or phasal condition, or the manipulation process). In all of the cases taken into account in the present work, this information was specified on the modal, phasal, or manipulative predicate. But of course, as was pointed out in Sections 5.3.2 and 9.1, it can also be specified on the other predicate. This is what happens when affixes or particles are used.

9.4. Iconicity of distance

In Section 1.2.2 a distinction was made between iconicity of independence and iconicity of distance. Iconicity of independence is the correspondence between a formal dependence between linguistic expressions and a conceptual dependence between the meanings they code. For example, as was seen in Section 9.3 above, grammatical dependence between the main and dependent verbs in subordination reflects semantic integration between the linked SoAs, that is the fact that the linked SoAs are interconnected and cannot be conceptualized as completely distinct (Section 5.3.3).

Iconicity of distance is the correspondence between the formal distance between linguistic expressions and the conceptual distance between the meanings they code. For instance, alienable possession involves a greater conceptual distance between the possessor and possessum than alienable possession, and this is reflected at the grammatical level by the fact that the formal distance between morphemes signalling inalienable possession is never greater than that between morphemes signalling alienable possession.

Iconicity of independence may be regarded as a particular case of iconicity of distance, in that in order for a meaning to be dependent on another the two have to be conceptually close. However, conceptual closeness does not entail conceptual dependence. For instance, the possessor and the possessum in inalienable possession are conceptually closer than in alienable possession, but they are distinct conceptual entities.

Iconicity of distance provides a plausible motivation for why, other things being equal, the relation types involving preference (desiderative and 'order' predicates, purpose) outrank the others with respect to a lack of TAM distinctions. In Section 5.3.3, it was argued that the fact that a participant of the main SoA has a will or an interest in the realization of the dependent SoA does not increase the semantic integration between the two SoAs, if by semantic integration is meant the fact that two SoAs are interconnected. However, it is intuitively

quite clear that if a participant of one SoA has a will or an interest in the realization of another SoA, then the two SoAs are conceptually closer than if there is no element of will or interest. For instance, somebody's wanting the realization of some SoA and that SoA are conceptually closer than two SoAs that happen at the same time, but are otherwise completely independent of each other. In the former case, the experiencer of the desiderative predicate is emotionally involved in the realization of the dependent SoA, while in the latter case there need not be any relation between the two SoAs, except that they happen to take place at the same time. Similarly, somebody's acting in order to obtain the realization of some SoA and that SoA are conceptually closer than an act of perception and the perceived SoA (as was pointed out in Section 5.3.3, the perceived SoA takes place independently of the act of perception, and the perception act is not directly triggered by the perceived SoA). A lack of TAM distinctions on the dependent verb may be seen as the iconic reflection of conceptual closeness, in that it leads to grammatical dependence between the linked clauses (Section 9.3), and grammatical dependence may be seen as a reduction in formal distance.

Similar arguments can be brought about to explain why subordination relations established at the predicational level outrank those established at the propositional level with respect to phenomena such as a lack of TAM distinctions (Section 8.3.5). Subordination relations at the predicational level are established between two SoAs. These SoAs need not be semantically integrated, that is, they need not be interconnected, and can be conceptualized as distinct. This is the situation found with most adverbial relations, as was shown in Chapter 6. However, even when there is no semantic integration, the linked SoAs are conceptually related, in that they are usually construed as a part of the same story frame, are causally related, are performed by the same participants and the like.

On the other hand, subordination relations at the propositional level are not established between two SoAs, but rather between one SoA (the main SoA) and a propositional content referring to the other SoA (the dependent SoA). This means that there is no direct relation between the linked SoAs, and therefore there is greater conceptual distance between them (for a similar approach, see Suzuki 2000). Greater conceptual distance between the linked SoAs is iconically reflected by a higher degree of grammatical independence between the clauses coding them, as manifested by the presence of autonomous inflectional distinctions on both the main and the dependent verbs.

9.5. Processes and things

9.5.1. Overview

Iconicity of distance, iconicity of independence, and the Principle of Information Recoverability—which is based on syntagmatic economy—provide plausible

functional motivations for the correlation between some morphosyntactic phenomena (a lack of TAM and person agreement distinctions, a lack of overtly expressed arguments) and factors such as semantic integration, preference, level of clause structure, and predetermination. However, a number of correlations between morphosyntactic phenomena and semantic factors cannot be accounted for in terms of these principles. For instance, a lack of TAM distinctions on the dependent verb leads to reduced grammatical independence between the linked clauses (Section 9.3), and a reduced grammatical independence between clauses iconically reflects a reduced conceptual independence, or more generally, a reduced conceptual distance between SoAs. A lack of TAM distinctions also leads to non-specification of information about the dependent SoA, and economically reflects the fact that the corresponding semantic features of the dependent SoA are predetermined. However, a lack of TAM distinctions also seems to be related to other factors, such as the ability of the dependent SoA to be construed as an object or a property, and the mood value of the dependent SoA (i.e. the fact that the dependent SoA is unrealized, or that its mood value is irrelevant). There does not seem to be any connection between these factors and a reduced grammatical independence between clauses, or any non-specification of information about the dependent SoA. Thus the correlation between these factors and a lack of TAM distinctions cannot be explained in terms of iconicity of independence, iconicity of distance, or syntagmatic economy.

Similarly, as was repeatedly pointed out in the previous chapters, a number of morphosyntactic phenomena (case marking/adpositions on the dependent verb, the coding of arguments as possessors, and the use of special TAM and person agreement forms) do not lead to either a non-specification of information about the dependent SoA, or a reduced grammatical independence between the linked clauses. Thus the distribution of these phenomena cannot be accounted for in terms of iconicity of independence, iconicity of distance, or syntagmatic economy either.

In what follows, it will be argued that these phenomena should be explained instead in terms of the cognitive status of dependent SoAs, as defined by the Asymmetry Assumption (Chapter 2). Iconicity of independence, iconicity of distance, and syntagmatic economy provide motivations for the match between particular morphosyntactic phenomena (lack of TAM and person agreement distinctions, lack of overtly expressed arguments) and particular semantic features of individual subordination relations (semantic integration and conceptual closeness between the linked SoAs, predetermination of the semantic features of these SoAs). On the other hand, there is reason to believe that phenomena such as case marking/adpositions on the dependent verb, the coding of arguments as possessors, and the use of special TAM and person agreement forms do not reflect particular semantic features of the linked SoAs, but rather the way the dependent SoA is conceptualized by the speaker. The way the dependent SoA is conceptualized also provides an explanation for the correlation between a lack of TAM distinctions and

particular semantic factors such as the ability of the dependent SoA to be construed as an object or a property and the fact that the dependent SoA is unrealized, or that its mood value is irrelevant.

This hypothesis is based on previous work by Langacker (1987*a*, 1987*b*, 1991) and Croft (1991: chs 2–3) on the distinction between nouns and verbs.

9.5.2. *Subordination and the distinction between nouns and verbs*

As the reader may have surmised from the discussion in this chapter and the previous ones, the morphosyntactic phenomena taken into account fall into two major categories. Some phenomena, as was pointed out in Sections 6.5 and 8.2.1, correspond to the presence of typical nominal properties on the dependent verb. These are case marking/adpositions and the coding of arguments as possessors. In the previous chapters it was repeatedly pointed out that case marking/adpositions are a distinguishing property of nouns with respect to verbs. Coding of arguments as possessors is also a distinguishing property of nouns. Nouns do not usually take arguments, but so-called relational nouns such as 'father' do. In this case, arguments are coded as possessors, as is witnessed by constructions such as 'the boy's father'.

Other phenomena correspond to a lack of verbal properties on the part of the dependent verb. Verbs differ from nouns with respect to properties such as TAM and person agreement inflection, as well as the ability to take arguments. Hence phenomena such as a lack of TAM or person agreement distinctions can be regarded as a lack of typical verbal properties on the part of the dependent verb.[3]

In what follows, it will be argued that presence of nominal properties on the dependent verb and a lack of verbal properties such as TAM or person agreement distinctions reflect the cognitive status of dependent SoAs, as defined by the Asymmetry Assumption (Chapter 2). This hypothesis provides a plausible functional motivation for the correlations between morphosyntactic phenomena and semantic factors that cannot be accounted for in terms of syntagmatic economy, the iconicity of independence, or the iconicity of distance.

A lack of verbal properties, and, to a less significant extent, the presence of nominal properties, have been dealt with in several studies on the alleged universality of the distinction between nouns and verbs (as well as other parts of speech such as adjectives and adpositions: for a comprehensive overview of the relevant issues, see Anward, Moravcsik, and Stassen 1997, as well as Croft 2001: ch. 2).

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[3] On the other hand, a lack of overtly expressed arguments cannot be regarded as a lack of a verbal property. A verb form that is not inflected for TAM or person agreement distinctions has no time reference, aspect or mood value, and no person. However, verb arguments are the grammatical reflection of relationality, that is, the fact that verbs establish a connection between a number of individual entities and the SoAs in which these entities are involved. The relevant entities are expressed by verb arguments. Even if arguments are not expressed overtly, the SoA described by the verb still involves individual entities. Thus, the relational character of verbs remains unaltered when arguments are not expressed overtly.

Nouns and verbs are traditionally identified on the basis of two sets of criteria, morphosyntactic behaviour and semantic properties. For instance, nouns can be inflected for case, gender, and number, and do not take arguments, while verbs can be inflected for tense, aspect, mood, and person, and do take arguments. Semantically, nouns typically denote objects, while verbs typically denote actions. Just as in the case of other categories such as subordination or subject (see the discussion in Sections 3.3.1 and 2.1), the two sets of criteria often yield conflicting results. Neither of them seem to work from a cross-linguistic perspective and also they often do not work from an intra-linguistic perspective either. A major problem is the fact that there is no consistent matching between semantic class and morphosyntactic properties. Hence, for instance, words denoting actions can behave like nouns morphosyntactically, as witnessed by English nouns such as *motion* or *starvation*. An extreme instance of the mismatch is provided by those languages where any lexical root can apparently display both nominal and verbal grammatical behaviour (Croft 1991: 43).

This contradictory evidence has led some scholars to argue that the distinction between nouns and verbs should be formulated in terms of functional prototypes rather than any morphosyntactic property of particular categories in individual languages.[4] This approach has been formulated in three major versions (Hopper and Thompson 1984, 1985; Langacker 1987*a*: chs 5–7, 1987*b*, 1991: ch. 10; Croft 1991, 2001: ch. 2), and is most relevant to the present discussion, as its proponents aim to account for the reason why verbs may display a lack of verbal properties and the presence of nominal properties. Proponents of this approach have implicitly or explicitly argued that a lack of verbal properties, and possibly the presence of nominal properties, result from the fact that the affected verb forms are not used in their prototypical cognitive or discourse function. Thus, this approach may account for why verb forms coding dependent SoAs display nominal properties such as case marking/adpositions and the coding of arguments as possessors. In principle, it may also account for why verb forms coding dependent SoAs lack typical verbal properties such as TAM inflection, although these phenomena have already been accounted for in terms of the iconicity of independence, the iconicity of distance, and syntagmatic economy. This issue will be dealt with in Section 9.5.4.

Hopper and Thompson (1984, 1985) argue that nouns and verbs can be distinguished in terms of their prototypical discourse functions. Nouns are prototypically used in discourse to refer to discourse-manipulable participants, that is, visible and tangible objects. Verbs are prototypically used in discourse to refer to 'actions' or 'events', that is concrete, kinetic, visible, effective entities that lack time stability. The more a noun or a verb performs its prototypical function in discourse, or, as Hopper and Thompson (1985: 151) put it, the more it refers to a discrete discourse

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[4] There is also another approach to this issue. This approach assumes that the distinction between nouns and verbs is not universal, and a number of languages lack it altogether (see, among others, Hengeveld 1992). This assumption appears to be chiefly based on the impossibility of distinguishing between nouns and verbs on morphosyntactic grounds in these languages.

entity or report a discrete discourse event, the more likely it is to be perceived as an independent syntactic unit, and to display the whole inventory of morphosyntactic hallmarks characterizing the category it belongs to. If, for some reason, a noun or a verb fails to perform its prototypical function, then it undergoes a decategorialization process. The decategorialization process is reflected at the morphosyntactic level by a reduction in the characteristics typical of the category, and possibly by the introduction of characteristics of the opposite category. For instance, a noun like 'fox' in 'fox-hunting' is not performing the prototypical function of nouns, as it does not identify any individual fox. As a result, it lacks typical nominal properties such as number inflection or an ability to take determiners, adjectives, or demonstratives. Likewise, a verb form like 'stolen' in 'the stolen sheep' does not report an event, but rather functions as an adjectival modifier. As a result, it lacks typical verbal properties such as person inflection (Hopper and Thompson 1984: 708, 728). Among the decategorialization cases discussed by Hopper and Thompson for verbs, many phenomena are mentioned that are relevant to subordination (and were examined in the previous chapters as well): nominalization, the use of reduced verb forms for purpose and relative clauses, so-called absolute participial constructions, clause-chaining, and 'bound' (after Givón's (1980) terminology) complement clauses.

As Croft (1991: 46–50) observes, however, Hopper and Thompson's analysis actually accounts for categoriality, that is the ability of a morpheme to function as an independent syntactic unit, not higher or lower category membership as nouns or verbs. Hopper and Thompson do not seem to provide any real definition of what they mean by non-discreteness, and their analysis puts together two quite distinct sets of phenomena. On the one hand, they look at cases where the relevant entities or events are not conceptually autonomous—as is, for instance, the case with the tightly interconnected events coded by verb serialization. On the other hand, they examine cases that are non-prototypical instances of the relevant categories—such as verbs coding unrealized events, or non-referential nouns. The notion of 'non-discreteness' seems to pertain to the former, rather than the latter case. There is a straightforward connection between non-autonomous entities and events and some of the morphosyntactic phenomena described by Hopper and Thompson, such as noun incorporation or verb compounding—non-autonomous entities and participants are coded by non-autonomous morphemes. This is a clear case of iconicity of independence (Section 9.3). However, Hopper and Thompson's analysis does not account for the second set of phenomena. There is no *a priori* reason why non-prototypical entities and events should be coded by non-autonomous morphemes, or by morphemes lacking typical nominal or verbal properties, or displaying properties of the opposite category. Thus, Hopper and Thompson's approach cannot account for why verb forms coding dependent SoAs display nominal properties (or lack verbal properties, for that matter). A clue to this issue is provided by Langacker's and Croft's models (Langacker 1987*a*: chs 5–7, 1987*b*, 1991: ch. 10; Croft 1991, 2001: ch. 2).

In Langacker (1987*a*: chs 5–7, 1987*b*) a basic distinction is outlined between nouns and verbs in cognitive terms. Nouns and verbs differ in the way the entities they designate are conceptualized. By entity is meant, in a maximally general sense, anything we might conceive of or refer to for analytical purposes, such as things, relations, locations, points, interconnections, sensations, values, etc. Nouns designate things, while verbs designate processes. According to Langacker (1987*a*: 189), a thing is properly characterized as a region in some domain. A region is a set of interconnected entities. Conceived entities are interconnected when the cognitive events constituting their conception are coordinated as components of a higher-level event. For instance, the cognitive processing of a red spot on a white wall includes a set of cognitive events, each corresponding to a colour sensation associated with a distinct location on the visual field. However, these cognitive events are interconnected, so that what the viewer perceives is a unitary whole, not an array of individual red dots. This mode of cognitive processing is described by Langacker (1987*b*: 63, 72) as summary scanning. Hence the distinguishing feature of nouns is that they designate sets of entities that are scanned summarily as a unitary whole (things). Verbs, by contrast, designate processes. A process involves a continuous series of states representing different phases of the process itself and is construed as occupying a continuous series of points in conceived time. For instance, the cognitive processing of a verb like 'enter' involves an entity (in Langacker's terms, a trajector) progressing from an out-relation to an in-relation with respect to some landmark (Langacker 1987*a*: 244–5). An indefinite number of component states are involved in the progression, and each of them is profiled individually, in a non-cumulative fashion. Each of the cognitive events involved in the cognitive processing of a process remains active only for a moment, and begins to decay as the following scene enters into the consciousness. This mode of cognitive processing is described by Langacker as sequential scanning (Langacker 1987*b*: 72). Hence verbs designate sets of entities that are scanned sequentially across a span of conceived time (processes).

In addition to that, nouns and verbs differ with respect to relationality (Langacker 1987*a*: 214–17, 1987*b*: 68–71, 1991: ch. 1). Nouns are non-relational predications, in that they designate sets of interconnected entities without profiling the interconnections between them. What is profiled is the region formed by the entities as a whole. Verbs, as well as adjectives and adpositions, are relational predications, in that they designate sets of interconnected entities and profile the interconnections between them. For instance, when 'red' is used as a colour noun, as in 'Red is a warm colour', it designates a region in colour space. When it is used as an adjective, it profiles an interconnection between this same region and a second entity (the one to which the colour property is attributed: Langacker 1987*a*: 216–17).

According to this model, nouns and verbs correspond to opposite cognitive prototypes. Nouns designate summarily scanned (i.e. atemporal) non-relational entities, while verbs designate sequentially scanned (i.e. temporal) relational entities. There are, however, intermediate categories. For instance, adjectives

and adpositions designate summarily scanned relational entities. More interestingly for the present discussion, Langacker includes within intermediate categories infinitival and participial constructions, as well as constructions like English indicative clauses introduced by *that*. He claims that the effect of these constructions is to suspend the sequential scanning of the verb stem, thereby imposing an atemporal profile on the processual base provided by the stem (Langacker 1987*b*: 76). Thus, unlike nouns, these constructions designate relational entities; unlike verbs, they designate atemporal entities. In addition to that, Langacker (1991: 440) claims that certain constructions, such as English *that*, impose a nominal construal on the structures they combine with, whereby the process designated by the verb stem is construed holistically and manipulated as a unitary entity.

A similar model is proposed by Croft (1991: chs 2–3). Croft establishes a distinction between nouns, verbs, and adjectives resting on two basic parameters, the semantic class of lexical roots and the pragmatic function that roots play in their manifestation in a position in the clause structure. A lexical root may belong to one of the three classes—object, action, and property—and perform one of the three pragmatic functions—reference, predication, and modification. Prototypical nouns, verbs, and adjectives result from the correlations between individual semantic classes and individual pragmatic functions, namely ⟨object, reference⟩, ⟨action, predication⟩, and ⟨property, modification⟩. These correlations are typologically unmarked (in the sense defined in Croft 1990: ch. 4), and define prototypical nouns, verbs, and adjectives respectively. Any other correlation of semantic class and pragmatic function will result in typological markedness, that is greater structural complexity, reduced inflectional and distributional potential, and lower frequency. Phenomena such as lack of verbal inflection, case/adposition marking on verbs, or coding of arguments as possessors or obliques, are typical manifestations of typological markedness.

The prototypical correlations are explained by Croft (1991: 123) in terms of the semantic properties of the various lexical classes and the kind of conceptualization (speech act) provided by the various pragmatic functions. The lexical classes are defined in terms of the four semantic parameters: valency (corresponding to Langacker's relationality); stativity (the aspectual distinctions between states and processes); persistence (how long the process or state is going to last over time); and gradability (the ability for the entity denoted by the concept to be manifested in degrees, such as height, coldness, etc.). Objects have zero valency, and are stative, persistent, and non-gradable. This makes them maximally suitable for the speech act corresponding to reference, establishing a cognitive file for an individual referent. Since the referent is conceptualized as an autonomous unit, the referring expression has to be non-relational. Since the cognitive file will last for a while in discourse, the referring expression has to be stable and permanent. Actions, on the other hand, have a valency of one or more than one, and are processual, transitory, and non-gradable. This results in optimal correspondence with the speech act corresponding to predication, reporting relatively transitory facts about

a referent.[5] This speech act requires the predicating expression to have non-zero valency, and be processual and transitory. Finally, properties have a valency of one, and are stative, persistent, and gradable.

This model is intended to provide a cognitive explanation for why certain correlations of semantic class and pragmatic function are typologically unmarked, while others are typologically marked. Croft (1991: 83) explicitly observes that (at least some) subordination relations involve non-prototypical correlations of semantic class and pragmatic function. Complement and relative relations involve the use of words denoting actions for reference and modification respectively. He suggests that the inflections that are characteristic of the prototypical correlations are tailored on those correlations, because they are semantically relevant to them (for instance, aspectual distinctions are semantically relevant to actions, because actions are processes, and number distinctions are semantically relevant to objects, because objects are countable). Hence these inflections will not appear on the forms coding the non-prototypical correlations, because they are not relevant to them (Croft 1991: 86–7).

Both Langacker and Croft implicitly or explicitly assume that dependent SoAs have a different cognitive status from independent ones, and this is the reason why the verb forms coding them lack typical verbal properties and display nominal properties instead. However, Langacker does not really provide a motivation for the connection between the cognitive status of dependent SoAs and the fact that dependent verb forms lack typical verbal properties, or display nominal properties. In discussing English infinitive and gerund constructions, Langacker (1991: 439–41) claims that these constructions impose an atemporal, possibly nominal construal on the structures they combine with, whereby the process designated by the verb stem is construed holistically and manipulated as a unitary entity. Yet, he does not actually provide any independent evidence for this claim. He seems to claim that the reason why processual properties are suspended in these cases is that the relevant entities are coded by some particular constructions, and that the reason why these constructions are used is that processual properties are suspended.

On the other hand, Croft does provide a motivation for why dependent SoAs are coded by forms lacking typical verbal properties. He claims that verbal properties (such as TAM or person agreement inflection) reflect properties such as persistence, stativity, and valency. These properties are relevant to the prototypical correlation ⟨action, predication⟩, but not to non-prototypical correlations of semantic classes and pragmatic functions. Dependent SoAs are a non-prototypical correlation of semantic class and pragmatic function, in that they correspond to non-predicated actions. Hence the properties typical of the prototypical correlation are not relevant to them, and this is reflected by a lack of the corresponding verbal properties on dependent verb forms.

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[5] In fact, this model incorporates Langacker's model. Referring expressions are equivalent to things, while predicating expressions are equivalent to processes (Croft 1990: 108, 2001: 104).

However, Croft does not address the issue of why properties such as valency, stativity, or persistence are not relevant to non-predicated actions, or what the connection is between non-predicated actions and the presence of nominal properties on the corresponding verb form. Thus, his model does not actually account for why dependent verb forms display nominal properties such as case marking/ adpositions or coding of arguments as possessors, or lack verbal properties.

In what follows, it will be argued that Langacker's and Croft's models can be integrated to provide a plausible account of the aspects of subordination that cannot be explained in terms of the iconicity of independence, the iconicity of distance, or syntagmatic economy. Following Langacker, it will be argued that a lack of processual properties on the part of the dependent SoA originates from the very nature of subordination, as defined by the Asymmetry Assumption (see Chapter 2). Following Croft, it will be argued that there is a direct connection between a lack of processual properties on the part of dependent SoAs (or, in Croft's terms, the non-prototypical status of non-predicated action words) and the presence of nominal properties on dependent verb forms. It will be further argued that a lack of processual properties provides a motivation for why dependent verb forms lack verbal properties such as TAM distinctions, and this explains the correlation between a lack of TAM distinctions, the ability of the dependent SoA to be conceptualized as an object, and the fact that the dependent SoA is unrealized, or that its mood value is irrelevant.

9.5.3. Subordination and the cognitive distinctions between processes and things

The Asymmetry Assumption is largely grounded on Langacker's own definition of subordination (Langacker 1991: 436–7). A dependent, or subordinate SoA, is an SoA whose profile is overridden by that of a main SoA. The dependent SoA is construed in the perspective of the main SoA, and it is the latter that imposes its processual profile over the whole construction. Thus, a construction expressing a subordination relation has just one processual profile, that of the main SoA (see the discussion in Section 2.4.1). As a result, only this SoA gets the sequential, state-by-state scanning characteristic of processes, while the non-profiled SoA is construed holistically as a component of the main SoA, and manipulated as a unitary entity (Langacker 1991: 440–1).

Lack of an autononomous profile on the part of dependent SoAs may account for the fact that dependent verbs display nominal properties such as case marking/ adpositions, or coding of arguments as possessors. By virtue of lacking an autonomous profile, dependent SoAs are not scanned sequentially, but construed as a unitary whole, just like things. In addition, they are construed in the perspective of the main SoA, which means that, like things, they may be conceptualized as a part of the main SoA. As a result, the dependent verb displays the

same properties as the grammatical entities that prototypically code things, that is, nouns.

However, the use of case marking/adpositions and the coding of arguments as possessors are not manifested in the same way across the various types of subordination relation. Rather, they follow the hierarchy in (8.6). If conceptualization of the dependent SoA as a thing plays a role in the occurrence of case marking/adpositions and coding of arguments as possessors, one would expect that it also plays a role in the distribution of these phenomena across different types of subordination relation, as manifested in the hierarchy in (8.6).

The distribution of case marking/adpositions and coding of arguments as possessors appears to be related to two major semantic factors, the ability of the dependent SoA to be construed as an object or a property and semantic integration. In the previous chapters, no actual definition was provided of what it means to construe the dependent SoA as an object. The sense in which the term 'object' was used is, however, roughly equivalent to Langacker's notion of thing, that is, a summarily scanned, non-relational entity (as opposed to a process, i.e. a sequentially scanned, relational entity). Thus, construal of the dependent SoA as an object means that that SoA is conceptualized as a thing, and (at least some of) its processual properties are suspended. It was argued above that all dependent SoAs, by virtue of not being conceptualized as autonomous processes (lack of an independent profile), are susceptible of being conceptualized as things. However, as was shown in Chapters 6–8, construal of the dependent SoA as an object, or, in Langacker's terms, conceptualization of the dependent SoA as a thing, seems to be easier with certain relation types than with others. Phenomena such as case marking/adposition and the coding of arguments as possessors are typical nominal properties, and nouns typically denote objects, or, in Langacker's terms, things. Hence the relation types where the dependent SoA is easier to conceptualize as a thing outrank the others with respect to the occurrence of case marking/adpositions and the coding of arguments as possessors.

The reasons why these relation types involve easier conceptualization of the dependent SoA as a thing were defined in rather intuitive terms in Chapters 6–8, but can now be described more precisely in the light of Langacker's and Croft's models. A thing, as opposed to a process, is a summarily scanned, non-relational entity, characterized by stability and persistence over time. Hence all relation types pertaining to the possible occurrence of SoAs (modals, manipulatives, the reality condition) or to the temporal development of SoAs (phasals), are incompatible with conceptualization of the dependent SoA as a thing. Relation types involving mental entities not susceptible of location in the real world, as is the case with knowledge, propositional attitude, and utterance predicates, are not compatible with conceptualization of the dependent SoA as a thing either. On the other hand, the dependent SoA is easier to conceptualize as a thing when it can be assimilated to a place (as is the case with purpose and temporal relations) than when this is not the case. Also, factual SoAs are easier to conceptualize as objects than non-factual

ones. This can be easily explained in terms of stability and persistence—in order for an entity to be stable and persistent over time, it has to exist, and non-factual SoAs do not exist, or at least are not presented as existent.

A similar line of reasoning may be used (and was in fact used in Section 8.3.6) to account for the connection between relative relations, conceptualization of the dependent SoA as a property, and occurrence of case marking/adpositions on the dependent verb. In relative relations, the dependent SoA provides a specification about a participant of the main SoA. Therefore the dependent SoA may be construed as a property attributed to the relevant participant of the main SoA. Properties are prototypically expressed by adjectives, and adjectives may agree in case with the noun to which they refer. This explains why the dependent verb in relative relations may display case marking/adpositions, and why relative relations outrank the relation types where the dependent SoA cannot be conceptualized as an object (or a property) with respect to case marking/adpositions.

The other semantic factor involved in the distribution of case marking/adpositions and the coding of arguments as possessors is semantic integration. Semantic integration can also be related to the lack of an autonomous profile on the part of the dependent SoA, and conceptualization of this SoA as a thing rather than a process. A dependent SoA is an SoA whose profile is overridden by that of another SoA. This means that a dependent SoA is construed in the perspective of the main SoA. Semantic integration was defined in Section 5.3.3 as the fact that two SoAs are interconnected to a more or less significant extent, and cannot be conceptualized as completely distinct. It seems reasonable to assume that the more interconnected two SoAs, the more integrated the dependent one is in the perspective of the other, and, conversely, the less interconnected two SoAs, the less integrated the dependent one is in the perspective of the other.

This is shown by the cognitive contrast between various types of complement, adverbial, and relative relations. Relative relations, as well as all adverbial relations except purpose, involve no semantic integration between the linked SoAs. One of the two SoAs is construed in the perspective of the other, in that the sentence has just one processual profile (as is proven by the application of assertiveness tests; see the discussion in Section 2.4.1). However, the semantic features of the main SoA as such have no effect on the way the dependent SoA is construed. In fact, the two SoAs take place independently of each other, and the linkage between them is created through the adverbial or relative relation, not through any specific feature of the main SoA. Although it is integrated in the perspective of the main SoA, the dependent SoA is completely autonomous from the main SoA in terms of its semantic features, such as, for example, mood value.[6]

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[6] The mood value of dependent SoAs in adverbial and relative relations is predetermined, but by the subordination relation linking main and dependent SoAs, not by the main SoA as such. The same holds for the predetermination of participants, time reference, and aspect value of the dependent SoA in adverbial relations.

On the other hand, purpose relations are the only adverbial relations involving semantic integration between the linked SoAs. In this case, the main SoA is performed with the goal of obtaining the realization of the dependent SoA. The dependent SoA is presented as unrealized, and it is assumed that if it takes place, it takes place as a direct result of the main SoA. This means that the main SoA does affect the way the dependent SoA is construed, and the dependent SoA is not independent of the main SoA in terms of semantic features. Hence the dependent SoA is more tightly integrated into the perspective of the main SoA than was the case with other adverbial relations and relative relations.

Similarly, a number of complement relations (those established by modal, phasal, desiderative, manipulative, and perception predicates) involve a varying degree of semantic integration between the main and dependent SoAs. In these relations, the main SoA defines fundamental semantic features of the dependent SoA, such as mood value, participants, and time reference. In this case too, then, the dependent SoA is tightly integrated into the perspective of the main SoA. On the other hand, a number of complement-taking predicates (knowledge, utterance, and propositional attitude) pertain to the propositional level of clause structure. As was repeatedly pointed out (Sections 5.3.3 and 9.3) these predicates involve no semantic integration, and imply that there is no direct connection between the linked SoAs. In this case too, the sentence has just one processual profile, that of the main SoA. From the conceptual point of view, however, the dependent SoA as such is completely independent of both the main SoA and the propositional content of the complement-taking predicate (Section 9.3). This means that the dependent SoA is only loosely integrated in the perspective of the main SoA.

If semantic integration between SoAs involves tighter integration of the dependent SoA in the perspective of the main one, then one may assume that semantic integration favours suspension of the processual properties of the dependent SoA, and conceptualization of the dependent SoA as a part of the main one, that is, as a thing. This provides a motivation for the connection between semantic integration and the morphosyntactic phenomena reflecting conceptualization of the dependent SoA as a thing, such as case/adposition marking and the coding of arguments as possessors.

We are now also able to account for the distribution of a morphosyntactic phenomenon that has been basically disregarded so far, the use of special forms to code TAM and person agreement distinctions. As was repeatedly pointed out in Chapters 5–8, scarcity of data makes it impossible to describe the use of special forms by means of implicational hierarchies. However, it is quite clear that the distribution of special forms is associated with the various semantic factors governing the distribution of the other morphosyntactic phenomena involved in the coding of subordination, such as predetermination, semantic integration, etc. In Sections 5.5 and 7.3 it was suggested that the reason why the use of special forms is associated with predetermination is that these forms involve the loss or difficult recoverability of information about the dependent SoA, in that they usually

express a reduced set of categorial distinctions, or express these distinctions differently from independent clauses. Thus they are used when the information conveyed by the relevant distinctions is recoverable from the context. This is in accordance with the Principle of Information Recoverability. However, this analysis accounts for why special TAM and person agreement forms may be used with no loss of information, not why they are used at all. Also, information recoverability cannot account for the association between special forms and the semantic factors other than predetermination. The discussion in this chapter showed however that these factors all pertain to the same basic point, the fact that the dependent SoA is not conceptualized as a process in its own right. The degree to which the dependent SoA is not conceptualized as an autonomous process depends on the various semantic factors involved in the subordination relation, such as, for example, semantic integration, or the ability of the dependent SoA to be conceptualized as an object (a further factor is the mood value of the dependent SoA, as will be shown in Section 9.5.4). Special inflectional forms are forms that are not used to code independent SoAs, that is, SoAs that are conceptualized as processes in their own right. We may then assume that the use of special inflectional forms iconically reflects the fact that a dependent SoA has a different cognitive status from SoAs conceptualized as autonomous processes. The degree to which the dependent SoA lacks processual properties (as determined by the various semantic factors discussed so far) determines the ranking of the relevant subordination relation with respect to use of special inflectional forms.

9.5.4. *Processes, things, and lack of TAM distinctions*

Lack of processual properties on the part of the dependent SoA may explain why a lack of TAM distinctions is related to the ability of the dependent SoA to be construed as a thing or a property, and to the mood value of the dependent SoA (see the discussion in Sections 8.3.3, 8.3.4, and 8.3.6). By virtue of lacking an autonomous processual profile, dependent SoAs are not scanned sequentially. Sequential scanning obviously pertains to the fact that processes are conceptualized as occurring through time. As was pointed out in Section 9.5.2 above, sequential scanning involves a continuous series of states representing different phases of the process itself and construed as occupying a continuous series of points in conceived time. TAM distinctions pertain to the occurrence of SoAs through time (Section 3.2.3). Hence a lack of TAM distinctions may be seen as the grammatical reflection of suspension of sequential scanning in the conceptualization of dependent SoAs.

This analysis explains why the ability of the dependent SoA to be conceptualized as a thing, or a property, seems to favour a lack of TAM distinctions. TAM distinctions reflect sequential scanning, and sequential scanning does not apply to things and properties (Section 9.5.2). Thus, if TAM distinctions are not expressed when conceptualization of the dependent SoA as a thing or a property is more

difficult, then they are not expressed when conceptualization of the dependent SoA as a thing or a property is easier.

This analysis may also explain the connection between a lack of TAM distinctions and the fact that the dependent SoA is unrealized, or that its mood value is irrelevant. Sequential scanning involves a set of entities that are scanned through a span of conceived time. However, unrealized SoAs, or SoAs with irrelevant mood value, do not actually take place through a span of conceived time. Hence sequential scanning is less relevant to these SoAs than it is to realized SoAs.[7]

In the approach just outlined, a lack of TAM distinctions reflects the fact that dependent SoAs lack an autonomous processual profile, and are scanned summarily rather than sequentially. This is an instance of iconic correspondence between language form and language function, albeit a different one from iconicity of independence or iconicity of distance. In fact, it might be argued that this analysis is in contrast with iconicity of independence, iconicity of distance, and syntagmatic economy. In one case, phenomena such as a lack of TAM distinctions are motivated in terms of the cognitive status of dependent SoAs, while in the other case they are motivated in terms of semantic integration and conceptual closeness between the linked SoAs (Sections 9.3 and 9.4), as well as predetermination of the semantic features of the dependent SoA (Section 9.2).

It should, however, be stressed that the iconic correspondence between a lack of TAM distinctions on dependent verbs and a lack of processual properties on the part of dependent SoAs does not pertain to the same domain as iconicity of independence, iconicity of distance, and syntagmatic economy. Iconicity of independence, iconicity of distance, and syntagmatic economy motivate the match between particular morphosyntactic phenomena (a lack of inflectional distinctions on the verb, a lack of overtly expressed arguments) and particular semantic features of individual subordination relations (semantic integration, predetermination, etc.). On the other hand, the notions of process and sequential scanning, as defined by Langacker, pertain to cognitive processing, that is the way individual entities are conceptualized, independenly of their semantic features. Sequential scanning is a mode of cognitive processing whereby the relevant entity is conceptualized as consisting of a number of distinct component states, that correspond to distinct cognitive events occupying a continuous series of points in conceived time. Cognitive processing reflects the perspective imposed by the speaker on a particular scene, not the intrinsic semantic features of that scene,

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[7] This is in accordance with Hopper and Thompson's observation that unrealized SoAs are non-prototypical and non-discrete (Hopper and Thompson 1984: 731–4). However, Hopper and Thompson do not provide any reason for why unrealized SoAs should be non-prototypical and non-discrete. The approach taken here, on the other hand, assumes a cognitive connection between unrealized SoAs and a lack of processual properties.

although of course there is a connection between the two (see on this point Croft 1991: 99–100).[8]

It may therefore be the case that there are distinct reasons for a lack of TAM distinctions on dependent verbs. On the one hand, a lack of TAM distinctions reflects particular semantic features of the linked SoAs in terms of iconicity of independence, iconicity of distance, and syntagmatic economy. On the other hand, a lack of TAM distinctions reflects the way dependent SoAs are conceptualized, that is a suspension of sequential scanning.

In most cases, however, the effects of the different motivations postulated for a lack of TAM distinctions cannot be disentangled. All subordination relations involve suspension of sequential scanning of the dependent SoA, because by definition dependent SoAs lack an autonomous processual profile. Thus, all subordination relations allow for the iconic correspondence between a lack of TAM distinctions and a suspension of sequential scanning. In addition, most subordination relations allow for the iconic or the economic correspondence between a lack of TAM distinctions and the semantic features of the linked SoAs (semantic integration, predetermination, etc.). In this case, it is difficult to establish whether a lack of TAM distinctions actually reflects the semantic features of the linked SoAs, the way the dependent SoA is conceptualized, or both.

There are, however, a few cases where the iconic correspondence between a lack of TAM distinctions and a suspension of sequential scanning seems to be the only motivation for the occurrence of a lack of TAM distinctions. Two such cases are the connection between a lack of TAM distinctions and the ability of the dependent SoA to be conceptualized as a thing, and that between a lack of TAM distinctions and the fact that the dependent SoA is unrealized (see the discussion above). Another case in point is represented by the occurrence of a lack of TAM distinctions in relation types that do not involve any of the semantic factors that motivate a lack of verbal properties in terms of syntagmatic economy, iconicity of independence, or iconicity of distance. For instance, a lack of TAM distinctions is sometimes found with utterance predicates: one such case was example (3.20), Section 3.2.3.3. In this case, the subordination relation involves no predetermination, no semantic integration, and conceptual distance between the linked SoAs.

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[8] The independence of the semantic features of particular entities and the way these entities are conceptualized is shown very clearly in Croft's model of parts of speech, outlined in Section 9.5.2. Croft (1991: chs 2–3, 2001: ch. 2) distinguishes three classes of lexical roots (objects, actions, and properties), defined on semantic grounds, and three pragmatic functions (reference, predication, and modification), defined on discourse/cognitive grounds. Each pragmatic function corresponds to a different way to conceptualize the entity denoted by a lexical root (Croft 1991: 108). Any lexical root may occur in any pragmatic function, which shows that the way an entity is conceptualized by the speaker is in principle independent of the semantic features of that entity. However, particular combinations of lexical roots and pragmatic functions will result in typological unmarkedness, while others will be typologically marked. This shows that there actually is a connection between the semantic features of lexical roots and the pragmatic functions in which they occur, in that particular combinations of lexical roots and pragmatic functions are more natural than others.

So lack of verbal properties seems to be motivated by lack of processual properties on the part of the dependent SoA only.[9] A similar case is provided by the occurrence of a lack of TAM distinctions in relative relations. As was argued in Chapter 7 and Section 8.3.6, relative relations do not involve any of the semantic factors that are related to iconicity of independence, iconicity of distance, or syntagmatic economy. Hence these principles cannot account for the occurrence of a lack of TAM distinctions in relative relations. However, relative relations involve suspension of the processual properties of the dependent SoA, and possibly conceptualization of the dependent SoA as a property. In this case too, then, a lack of TAM distinctions seems to be motivated by lack of processual properties (and conceptualization of the dependent SoA as a property) on the part of the dependent SoA only.

These phenomena can be regarded as evidence that a lack of processual properties on the part of the dependent SoA can provide an autonomous motivation for a lack of TAM distinctions in dependent clauses. Hence it seems reasonable to assume that a lack of processual properties on the part of the dependent SoA plays a role in the occurrence of a lack of TAM distinctions even when a lack of TAM distinctions is also motivated in terms of the semantic features of the linked SoAs (semantic integration, predetermination, conceptual closeness).

Further evidence in support of this hypothesis is provided by a quite different set of facts, to be discussed in Chapter 10. The morphosyntactic phenomena involved in the coding of dependent SoAs do not occur in isolation, but can be combined in different ways. For instance, a lack of person agreement distinctions may be combined with case marking/adpositions on the dependent verb, the use of special TAM forms may be combined with the coding of arguments as possessors, etc. In particular, the presence of nominal properties (case marking/adpositions, coding of arguments as possessors) on the dependent verb entails a lack of TAM distinctions. The presence of nominal properties on the dependent verb can be regarded as evidence that the dependent SoA is conceptualized as a thing rather than as a process. If lack of TAM distinctions were motivated in terms of the semantic features of the linked SoAs only, there would be no reason why the presence of nominal properties on the dependent verb should be associated with a lack of TAM distinctions. However, the implicational relation makes perfect sense if one

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[9] On the other hand, a lack of processual properties on the part of the dependent SoA cannot explain the fact that dependent verb forms lack overtly expressed arguments. Arguments can be seen as the grammatical reflection of relationality, that is the fact that a process designates a set of interconnected entities and profiles the interconnections between them. Arguments recall the interconnected entities at the grammatical level. However, Langacker's model assumes that dependent SoAs are not scanned sequentially, not that they are not relational. Suspension of sequential scanning results from the fact that in a subordination relation there is just one profiled SoA. However, this does not mean that the non-profiled SoA is not relational. Even if it is scanned summarily, an SoA still implies an interconnection between the entities involved in it. Hence suspension of sequential scanning cannot be used to account for lack of overtly expressed arguments in dependent clauses. This phenomenon should rather be explained in terms of syntagmatic economy and iconicity of independence only.

assumes that the lack of TAM distinctions reflects the fact that the dependent SoA is not conceptualized as a process. In order for a dependent SoA to be conceptualized as a thing, as manifested by the presence of nominal properties on the dependent verb, that SoA must be scanned summarily rather than sequentially, and this is reflected by the lack of TAM distinctions on the dependent verb.

9.6. Concluding remarks

Examination of the cross-linguistic coding of subordination relations as a whole has outlined a rather complex interaction of functional factors. The proposed account for the cross-linguistic coding of subordination may now be recast as follows.

(i) Some of the morphosyntactic phenomena involved in the cross-linguistic coding of subordination (lack of TAM and person agreement distinctions, lack of overtly expressed arguments) may be motivated in terms of syntagmatic economy, iconicity of independence, and iconicity of distance. These principles account for the correlation between the relevant morphosyntactic phenomena and semantic factors such as predetermination of the semantic features of the linked SoAs, semantic integration between the linked SoAs, preference, and the level of clause structure at which the subordination relation is established.

(ii) Other phenomena, such as case marking/adpositions on the dependent verb, coding of arguments as possessors, and the use of special TAM and person agreement forms are motivated in terms of the cognitive status of dependent SoAs. Dependent SoAs are not conceptualized as processes in their own right (in the sense of process defined by Langacker, that is as an entity scanned sequentially through time). In fact, they are possibly conceptualized as things or properties rather than processes. This is iconically reflected by case marking/adpositions on the dependent verb, the coding of arguments as possessors, and the use of special TAM and person agreement forms. Case marking/adpositions and the coding of arguments as possessors reflect the conceptualization of the dependent SoA as a thing rather than a process. Special TAM and person agreement forms indicate that the dependent SoA has a different cognitive status from independent SoAs.

(iii) Lack of processual properties on the part of dependent SoAs also provides a motivation for a lack of TAM distinctions. TAM distinctions reflect typical processual properties (sequential scanning), hence they are not expressed when the dependent SoA lacks these properties.

(iv) There is a direct connection between a lack of processual properties on the part of dependent SoAs and some of the semantic factors associated with the coding of subordination, namely semantic integration, the mood value of the dependent SoA, and the ability of the dependent SoA to be conceptualized as a thing or a property. These factors define the extent to which the dependent SoA lacks processual properties. This provides a reason why the distribution of the

morphosyntactic phenomena corresponding to a lack of verbal properties and the acquisition of nominal properties is related to these factors.

This approach assumes that a lack of processual properties on the part of dependent SoAs accounts for the occurrence and the distributional patterns of most of the phenomena involved in the coding of subordination. In addition to that, some phenomena (lack of TAM and person agreement distinctions, lack of overtly expressed arguments) are independently motivated in terms of syntagmatic economy, iconicity of independence, and iconicity of distance.

This approach combines elements from previous analyses, and integrates these analyses. The starting points were syntagmatic economy, iconicity of independence, and iconicity of distance (Sections 9.2, 9.3, and 9.4). Syntagmatic economy, as defined by Haiman (1985: 158), is manifested in the Principle of Information Recoverability, and only accounts for some of the morphosyntactic phenomena examined. Iconicity of independence, as defined by Newmeyer (1992; see also Haiman 1983*a*, 1985; Givón 1980, 1990: ch. 13), motivates the correlation between syntactic integration between clauses and semantic integration between SoAs. Iconicity of distance, as defined by Haiman (1983*a*, 1985; see also Newmeyer 1992) motivates the connection between syntactic integration between clauses, level of clause structure at which the subordination relation is established, and preference, that is the fact that the subordination relation involves an element of will or an interest in the realization of the dependent SoA on the part of a participant of the main SoA.

Yet, a number of morphosyntactic phenomena do not lead to syntactic integration between clauses, but appear to be related to semantic integration as well. Conversely, the phenomena leading to syntactic integration appear to be sensitive to semantic factors other than semantic integration or conceptual closeness between the linked SoAs. This shows that iconicity of independence and iconicity of distance cannot provide a complete explanation for the coding of subordination. A more comprehensive analysis was therefore put forward. The crucial point about this analysis is cognitive, namely that a dependent SoA is not conceptualized in the way SoAs are usually conceptualized. This point is implicit in Hopper and Thompson's (1984, 1985) notion of the non-discreteness of discourse events. Yet Hopper and Thompson fail to establish a motivated correlation between the functional notion of non-discreteness and the morphosyntactic phenomena related to it (as well as failing to define non-discreteness in an unambiguous way).

The idea that a dependent SoA is not conceptualized in the usual way for SoAs plays an explicit, and crucial role in Langacker's notion of a lack of independent perspective on the part of the dependent SoA (Langacker 1991: 435–7), as well as Croft's notion of non-prototypicality of action words used in non-predicational function (Croft 1991: ch. 2). The approach proposed in this chapter uses these notions to establish a motivated correlation between the cognitive status of dependent SoAs and some of the morphosyntactic phenomena involved in the cross-linguistic coding of subordination. This approach also

establishes a connection between the cognitive status of dependent SoAs and some of the semantic factors related to the implicational hierarchies, such as semantic integration, the ability of the dependent SoA to be conceptualized as a thing or a property, and the fact that the dependent SoA is unrealized.

As the reader may have noticed, each of the morphosyntactic phenomena taken into account has been considered individually so far. Yet these phenomena do not occur in isolation (see Chapter 3, as well as the observations at the end of Section 9.5.4). The various phenomena leading to a lack of verbal properties, such as a lack of TAM or person agreement inflection, may co-occur. The same holds for the morphosyntactic phenomena leading to the presence of nominal properties, such as case/adposition marking and the coding of participants as possessors or obliques. And a lack of verbal properties and the presence of nominal properties may also co-occur. Also, a lack of verbal properties and the presence of nominal properties may be associated with a lack of overtly expressed arguments. Hence one may wonder whether there is a correlation between the occurrence of the various phenomena, and whether this correlation is related to the functional principles discussed in this chapter. This is the topic of Chapter 10.

10 Correlations between Individual Morphosyntactic Phenomena

10.1. Introduction

The aim of this chapter is to ascertain whether there are any correlations in the occurrence of the various morphosyntactic phenomena found in the cross-linguistic coding of subordination. The procedure that will be used is rather different from the one used in the previous chapters. So far, the distribution of morphosyntactic phenomena has been investigated across relation types, that is with respect to which morphosyntactic phenomena are found in the cross-linguistic coding of individual types of complement, adverbial, and relative relations. Now, morphosyntactic phenomena will be investigated with respect to each other, in order to see whether there are any correlations between them. For instance, a lack of T distinctions will be compared with a lack of A and M distinctions, a lack of TAM distinctions will be compared with a lack of person agreement distinctions, the occurrence of case marking/adpositions on the dependent verb, a lack of overtly expressed arguments, etc. In fact, the analysis presented in this chapter follows the lines of previous investigations on the co-occurrence of various morphosyntactic phenomena, such as Comrie (1976*b*) and Croft (1991: ch. 2) on deverbalization phenomena, or Bybee (1985) on TAM distinctions. The results of these studies will be discussed when appropriate.

It is appropriate to comment here on how the individual occurrences of the various phenomena were counted. The global list of the constructions examined is reported in Appendix 4. The issue of how to count constructions is crucial to the present chapter. In preceding chapters, only the relationship between individual morphosyntactic phenomena and individual subordination relation types was examined. The crucial issue was to investigate what morphosyntactic phenomena are found in the coding of what subordination relations. Counting constructions is not so important in this situation, because only the individual morphosyntactic phenomena involved in the various constructions are considered, regardless of the constructions in which they occur. For example, the objective in investigating the distribution of case marking/adpositions on the dependent verb was to rank individual subordination relations with respect to this parameter, regardless of whether case marking/adpositions are associated with a lack of verbal inflection, a lack of overtly expressed arguments, etc. Furthermore, subordination relations are defined unambiguously, that is, for example, either a relation is a complement one or an adverbial one. Therefore, only two cases are possible: either the relevant

morphosyntactic phenomenon (e.g. case marking/adpositions) is possible in the coding of the relevant relation in a given language, or it is not. But the situation is different if the co-occurrence of different morphosyntactic phenomena is invest-igated. In this case, different morphosyntactic phenomena (e.g. case marking on the dependent verb and a lack of verbal inflection) can co-occur several times, and it is crucial to ascertain whether they co-occur because the same construc-tion is used, or because their co-occurrence is a frequent pattern across different constructions.

Each construction involves, of course, a combination of different morpho-syntactic phenomena, for example there may be balanced verb forms with no overtly expressed arguments, verb forms with case marking, arguments coded as possessors or obliques and no TAM distinctions, verb forms with no TAM dis-tinctions but with arguments coded as in independent clauses, etc. Some of these combinations were discussed in Chapter 3.

In addition, individual constructions may be used to express a variety of rela-tion types. The same construction may be used to express complement, adverbial, and/or relative relations, or different types of complement, adverbial, or relative relation.[1] For example, the so-called adjoined clause found in some Australian lan-guages and exemplified in (2.15) may have adverbial or relative meaning depending on the context. Similarly, indicative clauses introduced by *that* may be used in English with a variety of complement-taking predicates, such as knowledge, propositional attitude and utterance predicates.

This raises the problem of how one should distinguish individual constructions. That is, should the Australian adjoined clause be counted as an instance of two distinct constructions, because it can have both relative and adverbial meaning, or should it be counted just once, because it is always the same construction morphosyntactically? Similarly, should one distinguish different *that* constructions on the ground that they can occur with different complement-taking predicates, or is it always the same construction?

Some even more problematic cases may be encountered. Constructions may differ with respect to parameters not taken into account in the present study. For instance, balanced verb forms may occur with or without conjunctions. English complement constructions may or may not be introduced by *that*, as exemplified by the contrast between *He said that he would phone me* and *He said he would phone me*. But the occurrence of conjunctions has not been taken into account in the present study, so, as far as the parameters under investigation are concerned, these two English sentences may be regarded as instances of the same construction.

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[1] It should be pointed out that the term 'construction' is used here in an exclusively morphosyn-tactic sense. By 'construction' is meant a combination of various morphosyntactic phenomena used to express a particular relation between SoAs (regardless of what relation is being expressed). This use should be regarded as distinct with respect to the sense and the theoretical status attributed to the notion of 'construction' in theories like Construction Grammar (see, e.g. Goldberg 1995) and Radical Construction Grammar (Croft 2001).

Also, a number of languages use the same verb forms in combination with different conjunctions to express different subordination relations. For example, indicative verb forms can be used in Italian with a variety of conjunctions (such as *quando*, *perché*, *se*, *mentre*, *poiché*) to express different adverbial meanings. Except for the conjunction used, the structure of the clause is always the same. In this case too, one could count different constructions, because there are different conjunctions expressing different meanings (and possibly imposing constraints on which tense/aspect forms of the indicative can be used). Otherwise, one could count just one construction, because conjunctions are not relevant to the investigation (and, moreover, even if different conjunctions are used, it is always the same grammatical element, that is, a conjunction).

Another problematic case is found when the same verb form is used, but is associated with different phenomena depending on the relation type being expressed. In Section 3.3.1.2 it was asked which cases should be taken into account with respect to a lack of overtly expressed arguments. It was pointed out that there are languages where arguments are not expressed whenever the linked SoAs share their participants. This does not allow one to rank different subordination relations with respect to a lack of overtly expressed arguments, because a lack of overtly expressed arguments depends on whether or not the linked SoAs share a participant, not on the subordination relation type. It was therefore suggested that only two cases are relevant to the hierarchy of a lack of overtly expressed arguments, (i) constructions not allowing the overt expression of arguments under any circumstance, and (ii) constructions not allowing the overt expression of arguments under a sharing of participants, when these constructions are used for relation types that entail a sharing of participants between the linked SoAs. This second case, which is illustrated by the Mandarin Chinese examples in (3.41), may be problematic for counting constructions. The same verb form may be associated with a lack of overtly expressed arguments when the subordination relation entails a sharing of participants, and with overtly expressed arguments when no participants are shared. Are these instances of two different constructions, or is it the same construction?

The solution adopted in this chapter (as well as in Appendix 4) rests on the following basic criterion. Two combinations of various morphosyntactic phenomena (e.g. a lack of verbal inflection, case marking/adpositions on the dependent verb, the coding of arguments as possessors, etc.) count as instances of the same construction if they are identical with respect to the parameters taken into account in the investigation, namely, verb form and participant coding. Under this criterion, English indicative clauses in complement relations count as instances of the same construction regardless of whether or not they are introduced by *that*, and independently of the complement-taking predicates with which they occur. The reason for regarding them as instances of the same construction is that the same verb form is used in all cases, and participants are always coded in the same way. For this reason, also Italian indicative clauses introduced

by different adverbial conjunctions are also regarded as instances of the same construction.

On the other hand, if the same verb form is associated with a lack of overtly expressed arguments under a sharing of participants, but with overtly expressed arguments otherwise, two distinct constructions will be counted. The first is the one used for relation types entailing a sharing of participants between the linked SoAs. In this case, overt expression of arguments is not allowed. The second construction is the one used for relation types not entailing a sharing of participants. In this case, arguments may or may not be overtly expressed. The ground for distinguishing two different constructions here is that participants are treated differently in each case.

In what follows, the various logically possible combinations of the morphosyntactic phenomena taken into account are investigated, and their frequencies, based on the data in Appendix 4, are reported. It will be shown that a number of implicational correlations exist between the phenomena taken into account. For instance, as will be seen in Section 10.2.4, the presence of case marking or adpositions on the dependent verb entails a lack of T, A, or M distinctions. The implicational correlations were established using the same basic criteria applied in the previous chapters, and described in Sections 4.2 and 6.4.1. Implicational correlations are established on the basis of significant cases, that is, cases where the antecedent and the consequent of the implication do not have the same truth value (i.e. either 1 or 0: Section 4.2). Cases where the antecedent and the consequent of the implication have the same truth value do not contradict a proposed implication, and thus can be used as evidence confirming it.

However, these cases are not significant to establish the implication itself. The cases that really matter in establishing an implication are those where the antecedent and the consequent have the value 0 and 1 respectively, which support the implication, and those where the antecedent and the consequent have the value 1 and 0 respectively, which are exceptions to the implication. Thus, the number of exceptions to a candidate implication should be weighted against the number of cases where the antecedent and the consequent have the value 0 and 1 respectively, not just all of the other cases involved in the implication. As was stated in Section 6.4.1, the criterion adopted in this study to regard a candidate implication as valid was that in principle the number of exceptions should be no more than one-third of the number of significant cases (i.e. the number of exceptions plus the number of supporting cases). Taking just the number of significant cases, rather than the total number of cases involved in the implication, increases the weight of exceptions, but at the same time provides a safer measurement of the strength of the implication itself.

For each of the implications discussed in this chapter, a table will be provided in Section 10.6 reporting the number of significant cases supporting the implication and the number of significant cases contradicting it.

10.2. Correlations between individual morphosyntactic phenomena

10.2.1. Lack of TAM distinctions

A lack of TAM distinctions is a complex parameter, in that T, A, and M distinctions may or may not be expressed independently of each other. Therefore, before comparing this parameter with the others (which will be done in the following sections), T, A, and M distinctions will be compared with each other.

Table 10.1 reports the frequencies of the various combinations for a lack of T, A, and M distinctions. For each of these distinction, two cases are taken into account: the case where the relevant distinctions are not expressed, and the case where the relevant distinctions are expressed, either as in independent clauses or by means of special forms.

The data in Table 10.1 show quite a clear pattern. The overwhelming tendency is for TAM distinctions to be either all expressed (T*A*M*) or not expressed at all (–––). When only one or two of these distinction types are expressed, however, a number of implicational and frequency patterns can be observed. First, a lack of A distinctions (–––, T*–M*, T*––, ––M*) entails a lack of T distinctions (the cases T*–M* and T*––, which would represent a counterexample to this generalization, are not attested):

(10.1)   A distinctions not expressed → T distinctions not expressed

A lack of T distinctions (–––, –A*M*, –A*–, ––M*, 166 cases in total) is more frequent than a lack of A distinctions (–––, T*–M*, T*––, ––M*, 126 cases in total), and is as frequent as a lack of M distinctions (–––, T*A*–, T*––, –A*–, 168 cases in total). A lack of M distinctions is more frequent than a lack of A distinctions. This may be represented as follows (henceforth, '≫' = 'is more frequent than'):

(10.2)   T distinctions not expressed, M distinctions not expressed ≫ A
          distinctions not expressed

These patterns can be accounted for in terms of the principle of relevance, as discussed by Bybee (1985). According to Bybee (1985: 13–16), a meaning element is relevant to another meaning element if the semantic content of the former directly affects or modifies the semantic content of the latter. Aspect is more relevant to verbs than tense or mood, for it modifies the internal temporal constituency of the SoA (Bybee 1985: 21–2). Two SoAs having different internal constituency are more different from each other than two SoAs located at different temporal points or having a different mood value, because in the latter case the internal constituency of the SoA is not affected. Bybee uses the principle of relevance to account for the different positioning of TAM affixes with

TABLE 10.1. *Lack of TAM distinctions*

Lack of TAM distinctions	Number of attested cases
T*A*M*	149
– – –	99
T*A*–	43
T*–M*	0
–A*M*	14
T*– –	0
–A*–	27
– –M*	26

T*, A*, M* = the relevant distinctions are expressed, either as in independent clauses or by means of special forms; – = the relevant distinctions are not expressed. Languages where T, A, or M distinctions are not expressed on the verb are not included.

respect to the verb stem: A affixes occur closer to the stem than T and M affixes (Bybee 1985: 34–5).

The principle of relevance may account for why a lack of A distinctions on dependent verbs entails a lack of T distinctions, and is less frequent than a lack of T and M distinctions. A distinctions are more relevant to verb meaning than T and M distinctions. Hence they receive overt coding more frequently, and are not expressed only if the less relevant distinctions are not expressed either.

Since M distinctions are less relevant to verb meaning than A distinctions, one would expect M distinctions not to be expressed if A distinctions are not expressed. The data in Table 10.1 show that this is not the case. However, an independent motivation can be provided for why there are cases where M distinctions are expressed, but A distinctions are not (these are the cases indicated as '– –M*' in Table 10.1). As can be easily seen from the data in Appendix 4, most of these cases involve verb forms devoted to the expression of irrealis (subjunctives, optatives, and the like). As was repeatedly pointed out in the previous chapters, TAM distinctions pertain to the sequential scanning of SoAs, and sequential scanning, and thus lack of TAM distinctions, are less relevant to irrealis than they are to realis. Hence it comes as no surprise that T and A distinctions are not expressed on these verb forms. However, there is an independent motivation for expressing M distinctions when the dependent SoA is unrealized. Irrealis represents a marked, that is a less expected, situation type with respect to realis. We tend to talk about realized SoAs, and unrealized or non-factual SoAs are usually presented in discourse in the perspective of realized SoAs. It is reasonable to assume that less expected situations receive overt coding more often than more expected situations, precisely because they are less expected, and therefore less easily identifiable (for a similar

point of view, see Bybee 1985: 210–11).[2] Irrealis is explicitly indicated as such by means of M distinctions, and this provides a motivation for why verb forms expressing irrealis are inflected for M distinctions even if they are not inflected for A distinctions.

Bybee (1985: 22) also argues that tense is more relevant to verb meaning than mood, because mood pertains to what the speaker wants to do with the pro-position in discourse (e.g. convey assertions, commands, or warnings) rather than to the SoA in itself. Bybee uses this assumption to account for the fact that, in her sample, T affixes occur closer to the verb stem than M affixes (Bybee 1985: 34–5).

If tense is more relevant to verb meaning than mood, relevance cannot be used to account for the fact that a lack of T distinctions is as frequent as a lack of M distinctions, because that would mean that less relevant distinctions receive overt expression as frequently as more relevant distinctions. In fact, however, there are some principled grounds for claiming that mood is at least as relevant to verb meaning as tense. M distinctions define the actuality value of the SoA. SoAs having different actuality values (e.g. realized vs. unrealized or non-factual: see Section 5.3.2) differ from each other at least as much as SoAs that are just located at different points in time. In this view, a lack of T distinctions is as frequent as a lack of M distinctions because M distinctions are at least as relevant to verb meaning.

10.2.2. *Use of special forms to express TAM distinctions*

The use of special forms (not used in independent clauses) to express TAM distinctions, just like a lack of these distinctions, may in principle concern any distinction type independently of the others. The distinctions that are not coded by means of special forms may be not expressed, or may be expressed in the same way as in independent clauses. This yields a variety of possible combinations, as given in Table 10.2.

No implicational correlations can be established between the use of personal forms for A distinctions, the use of special forms for T distinctions, and the use of special forms for M distinctions. However, the use of special forms to express A distinctions (tam, ta–, taM, –am, TAm, –a–, TaM, –aM, Ta–: 54 cases) is more frequent than the use of special forms to express T distinctions (tam, ta, taM, t–m, tAm, t––, tAM, t–M, tA–: 42 cases), and the latter is more frequent than the use of special forms to express M distinctions (tam, t–m, tAm, –am, Tam, ––m, TAm, –Am, T–m: 31 cases):

(10.3)   Special A forms ≫ Special T forms ≫ Special M forms

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[2] This may be the reason why reality condition relations seem to be more likely to be expressed by means of special M forms than reason relations (Section 6.4.2). Reason relations entail that the dependent SoA is factual, while reality condition relations entail that it is non-factual, and non-factuality is explicitly indicated as such by means of special M forms.

TABLE 10.2. *Use of special forms to express TAM distinctions*

Special forms for TAM distinctions	Number of attested cases
tam	8
TAM	124
ta–	30
TA–	13
taM	1
t–m	0
T–M	0
tAm	0
–am	2
–AM	10
Tam	0
t– –	0
T– –	0
tAM	3
t–M	0
tA–	0
–a–	11
–A–	16
TaM	0
–aM	0
Ta–	0
– –m	6
– –M	21
TAm	13
–Am	2
T–m	0

T, A, M = the relevant distinctions are expressed as in independent clauses; t, a, m = the relevant distinctions are expressed by special forms; – = the relevant distinctions are not expressed. Languages where T, A, M distinctions are not expressed on the verb are not included.

This frequency pattern is the opposite of the one found for a lack of TAM distinctions, in that the use of special forms to express A distinctions is more frequent than the use of special forms to express T and M distinctions. It should be pointed out that in most cases, when special forms are used for T, A, or M distinctions, at least some of the other distinctions are not expressed. There are only twenty cases out of seventy-three where special forms are used for T, A, or M distinctions, and the other distinctions are all expressed (tam, taM, tAm, Tam, TAm).

This may explain why the pattern found for the distribution of special forms is the opposite of the one for a lack of TAM distinctions. The use of special forms applies to the distinctions that are more frequently expressed, that is, A distinctions, following a pattern opposite to the one governing a lack of TAM distinctions.

The use of special forms for M distinctions is less frequent than the use of special forms for T distinctions. This is probably because there are a number of mood forms (such as subjunctives, optatives, purposives, and the like) that are used primarily in dependent clauses, but can also be used in independent clauses to convey wishes, commands, and the like. Since they can be used in independent clauses, these forms were not counted as special forms. This significantly reduces the number of 'true' special M forms in the sample.

10.2.3. Person agreement distinctions

Person agreement distinctions may be not expressed, or expressed as in independent clauses, or expressed by means of special forms. These three situations can be compared with the other two parameters examined so far, a lack of TAM distinctions and the coding of these distinctions by means of special forms.

A lack of person agreement distinctions entails a lack of T, A, or M distinctions or an expression of these distinctions by means of special forms:

(10.4)   Person agreement not expressed → T/A/M not expressed ∨ T/A/M
         special forms

The data on the possible combinations of lack of person agreement distinctions and expression of TAM distinctions are reported in Table 10.3 (Section 10.6).

When person agreement distinctions are expressed, they can be expressed either as in independent clauses, or by means of special forms. The use of special forms for person agreement distinctions entails a lack of T, A, or M distinctions, or an expression of these distinctions by means of special forms:

(10.5)   Person agreement special forms → T/A/M not expressed ∨ T/A/M
         special forms

The data for this implication are reported in Table 10.4 (Section 10.6).

10.2.4. Case marking/adpositions on the verb

Case marking/adpositions on the dependent may combine with the morphosyntactic phenomena examined so far (lack of TAM distinctions, coding of TAM distinctions by means of special forms, lack of person agreement distinctions, coding of person agreement distinctions by means of special forms).

Case marking/adpositions on the dependent verb entail lack of a T, A, or M distinctions, or the coding of these distinctions by means of special forms:

(10.6)   Case marking/adpositions → T/A/M not expressed ∨ T/A/M special forms

The data on the possible combinations of case marking/adpositions and expression of TAM distinctions are reported in Table 10.5 (Section 10.6).

Case marking/adpositions on the dependent verb also entail a lack of person agreement distinctions:

(10.7)   Case marking/adpositions → Person agreement not expressed

The data on the possible combinations of case marking/adpositions on the dependent verb and lack of person agreement distinctions are reported in Table 10.6 (Section 10.6). As can be seen from this table, the implicational correlation between case marking/adpositions on the dependent verb and a lack of person agreement distinctions has fourteen exceptions. Many of these are cases where person agreement distinctions are expressed by means of special forms. In fact, a frequency correlation exists between case marking/adpositions on the dependent verb and the use of special forms to express person agreement distinctions. If the verb displays case marking/adpositions, person agreement distinctions are usually not expressed. However, if person agreement distinctions are expressed, the percentage of person agreement special forms is higher than it is when the verb displays no case marking/adpositions. Conversely, the percentage of case marking/adpositions is higher when person agreement distinctions are expressed by special forms than when they are expressed as in independent clauses. The relevant percentages are reported in Table 10.7 (Section 10.6).

10.2.5. Lack of overtly expressed arguments

A lack of overtly expressed arguments will be compared in this section with a lack of TAM and person agreement distinctions, the use of special forms to code these distinctions, and case marking/adpositions on the dependent verb. Only A and S arguments will be taken into account. The case where arguments are not expressed will be contrasted with the case where arguments are expressed, either as in independent clauses or as possessors.

A lack of overtly expressed arguments entails a lack of T, A, or M distinctions. This generalization has 48 exceptions (i.e. cases where arguments are not expressed, but T, A, and M distinctions are all expressed) out of 165 significant cases. It should, however, be pointed out that most of the exceptions (34 cases out of 48) involve relative relations. In Section 10.3, an analysis will be proposed accounting for why arguments are not expressed in relative relations, while TAM distinctions are all expressed. If these cases are ignored, we are left with 14 'real' exceptions out of 165 significant cases.

(10.8)   Arguments not expressed → T/A/M not expressed

The data for the possible combinations of a lack of overtly expressed arguments and a lack of TAM distinctions are reported in Table 10.8 (Section 10.6).

   A lack of overtly expressed arguments also entails a lack of person agreement distinctions:

(10.9)   Arguments not expressed → Person agreement not expressed

The data for the possible combinations of a lack of overtly expressed arguments and a lack of person agreement distinctions are reported in Table 10.9 (Section 10.6).

   No implicational or frequency correlations could be found between a lack of overtly expressed arguments and special TAM or person agreement forms, or the presence of case marking/adpositions on the dependent verb.

10.2.6. Coding of arguments as possessors

The coding of arguments (A or S) as possessors will be compared with the other parameters taken into account, that is a lack of TAM and person agreement distinctions, the use of special forms to express these distinctions, and case marking/adpositions on the dependent verb.[3]

   The coding of arguments as possessors entails a lack of T, A, or M distinctions, or the coding of these distinctions by means of special forms:

(10.10)   Arguments expressed as possessors → T/A/M not expressed ∨ T/A/M special forms

The data for the possible combinations of coding of arguments as possessors, a lack of TAM distinctions, and the expression of these distinctions by means of special forms are reported in Table 10.10 (Section 10.6).

   The coding of arguments as possessors also entails a lack of person agreement distinctions, or the coding of these distinctions by means of special forms:

(10.11)   Arguments expressed as possessors → Person agreement not expressed ∨ Person agreement special forms

The data for the possible combinations of coding of arguments as possessors, lack of person agreement distinctions, and the expression of these distinctions by means of special forms are reported in Table 10.11 (Section 10.6).

   Finally, the coding of arguments as possessors entails case marking/adpositions on the dependent verb:

(10.12)   Coding of arguments as possessors → Case marking/adpositions

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[3] In principle, a lack of overtly expressed arguments might also be compared with the coding of arguments as possessors, because there may be languages where either A or S arguments are not expressed, while the arguments that are expressed are coded as possessors. Some such cases were found in the sample, but they were too few to provide a principled basis of comparison.

The data for the possible combinations between the coding of arguments as possessors and case marking/adpositions on the dependent verb are reported in Table 10.12 (Section 10.6).

10.3. Explaining the correlation patterns: processes and things

Comparison between the various morphosyntactic phenomena involved in the cross-linguistic coding of subordination revealed the existence of systematic correlation patterns. First, a number of correlation patterns could be detected involving T, A, and M distinctions (Section 10.2.1). These patterns were explained in terms of the principle of relevance, outlined in Bybee (1985). However, there also are correlation patterns linking TAM distinctions as a whole and the other parameters involved in the cross-linguistic coding of subordination.

A lack of person agreement distinctions, the expression of person agreement distinctions by means of special forms, case marking/adpositions on the dependent verb, a lack of overtly expressed arguments, and the coding of arguments as possessors all entail a lack of T, A, or M distinctions, or the expression of these distinctions by means of special forms not used in independent clauses (see the implicational generalizations in (10.4), (10.5), (10.6), (10.8), and (10.10)). This pattern basically corresponds to Croft's Deverbalization Hierarchy (Croft 1991: 83 and 2001: 355–7; see Section 3.3.1.3), as well as Lehmann's desentialization continuum (Lehmann 1988: 193–200) and the data in Comrie (1976*b*) and Koptjevskaja-Tamm (1993*b*).

This pattern appears particularly significant in light of the functional principles discussed in Chapter 9. One of the basic points about the explanatory model presented in that chapter was that a dependent SoA is not conceptualized as an autonomous process, and is scanned summarily rather than sequentially. In addition, a dependent SoA may be conceptualized as a constituent part of the main SoA, that is, as a thing.

Conceptualization of the dependent SoA as a thing is reflected at the grammatical level by nominal properties such as case marking/adpositions on the dependent verb and the coding of arguments as possessors. In fact, the fact that the coding of arguments as possessors entails case marking/adpositions on the verb ((10.12)) may be regarded as evidence that these phenomena both reflect conceptualization of the dependent SoA as a thing.

The use of special person agreement forms may also be evidence that the relevant SoA is being conceptualized as a thing, because special person agreement forms are in many cases possessive forms, and possessive person agreement forms can be regarded as the correspondent of the coding of arguments as possessors at the level of person agreement. In fact, the coding of arguments as possessors entails that if person agreements are expressed, they are expressed by means of special forms, and these forms are always possessive forms. This confirms that the coding

of arguments as possessors and possessive person agreement forms are two aspects of the same phenomenon, one involving conceptualization of the dependent SoA as a thing.

In order for an SoA to be conceptualized as a thing, sequential scanning has to be suspended. Suspension of sequential scanning is reflected at the grammatical level by a lack of TAM distinctions (Section 9.5). Hence one would expect that the presence of the grammatical properties that reflect conceptualization of the dependent SoA as a thing entails (or at least tends to co-occur with) a lack of TAM distinctions. This is exactly the case. The presence of case marking/adpositions on the dependent verb, the coding of arguments as possessors, and the use of special (possessive) person agreement forms all entail a lack of TAM distinctions (see the implicational generalizations in (10.6) and (10.10) above).[4]

Also, if a dependent SoA is conceptualized as a thing, its cognitive status is very different from that of independent SoAs, that are usually conceptualized as processes. It seems reasonable to assume that this may be reflected by the use of special forms for T, A, or M distinctions, different from the ones used in independent clauses. This may explain the implicational correlation between the grammatical phenomena reflecting conceptualization of the dependent SoA as a thing and the use of special forms for TAM distinctions.

The cognitive status of dependent SoAs (i.e. lack of autonomous processual properties) is not the only motivation for a lack of TAM distinctions. As was shown in Chapter 9, a lack of TAM distinctions is also motivated in terms of syntagmatic economy, iconicity of independence, and iconicity of distance. However, the implicational correlation between a lack of TAM distinctions and the presence of nominal properties on the dependent verb confirms that the cognitive status of dependent SoAs does play a role in the lack of TAM distinctions. If it did not, there would be no motivation for the implicational correlation between a lack of TAM distinctions and a presence of nominal properties on the dependent verb, because the presence of nominal properties on the dependent verb appears to be motivated in terms of the cognitive status of the dependent SoA only.

The cognitive status of dependent SoAs may also account for the correlation between case marking/adpositions on the dependent verb, the coding of arguments as possessors, and a lack of person agreement distinctions. Case marking/ adpositions on the dependent verb and the coding of arguments as possessors are nominal properties, and reflect a conceptualization of the dependent SoA as a thing rather than as a process. As was repeatedly stressed in the previous

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[4] In the cases where person agreement forms are not possessive forms, the relevant verb forms are forms devoted to the expression of irrealis (such as subjunctives and the like). These forms often do not display TAM distinctions, because sequential scanning, and thus TAM distinctions, are less relevant to unrealized SoAs than they are to realized ones (Section 9.5.4). Thus, there may be two distinct motivations for the association between special person agreement forms and lack of TAM distinctions, conceptualization of the dependent SoA as a thing and the fact that the dependent SoA is unrealized.

chapters, things are prototypically coded by nouns, while processes are pro- totypically coded by verbs. One of the properties that distinguish verbs from nouns is person agreement. If the dependent SoA is conceptualized as a thing, this may be reflected at the grammatical level by a lack of verbal properties on the part of the relevant verb form, as manifested by a lack of person agreement distinctions.

The fact that person agreement distinctions are a typical verbal property may also explain why a lack of person agreement distinctions entails a lack of TAM dis- tinctions, or the expression of these distinctions by means of special forms. A lack of person agreement distinctions, and verbal properties in general, is motivated by the fact that the relevant event is not conceptualized as a process, and suspen- sion of the processual properties of the dependent event is directly reflected by a lack of TAM distinctions, or the coding of these distinctions by means of special forms.

There are also frequency and implicational correlations between case marking/ adpositions on the dependent verb, the coding of arguments as possessors, and the use of special person agreement forms (Section 10.2.4 and 10.2.6). These correlations too can be explained in terms of the cognitive status of dependent SoAs. As was pointed out above, special person agreement forms are in most cases possessive forms, and possessive person agreement forms can be regarded as evidence that the dependent SoA is conceptualized as a thing rather than as a process. Thus, one would expect that they co-occur with other phenomena reflecting conceptualization of the dependent SoA as a thing, such as case mark- ing/adpositions and the coding of arguments as possessors, and this is exactly the case.

10.4. Explaining the observed correlations: syntagmatic economy

The cognitive status of dependent SoAs does not explain a number of observed correlations. For instance, there does not seem to be any correlation between the cognitive status of dependent SoAs and the fact that verb arguments are not expressed. Verb arguments pertain to relationality, that is the fact that an SoA involves a number of entities that take part in it. However, even if they are scanned summarily rather than sequentially, dependent SoAs are still relational, that is they still involve a number of entities taking part in the SoA (for a similar view, see Langacker 1991: 440–1). Thus, a lack of overtly expressed arguments cannot be related to the cognitive status of dependent SoAs. This means that the cognitive status of dependent SoAs cannot explain the correlation patterns involving a lack of overtly expressed arguments, namely the implicational correlations between a lack of overtly expressed arguments, a lack of TAM distinctions ((10.8)), and a lack of person agreement distinctions ((10.9)).

A lack of overtly expressed arguments economically reflects a sharing of participants between the main and dependent SoAs (Section 9.2). In Chapters 5–9 it was shown that a number of subordination relations entail a sharing of participants between main and dependent SoAs, or prototypically involve a sharing of participants at the discourse level (modals, phasals, manipulatives, and purpose relations). These relation types also involve predetermination of the time reference, aspect and mood value of the dependent SoA, and predetermination is economically reflected by a lack of TAM distinctions. Thus, with these relation types, (syntagmatic) economy motivates both a lack of overtly expressed arguments, and a lack of TAM distinctions.

On the other hand, there are a number of subordination relation types that entail predetermination of the time reference, aspect, and mood value of the dependent SoA, but not a sharing of participants between the main and dependent SoAs (desiderative, perception, knowledge, propositional attitude and utterance predicates, temporal, reason, and reality condition relations). In this case, a lack of TAM distinctions is motivated in terms of syntagmatic economy, but a lack of overtly expressed arguments is not (although some of these relation types may involve a sharing of participants at the discourse level, as was argued in Section 9.2). Thus, the subordination relations where a lack of overtly expressed arguments is economically motivated are a subset of the subordination relations where a lack of TAM distinctions is economically motivated. One would, therefore, expect that when arguments are not expressed, TAM distinctions will not be expressed either, but when TAM distinctions are not expressed, arguments may or may not be expressed. This is exactly what happens in the implication correlation pattern.[5]

A counterexample to the analysis just outlined is provided by relative relations. In relative relations, a lack of TAM distinctions and a lack of overtly expressed arguments are motivated in terms of distinct principles. A lack of TAM distinctions is motivated in terms of the cognitive status of the dependent SoA (Section 9.5.4), while a lack of overtly expressed arguments (gapping) is not motivated in terms of any particular semantic or cognitive feature of relative relations. Rather, a lack of

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[5] This pattern is, however, different in nature from the ones examined so far. If there is an implicational correlation between two phenomena, it is usually assumed that this is because there is a functionally motivated connection between those two phenomena, that is they reflect the same functional principle (e.g. conceptualization of the dependent SoA as a thing). This was the case with all of the implication correlations examined so far. However, an implicational correlation between two phenomena may also result from the fact that there are distinct functional principles motivating the occurrence of both phenomena in the same contexts. This is the case with the implicational correlation between a lack of overtly expressed arguments and a lack of TAM distinctions. A lack of overtly expressed arguments and a lack of TAM distinctions both reflect syntagmatic economy, but in different ways. A lack of overtly expressed arguments reflects the fact that the participants of the dependent SoA are predetermined, while a lack of TAM distinctions reflects the fact that the time reference, aspect and mood value of the dependent SoA are predetermined. In all of the cases where participants are predetermined, the time reference, aspect, and mood value of the dependent SoA are also predetermined, but there is no direct connection between these two phenomena.

overtly expressed arguments is a means of indicating the role of the relativized item (Section 7.3). This means that there is no reason why a lack of TAM distinctions and a lack of overtly expressed arguments should occur simultaneously in relative relations. For instance, TAM distinctions may be not expressed, but a device other than gapping, such as a pronoun, may be used to indicate the role of the relativized item. On the other hand, TAM distinctions may be expressed, but gapping may be used to indicate the role of the relativized item. In fact, as was observed in Section 10.2.5, most of the exceptions to the implicational correlation between a lack of overtly expressed arguments and a lack of TAM distinction are provided by relative relations.

Syntagmatic economy also allow us to account for the implicational correlation between a lack of overtly expressed arguments and a lack of person agreement distinctions. In Section 10.3 it was argued that person agreement distinctions are a typical verbal property, and a lack of person agreement distinctions reflects the fact that the SoA coded by the verb is not conceptualized as an autonomous process. However, as was shown in Section 9.2, a lack of person agreement distinctions, just like a lack of overtly expressed arguments, also reflects a sharing of participants between the linked SoAs. If there is no need to provide information about participants of the dependent event, there is no need for either overtly expressed arguments or person agreement distinctions. This explains why a lack of overtly expressed arguments entails a lack of person agreement distinctions.[6]

This also provides an additional motivation for the implication correlation between a lack of person agreement distinctions and a lack of TAM distinctions. In Section 10.3 this correlation was accounted for in terms of the cognitive status of dependent SoAs. However, the relation types involving predetemination of the participants of the dependent SoA (i.e. sharing of participants between the linked SoAs) are a subset of those involving predetermination of the time reference, aspect, and mood value of the dependent SoA. Thus, in all of the cases where there is no need to cross-reference the participants of the dependent SoA on the verb, there is no need to overtly specify the time reference, aspect, and mood value of the dependent SoA, while the reverse does not hold. This accounts for why, in all of the cases where person agreement distinctions are not expressed overtly, TAM distinctions are not expressed either, but TAM distinctions may be not expressed even when person agreement distinctions are expressed.

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[6] On the other hand, a lack of person agreement distinctions is also motivated in terms other than a sharing of participants between the dependent SoA, that is, the fact that the dependent SoA is not conceptualized as an autonomous process. This means that a lack of person agreement distinctions may occur independently of a sharing of participants between main and dependent SoA, and, therefore, independently of a lack of overtly expressed arguments, as predicted by the implicational correlation between a lack of overtly expressed arguments and a lack of person agreement distinctions.

10.5. A frequency hierarchy for the coding of subordination

In the previous sections, the frequency distributions for various combinations of individual morphosyntactic phenomena were examined, and an analysis was proposed accounting for the implicational and frequency correlations between these phenomena. However, the data from the language sample (reported in Appendix 4) also allow us to establish the relative frequency of each individual phenomenon with respect to the others. These data allow us to establish the following frequency hierarchy for the various morphosyntactic phenomena:[7]

(10.13)   The Frequency Hierarchy for the morphosyntactic coding of subordination:

Lack of T/A/M distinctions (136 cases) ≫ Lack of person agreement distinctions (118 cases), lack of overtly expressed arguments (107 cases) ≫ Case marking/adpositions (55 cases), special T/A/M forms (59 cases) ≫ Special person agreement forms (27 cases), coding of arguments as possessors (17 cases)

The Frequency Hierarchy provides supporting evidence for the analysis of the correlation patterns presented so far. The cognitive status of dependent SoAs leads to suspension of the sequential scanning of these SoAs. This may explain why a lack of the grammatical properties related to sequential scanning, namely TAM distinctions, is the most frequent phenomenon in the coding of subordination.

On the other hand, the cognitive status of dependent SoAs may, but need not lead to the conceptualization of those SoAs as things. Suspension of sequential scanning is a direct result of the fact that the dependent SoA has no autonomous profile. The sentence has just one processual profile, that of the main SoA, and therefore it is just the main SoA that gets sequential scanning. Conceptualization of dependent SoAs as things originates from a number of cognitive similarities between dependent SoAs and things. Like things, dependent SoAs are scanned summarily rather than sequentially. Also, dependent SoAs are integrated in the perspective of the main SoAs, which means that, just like things, they can be conceptualized as components of that SoA. However, there are a number of differences between dependent SoAs and things. For instance, as was pointed out in Section 10.4, dependent SoAs are

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[7] This hierarchy is not based on all of the languages in the sample, because not all languages display all of the parameters relevant to the investigation. In all languages, the verb has arguments and may or may not carry case marking/adpositions. Hence the phenomena pertaining to verb arguments (lack of overtly expressed arguments, coding of arguments as possessors) and case marking/adpositions are relevant to all of the languages in the sample. On the other hand, not all languages express person agreement or TAM distinctions on the verb. Hence the phenomena pertaining to person agreement and TAM distinctions are not relevant to all of the languages in the sample. The relative frequencies of the morphosyntactic phenomena taken into account should be calculated only on the basis of the languages where all of these phenomena are relevant, because otherwise the frequencies of some phenomena might be distorted. Thus, the languages where the verb is not marked for person agreement and/or TAM distinctions should be excluded.

relational, that is involve a number of entities taking part in the SoA, while things are non-relational.

This means that, while suspension of sequential scanning of dependent SoAs is a direct result of the cognitive status of these SoAs, conceptualization of dependent SoAs as things is not. This may explain why the grammatical phenomena related to conceptualization of the dependent SoA as a thing, namely case marking and adpositions, use of special (possessive) person agreement forms, and the coding of arguments as possessors, are the least frequent phenomena in the cross-linguistic coding of subordination.

The distribution of the various morphosyntactic phenomena along the Frequency Hierarchy also suggests that there is a connection between the number (and possibly the type) of functional motivations underlying a particular phenomenon and its cross-linguistic frequency. The Frequency Hierarchy is clearly divided into two blocks, in that phenomena such as a lack of TAM distinctions, a lack of person agreement distinctions, and a lack of overtly expressed arguments are much more frequent than the other phenomena, namely case marking/ adpositions, the coding of arguments as possessors, and the use of special TAM and person agreement forms. In Chapter 9 it was argued that the distribution of a lack of TAM distinctions, a lack of person agreement distinctions, and a lack of overtly expressed arguments obeys several functional principles. A lack of TAM distinctions and a lack of person agreement distinctions reflect suspension of the processual properties of the dependent SoA, information recoverability, and semantic integration (or, more generally, conceptual closeness between the linked SoAs). Similarly, a lack of overtly expressed arguments reflects information recoverability, as well as semantic integration. On the other hand, case marking/ adpositions, the coding of arguments as possessors and the use of special TAM and person agreement forms reflect just one functional motivation, the fact that the dependent SoA is not conceptualized as an autonomous process (and is possibly conceptualized as a thing instead). This suggests that the more the functional motivations underlying a grammatical phenomenon, the more frequent it is cross-linguistically. This is explicitly argued in some typological studies, such as Tomlin (1986). However, further cross-linguistic evidence is needed to substantiate this hypothesis.

10.6. Data supporting the correlation patterns

In this section, the data supporting the correlation patterns discussed in this chapter are presented. For each correlation pattern, a table is provided reporting the number of occurrences of each of the logically possible combinations of the relevant phenomena. The tables concerning implicational correlations indicate the number of significant cases supporting the implication and the number of significant

cases contradicting the implication. The table concerning the frequency correlation between case marking/adpositions on the dependent verb and lack of person agreement distinctions (Table 10.7) reports the percentages of each of the logically possible combinations of the phenomena involved in the correlation. Note that TAM distinctions may be not expressed at all, or some of these distinctions (T, A, or M) may be not expressed, while the other distinctions are expressed, either as in independent clauses, or by means of special forms. Henceforth, in the tables and the implicational generalizations, the notation 'T/A/M' will be used to mean 'T,

TABLE 10.3. *Lack of person agreement distinctions vs. expression of TAM distinctions*

	T/A/M not expressed	TAM expressed—no special forms	T/A/M special forms
Person agreement not expressed	104	9	33
Person agreement expressed	30	83	19

Implication: Person agreement not expressed → T/A/M not expressed ∨ T/A/M special forms ((10.4))
Significant cases
Cases supporting the implication
0–1 Person agreement expressed & T/A/M not expressed   30
      Person agreement expressed & T/A/M special forms   19
Cases contradicting the implication
1–0 Person agreement not expressed & TAM expressed—   9
      no special forms

TABLE 10.4. *Use of special forms to express person agreement distinctions vs. expression of TAM distinctions*

	T/A/M not expressed	TAM expressed—no special forms	T/A/M special forms
Person agreement expressed— special forms	20	1	8
Person agreement expressed— no special forms	39	80	13

Implication: Special person agreement forms → T/A/M not expressed ∨ T/A/M special forms ((10.5))
Significant cases
Cases supporting the implication
0–1 Person agreement expressed—no special forms & T/A/M not expressed   39
      Person agreement expressed—no special forms & T/A/M special forms   13
Cases contradicting the implication
1–0 Person agreement expressed—special forms & TAM expressed—no   1
      special forms

TABLE 10.5. *Case marking/adpositions on verbs vs. expression of TAM distinctions*

	T/A/M not expressed	TAM expressed—no special forms	T/A/M expressed—special forms
Case marking/adpositions	76	7	22
No case marking/adpositions	151	136	61

Implication: Case marking/adpositions on the dependent verb → T/A/M not expressed ∨ T/A/M special forms ((10.6))
Significant cases
Cases supporting the implication
0–1 No case marking/adpositions & T/A/M not expressed   151
       No case marking/adpositions & T/A/M special forms   61
Cases contradicting the implication
1–0 Case marking/adpositions & TAM expressed—no special forms   7

TABLE 10.6. *Case marking/adpositions on verbs vs. lack of person agreement distinctions*

	Person agreement not expressed	Person agreement expressed
Case marking/adpositions	44	14
No case marking/adpositions	72	128

Implication: Case marking/adpositions → Person agreement not expressed ((10.7))
Significant cases
Cases supporting the implication
0–1 No case marking/adpositions & Person agreement not expressed 72
Cases contradicting the implication
1–0 Case marking/adpositions & Person agreement expressed   14

A, or M distinctions', and the notation 'TAM' will be used to mean 'T, A, and M distinctions'. Thus, for instance, the notation 'T/A/M not expressed' means that T, A, or M distinctions are not expressed, while the notation 'TAM expressed' means that T, A, and M distinctions are all expressed.

TABLE 10.7. *Case marking/adpositions on verbs vs. use of special forms to express person agreement distinctions*

	Person agreement expressed— special forms	Person agreement expressed— no special forms
Case marking/adpositions	6	8
No case marking/adpositions	19	110

Frequency correlations: The percentage of person agreement special forms is higher when the verb displays case marking/adpositions than when this is not the case. The percentage of case marking/adpositions is higher when person agreement distinctions are expressed by special forms than when they are expressed as in independent clauses.

Percentages of individual combinations

Case marking/adpositions	Person agreement special forms	43%
	Person agreement expressed as in independent clauses	57%
No case marking/adpositions	Person agreement special forms	14%
	Person agreement expressed as in independent clauses	86%
Person agreement special forms	Case marking/adpositions	26%
	No case marking/adpositions	74%
Person agreement expressed as in independent clauses	Case marking/adpositions	7%
	No case marking/adpositions	93%

TABLE 10.8. *Lack of overtly expressed arguments vs. lack of TAM distinctions*

	T/A/M not expressed	TAM expressed
Arguments not expressed	129	48
Arguments expressed	119	153

Implication: Arguments not expressed → T/A/M not expressed → T/A/M not expressed ((10.8))

Significant cases

Cases supporting the implication

0–1   Arguments expressed & T/A/M not expressed   119

Cases contradicting the implication

1–0   Arguments not expressed & TAM expressed   48

TABLE 10.9. *Lack of overtly expressed arguments vs. lack of person agreement distinctions*

	Person agreement not expressed	Person agreement expressed
Arguments not expressed	61	22
Arguments expressed	46	126

Implication: Arguments not expressed → Person agreement not expressed ((10.9))
Significant cases
Cases supporting the implication
0–1 Arguments expressed & Person agreement not expressed   45
Cases contradicting the implication
1–0 Arguments not expressed & Person agreement expressed   20

TABLE 10.10. *Coding of arguments as possessors vs. expression of TAM distinctions*

	T/A/M not expressed	TAM expressed—no special forms	T/A/M special forms
Arguments expressed as possessors	24	1	6
Arguments expressed as in independent clauses	78	133	46

Implication: Arguments expressed as possessors → T/A/M not expressed ∨ T/A/M special forms ((10.10))
Significant cases
Cases supporting the implication
0–1 Arguments expressed as in independent clauses & T/A/M not expressed   78
     Arguments expressed as in independent clauses & T/A/M special forms   46
Cases contradicting the implication
1–0 Arguments expressed as possessors & TAM expressed—no special forms   1

TABLE 10.11. *Coding of arguments as possessors vs. expression of person agreement distinctions*

	Person agreement not expressed	Person agreement expressed—no special forms	Person agreement expressed—special forms
Arguments expressed as possessors	13	2	4
Arguments expressed as in independent clauses	23	96	9

Implication: Arguments expressed as possessors → Person agreement not expressed ∨ Person agreement special forms ((10.11))
Significant cases
Cases supporting the implication
0–1 Arguments expressed as in independent clauses & Person agreement not expressed   23
      Arguments expressed as in independent clauses & Person agreement special forms   9
Cases contradicting the implication
1–0 Arguments expressed as possessors & Person agreement expressed—no special forms   2

TABLE 10.12. *Coding of arguments as possessors vs. case marking/adpositions on verbs*

	Case marking/adpositions	No case marking/adpositions
Arguments expressed as possessors	16	4
Arguments expressed as in independent clauses	25	221

Implication: Coding of arguments as possessors → Case marking/adpositions ((10.12))
Significant cases
Cases supporting the implication
0–1 Arguments expressed as in independent clauses & Case marking/adpositions   25
Cases contradicting the implication
1–0 Arguments expressed as possessors & No case marking/adpositions   4

11 Conclusions and Prospects

In Chapters 1–4, the theoretical foundations and the methodological premises of the functional-typological approach were outlined. One of the crucial aspects of the functional-typological approach, as opposed to formalist approaches, is the recourse to functional principles of all types (both semiotic and external) to account for patterns of cross-linguistic variation. In Chapters 1 and 2 it was argued that functional, rather than morphosyntactic criteria should be used in cross-linguistic research to define the phenomenon under investigation.

The assumption underlying this claim was that there is a motivated connection between the form and the function of linguistic expressions, and this connection cannot be captured if only morphosyntactic criteria are taken into account. This issue was discussed with particular regard to subordination in Chapter 2, where formal and functional approaches to subordination were compared. It was shown that formal criteria fail to provide a cross-linguistically applicable definition of subordination. Instead, a functional definition was proposed, one grounded in cognitive terms (the Asymmetry Assumption). Subordination was defined as a particular way to construe the cognitive relationship between two SoAs, one in which one SoA (the dependent one) lacks an autonomous profile, and is construed in the perspective of the other SoA (the main one). This cognitive situation underlies various types of semantic relation between SoAs, so that different types of subordination relation (complement, adverbial, relative) can be defined.

In Chapters 5–8 the cross-linguistic coding of various types of subordination relation was examined, and a significant connection emerged between the cross-linguistic distribution of individual morphosyntactic phenomena across different types of subordination relation and the semantic features of these relations. This connection is manifested in a number of implicational hierarchies, which include different types of complement, adverbial, and relative relations, and represent the major empirical result of the study.

In Chapter 9 an attempt was made to provide a motivation for the connection between the distribution of individual morphosyntactic phenomena and the semantic features of the various subordination relation types. Semiotic motivations such as iconicity of independence, iconicity of distance, and syntagmatic economy were examined, and it was shown that they can account for individual aspects of the cross-linguistic coding of subordination. However, it was also argued that a more comprehensive model should be provided for the cross-linguistic coding of subordination. This model is based on the cognitive distinction between processes and things (in Langacker's sense of these terms), and assumes that a direct connection

exists between the cognitive status of dependent SoAs and some of the morpho-syntactic phenomena involved in the cross-linguistic coding of subordination. A dependent SoA lacks an autonomous processual profile, and therefore it is not conceptualized as a process in its own right. Processes are prototypically coded by verbs, and processual properties such as sequential scanning are reflected by verbal properties such as TAM distinctions. Hence phenomena such as a lack of TAM distinctions reflect suspension of the processual properties of dependent SoAs.

In addition to not being conceptualized as processes in their own right, dependent SoAs may be conceptualized as things or properties. Conceptualization of the dependent SoA as a thing or a property is reflected, again, by a lack of TAM distinctions (in that both things and properties are atemporal, summarily scanned entities), as well as the presence of nominal properties on the dependent verb.

This analysis receives further support from the co-occurrence patterns found for the individual morphosyntactic phenomena cross-linguistically, as outlined in Chapter 10. The occurrence of the phenomena corresponding to a presence of nominal properties entails a lack of TAM distinctions. On the other hand, a lack of TAM distinctions is found even when the verb displays no nominal properties. Moreover, a lack of TAM distinctions is more frequent cross-linguistically than the presence of nominal properties. This reflects the fact that the dependent SoA is not conceptualized as a process, and is possibly conceptualized as a thing instead. In order for a process to be conceptualized as a thing, it has to lack processual properties to some extent. This explains why the presence of nominal properties on the dependent verb entails a lack of TAM distinctions. On the other hand, a lack of processual properties does not entail conceptualization of the dependent SoA as a thing. This explains why TAM distinctions may be missing even if the verb displays no nominal properties.

The observed patterns would not have been discovered if functional consid-erations had not played a role in the analysis from the beginning. Individual morphosyntactic phenomena, for example a lack of categorial distinctions on verbs, turn out not to be universal across languages. This makes it impos-sible to establish principled and cross-linguistically valid generalizations based on morphosyntactic criteria. Cross-linguistic investigation shows, however, that there are universal cross-linguistic patterns, and these are found in the map-ping between particular morphosyntactic phenomena and particular functions, for example the expression of particular conceptual relations between SoAs. Not all languages use the same morphosyntactic constructions for the same function. However, the principles governing the match between particular morphosyntactic constructions and particular functions are universal, and are manifested in the implicational hierarchies for the distribution of individual morphosyntactic phenomena across different functions (e.g. different types of conceptual relation between SoAs). This conclusion follows the lines of much recent typological work, according to which there are no universal grammatical relations and categories (intended as particular combinations of morphosyntactic

constructions and semiotic function), but there are universal principles governing the match between individual constructions and individual functions (Dryer 1997; Croft 2001).

The central assumption of the proposed explanatory model for subordination is that the cross-linguistic coding of dependent SoAs, as manifested in the occurrence of non-independent clause-like patterns, reflects the cognitive status of these SoAs. The distribution of non-independent clause-like patterns across the various types of subordination relation reflects the semantic features of these relations.

This is a basically iconic explanation, in that it is assumed that the form of some constructions reflects the cognitive organization as well as the semantic properties of particular relations between SoAs. Therefore, these constructions are used for some relation types rather than for others. In addition, some patterns are independently motivated in terms of syntagmatic economy.

It has been argued that iconicity and syntagmatic economy are the result of processing motivations. Iconicity facilitates processing in that it represents an efficient mapping of meaning onto form (Givón 1985; Haiman 1985: 11; Croft 1990: 252–5, 1995: 515). As Givón (1985: 189) puts it, other things being equal, a coded experience is easier to store, retrieve, and communicate if the code is maximally isomorphic to the experience. Syntagmatic economy facilitates processing in that it allows a reduction of the amount of information specified in the sentence.

The processing account of iconicity and economy has two relevant implications for the proposed analysis of subordination, as well as for any explanatory model based on these principles. First, the observed implicational patterns can be accounted for in terms of processing ease. Other things being equal, some combinations of morphosyntactic structure and semiotic function should be easier to process than others, because there is an isomorphism between form and function, or because these combinations allow a reduction of the amount of information specified in the sentence. If a language displays a combination of form and function that is more difficult to process, then it will also display the easier combinations. This is basically the same kind of argumentation as the one provided by Hawkins (1994, 1999) in accounting for the cross-linguistic distribution of gapping strategies and filler-gap dependencies in general (see the discussion in Section 7.3).

For instance, the connection between a lack of TAM distinctions on dependent verbs and semantic integration between SoAs was accounted for in iconic terms. A lack of TAM distinctions leads to syntactic integration between clauses, and syntactic integration between clauses reflects semantic integration between SoAs (this motivation also holds for a lack of person agreement distinctions and a lack of overtly expressed arguments).

As a result, the combination ⟨no TAM distinctions, semantic integration⟩ should be easier to process than the non-iconic one ⟨no TAM distinctions, no semantic integration⟩. Hence, if a language displays the latter, it will also display the former.

Similarly, the connection between a lack of TAM and person agreement distinctions and predetermination of the semantic features of the dependent SoA was accounted for in economic terms (the Principle of Information Recoverability). A lack of TAM and person agreement distinctions on the dependent verb leads to non-specification of information about the dependent SoA, and information about the dependent SoA need not be specified if it is predetermined. As a result, the economic combination ⟨no TAM/person agreement distinctions, predetermination⟩ should be easier to process than the non-economic one ⟨TAM/person agreement distinctions, predetermination⟩, and if a language displays the latter, it will also display the former.

The second implication of the processing account of iconicity and economy is as follows. If iconic and economic patterns are easier to process than non-iconic or non-economic ones, one would expect them (other things being equal) to be favoured cross-linguistically. This means that iconic and economic patterns should be more frequent synchronically, and also that diachronic changes from a non-iconic or non-economic pattern to an iconic or economic one should be more frequent than changes in the opposite direction. Let us take TAM and person agreement distinctions again. The iconic combination ⟨no TAM distinctions, semantic integration⟩ should be more frequent than the non-iconic ones ⟨no TAM distinctions, no semantic integration⟩ and ⟨TAM distinctions, semantic integration⟩, because it facilitates processing. For the same reason, the economic combination ⟨no TAM/person agreement distinctions, predetermination⟩ should be more frequent than the non-economic one ⟨TAM/person agreement distinctions, predetermination⟩. Also, diachronic changes from the non-iconic or non-economic combinations to the iconic or economic ones should be more frequent than changes in the opposite direction.

The sample languages provide some supporting evidence for this. As can easily be seen from the tables in Chapters 5–7, as well as the data in Appendix 4, the languages using balanced verb forms, deranked verb forms or both balanced and deranked forms for all of the subordination relations taken into account are a minority (henceforth, these languages will be indicated as all-balancing, all-deranking and all-balancing/deranking respectively). The sample includes fourteen all-balancing languages (Akan, Arapesh, Banda Linda, Mandarin Chinese, Hittite, Hmong Njua, West Makian, Nung, Paiwan, Sawu, Slave, Tok Pisin, \nobreak Vietnamese, and Yoruba), six all-deranking languages (Resigaro, Shipibo-Conibo, Squamish, Sumerian, Wargamay—for which information is available only for a very limited number of subordination relation types— and Yidiɲ), and one all-balancing/deranking language (Ancient Egyptian). This means that most languages use a combination of balanced and deranked verb forms in their subordination systems, and establish the cut-off point between the two at various points along the Subordination Deranking Hierarchy. This can be easily explained in terms of iconicity and economy. Balancing entails expression of TAM and person agreement distinctions, while deranking involves, in most cases, a lack

of TAM or person agreement distinctions. Use of balancing and deranking for the relation types located at the leftward and the rightward ends of the hierarchy respectively would result in non-iconic and non-economic combinations, such as ⟨TAM distinctions, semantic integration⟩, ⟨no TAM distinctions, no semantic integration⟩, or ⟨TAM/person agreement distinctions, predetermination⟩. Hence all-balancing, all-deranking, and all-balancing/deranking systems are disfavoured cross-linguistically. Moreover, the frequency differences between all-balancing, all-deranking, and all-balancing/deranking languages can be accounted for in terms of the Principle of Information Recoverability. Use of deranked forms leads in most cases to non-specification of information concerning the dependent SoA. All-deranking subordination systems involve non-iconic patterns, in that verb forms with no TAM or person agreement distinctions are used for relation types involving no semantic integration. In addition, they lead to loss of information in the sentence, in that these forms lead to non-specification of information about the dependent SoA, and they are used for relation types where the semantic features of the dependent SoA are not predetermined. On the other hand, all-balancing subordination systems involve non-iconic and non-economic patterns, in that verb forms with TAM and person agreement distinctions are used for relation types involving semantic integration and the predetermination of information. However, unlike all-deranking systems, all-balancing systems do not result into loss of information, and this may explain why they are more frequent cross-linguistically. Finally, all-balancing/deranking systems involve non-iconic and non-economic patterns (balanced and deranked verb forms used at the leftward and the rightward ends of the Subordination Deranking Hierarchy respectively), and in addition they lead to a loss of information, in that deranked forms are used for relation types involving no predetermination of information. This may explain why they are virtually not attested cross-linguistically.

It should, however, be stressed that the sample used in the present study is a variety sample, and was not designed to ascertain the statistical relevance of particular combinations of morphosyntactic form and semiotic function, nor the statistical relevance of any grammatical phenomenon, for that matter. To do so, a probability sample would be needed (see the discussion in Section 4.3). Hence, the observed frequency patterns for balancing and deranking cannot be taken as conclusive evidence for the actual cross-linguistic frequency of these phenomena. A proportional sample could, however, be used to ascertain whether the frequency patterns attested for balancing and deranking cross-linguistically actually confirm the proposed processing account of subordination.

Also, the present study is not diachronically oriented, and for most of the languages in the sample no diachronic evidence is available on processes of change concerning subordination. Where instances of diachronic change could be collected, these confirm that changes in the coding of subordination proceed from non-iconically and non-economically motivated patterns to iconically and economically motivated ones. This will be illustrated by means of two

examples, that concern languages included within the sample as well as other languages:

(i)   The Balkan infinitive. It is a well-known fact of the Balkan languages that infinitive verb forms have been eliminated in all of them at different times and to a variable extent, and replaced by indicative and subjunctive forms (Joseph 1983; Banfi 1990). This process also affects some Southern Italian dialects which have been exposed to extensive contact with Greek over several centuries. If one examines the processes leading to the elimination of the infinitive in the various Balkan languages (the data can be found in Joseph 1983), it is immediately clear that these processes follow the Subordination Deranking Hierarchy. The language where infinitive forms are more widespread is Ancient Greek, which used them for most types of complement and adverbial relations. Elimination of infinitive forms came to completion in the seventeenth century, and affected propositional attitude and utterance predicates first, and then all of the other relation types. Similarly, in South Slavic languages, infinitive forms were originally used with modal, phasal, desiderative, and manipulative predicates, as well as in purpose relations (Old Church Slavonic). Elimination of infinitive forms affects desiderative and manipulative predicates first, and then the other relation types. In some cases, modals and phasals remained unaffected by the phenomenon: some Balkan languages, such as Bulgarian and Serbo-Croatian, still use infinitive forms with modals and phasals. Similar processes are attested in Southern Italian dialects (for a detailed account, see Cristofaro 1998*a*).

(ii)   Turkish *ki*. Turkish, originally a predominantly deranking language, borrowed from Persian the conjunction *ki*, which is used with the indicative to code complement relations involving knowledge, utterance, propositional attitude, perception and desiderative predicates, and reason relations (Lewis 1967: 211–14; Underhill 1976: 431–6). It can also be used for relativization, though Lewis (1967: 211–14) argues that this strategy is felt as quite unnatural and typical of non-native speakers. For all these relation types, however, a deranking construction is also available.

These two examples illustrate two similar diachronic processes whereby verb forms lacking inflectional potential, such as TAM and person agreement distinctions (infinitives, gerunds, participles) are replaced by forms displaying full inflectional potential (indicatives, subjunctives). These processes go from the rightward end to the leftward end of the Subordination Deranking Hierarchy, that is, from the relation types involving no semantic integration and no predetermination to those involving semantic integration and predetermination. This can be taken as evidence that diachronic changes affecting the coding of subordination proceed from non-iconic patterns involving loss of information (in this case, ⟨no TAM/person agreement distinctions, no semantic integration⟩, and ⟨no TAM/person agreement distinctions, no predetermination⟩)

to iconic ones involving no loss of information (⟨TAM/person agreement distinctions, no semantic integration⟩, and ⟨TAM/person agreement distinctions, no predetermination⟩).

Finally, a few qualifications are in order about the nature of the proposed explanatory model for subordination, and functional explanations in general. The proposed model postulates a particular cognitive organization of our conceptual experience (such as the distinction between less tightly integrated vs. more tightly integrated SoAs, or the process vs. thing distinction), and invokes a functional motivation, iconicity, to bridge the postulated cognitive organization and the grammatical patterns found for subordination relations cross-linguistically. A further motivation, economy, is invoked to account for some individual grammatical patterns.

Ideally, in order for this model (or any model based on functional principles, for that matter) to be maximally effective, it should be supported by two types of evidence. First, there should be evidence that the postulated cognitive organization and functional principles work in domains of grammar other than the one under investigation. There is robust evidence that iconicity and economy work in grammatical domains other than subordination, in that iconicity and economy allow us to account for a number of correlations between language structure and semiotic function that are independent of subordination (Section 1.2.2). There is also robust linguistic evidence for the process vs. thing distinction, in that there are consistent grammatical properties that appear to be associated with this distinction, and fail to manifest themselves when the encoded conceptual situation does not display typical process or thing properties (Section 9.5.2).

The distinction between less tightly integrated vs. more tightly integrated SoAs cannot probably be investigated in domains other than subordination (or possibly clause linkage in general), because it crucially pertains to relations between SoAs. However, there is evidence that the functional principles governing the match between semantic integration and non-independent clause-like patterns, iconicity of independence and iconicity of distance, are active in grammatical domains other than subordination, such as noun incorporation or the expression of possession (Haiman 1983*a*, 1985; Newmeyer 1998: 117).

On the other hand, since the proposed model is a cognitively based one, there should be non-linguistic evidence that the organization of our conceptual experience actually works in terms of processes vs. things (and more prototypical instances vs. less prototypical instances thereof), less tightly integrated SoAs vs. more tightly integrated SoAs, and so on. No such evidence is available at the moment. More generally, no systematic attempt has been made in cognitively oriented literature (such as, for example Langacker (1987*a*, 1991) or, more recently, Horie (2000)) to provide non-linguistic evidence for the postulated cognitive categories. This may be regarded as a drawback of the proposed model (and any cognitively based model, for that matter). However, the explanatory

value of the postulated cognitive categories resides in the fact that a principled correlation can be established between these categories and the distribution of some linguistic phenomena, as manifested in the implicational hierarchies. To the extent that no counterexamples, or a limited number of counterexamples to this correlation are found, and that a plausible motivation (such as iconicity, and, ultimately, processing) is available for the correlation, it may be reasonably assumed that the postulated cognitive model sheds light on some aspects of the conceptual organization of the human mind.

Appendices

1. Sources of information on the languages in the sample

1.	Acehnese	(Durie 1985)
2.	Akan	(Balmer and Grant 1929)
3.	Arabic (Gulf)	(Holes 1990; Clive Holes, personal communication)
4.	Arapesh	(Fortune 1942)
5.	Banda Linda	(Cloarec-Heiss 1986; France Cloarec-Heiss, personal communication)
6.	Barasano	(Jones and Jones 1991)
7.	Basque	(Saltarelli 1988; Kutz Arrieta, personal communication; Eguzkitza Bilbao Andolin, personal communication)
8.	Berbice Dutch Creole	(Kouwenberg 1994)
9.	Borana	(Webster 1930; Francesco Falaschi, personal communications; Paolo Tablino, personal communication)
10.	Burushaski	(Lorimer 1935)
11.	Canela-Krahô	(Popjes and Popjes 1986)
12.	Chinese (Mandarin)	(Li and Thompson 1981)
13.	Diegueño	(Langdon 1970)
14.	Djapu	(Morphy 1983)
15.	Egyptian (Ancient)	(Gardiner 1957; Loprieno 1995)
16.	Finnish	(Sulkala and Karjalainen 1992)
17.	Fula	(Arnott 1970)
18.	Gimira	(Breeze 1990)
19.	Greek (Ancient)	(Humbert 1986, personal data)
20.	Greenlandic (West)	(Fortescue 1984; Michael Fortescue, personal communication)
21.	Gumbayinggir	(Eades 1979)
22.	Guugu Yimidhirr	(Haviland 1979)
23.	Hittite	(Friedrich 1960)
24.	Hixkaryana	(Derbyshire 1979)
25.	Hmong Njua	(Harriehausen 1990)
26.	Ho	(Deeney 1975)
27.	Hurrian	(Speiser 1941)
28.	Italian	(personal data)
29.	Jacaltec	(Craig 1977; Colette Grinewald, personal communication)

30. Japanese (Kuno 1973; Hinds 1988)
31. Kanuri (Cyffer 1974)
32. Karimojong (Novelli 1985)
33. Kayardild (Dench and Evans 1988; Evans 1995)
34. Khasi (Nagaraja 1985)
35. Kobon (Davies 1981)
36. Kolokumi (Williamson 1965)
37. Krongo (Reh 1985)
38. Lango (Noonan 1992)
39. Lezgian (Haspelmath 1993; Martin Haspelmath, personal communication)
40. Limbu (Van Drien 1987)
41. Makian (West) (Voorhoeve 1982)
42. Maŋarayi (Merlan 1982)
43. Maori (Bauer 1993)
44. Maricopa (Gordon 1986)
45. Muna (Van den Berg 1989)
46. Nama (Rust 1965)
47. Nandi (Creider and Creider 1989)
48. Ngbaka (Thomas 1963)
49. Nung (Saul and Wilson 1980)
50. Paiwan (Egli 1990)
51. Paumarí (Chapman and Derbyshire 1991)
52. Pero (Frajzyngier 1989)
53. Pirahã (Everett 1986; Daniel Everett, personal communication)
54. Punjabi (Bhatia 1993)
55. Quechua (Huallaga Huánuco) (Weber 1989)
56. Resigaro (Allin 1976)
57. Retuarã (Strom 1992)
58. Sawu (Walker 1982)
59. Shipibo-Conibo (Weißhar and Illius 1990)
60. Shoshone (Tümpisa Panamint) (Dayley 1989)
61. Slave (Rice 1989; Keren Rice, personal communication)
62. Songhay (Prost 1956)
63. Squamish (Kuipers 1967)
64. Sumerian (Thompsen 1984)
65. Supyire (Carlson 1994)
66. Tagalog (Schachter and Otanes 1972)
67. Tamazight (Penchoen 1973)
68. Tamil (Asher 1985)

69. Tanghkul Naga   (Arokhianatan 1987)
70. Tarascan   (LeCron Foster 1969)
71. Tok Pisin   (Wurm and Mülhaüser 1985)
72. Turkish   (Lewis 1967; Underhill 1976)
73. Tzutujil   (Dayley 1985)
74. Ute   (Givón 1980)
75. Vai   (Welmers 1976)
76. Vietnamese   (Hùng 1979)
77. Wargamay   (Dixon 1979)
78. Wayãpi   (Grenand 1980)
79. Yidiɲ   (Dixon 1977)
80. Yoruba   (Rowlands 1969)

2. Genetic affiliation of the languages in the sample

Languages were selected on the basis of the indications given in Rijkhoff, Bakker, Hengeveld, and Kahrel (1993: 189–90) for a 100-language sample. Genetic classification is based on Ruhlen (1987). Numbers in brackets indicate the number of languages required for each phylum and subphylum, and possibly the number of languages actually included. Thus, for example, a notation of the form '3/4' indicates that there should have been four languages for the relevant phylum or subphylum, but only three were actually included. The languages included in the sample are displayed in the rightmost column.

TABLE A2. *Genetic affiliation of the languages in the sample*

Phylum	Subphyla		Languages
AFRO-ASIATIC (6)	Ancient Egyptian (1)		Ancient Egyptian
	Berber (1)		Tamazight
	Chadic (1)		Pero
	Cushitic (1)		Borana
	Omotic (1)		Gimira
	Semitic (1)		Gulf Arabic
ALTAIC (2)	Altaic proper (1)		Turkish
	Korean-Japanese (1)		Japanese
AMERINDIAN (18)	Andean (1)		Huallaga (Huánuco) Quechua
	Central (2)		Tümpisa (Panamint) Shoshone, Ute
	Chibchan-Paezan (2)	Chibchan (1)	Tarascan
		Paezan (1)	Pirahã
	Equatorial-Tucanoan (5)	Equatorial (3)	Paumarí, Resigaro, Wayãpi
		Macro-Tucanoan (2)	Barasano, Retuarã

Phylum	Subphyla						Languages
	Ge-Pano-Carib (3)	Ge-Pano (2)	Macro-Ge (1)				Canela-Krahô
			Macro-Panoan (1)				Shipibo-Conibo
		Macro-Carib (1)					Hixkaryana
	Northern (5)	Almosan (1)					Squamish
		Hokan (2)					Diegueño, Maricopa
		Penutian (2)					Jacaltec, Tzutujil
AUSTRALIAN (7)							Djapu, Gumbayinggir, Guugu Yimidhirr, Kayardild, Maŋarayi, Wargamay, Yidiɲ
AUSTRIC (11/14)	Austro-Tai (7/10)	Austronesian (6/9)	Malayo-Polinesian (5/6)	Central-Eastern (2/3)	Central (1)		Sawu
					Eastern (1/2)	Oceanic (1)	Maori
				Western (3)			Acehnese, Muna, Tagalog
			Paiwanic (1)				Paiwan
	Daic (1)						Nung
	Austroasiatic (3)	Mon-Khmer (2)					Khasi, Vietnamese
		Munda (1)					Ho
	Miao-Yao						Hmong Njua
CAUCASIAN (1)							Lezgian
CHUKCHI-KAMCHATKAN (0/1)							—
ELAMO-DRAVIDIAN (1)							Tamil
ESKIMO-ALEUT (1)							West Greenlandic
INDO-HITTITE (4)	Anatolian (1)						Hittite

Phylum		Niger-Congo (7)				Examples
	Indo-European (3)					Ancient Greek, Italian, Punjabi
INDO-PACIFIC (3/13)	Torricelli (1)					Arapesh
	Trans-New Guinea					Kobon
	West Papuan					West Makian
KHOISAN (1)						Nama
LANGUAGE ISOLATES (4/9)						Basque, Burushaski, Hurrian, Sumerian
NA-DENE (1)						Slave
NIGER-KORDOFANIAN (9)	Kordofanian (1)					Krongo
	Niger-Congo proper (8)	Niger-Congo (7)	West Atlantic			Fula
			Central Niger-Congo (6)	North-Central Niger-Congo (3)		Banda Linda, Ngbaka, Supyire
				South-Central Niger-Congo (3)	Eastern (1)	Yoruba
					Iljo-Defaka (1)	Kolokumi
					Western (1)	Akan (Fante)
		Mande (1)				Vai
NILO-SAHARIAN (5)						Kanuri, Karimojong, Lango, Nandi, Songhay
PIDGINS AND CREOLES (2)						Berbice Dutch Creole, Tok Pisin
SINO-TIBETAN (3/4)	Sinitic (1)					Mandarin Chinese
	Tibeto-Karen (2/3)	Tibeto-Burman (2)				Limbu, Tanghkul Naga
URALIC-YUKAGHIR (1)						Finnish

3. Location of the languages in the sample

Language numbers correspond to those in Appendix 1. Elaboration on a map by Matthew Dryer, used with permission.
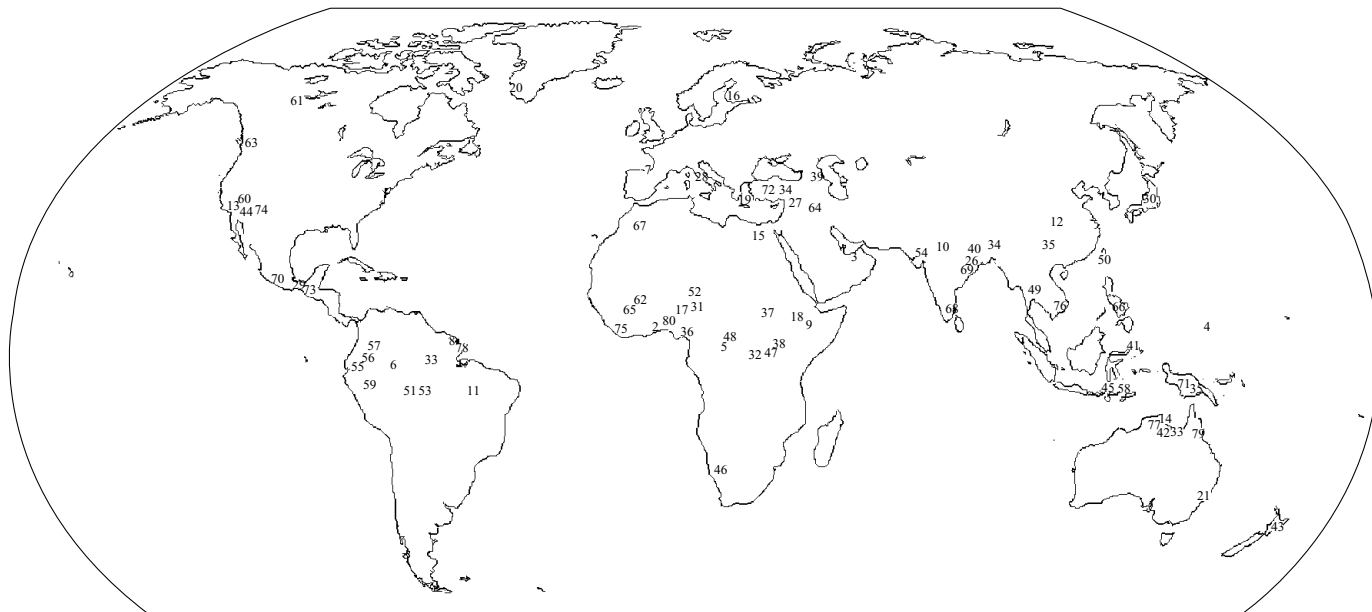
4. The constructions examined in the study

This Appendix provides a complete list of the constructions examined in this study. It reports all of the constructions used to express the dependent SoA in the various types of subordination relation taken into account in each language (the criteria for distinguishing individual constructions were discussed in Section 10.1). The list is organized as follows. The first column reports the sample languages, in alphabetical order, along with the sources of information for each language. The second column reports the grammar's name and page numbers from the source material for each construction. Grammars do not always provide names for individual constructions; when no specific name for a construction is provided in the grammar, the construction is named after the verb form used. Sometimes the construction presents the same structure as an independent clause, and no specific name is provided in the grammar for either the construction, or the verb form used; in this case, the label *ics* 'independent clause structure' is used to name the construction. Columns three to eight refer to the morphosyntactic features of individual constructions. Column three indicates whether the verb form is balanced or deranked. Column four concerns TAM distinctions, that is, whether or not they are expressed, and whether they are coded by means of special forms not used in independent clauses. Columns five to seven refer to the coding of A, S, and O. They indicate whether or not A, S, and O are overtly expressed, and whether they are expressed as in independent clauses or in a different way (e.g. as possessors or obliques). These columns also indicate whether or not person agreement with A, S, or O is expressed, and whether it is expressed by means of special forms. Column eight indicates whether or not the dependent verb has case marking/adpositions. Finally, column nine reports the subordination relation types for which the construction is used.

The order in which the various constructions are listed follows the order of the chapters concerning individual subordination relations. That is, for each language, the constructions used for complement relations are reported first, then those for adverbial relations, and finally those for relative relations. Within individual relation types, constructions are listed in the same order used for the tables in Chapters 5–7 (which basically corresponds to the Subordination Deranking Hierarchy). For instance, within complement relations, the constructions used for modals and phasals are reported first, then those for desideratives and manipulatives, etc. Within adverbial relations, the constructions used for purpose come first, then those for 'before', etc. Within relative relations, the constructions used for A and S relativization are reported first, then those for O relativization, etc.

The following notation is used in the table:

- Column two: ics = independent clause structure
- Column three: B = balancing; D = deranking

- Column four: T/A/M = tense, aspect, or mood distinctions are expressed as in independent clauses; t/a/m = tense, aspect, or mood distinctions are expressed by special forms; – = the relevant distinctions are not expressed; · = the relevant distinctions are not expressed on verbs in the language.
- Columns five to seven: ac./ac = the relevant argument (A or S) is overtly expressed in the same way as O; gap = the relevant argument is relativized and gapped; (gap) = the relevant argument is gapped when relativized; O./O = the relevant argument is overtly expressed as in independent clauses; .O = person agreement with the relevant argument is expressed as in independent clauses; o./o = the relevant argument is overtly expressed as an oblique; *o./o* = the relevant argument is expressed differently from independent clauses (but not as a possessor or an oblique, e.g. by means of special tone); .o = person agreement with the relevant argument is expressed by special forms; (P) = the relevant argument is expressed by a pronoun when relativized; p./p = the relevant argument is overtly expressed as a possessor; .p = possessive person agreement with the relevant argument; –./– = the relevant argument is not expressed; .– = person agreement with the relevant argument is not expressed; .(–) = person agreement is not expressed when the relevant argument is relativized.

    The symbols for coding of arguments combine, of course, with those for agreement when the language has agreement.
- Column eight: C/Ad = case marking/adpositions; c = case marking/adpositions on the verb; – = no case marking/adpositions on the verb
- Column nine: Alignment patterns in relativization are indicated by a slash, e.g. A/S r. = relativization of A and S (on an accusative basis), S/O r. = relativization of S and O (on an ergative basis).

TABLE A4. *The constructions examined in the study*

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Acehnese (Durie 1985)	ability adjunct complements: 250–1	B	…	–.O	–.O	O.O	–	Mod. ('be able', 'may')
	jussive complements: 256–7	D/B	…	–.–/+	–.–/+	O.O	–	Man. ('order')
	ics: 244–9, 254; 258	B	…	O.O	O.O	O.O	–	Mod., Phas., Perc., Know., Prop.a., Utt., Bef., Wh., R.c., Reas.
	dative complements: 251–3	D	…	–.–	–.–	O.O	–	Des.
	verb serialization: 241–3	D	…	–.–	–.–	O.O	–	Motion purpose
	attributive verb form: 231–40	B	…	O/(gap).O/(–)	gap.O/(–)	O/(gap).O/(–)	–	Ar., S r., O r., Ind. o. r., Obl. r.
Akan (Balmer and Grant 1929)	permissive: 157–9	D	–M	O	O	O	–	Man. ('order')
	ics: 157–61; 169–70	B	TAM	O	O	O	–	Perc., Know. Utt., Purp., Bef., Aft.., Wh., R.c., Reas.
	ics with relative particle: 79–81	B	TAM	O/ (P)	O /(P)	O /(P)	–	A/S r., O r., Ind. o. r., Obl. r.
	serial verb: 115–19; 128–31	D	–––	O/–	O/–	O/–	–	Motion purpose
Arabic (Gulf) (Holes 1990)	finite verb form: 1–2; 201–2	B	TAM	–.O	–.O	O	–	Mod., Man. ('order')
	finite verb form: 1–2; 190–1; 201–2	B	TAM	O.O	O.O	O.O	–	Des., Man. ('order'), Perc., Know. Prop.a., Utt., Purp., Bef., Aft., Wh. R.c., Reas.
	verbal noun: 20–2	D	–––	p.p	p.p	O	c	Des., Man. ('order'), Perc., Know. Prop.a., Utt., Purp., Bef., Aft., Wh. R.c., Reas.
	verbal noun: 20–2	D	–––	–.–	–.–	O	c	Mod., Des., Man. ('order')
	active participle: 34–5	D	–––	O/gap.–	O/(gap).–	O	–	Perc., A/S r., Reas.
	indicative: 23–4	B	TAM	O/(gap).O	O/(gap).O	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
	passive participle: 23	D	–A–	–.–	–.–	gap.–	–	O r.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Arapesh (Fortune 1942)	ics: 75–9; 88–97	B	…	O.O	O.O	O	–	Perc., Utt., Purp., R.c.
	ics: 78	B	…	P.O	P.O	O	–	A/S r.
Banda Linda (Cloarec-Heiss1986, France Cloarec-Heiss, p.c.)	ics: 502–3	B	.AM	O/*o*	O/*o*	O	–	Mod., Phas., Des., Man. ('order'), Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	ics: 527–38	B	.AM	O/(P)	O(P)	O(P)	–	A/S r., O r., Ind. o. r., Obl. r.
Barasano (Jones and Jones 1991)	infinitive: 161–2	D	–––	–.–	–.–	O	–	Mod., Phas., Purp.
	infinitive: 137; 162–3	D	–––	–.–	–.O	O	–	Man. ('order')
	nominalization: 137–8	D	–––	O.–	O.–	O	–	Perc.
	sentential complement: 160–1	B	TAM	O.O	O.O	O	–	Know., Prop.a., Utt.
	nominalization: 157–9	D	–––	O.–	O.–	O	–	Bef., Aft., Wh., R.c., Reas.
	juxtaposition of verb phrases: 111–12; 154–5	D	–––	–.–	–.–	O	–	Aft.
	nominalization: 149–53	D	–––	O/(gap).–	gap.–	O/(gap)	c	A/S r., O r.
	nominalization: 149–53	D	tam	O/(gap).–	gap.–	O/(gap)	c	A/S r., O r.
Basque (Saltarelli 1988)	participle: 141–2	D	–A–	–.–	–.–	O.–	c	Mod., Des.
	nominalization: 34; 52–3; 141–2	D	–––	–.–	–.–	O.–	c	Mod., Phas., Man. ('order'), Perc.
	nominalization: 53–7; 141–2	D	–––	O.–	O.–	O.–	c	Des., Purp., Bef., Aft., Wh., R.c., Reas.
	subjunctive: 2–3; 43–7	D	TAm	O.O	O.O	O.O	–	Man. ('order'), Purp., Wh.
	indicative: 2; 43–50	B	TAM	O.O	O.O	O.O	–	Perc., Know., Prop.a., Utt., Bef., Aft., Wh., R. c., Reas.

	participle: 35–6; 53–4; 141–2	D	–A–	O.–	O.–	O.–	c	Bef., Aft., Wh.
	participle: 42	D	–A–	O.–	gap.–	gap.–	–	S/O r.
	indicative: 35–7	B	TAM	O/(gap).O	O/(gap).O	O/(gap).O	–	A/S r., O r., Ind. o. r., Obl. r.
Berbice Dutch Creole (Kouwenberg 1994)	reduced complement clause: 346–50	D	–A–	–	–	O	–	Mod., Phas., Des., Perc., Purp.
	full complement clauses: 323–5; 332–8; 108–9; 114–16	B	TAM	O	O	O	–	Perc., Know., Prop.a., Utt., Bef., Aft., Wh., R.c., Reas.
	ics with relativizer: 361–87	B	TAM	O/(P)/(gap)	O(P)/gap	O/(P)/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.
Borana (Francesco Falaschi, Paolo Tablino, p.c.)	infinitive	D	–––	–.–	–.–	O	–	Mod., Phas., Man. ('order'), Purp.
	subjunctive	D	––M	O.o	O.o	O	–	Des., Perc., Purp., Bef., Wh. A/S r., O r., Ind. o. r., Obl. r.
	indicative	B	TAM	O.O	O.O	O	–	Man. ('order'), Know., Prop.a., Utt., Aft., Wh., R.c., A/S r., O r., Ind. o. r., Obl. r.
	gerund	D	–––	–.–	–.–	O	–	Reas.
Burushaski (Lorimer 1935)	-š form: 366–8	D	––M	–	–.–	O.–	–	Mod.
	-š form: 366–8	D	––M	O	O.–	O.–	–	Mod., Des., Man. ('let'), Bef.
	infinitive: 350–7; 385–7	D	–––	–	–.–	O.–	c	Mod., Phas.
	infinitive: 350–7; 385–7	D	–––	O/–	O/–.–	O/–.–	c	Mod., Phas., Man. ('order', 'make'), Perc., Know., Purp., Bef., Aft., Wh.
	finite verb form: 385; 389; 390–5; 401	B	TAM	O	O.O	O.O	–	Utt., Wh., R.c., Reas.
	active and static participle: 384–7	D	–a–	O	O.O	O.O	–	Bef., Aft., Wh.
	static participle: 395–6	D	–a–	O/(gap)	gap.–	O/(gap).–	c	Ar., S r., O r.
Canela-Krahô (Popjes and Popjes 1986)	nominalizer: 142–3; 164–7	D	TAM	–.O	–.O	O.O	c	Man. ('make', 'order')
	ics: 164–7; 139; 148–9	B	TAM	O.O	O.O	O.O	–	Utt., Wh., Reas.
	ics: 171	B	TAM	O/(P).O	O/(P).O	O/(P).O	–	A/S r., O r., Ind. o. r., Obl. r.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Chinese (Mandarin) (Li and Thompson 1981)	serial verb construction: 125–83; 598–611	B	.A.	–	–	O	–	Mod., Phas.
	serial verb construction, forward/backward sentence linking: 125–83; 598–611; 633–41; 651–6	B	.A.	O	O	O	–	Des., Man. ('make', 'order'), Perc., Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	nominalization: 579–85	B	.A.	O/(gap)	O/(gap)	O/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.
Diegueño (Langdon 1970)	zero suffix nominalization: 180–1	D	T/tAM	–.O	–.O	O.O	c	Phas.
	kw- nominalization: 150–7; 178–9	D	T/tAM	O.O	O.O	O.O	c	Des., Perc., Aft., Wh., R.c., Reas.
	kw- nominalization: 177	D	T/tAM	gap.–	gap.–	O.–	–	A/S r.
Djapu (Morphy 1983)	purposive/dative subordinate clause: 133	D	–––	–	–	o	c	Mod., Des.
	finite verb form: 128–31	B	TAM	O	O	O	–	Des., Perc., Know., Prop.a., Wh., R.c., Reas.
	purposive/dative subordinate clause: 131–3	D	–––	o	o	o	c	Des., Purp., Reas.
	nominalization: 135–6	D	–––	gap	gap	O	c	Perc., A/S r.
	direct speech: 148	B	TAM	O	O	O	–	Utt.
	nominalization: 136–7	D	–––	–		gap	c	O r.
Egyptian (Ancient) (Gardiner 1957)	ics: 140; 160–6	B	TAM	O.O	O.O	O	–	Mod., Phas., Des., Man. ('make', 'order'), Perc., Know. Prop.a., Utt., Purp., Aft., Wh., R.c., Reas., A/S r., O r., Ind. o. r., Obl. r.

	infinitive: 140	D	–––	–.–	–.–	p	–	Mod., Phas., Des., Man. ('make', 'order'), Perc., Know. Prop.a., Utt.
	infinitive: 227–32	D	–––	–.–	–.–	p	c	Purp., Aft.,. Wh., R.c., Reas.
	juxtaposition: 150–2	B	TAM	O/(P).O	O/(P).O	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
	participle: 270–90	D	ta–	O.–	O.–	O	–	A/S r., O r., Ind. o. r., Obl. r.
Finnish (Sulkala and Karjalainen 1992)	infinitive: 35–7; 310–1	D	–––	–.–	–.–	O	–	Mod., Phas.
	infinitive: 310–1	D	–––	–.–	–.–	O	c	Phas.
	ics: 4–6; 30–1; 50–9	B	TAM	O.O	O.O	O	–	Des., Man. ('order'), Perc., Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	infinitive: 6–7	D	–––	p.–	p.–	?	–	Man. ('order')
	participle: 6; 37–8	D	ta–	p.–	p.–	O	–	Des., Man. ('order'), Perc., Know., Prop.a., Utt.
	infinitive: 53; 55	D	–––	p/–.–	p/–.–	–	c	Purp., Reas.
	infinitive: 50–2	D	–––	p.–	p.–	O	c	Bef., Aft., Wh.
	participle: 50–2	D	ta–	p/–.–	p/–.–	O	c	Bef., Aft., Wh.
	ics: 39–46; 50; 53	B	TAM	O.O	O.O	O	–	Wh.
	conditional: 56–7	B	TAM	O.O	O.O	O	–	R.c.
	infinitive: 47–8	D	–––	gap.–	gap.–	?	c	A/S rel.
	participle: 47–8	D	ta–	gap.–	gap.–	–	–	A/S rel.
	ics: 39–46; 50; 53	B	TAM	O/(P).O	O/(P).O	O/(P)	–	A/S r., O. r., Ind. o. r., Obl. r.
Fula (Arnott 1970)	infinitive: 380	D	––	–	–	O	–	Mod., Des., Purp.
	subjunctive: 37; 305–7	D	––M	O/o	O/o	O/o	–	Des., Man. ('make', 'order')
	ics: 37–8	B	TAM	O	O	O	–	Perc., Know., Prop.a., Bef., Aft., Wh., R.c., Reas.
	subjunctive: 310–11; 326	D	––M	O/*o*	O/*o*	O	–	Purp., Bef. Wh.
	relative past/future: 320–1	D	tam	O/o	O/o	O	–	Wh.
	participle: 380–1	D	ta–	gap	gap	O	–	A/S r.
	relative past/future: 149–51	D	tam	O/(P)	P	O/(P)	–	A/S r., O r.

TABLE A4. (*contd.*)

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Gimira (Breeze 1990)	infinitive: 50	D	———	–.o	–.o	?	–	Phas., Des., Purp.
	ics: 61–2	B	TAM	O.O	O.O	O	–	Man. ('order'), Utt.
	verb stem + determiner: 47–50	D	TAM	O/(gap).–	–.–	O/(gap)	c	Perc., Know., A/S r., O r.
	suffix added to relative clause construction: 50–4	D	TAM	O.–	O.–	O	–	Purp., Bef., Aft., Wh., Reas.
	participle: 55–6	D	ta–	–.o	–.o	O	–	Purp., Wh., Reas.
	participle: 55–6	D	ta–	–.o	–.o	O	c	Bef., Aft.
	suffix added to verb stem: 48–50	D	TAm	O.–	O.–	O	–	Wh., Reas.
	verb stem + determiner: 47–50	D	TAM	O/(gap).–	gap.–	O/(gap)	c	Ar., S r., O r.
Greek (Ancient) (Humbert 1986)	infinitive: 196–7	D	ta–	–.–	–.–	O	–	Mod., Phas.
	infinitive: 196–7	D	ta–	ac.–	ac.–	O	–	Mod. (Impersonal)
	participle: 201–3	D	ta–	–.–	–.–	O	c	Phas.
	infinitive: 183–98	D	ta–	ac.–	ac.–	O	–	Des., Know., Prop.a., Utt.
	infinitive: 183–98	D	ta–	–.–	–.–	O	–	Man. ('make', 'order')
	participle: 201–3	D	ta–	–.–	–.–	O	c	Perc.
	indicative: 183–91; 212–14; 233–8	B	TAM	O.O	O.O	O	–	Know., Prop.a., Utt., Purp., Bef., Aft., Wh, R.c., Reas.
	infinitive: 53–4	D	ta–	ac.–	ac.–	O	c	Purp., Bef., Aft., Wh., R.c., Reas.
	subjunctive: 212–17; 232–8	D	tam	O.O	O.O	O	–	Purp., Bef., Aft., Wh.
	participle: 127–32	D	ta–	p/O.–	p/O.–	O	c	Aft., Wh., R.c., Reas.
	indicative: 238–41	B	TAM	O/(P).O	O/(P).O	O/(P).O	–	A/S r. O r., Ind. o. r, Obl. r.
	active participle: 128–9	D	ta–	gap.–	gap.–	O	c	A/S r.
	passive participle: 128–9	D	ta–	o.–	–.–	gap	c	O r.

Greenlandic (West) (Fortescue 1984)	subordinate moods: 34–44; 49–61	D	TAm	–.o	–.o	O.o	–	Des., Man. ('order'), Perc.
	subordinate moods: 34–44; 49–61	D	TAm	O.o	O.o	O.o	–	Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	nominalization : 44–8; 61–5; 296–8	D	–A–	o/p.p	o/p.p	o/p.p	c	Perc., Bef., Aft., Wh., Reas.
	indicative: 35	B	TAM	O.O	O.O	O.O	–	Know., Utt.
	participle: 49–55	D	–A–	O/p/(gap).p	O/(gap).p	O/(gap).p	c	A r., S/O r., Ind o. r., Obl. r.
Gumbayinggir (Eades 1979)	purposive: 329–30	D	––m	–/O	–	O/–	–	Mod., Man. ('order'), Purp.
	nominalization: 324; 326	D	TAM	–	–	O	c	Perc.
	direct speech: 329	B	TAM	O	O	O	–	Utt.
	facilitative conjunction + imperative: 321–2	D	––M	O	O	O	–	Purp.
	conjoined sentences: 320–8	B	TAM	O/–	O/–	O/–	–	Aft., Wh., R.c., A r., S r., O r.
Guugu Yimidhirr (Haviland 1979)	purposive: 135–40	D	––M	O/–	O/–	O	–	Des., Man. ('order'), Purp.
	sub. 1 perfective: 140–2	D	–AM	O/–	O/–	O/–	–	Perc.
	sub. 1 perfective: 143	B	TAM	O/–	O/–	O/–	–	Know, Utt., Reas.
Hittite (Friedrich 1960)	ics: 163–5	B	TAM	O.O	O.O	O	–	Know., Prop.a., Utt., Purp., Bef., Wh., R.c., Reas.
	ics: 167–9	B	TAM	O/(P).O	O/(P).O	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
Hixkaryana (Derbyshire 1979)	derived nominal: 25–6; 90–1	D	–––	o.p	O.p	O.p	c	Phas., Man. ('order')
	derived nominal: 32	D	–––	o.p	O.p	O.p	–	Des., Utt.
	ics: 21–3	B	TAM	O.O	O.O	O.O	–	Utt.
	derived nominal: 28–9	D	–––	–.–	–.–	O.p	–	Purp.
	derived nominal: 30–1	D	–––	o.–	O.p	O.p	c	Purp., Reas.
	derived time adverbial: 27–31	D	–––	o.–	O.p	O.p	–	Aft., Wh., R.c., Reas.
	juxtaposition: 26	B	TAM	O.O	O.O	O.O	–	A/S r.
	derived nominal: 26, 92	D	–––	gap.–		O.p	–	A r.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
	derived nominal: 92	D	– – –	O.p		gap.–	–	O r.
Hmong Njua (Harriehausen 1990)	ics: 179–83; 241–2	B	…	–	–	O	–	Mod., Purp.
	ics: 201; 217–21	B	…	O/–	O/–	O	–	Des., Man. ('make', 'order'), Perc., Know., Prop.a., Utt.
	ics: 224–6; 242–3	B	…	O	O	O	–	R.c., Reas.
	ics: 141–3; 224	B	…	O/(gap)	O/(gap)	O/(gap)	–	A/S r., O r.
Ho (Deeney 1975)	participle: 79	D	TA–	–.–	–.–	O.O/–	–	Mod.
	ics: 81; 85–6	B	TAM	O.O	O.O	O.O	–	Des., Man. ('order'), Utt., Reas.
	optative: 84–5	D	TAM	O.O	O.O	O.O	–	Purp.
	participle: 76–84	D	TA–	O.O	O.O	O.O	c	Purp., Bef., Aft., Wh., R.c., Reas.
	participle: 79	D	TA–	–.–	–.–	O.O	c	Mod., Purp., Bef., Aft., Wh., R.c., Reas.
	participle: 74–6	D	TA–	O/(gap).–	O/(gap).–	O/(gap).O/–	–	A/S r., O r., Ind. o. r., Obl. r.
Hurrian (Speiser 1941)	ics: 77–8; 176; 212–3	B	TAM	O.O	O.O	O.O	–	Utt., Purp., S, O r.
Italian (personal data)	infinitive	D	–a–	–.–	–.–	O	–	Mod., Perc.
	infinitive	D	–a–	–.–	–.–	O	c	Phas., Man. ('order'), Know. Prop.a., Utt., Purp., Bef., Wh., Reas.
	infinitive	D	–a–	–.–	–.–	O	c/-	Des.
	infinitive	D	–a–	–.–	–.–	O	–	Man. ('make'), Aft.
	subjunctive	D	tam	O.o	O.o	O	–	Des., Man. ('order'), Know., Prop.a., Utt., Purp., Bef., Wh.
	indicative	B	TAM	O/(gap).O	O/(gap).O	O/(gap).O	–	Perc., A/S r., O r. Ind. o. r., Obl. r.

	indicative	B	TAM	O.O	O.O	O	–	Know., Prop.a., Utt., Aft., Wh., R.c., Reas.
	gerund	D	–a–	–.–	–.–	O	–	Aft., Wh., Reas.
	active participle	D	–a–	gap.–	gap.–	O	–	A/S r.
	passive participle	D	–a–	o.–	–.–	gap	–	O r.
Jacaltec (Craig 1977)	infinitive: 244–7; 312; 358; 419–22	D	–––	–	–.–	O.–	–	Mod., Phas., Des., Man. (make', 'order'), Purp.
	embedded gerund sentence: 236–44; 419–22	D	–––	–.o	–.o	O.O	–	Mod., Phas., Des., Man. ('make', 'order'), Purp.
	finite verb: 231–67	B	TAM	O.O	O.O	O.O	–	Phas., Des., Man. ('make'. 'order'), Perc., Know., Prop.a., Utt., Purp. R. c.
	embedded gerund sentence: 236–44; 419–22	D	–––	o.o	o.o	O.O	–	Perc., Know.
	finite verb form: 191–210	B	TAM	O/(gap).O	O/(gap).O	O/(gap).O	–	A r., S r., O r., Ind. o. r., Obl. r.
Japanese (Kuno 1973, unless otherwise specified)	participle: Hinds (1988: 316–19)	D	–––	–	–	O	–	Mod.
	tensed verb form: Hinds (1988: 316–17)	B	TAM	–	–	O	–	Mod.
	tensed verb form + conjunction: (Hinds 1988: 56–8, 65; Kuno 1973: 153–75; 213–22)	B	TAM	O	O	O	–	Des., Man. ('order'), Perc., Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	verb stem: (Hinds 1988: 56–8)	D	–––	–	–	O	c	Purp.
	gerundive: 159–67, 201–9	D	–––	O	O	O	–	Aft., Wh.
	tensed verb form: (Hinds 1988: 58–63; Kuno 1973: 234–69)	B	TAM	O/(gap)	O/(gap)	O	–	A/S r., O r., Ind. o. r., Obl. r.
Kanuri (Cyffer 1974)	consecutive: 100–1; 139–40; 149	D	–––	–.–	–.–	O	–	Mod., Phas., Des., Purp.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
	deverbal noun: 139	D	– – –	–.–	–.–	O	–	Phas., Des., Purp.
	ics: 36; 132–6; 141–2	B	TAM	O/(gap).O	O/(gap).O	O/(gap)	–	Perc., A/S r., O r., Ind. o. r., Obl. r.
	ics: 36; 132–6; 141–2	B	TAM	O.O	O.O	O	–	Utt., Bef., Wh.
	dependent historicus,	D	tam	O.O	O.O	O	–	Aft., Wh., R.c., Reas.
	dependent imperfect: 95–8; 143–4; 153–6	D	tam	O.O	O.O	O	–	Aft., Wh., R.c., Reas.
	imperfect/eventualis: 137–40	B	TAM	gap.O	gap.O	O	–	A/S r.
Karimojong (Novelli 1985)	infinitive: 434; 524–7	D	ta–	–.–	–.–	O	–	Mod., Phas., Des., Purp.
	narrative: 511	D	tam	O/ –.o	O/ –.o	O	–	Mod., Des.
	parataxis: 499; 529–30	B	TAM	O/(P).O	O/(P).O	O/(P).O	–	Perc., A/S r., O r., Ind. O r., Obl. r.
	indicative + conjunction: 176–81; 507; 530–1	B	TAM	O.O	O.O	O	–	Prop.a., Utt., Purp., Bef., Aft., Wh., Reas.
	infinitive: 524–5	D	ta–	–.–	–.–	O	–	Purp.
	mood II: 512–13	D	TAm	O.O	O.O	O.O	–	R.c.
Kayardild (Evans 1995)	potential, desiderative: 506–8	B	– –M	O/–	O/–	O	–	Man. ('order')
	nominalization: 452–87	B	–AM	O/–/(gap)	O/–/(gap)	O/(gap)	c	Perc., Purp., Aft., Wh., Reas., A/S r., O r., Ind. o. r., Obl. r.
	finite clause: 513–14	B	–AM	–/O	–/O	O	c/–	Perc.
	finite clause: 498–9; 509–22	B	TAM	O	O	O	–	Perc., Know., Prop.a., Utt., Wh., Reas.
	ics: 93–8	B	TAM	O/(P).O	O/(P).O	O/(P)	–	Know., Prop.a., Utt., Bef., Wh., R.c., Reas., A/S r., O r., Ind. o. r., Obl. r.
	infinitive: 34; 37–8	D	– – –	–.–	–.–	O	–	Mod., Purp.
	precondition clause: 508–9	D	TAm	O	O	O	–	Wh., R.c.
	finite clause: 498–9; 509–22	B	TAM	O/(gap)	gap	O/(gap)	–	A/S r., O r.

Language	Construction								
	nominalization: 474	B	– – –	–		–	O	c	Perc., Purp.
	nominalization: 452–87	B	–AM	O/(gap)		O/(gap)	O/(gap)	c	A/S r., O r., I. o. r., Obl. r.
Khasi (Nagaraja 1985)	ics: 93–8	B	TAM	O/(P).O		O/(P).O	O/P	–	Know., Prop.a., Utt., Bef., Wh., R.c., Reas., A/S r., O r., Ind. o. r., Obl. r.
	infinitive: 34; 37–8	D	– – –	–.–		–.–	O	–	Mod Purp.
Kobon (Davies 1981)	verb stem: 172	D	– – –	–.–		–.–	O	–	Phas.
	ics: 1–3; 27–35	B	TAM	O.O		O.O	O	–	Man. ('order'), Perc., Prop.a., Utt., Aft., Wh., R.c., Reas.
	verb stem + suffix: 37	D	– – –	–.–		–.–	O	–	Purp.
	medial verb: 33–40	D	– – –	–.O		–.O	O	–	Wh., Reas.
	indicative: 29–30	B	TAM	O/(gap)/(P).O		O/(gap)/(P).O	O/(gap)/(P).O	–	A/S r., O r., Ind. o r., Obl. r.
	nominalization: 31	D	– – –	gap.–		gap.–	O	–	A/S r.
Kolokumi (Williamson 1965)	verb serialization: 54–6; 63–6	D	– – –	–		–	O	–	Mod., Phas., Des., Man. ('make', 'order'), Purp.
	verb serialization: 63–6	D	– – –	p		p	O	–	Phas., Des., Perc., Purp.
	ics: 78–83	B	TAM	O.O		O.O	O	–	Utt., Wh., Reas.
	verb serialization: 70–1	D	– – –	O/(gap)		gap	O	–	A/S r., O r.
Krongo (Reh 1985)	infinitive: 334–5	D	TA–	–.–		–.–	O	c	Mod., Des.
	nominalization: 335–6; 342–3	D	TA–	p.–		p.–	O	c	Des., Know., Utt., Aft.
	ics: 353–4	B	TAM	O.O		O.O	O	–	Utt.
	infinitive: 349–52	D	– – –	o/p.–		o/p.-	–	c	Purp.
	ics: 328; 338; 341–8	B	TAM	O.O		O.O	O.O	–	Bef., Aft., Wh., R.c., Reas.
	verb used in attributive function: 255–61	B	TAM	O.–		O.–	O	–	A/S r.
Lango (Noonan 1992)	infinitive: 209–13; 225; 244–5	D	.– –	–.–		–.–	O.O	–	Mod., Phas., Des., Purp.
	subjunctive: 191	D	.–m	O.O		O.O	O.O	–	Des., Man. ('make', 'order')
	ics: 220–2; 242–6	B	.AM	O.O		O.O	O.O	–	Perc., Know., Prop.a., Utt., Bef., Aft., Wh., R.c., Reas.
	nominalization: 244–5	D	.– –	P.–		P.–	O.O	c	Purp.
	ics: 215–20	B	.AM	O/(gap).O		O/(gap).O	O/(gap).O	–	A/S r., O r., Ind. o. r., Obl. r.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Lezgian (Haspelmath 1993)	infinitive: 355–9; 391	D	–––	–	–	O	–	Mod., Phas., Des., Man. ('make'), Purp.
	masdar: 359–62	D	–––	–	–	O	c	Mod., Phas. Man. ('order')
	substantivized participle: 365–70	D	ta–	O	O	O	–	Des., Perc., Know. Prop.a.
	ics: 367–9; 391	B	TAM	O	O	O	–	Know., Prop.a., Utt., Reas.
	absolute masdar: 391–2	D	–––	O	O	O	c	Purp.
	optative: 393–4	D	––M	O	O	O	–	Purp.
	verb stem + suffix: 384–5	D	–––	O	O	O	–	Bef.
	participle: 388–90	D	ta–	O	O	O	–	Aft., Wh., Reas.
	conditional mood: 394–6	D	TA/tam	O	O	O	–	R.c.
	masdar: 389	D	ta–	O	O	O	c	Reas.
	participle: 340–4	D	ta–	O/(gap)	O/(gap)	O	–	A/S r., O r., Ind. o. r., Obl. r.
Limbu (Van Drien 1987)	infinitive: 209	D	––M	–.O	–.O	O.O	–	Mod.
	optative: 133–5; 270	D	––M	O.O	O.O	O.O	–	Man. ('make', 'order')
	nominalization: 196–8	D	–––	–.O	–.O	(gap)/O.O	–	Perc., Know., O r.
	ics: 225–38	B	TAM	O.O	O.O	O.O	–	Prop.a., Utt., Wh., R.c., Reas.
	supine: 213–15	D	–––	–.–	–.–	O.o	–	Purp.
	gerund: 149–58	D	–––	O.–	O.–	O.–	–	Bef., Aft., Wh., R.c., Reas.
	active participle: 199–203	D	–––	gap.–	gap.–	O.–	–/c	A/S r.
	passive participle: 209–10	D	TA–	–.–	–.–	gap.–	–	O r.
Makian (West) (Voorhoeve 1982)	ics: 22; 31; 33	B	…	–.O	–.O	O	–	Mod., Des., Purp.
	ics: 33	B	…	O.O	O.O	O	–	Utt., Aft., Wh., R.c., Reas.
	ics: 32	B	…	gap/P.O	gap/P.O	O	–	A/S r.
Maŋarayi (Merlan 1982)	purpose complement: 10–11	D	––M	–.–	–.–	p.–	c	Des., Purp.

Language	Construction							
	ics: 1–3; 14–18; 21–2; 35	B	TAM	O.O	O.O	O.O	–	Man. ('order'), Prop.a., Utt., Wh., R. c., Reas.
	generalized subordinate clause: 14–18; 21	B	TAM	O/(gap).O	gap.O	O/(gap).O	–	Perc., A r., S r., O r.
	desiderative/intentional: 21	D	––M	O.O	O.O	O.O	c	Aft.
	past tense: 21	D	––M	O.O	O.O	O.O	c	Aft.
	desiderative/intentional: 21–2	D	––M	O.O	O.O	O.O	–	Wh., R.c.
	nominalization: 11–12	D	–––	–.–	–.–	?	c	Reas.
Maori (Bauer 1993)	*kia/ki te* clauses: 43; 66–8; 410; 450	D	–––	–	–	O	c	Phas., Des. Man. ('make', 'order'), Purp.
	nominalization: 49; 60–1; 64	D	–––	p	p	O	c	Perc., Know., Wh., Reas.
	ics: 1–2; 40; 62; 67	B	TAM	O	O	O	–	Know., Utt., Wh., R.c., Reas.
	subjunctive: 62–6	D	––M	O	O	O	–	Purp., Wh.
	verb stem: 61	D	–––	O	O	O	–	Wh.
	nominalization: 67	D	–––	o	o	p	–	Reas.
	ki te clauses: 68	D	–––	O	O	O	c	R.c.
	ics: 51–6	B	TAM	O/(P)/(gap)	O/(P)/(gap)	O/(P)/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.
	direct object passive/actor emphatic promotion: 55–6	B	TAM	o	–	gap	–	O. r.
Maricopa (Gordon 1986)	irrealis nominalization: 231	D	.–m	ac.O	ac.O	O.O	c	Mod.
	auxiliary + lexical verb: 172–3	D	.––	–.O	–.O	O.O	–	Phas., Des.
	desiderative suffix: 248	D	.–m	O.O	O.O	O.O	–	Des.
	switch-reference suffixes: 234–5; 241–2; 270–2	D	.––	O.O	O.O	O.O	–	Perc., Know., Bef., Aft., Wh.
	verb marked with incompletive suffix: 243–5	D	.AM	O.O	O.O	O.O	–	Know.
	verb marked with –k suffix: 130–1	D	.––	O.O	O.O	O.O	–	Prop.a., Utt.
	switch-reference suffixes: 131–2; 266–79	D	.AM	O.O	O.O	O.O	–	Wh., R.c., Reas.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
	ics (internal relative): 253–4	B	.AM	O.O	O.O	O.O	–	A/S r., O r., Ind. o. r., Obl. r.
	kw- nominalization. 255–61	D	.– –	o.–	o.–	O.O	c	A/S r.
	nominalization: 261–2	D	.– –	o.O	o.O	O.O	c	O r., Ind. o. r., Obl. r.
Muna (Van den Berg 1989)	juxtaposition: 238–46	B	TAM	O.O	O.O	O	–	Phas., Des., Man. ('order'), Perc., Know., Prop.a., Utt, Purp.
	conjoining: 246–66	B	TAM	O.O	O.O	O	–	Purp., Aft., Wh., R.c., Reas.
	active participle: 231–3	D	– – –	gap.–	gap.–	O	–	A/S r.
	normalization: 235	D	– – –	o.p		gap	–	O r.
	passive participle: 234–5	D	– – –	o.p	–.–	gap	–	O r., Ind. o. r.
Nama (Rust 1965)	ics: 199–202; 216–18	B	.AM	O.O	O.O	O.O	–	Utt., Purp., Aft., Wh., R.c., Reas.
	gerund: 218–19	D	.– –	–.–	–.–	O.–	–	Wh.
	optative: 203–15	B	.–M	O.O	O.O	O.O	–	R.c.
	ics: 199–202; 216–18	B	.AM	O/(gap).O	gap.O	O/(gap).O	–	A/S r., O r.
Nandi (Creider and Creider 1989)	subjunctive: 130–1	D	–Am	O.o	O.o	O.o	–	Des.
	indicative: 129–39; 148–50	B	TAM	O.O	O.O	O.O	–	Perc., Know., Prop.a., Utt., Wh., R.c., Reas.
	indicative: 129–39; 148–50	B	TAM	O/(P).O	O/(P).O	O.O	–	A/S r., O r., Ind. o r., Obl. r.
Ngbaka (Thomas 1963)	ics: 266–99	B	TAM	O	O	O	–	Man. ('order'), Prop.a., Utt., Purp., Aft., R.c., Reas., A/S r., O r., Ind. o. r., Obl. r.
	verb-*té*:266–7	D	– – –	–	–	O	–	Purp., Aft., Reas.
	conditional: 292–9	D	– –m	O	O	O	–	R.c.
	ics: 266–99	B	TAM	O/(P)/(gap)	O/(P)/gap	O/(P)/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.

Nung (Saul and Wilson 1980)	ics: 44–6; 108	B	. . .	–	–	O	–	Mod., Des., Purp.
	ics: 83–5; 78–81; 103–11	B	. . .	O	O	O	–	Perc., Utt., Bef., Aft., Wh., R.c., Reas.
	ics: 83–5; 78–81; 103–11	B	. . .	O/(P)	P	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
Paiwan (Egli 1990)	verb serialization: 305–6	B	TAM	–	–	O	–	Mod., Man. ('order')
	ics: 182–305	B	TAM	O/(gap)	O/(gap)	O/(gap)	–	Prop.a., Purp., Wh., R.c., Reas., A/S r., O r., Ind. o. r., Obl. r.
Paumarí (Chapman and Derbyshire 1991)	ics with dependent suffixes: 227–32; 235–8; 240–3	B	.AM	O	O	O	–	Des., Utt., Purp., Bef., Aft., Wh., Reas.
	ics with dependent suffixes: 227–30; 235–8; 240–3	B	.AM	–	–	O	–	Man. ('order')
	nominalization: 240	D	.– –	p	p	O	–	Perc.
	auxiliary construction: 227–32	D	.– –	O	O	O	–	Purp., Reas.
	ics with dependent suffixes: 238–40	B	.AM	O	O	O	–	A/S r. , O. r., Ind. o. r., Obl. r.
Pero (Frajzyngier 1989)	group one: 253–4, 256–7	D	– – –	–	–	O	–	Phas., Des.
	optative: 256; 261	D	– –M	–	–	O	–	Des., Man. ('order')
	optative: 256–7	D	– –M	O	O	O	–	Des.
	nominalized verb: 256; 264–5	D	– – –	–	–	O	–	Des., Purp.
	consecutive: 257–8; 269–75	B	TAM	O	O	O	–	Des., Aft., Wh., R.c., Reas.
	ics: 259	B	TAM	O	O	O	–	Utt.
	ics: 276–85	B	TAM	O/(P)/(gap)	O/(P)/(gap)	O/(P)/(gap)	–	A/S r., O r.
Pirahã (Everett 1986)	nominalization: 263–5	D	.– –	–	–	O	–	Mod.
	nominalization: 263–5	D	.– –	O	O	–	–	Man. ('make', 'order'), Purp.
	ics: 263–70; 275–7	B	.AM	O	O	O	–	Man. ('order'), Utt., Aft., Wh., R.c., A/S r., O r.
	ics: 275–7	B	.AM	O/(gap)	O/gap	O/(gap)	–	A/S r., O r.
Punjabi (Bhatia 1993)	infinitive: 45–6; 49–50; 71–5; 79–80	D	– – –	–.–	–.–	O	c	Mod., Phas., Des., Man. ('order'), Purp.
	subjunctive: 44; 74–5	D	– –M	O.o	O.o	O	–	Des., Purp.

TABLE A4. (*contd.*)

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
	ics: 44; 74–8	B	TAM	O.O	O.O	O	–	Know., Prop.a., Utt., Wh., R.c., Reas.
	infinitive: 71–5	D	–––	–.–	–.–	O	c	Bef. Aft., Wh., Reas.
	participle: 50–1; 60–1; 69–76	D	–a–	–.–	–.–	O/(gap)	–	Reas., Aft., A/S r., O r.
	ics: 53–6	B	TAM	O/(P).O	O/(P).O	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
Quechua (Huallaga Huánuco) (Weber 1989)	infinitive: 104; 289, 291	D	–––	–.–	–.–	?	c	Mod., Phas., Des.
	transition: 81; 117–19; 281; 289; 292	D	–A–	?.o	?.o	O.o	c	Des., Man. ('order'), Know., Purp., Reas., Obl. r.
	transition: 298–300	D	–A–	O/–.–	O/–.–	O.–	c	Perc.
	direct speech: 20–1	B	TAM	O.O	O.O	O.O	–	Utt.
	transition: 81; 298–90;	D	–A–	?.o	?.o	?.o	–	Aft., Wh., R.c., Reas.
	transition: 118–19; 177; 280; 292; 305	D	–A–	?.-	?.–	?	–	Purp., Bef., Wh., R.c., Reas.
	conditional: 104	D	TAm	O.o	O.o	O.o	–	R.c.
	transition: 279–81	D	–A–	?/(gap).o/(–)	?/(gap).o/(–)	?/(gap).o/(–)	–	A/S r., O r., Obl. r.
Resigaro (Allin 1976)	nominalization: 310; 324–7; 344; 356–7	D	TAM	O	O	O	–	Des., Man. ('order'), Perc., Know., Utt., Purp., R.c., Reas.
	nominalization: 357–68	D	TAM	O/(gap)	gap	O/(gap)	–	A/S r., O r.
Retuarã (Strom 1992)	deverbalization: 159–60	D	–––	–.–	–.–	O	–	Des.
	deverbalization: 159–60	D	–––	–.O	–.O	O	–	Des.
	purposive: 161–5	D	–––	–.–	–.–	O	–	Man. ('make', 'order'), Purp.
	ics: 162	B	TAM	O.O	O.O	O	–	Perc., Know., Prop.a., Utt.
	verb root: 169–70	D	–––	O.O	O.O	O	–	Purp., Aft.
	adverbial clauses formed by conjunctions: 176–8	B	TAM	O.O	O.O	O	–	Bef./Aft., Wh., Reas., R.c.

Language	Construction							Functions
	adverbial clauses formed by suffixes: 170–3	D	–A–	O.O	O.O	O	–	Wh., R.c., Reas.
	adverbial clauses formed by suffixes: 174–5	D	–––	–.–	–.–	–.–	–	Reas.
	internally headed relative construction: 151–8	D	–––	O/(gap).–	O/(gap).–	O/(gap)	c	A/S r., O r., Ind. o. r., Obl. r.
Sawu (Walker 1982)	ics: 45–7; 51	B	TA.	O	O	O	–	Mod., Man. ('order'), Perc., Prop.a., Utt., Purp., R.c.
	relative marker *do*: 44–5	B	TA.	O/(gap)	O/(gap)	O	–	A/S r., O r., Ind. o. r.
Shipibo-Conibo (Weißhar and Illius 1990)	nominalization: 569; 578	D	–––	–	–	O	–	Mod., Des., Purp.
	switch reference suffixes: 583	D	–––	O	O	O	–	Wh.
	participle: 579	D	–a–	O/(gap)	gap	O	–	A/S r.
Shoshone (Tümpisa Panamint) (Dayley 1989)	infinitive: 355–6; 381–2	D	–––	–.–	–.–	O.–	–	Mod., Man. ('order'), Purp.
	intentional: 382	D	–––	o.–	o.–	O.–	–	Man. ('order')
	participle: 123–5	D	ta–	–.–	–.–	O.–	c	Perc.
	finite object clauses: 374–85	B	TAM	O.O	O.O	O.O	–	Know., Utt.
	subordinating suffixes: 87–8	D	–––	ac/p/–.–	ac/p/–.–	O.––	–	Aft., Wh., R.c., Reas.
	participle: 357–74	D	ta–	O/(gap).–	O/(gap).–	O/(gap).–	c	A/S r., O r., Ind. o. r., Obl. r.
Slave (Rice 1989)	ics: 1058–64; 1243–8; 1261–3	B	TAM	O.O	O.O	O	–	Phas., Des., Man. ('make', 'order'), Perc., Know. Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	internal relatives: 1309–32	B	TAM	O.O	O.O	O	–	A/S r., O r., Ind. o. r., Obl. r.
	external relatives: 1309–32	B	TAM	O/(gap).O	gap.O	O/(gap)	–	A/S r., O r., Ind. o. r.
Songhay (Prost 1956)	infinitive: 110–12	D	–––	–	–	O	–	Mod.
	subjunctive: 136–41; 156–7	D	––M	–	–	O	–	Mod., Des., Man. ('order'), Purp.
	indicative: 156–7	B	TAM	O	O	O	–	Know., Prop.a., Utt., Wh., R.c., Reas.
	indicative: 156–7	B	TAM	gap	gap	O	–	A/S r.
Squamish (Kuipers 1967)	k^i clauses: 183–8; 291	D	TA–	O/p.O	O/p.O	O.O	–	Mod., Phas. Man. ('order'), Perc., Utt.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
	/q/ clauses: 189–95	D	––m	O.O	O.O	O.O	c	Perc., R.c.
	nominal paradigm: 88	D	–––	O/(gap).O/(–)	gap.–	O/(gap).O/(–)	–	A/S r., O r.
Sumerian (Thompsen 1984)	marû form: 245–9; 265–7	D	TA–	O.O	O.O	O.O	c	Man. ('order'), Utt., Purp.
	subordinating suffix—*a*: 242–9	D	TA–	O.O	O.O	O.O	c	Wh., R.c., Reas.
	participle: 261–3	D	TA–	p/–.–	gap.–	gap.–	–	S/O r.
	subordinating suffix—*a*: 242–9	D	TA–	O/(P)/(gap).O	P/gap.O	O/(P)/(gap).O	c	A/S r., O r.
Supyire (Carlson 1994)	nominalization: 428–38	D	–––	O/p	O/p	?	c	Mod., Phas.
	subjunctive: 292; 425–38; 550; 555–6; 585–7	D	-am	O/–	O/–	O	–	Mod.
	subjunctive: 292; 425–38; 550; 555–6; 585–7	D	-am	O	O	O	–	Des., Man. ('make', 'order'), Purp., Bef.
	verb serialization: 287–8; 371–2; 422–31; 587	B	TAM	–	–	O	–	Mod., Man. ('make', 'order'), Perc., Purp.
	complement in adjectival form: 423	D	–––	–	–	?	c	Perc.
	ics: 422–3; 487–515; 550–8; 580–1	B	TAM	O	O	O	–	Know., Prop.a., Utt., Bef., Aft., Wh., Reas.
	nominalization: 588	D	–––	–	–	O	c	Purp.
	conditional clause: 553–4; 570–1	D	TAm	O	O	O	–	Wh., R.c.
	indicative: 422–3; 487–515; 550–8; 580–1	B	TAM	O/(P)	O/(P)	O/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.

Tagalog (Schachter and Otanes 1972)	basic verb form: 172–81; 477–9	D	.–.	O	O	O	–	Man. ('order'), Purp., Bef., Aft., Wh.
	ics: 123; 172–81; 464; 477	B	.A.	O	O	O	–	Know., Prop.a., Utt., Aft., Wh., R.c., Reas.
	ics: 123; 172–81; 464; 477	B	.A.	O/(gap)	O/(gap)	O/(gap)	–	S r., O r., Ind. o. r., Obl. r.
Tamazight (Penchoen 1973)	projective: 72	D	–AM	–.O	–.O	–	–	Mod.
	verbal noun: 71	D	–––	–.–	–.–	–/p	–	Phas.
	extensive/continuative: 73	D	–A–	–.O	–.O	O	–	Phas.
	projective: 72	D	–AM	O.O	O.O	O	–	Des.
	ics: 73–6; 83	B	TAM	O.O	O.O	O	–	Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	participle: 67	D	–A–	gap.–	gap.–	O	–	A/S r.
	ics: 68–70	B	TAM	O.O	O.O	O	–	O r., Ind. o. r., Obl. r.
Tamil (Asher 1985)	infinitive: 22–3; 164–72	D	–A–	–.–	–.–	O	–	Mod., Phas., Man. ('order')
	past participle: 164	D	–A–	–.–	–.–	O	–	Phas.
	nominalization: 20; 43	D	–/TA–	O.–	O.–	O	c	Perc., Utt., Purp., Reas.
	ics: 1–3	D	TAM	O.O	O.O	O	–	Utt.
	relative participle: 37–9	D	–/TAM/m	O.–	O.–	O.–	–	Aft., Wh.
	nominalization: 39–40	D	–Am	O.–	O.–	O	c	Bef., Aft.
	infinitive: 40–2	D	–A–	O.–	O.–	O	–	Aft., Wh.
	conditional: 44–5	D	––m	O.O	O.O	O	–	R.c.
	correlative construction: 25–6	D	TAM	O/(P).–	O/(P).–	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
	relative participle: 26–34	D	TAM/m	O/(gap).–	(gap).–	O/(gap)	–	A/S r., O r., Ind. o. r., Obl. r.
Tanghkul Naga (Arokhianatan 1987)	clause juxtaposition: 131–2	B	TAM	O	O	O	–	Utt.
	participial marker: 110–30	D	–––	O	O	O	–	Purp., Bef., Aft., Wh., R.c., Reas.,
	conditional: 120–2	D	–AM	O	O	O	–	
	relative participle: 135	D	–AM	O/(gap)	(gap)	O/(gap)	–	A/S r., O r., Ind. o. r., Obl r.
Tarascan (LeCron Foster 1969)	participle: 180–1	D	–––	–	–	O	–	Purp.
	subjunctive: 176–80	D	TAM	O/(P).O	P.O	O/(P).O	–	A/S r., O r.

Language	Grammar's name and page numbers for verb form or construction	B/D	TAM	A	S	O	C/Ad	Subordination relation type
Tok Pisin (Wurm and Mülhaüser 1985)	ics: 378–82; 384–9	B	TAM	–	–	O	–	Mod., Phas.
	ics: 403–11	B	TAM	O	O	O	–	Des., Man. ('make', 'order'), Perc., Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	ics: 417–20	B	TAM	O/P	O/P	O/P	–	A/S r., O r., Ind. o. r., Obl. r.
Turkish (Underhill 1976, unless otherwise specified)	infinitive: 310–12; 388 (Kornfilt 1997: 51; 73)	D	– – –	–.–	–.–	O	c	Phas., Man. ('make', 'order'), Des., Purp.
	nominalization: 322–4	D	ta–	p.–	p.–	O	c	Des., Know., Prop.a., Utt.
	ki construction: 433–6	B	TAM	O.O	O.O	O	–	Des., Know., Prop.a., Utt., Reas.
	aorist/reported pas (Kornfilt 1997: 47)	B	TAM	ac.O	ac.O	O	–	Perc.
	nominalization: 388 (Kornfilt 1997: 69–73)	D	ta–	O/p.–	O/p.–	O	c	Purp., Bef., Aft., Wh., Reas.
	adverbial auxiliary: 399–401	D	TAM	O.–	O.–	O	–	Wh.
	conditional: 412–14	D	TAm	O.O	O.O	O	–	R.c.
	participle: 276–92	D	ta–	p/(gap).p	p/(gap).p	p/(gap)	c	A/S r., O r., Ind. o. r., Obl. r.
Tzutujil (Dayley 1985)	ics: 231–3; 366–8; 391–404	B	TAM	–.O	–.O	O.O	–	Mod., Phas., Man. ('order')
	infinitive: 233–7; 380–4; 401–2	D	– – –	–.–	–.–	O/p.-/p	–	Phas., Purp.
	ics: 231–3; 366–8; 391–404	B	TAM	O.O	O.O	O.O	–	Des., Perc., Prop.a., Utt., Wh., R.c., Reas.
	ics: 231–3; 366–8; 391–404	B	TAM	O/(gap)/(P).O	O/(gap)/(P).	O/(gap)/(P).O	–	A/S r., O r., Ind. o. r., Obl. r.
Ute (Givón 1980)	nominalizing suffix: 70–2	D	TAM	–.–	–.–	O	–	Mod., Des., Man. ('order')
	nominalizing suffix: 72–8; 175; 253–8	D	TAM	p.–	p.–	O	–	Know., Prop.a., Purp., Reas.

	direct speech: 72	B	TAM	O.O	O.O	O	–	Utt.
	nominalizing suffix: 185–90	D	TAM	O.O	O.O	O	–	A/S r.
	nominalizing suffix: 190–7	D	TAM	p.O		gap	–	O r.
Vai (Welmers 1976)	-ná/-á nominalization: 97–9	D	–––	–	–	O	–	Mod., Phas., Perc., Purp.
	incompletive: 99–104	D	taM	O	O	O	–	Des., Man. ('order'), Purp.
	ics: 107–8; 124–9	B	TAM	O	O	O	–	Know., Prop.a., Utt., Bef., Wh., Reas., A/S r., O r., Ind. o. r., Obl. r.
	conditional: 105–7	D	TAm	O	O	O	–	Bef., R.c.
Vietnamese (Hùng 1979)	ics: 80–1; 88; 106	B	.AM	–	–	–	–	Mod., Des., Man. ('order'), Perc.
	ics: 62; 80–9; 92–4; 106; 117–19	B	.AM	O	O	O	–	Know., Prop.a., Utt., Purp., Bef., Aft., Wh., R.c., Reas.
	ics: 62; 80–9; 92–4; 106; 117–19	B	.AM	O/(gap)	gap	O/(gap)	–	A/S r., O r.
Wargamay (Dixon 1979)	purposive: 69–73	D	.–m	O	–	–	–	Des., Man. ('order'), Purp.
	purposive: 69–73	D	.–m	O	gap	gap	–	S/O r.
Wayãpi (Grenand 1980)	ics: 95–6; 61–2; 85–9	B	TAM	O.O	O.O	O	–	Utt., Purp., Bef., Aft., Wh., R.c.., Reas.
	t-morpheme: 87	D	TAM	–.o	–.o	O	–	Purp.
	ics: 61–2; 85–9	B	TAM	O/(P).O	O/(P).O	O/(P)	–	A/S r., O r., Ind. o. r., Obl. r.
Yidiɲ (Dixon 1977)	purposive: 342–7; 448	D	––M	O	–	–	–	Man. ('order'), Purp.
	dative subordinate clauses: 322–34	D	ta–	O	O/–	O/–	–	Perc., Wh., S/O r.
	causal subordinate clauses: 334–40	D	ta–	O	O/–	O/–	–	Aft., R.c., Reas.
Yoruba (Rowlands 1969)	verb with lengthened vowel: 67–8	B	TAM	–	–	O	–	Mod., Phas., Des.
	dependent verb form: 71–3	B	TAM	O	O	O	–	Man. ('order'), Purp., Bef.
	ics: 67–8; 87–91; 167–81	B	TAM	O	O	O	–	Utt., Wh., R.c., Reas.
	ics: 87–91; 167–81	B	TAM	O/(gap)/(P)	gap/P	O/(gap)/(P)	–	A/S r., O r.

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Index of Subjects

Index of Languages

Index of Authors

sharing is caring!!!